



# UNIFIED SERVICES ROUTER

## USER MANUAL

### DSR-500N/1000N

RELEASE 1.01



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# **User Manual**

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## ***Unified Services Router***

D-Link Corporation  
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**User Manual**  
**DSR-500N/1000N**  
**Unified Services Router**  
**Version 1.0**

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# Chapter 1. Introduction

The D-Link Unified Services Routers are enterprise grade security gateway solutions with Firewall, VPN and in some cases 802.11n Access Point capabilities. These devices have wizards to allow for quick and easy configuration for internet access, VPN tunnels, and wireless networks. The GUI provides all the capabilities for novice and advanced users to administer this secure and feature rich router.

## 1.1 About this User Manual

This document is a high level manual to allow new D-Link Unified Services Router users to configure connectivity, setup VPN tunnels, establish firewall rules and perform general administrative tasks. Typical deployment and use case scenarios are described in each section. For more detailed setup instructions and explanations of each configuration parameter, refer to the online help that can be accessed from each page in the router GUI.

## 1.2 Typographical Conventions

The following is a list of the various terms, followed by an example of how that term is represented in this document:

- Product Name – D-Link Unified Services Router.
  - Model numbers DSR-500/500N/1000/1000N
- GUI Menu Path/GUI Navigation – ***Monitoring > Router Status***
- User input – Text
- Important note – 

# Chapter 2. Configuring Your Network: LAN Setup

It is assumed that the user has a machine for management connected to the LAN to the router. The LAN connection may be through the wired Ethernet ports available on the router, or once the initial setup is complete, the device may also be managed through its wireless interface as it is bridged with the LAN. Access the router's graphical user interface (GUI) for management by using any web browser, such as Microsoft Internet Explorer or Mozilla Firefox:

- Go to <http://192.168.10.1> (default IP address) to display the router's management login screen.
- Default login credentials for the management GUI:
  - Username: **admin**
  - Password: **admin**

 If the router's LAN IP address was changed, use that IP address in the navigation bar of the browser to access the router's management UI.

## 2.1 LAN Configuration

### *Setup > Network Settings > LAN Configuration*

By default, the router functions as a Dynamic Host Configuration Protocol (DHCP) server to the hosts on the WLAN or LAN network. With DHCP, PCs and other LAN devices can be assigned IP addresses as well as addresses for DNS servers, Windows Internet Name Service (WINS) servers, and the default gateway. With the DHCP server enabled the router's IP address serves as the gateway address for LAN and WLAN clients. The PCs in the LAN are assigned IP addresses from a pool of addresses specified in this procedure. Each pool address is tested before it is assigned to avoid duplicate addresses on the LAN.

For most applications the default DHCP and TCP/IP settings are satisfactory. If you want another PC on your network to be the DHCP server or if you are manually configuring the network settings of all of your PCs, set the DHCP mode to 'none'. DHCP relay can be used to forward DHCP lease information from another LAN device that is the network's DHCP server; this is particularly useful for wireless clients.

Instead of using a DNS server, you can use a Windows Internet Naming Service (WINS) server. A WINS server is the equivalent of a DNS server but uses the NetBIOS protocol to resolve hostnames. The router includes the WINS server IP address in the DHCP configuration when acknowledging a DHCP request from a DHCP client.

You can also enable DNS proxy for the LAN. When this is enabled the router then acts as a proxy for all DNS requests and communicates with the ISP's DNS servers. When disabled all DHCP clients receive the DNS IP addresses of the ISP.

To configure LAN Connectivity, please follow the steps below:

1. In the LAN Setup page, enter the following information for your router:

- IP address (factory default: 192.168.10.1).

 If you change the IP address and click Save Settings, the GUI will not respond. Open a new connection to the new IP address and log in again. Be sure the LAN host (the machine used to manage the router) has obtained IP address from newly assigned pool (or has a static IP address in the router's LAN subnet) before accessing the router via changed IP address.

- Subnet mask (factory default: 255.255.255.0).

2. In the DHCP section, select the DHCP mode:

- None: the router's DHCP server is disabled for the LAN
- DHCP Server. With this option the router assigns an IP address within the specified range plus additional specified information to any LAN device that requests DHCP served addresses.
- DHCP Relay: With this option enabled, DHCP clients on the LAN can receive IP address leases and corresponding information from a DHCP server on a different subnet. Specify the Relay Gateway, and when LAN clients make a DHCP request it will be passed along to the server accessible via the Relay Gateway IP address.
- If DHCP is being enabled, enter the following DHCP server parameters:
  - Starting and Ending IP Addresses: Enter the first and last continuous addresses in the IP address pool. Any new DHCP client joining the LAN is assigned an IP address in this range. The default starting address is 192.168.10.2. The default ending address is 192.168.10.100. These addresses should be in the same IP address subnet as the router's LAN IP address. You may wish to save part of the subnet range for devices with statically assigned IP addresses in the LAN.
  - Primary and Secondary DNS servers: If configured domain name system (DNS) servers are available on the LAN enter their IP addresses here.
  - WINS Server (optional): Enter the IP address for the WINS server or, if present in your network, the Windows NetBios server.
  - Lease Time: Enter the time, in hours, for which IP addresses are leased to clients.

- Enable DNS Proxy: To enable the router to act as a proxy for all DNS requests and communicate with the ISP's DNS servers, click the checkbox.
3. Click Save Settings to apply all changes.

**Figure 1: Setup page for LAN TCP/IP settings**

The screenshot shows the 'LAN SETUP' section of the router's configuration interface. It includes a summary message, two save buttons ('Save Settings' and 'Don't Save Settings'), and a 'LOGOUT' link. Below this is the 'LAN TCP/IP Setup' section with fields for IP Address (176.16.2.40) and Subnet Mask (255.255.255.0). The 'DHCP' section contains fields for DHCP Mode (set to 'None'), Starting IP Address (176.16.2.200), Ending IP Address (176.16.2.254), Primary DNS Server, Secondary DNS Server, WINS Server, Lease Time (24), and Relay Gateway. The 'LAN Proxy' section has an 'Enable DNS Proxy' checkbox checked. The 'Run-Time User Authentication' section has an 'Enable Run-Time User Authentication' checkbox unchecked.

## 2.1.1 LAN Configuration in an IPv6 Network

### *Advanced > IPv6 > IPv6 LAN > IPv6 LAN Config*

In IPv6 mode, the LAN DHCP server is enabled by default (similar to IPv4 mode). The DHCPv6 server will serve IPv6 addresses from configured address pools with the IPv6 Prefix Length assigned to the LAN.

- ☞ IPv4 / IPv6 mode must be enabled in the **Advanced > IPv6 > IP mode** to enable IPv6 configuration options.

## LAN Settings

The default IPv6 LAN address for the router is **fec0::1**. You can change this 128 bit IPv6 address based on your network requirements. The other field that defines the LAN settings for the router is the prefix length. The IPv6 network (subnet) is identified by the initial bits of the address called the prefix. By default this is **64** bits long. All hosts in the network have common initial bits for their IPv6 address; the number of common initial bits in the network's addresses is set by the prefix length field.

**Figure 2: IPv6 LAN and DHCPv6 configuration**

<b>DSR-1000N //</b> <a href="#">Application Rules</a> <a href="#">Website Filter</a> <a href="#">Firewall Settings</a> <a href="#">Wireless Settings</a> <a href="#">Advanced Network</a> <a href="#">Routing</a> <a href="#">Certificates</a> <a href="#">Users</a> <a href="#">IP/MAC Binding</a> <b>IPv6</b> <a href="#">Radius Settings</a> <a href="#">Power Saving</a>	<div style="text-align: center; margin-bottom: 10px;"> <b>SETUP</b>      <b>ADVANCED</b>      <b>TOOLS</b>      <b>STATUS</b> </div> <div style="color: red; font-weight: bold; margin-bottom: 10px;">     Please Set IP Mode to IPv4/IPv6 in <a href="#">Routing Mode Page</a> to configure this page.   </div> <div style="background-color: #0070C0; color: white; padding: 5px; margin-bottom: 10px;"> <b>IPv6 LAN CONFIG</b> <span style="float: right;">LOGOUT</span> </div> <div style="border: 1px solid #ccc; padding: 10px; background-color: #f9f9f9;"> <p>This page allow user to IPv6 related LAN configurations.</p> <div style="display: flex; justify-content: space-around; margin-bottom: 10px;"> <span><a href="#">Save Settings</a></span> <span><a href="#">Don't Save Settings</a></span> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <b>LAN TCP/IP Setup</b> </div> <div style="display: flex; justify-content: space-between; margin-bottom: 10px;"> <div style="width: 45%;"> <b>IPv6 Address:</b> </div> <div style="width: 45%;"> <input type="text" value="fec0::1"/> </div> </div> <div style="display: flex; justify-content: space-between; margin-bottom: 10px;"> <div style="width: 45%;"> <b>IPv6 Prefix Length:</b> </div> <div style="width: 45%;"> <input type="text" value="64"/> </div> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <b>DHCPv6</b> </div> <div style="display: flex; justify-content: space-between; margin-bottom: 10px;"> <div style="width: 45%;"> <b>DHCP Status:</b> </div> <div style="width: 45%;"> <input type="button" value="Disable DHCPv6 Server"/> </div> </div> <div style="display: flex; justify-content: space-between; margin-bottom: 10px;"> <div style="width: 45%;"> <b>DHCP Mode:</b> </div> <div style="width: 45%;"> <input type="button" value="Stateless"/> </div> </div> <div style="display: flex; justify-content: space-between; margin-bottom: 10px;"> <div style="width: 45%;"> <b>Domain Name:</b> </div> <div style="width: 45%;"> <input type="text" value="dlink.com"/> </div> </div> <div style="display: flex; justify-content: space-between; margin-bottom: 10px;"> <div style="width: 45%;"> <b>Server Preference:</b> </div> <div style="width: 45%;"> <input type="text" value="255"/> </div> </div> <div style="display: flex; justify-content: space-between; margin-bottom: 10px;"> <div style="width: 45%;"> <b>DNS Servers:</b> </div> <div style="width: 45%;"> <input type="button" value="Use DNS Proxy"/> </div> </div> <div style="display: flex; justify-content: space-between; margin-bottom: 10px;"> <div style="width: 45%;"> <b>Primary DNS Server:</b> </div> <div style="width: 45%;"> <input type="text"/> </div> </div> <div style="display: flex; justify-content: space-between; margin-bottom: 10px;"> <div style="width: 45%;"> <b>Secondary DNS Server:</b> </div> <div style="width: 45%;"> <input type="text"/> </div> </div> <div style="display: flex; justify-content: space-between; margin-bottom: 10px;"> <div style="width: 45%;"> <b>Lease/Rebind Time:</b> </div> <div style="width: 45%;"> <input type="text" value="86400"/> (Seconds)     </div> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <b>List of IPv6 Address Pools</b> </div> <div style="display: flex; justify-content: space-between; border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <div style="width: 10%;"><input type="checkbox"/></div> <div style="width: 45%;">Start Address</div> <div style="width: 45%;">End Address</div> </div> <div style="text-align: center; margin-bottom: 10px;"> <a href="#">Edit</a>    <a href="#">Delete</a>    <a href="#">Add</a> </div> </div>
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☞ If you change the IP address and click Save Settings, the GUI will not respond. Open a new connection to the new IP address and log in again. Be sure the LAN host (the machine used to manage the router) has obtained IP address from newly assigned pool (or has a static IP address in the router's LAN subnet) before accessing the router via changed IP address.

As with an IPv4 LAN network, the router has a DHCPv6 server. If enabled, the router assigns an IP address within the specified range plus additional specified information to any LAN PC that requests DHCP served addresses.

The following settings are used to configure the DHCPv6 server:

- DHCP Mode: The IPv6 DHCP server is either stateless or stateful. If stateless is selected an external IPv6 DHCP server is not required as the IPv6 LAN hosts are auto-configured by this router. In this case the router advertisement daemon (RADVD) must be configured on this device and ICMPv6 router discovery messages are used by the host for auto-configuration. There are no managed addresses to serve the LAN nodes. If stateful is selected the IPv6 LAN host will rely on an external DHCPv6 server to provide required configuration settings
- The domain name of the DHCPv6 server is an optional setting
- Server Preference is used to indicate the preference level of this DHCP server. DHCP advertise messages with the highest server preference value to a LAN host are preferred over other DHCP server advertise messages. The default is 255.
- The DNS server details can be manually entered here (primary/secondary options. An alternative is to allow the LAN DHCP client to receive the DNS server details from the ISP directly. By selecting Use DNS proxy, this router acts as a proxy for all DNS requests and communicate with the ISP's DNS servers (a WAN configuration parameter).
- Primary and Secondary DNS servers: If there are configured domain name system (DNS) servers available on the LAN enter the IP addresses here.
- Lease/Rebind time sets the duration of the DHCPv6 lease from this router to the LAN client.

### IPv6 Address Pools

This feature allows you to define the IPv6 delegation prefix for a range of IP addresses to be served by the gateway's DHCPv6 server. Using a delegation prefix you can automate the process of informing other networking equipment on the LAN of DHCP information specific for the assigned prefix.

## 2.1.2 Configuring IPv6 Router Advertisements

Router Advertisements are analogous to IPv4 DHCP assignments for LAN clients, in that the router will assign an IP address and supporting network information to devices that are configured to accept such details. Router Advertisement is required in an IPv6 network is required for stateless auto configuration of the IPv6 LAN. By configuring the Router Advertisement Daemon on this router, the device will listen on the LAN for router solicitations and respond to these LAN hosts with router advisements.

## RADVD

### ***Advanced > IPv6 > IPv6 LAN > Router Advertisement***

To support stateless IPv6 auto configuration on the LAN, set the RADVD status to Enable. The following settings are used to configure RADVD:

- Advertise Mode: Select Unsolicited Multicast to send router advertisements (RA's) to all interfaces in the multicast group. To restrict RA's to well known IPv6 addresses on the LAN, and thereby reduce overall network traffic, select Unicast only.
- Advertise Interval: When advertisements are unsolicited multicast packets, this interval sets the maximum time between advertisements from the interface. The actual duration between advertisements is a random value between one third of this field and this field. The default is 30 seconds.
- RA Flags: The router advertisements (RA's) can be sent with one or both of these flags. Choose Managed to use the administered /stateful protocol for address auto configuration. If the Other flag is selected the host uses administered/stateful protocol for non-address auto configuration.
- Router Preference: this low/medium/high parameter determines the preference associated with the RADVD process of the router. This is useful if there are other RADVD enabled devices on the LAN as it helps avoid conflicts for IPv6 clients.
- MTU: The router advertisement will set this maximum transmission unit (MTU) value for all nodes in the LAN that are autoconfigured by the router. The default is 1500.
- Router Lifetime: This value is present in RA's and indicates the usefulness of this router as a default router for the interface. The default is 3600 seconds. Upon expiration of this value, a new RADVD exchange must take place between the host and this router.

**Figure 3: Configuring the Router Advertisement Daemon**

DSR-1000N //	SETUP	ADVANCED	TOOLS	STATUS																		
<a href="#">Application Rules</a> ▾ <a href="#">Website Filter</a> ▾ <a href="#">Firewall Settings</a> ▾ <a href="#">Wireless Settings</a> ▾ <a href="#">Advanced Network</a> ▾ <a href="#">Routing</a> ▾ <a href="#">Certificates</a> <a href="#">Users</a> ▾ <a href="#">IP/MAC Binding</a> <a href="#">IPv6</a> ▾ <a href="#">Radius Settings</a> <a href="#">Power Saving</a>	<div style="background-color: #e0f2e0; padding: 10px;"> <p style="color: red; margin: 0;">Please Set IP Mode to IPv4/IPv6 in <a href="#">Routing Mode Page</a> to configure this page.</p> <div style="background-color: #d9e1f2; border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <b>RADVD</b> <span style="float: right;">LOGOUT</span> <p>This page allow user to configure Router Advertisement Daemon (RADVD) related configurations.</p> <p style="text-align: center;"><a href="#">Save Settings</a> <a href="#">Don't Save Settings</a></p> </div> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <h3>Router Advertisement Daemon (RADVD)</h3> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">RADVD Status:</td> <td style="width: 70%; text-align: right;"><input type="button" value="Disable"/></td> </tr> <tr> <td>Advertise Mode:</td> <td style="text-align: right;"><input type="button" value="Unsolicited Multicast"/></td> </tr> <tr> <td>Advertise Interval:</td> <td style="text-align: right;">30</td> </tr> <tr> <td>RA Flags:</td> <td></td> </tr> <tr> <td>Managed</td> <td style="text-align: right;"><input type="checkbox"/></td> </tr> <tr> <td>Other</td> <td style="text-align: right;"><input checked="" type="checkbox"/></td> </tr> <tr> <td>Router Preference:</td> <td style="text-align: right;"><input type="button" value="High"/></td> </tr> <tr> <td>MTU:</td> <td style="text-align: right;">1500</td> </tr> <tr> <td>Router Lifetime:</td> <td style="text-align: right;">3600</td> </tr> </table> </div> </div>				RADVD Status:	<input type="button" value="Disable"/>	Advertise Mode:	<input type="button" value="Unsolicited Multicast"/>	Advertise Interval:	30	RA Flags:		Managed	<input type="checkbox"/>	Other	<input checked="" type="checkbox"/>	Router Preference:	<input type="button" value="High"/>	MTU:	1500	Router Lifetime:	3600
RADVD Status:	<input type="button" value="Disable"/>																					
Advertise Mode:	<input type="button" value="Unsolicited Multicast"/>																					
Advertise Interval:	30																					
RA Flags:																						
Managed	<input type="checkbox"/>																					
Other	<input checked="" type="checkbox"/>																					
Router Preference:	<input type="button" value="High"/>																					
MTU:	1500																					
Router Lifetime:	3600																					

## Advertisement Prefixes

### *Advanced > IPv6 > IPv6 LAN > Advertisement Prefixes*

The router advertisements configured with advertisement prefixes allow this router to inform hosts how to perform stateless address auto configuration. Router advertisements contain a list of subnet prefixes that allow the router to determine neighbors and whether the host is on the same link as the router.

The following prefix options are available for the router advertisements:

- IPv6 Prefix Type: To ensure hosts support IPv6 to IPv4 tunnel select the 6to4 prefix type. Selecting Global/Local/ISATAP will allow the nodes to support all other IPv6 routing options
- SLA ID: The SLA ID (Site-Level Aggregation Identifier) is available when 6to4 Prefixes are selected. This should be the interface ID of the router's LAN interface used for router advertisements.
- IPv6 Prefix: When using Global/Local/ISATAP prefixes, this field is used to define the IPv6 network advertised by this router.

- IPv6 Prefix Length: This value indicates the number contiguous, higher order bits of the IPv6 address that define up the network portion of the address. Typically this is 64.
- Prefix Lifetime: This defines the duration (in seconds) that the requesting node is allowed to use the advertised prefix. It is analogous to DHCP lease time in an IPv4 network.

**Figure 4: IPv6 Advertisement Prefix settings**

DSR-1000N //	SETUP	<b>ADVANCED</b>	TOOLS	STATUS										
<div style="border: 1px solid #ccc; padding: 10px;"> <p style="margin: 0;"><b>ADVERTISEMENT PREFIXES</b></p> <p style="text-align: right; margin-top: -10px;">LOGOUT</p> <hr/> <p>Description...</p> <p style="text-align: center; margin-top: 5px;"> <input type="button" value="Save Settings"/> <input type="button" value="Don't Save Settings"/> </p> <hr/> <p><b>Advertise Prefixes Configuration</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">IPv6 Prefix Type:</td> <td style="width: 70%; text-align: center;"> <input type="text" value="6to4"/> </td> </tr> <tr> <td>SLA ID:</td> <td style="text-align: center;"> <input type="text"/> </td> </tr> <tr> <td>IPv6 Prefix:</td> <td style="text-align: center;"> <input type="text"/> </td> </tr> <tr> <td>IPv6 Prefix Length:</td> <td style="text-align: center;"> <input type="text"/> </td> </tr> <tr> <td>Prefix Lifetime:</td> <td style="text-align: center;"> <input type="text"/> (Seconds)         </td> </tr> </table> </div>					IPv6 Prefix Type:	<input type="text" value="6to4"/>	SLA ID:	<input type="text"/>	IPv6 Prefix:	<input type="text"/>	IPv6 Prefix Length:	<input type="text"/>	Prefix Lifetime:	<input type="text"/> (Seconds)
IPv6 Prefix Type:	<input type="text" value="6to4"/>													
SLA ID:	<input type="text"/>													
IPv6 Prefix:	<input type="text"/>													
IPv6 Prefix Length:	<input type="text"/>													
Prefix Lifetime:	<input type="text"/> (Seconds)													

## 2.2 VLAN Configuration

The router supports virtual network isolation on the LAN with the use of VLANs. LAN devices can be configured to communicate in a subnetwork defined by VLAN identifiers. LAN ports can be assigned unique VLAN IDs so that traffic to and from that physical port can be isolated from the general LAN. VLAN filtering is particularly useful to limit broadcast packets of a device in a large network.

VLAN support is disabled by default in the router. In the VLAN Configuration page, enable VLAN support on the router and then proceed to the next section to define the virtual network.

### *Setup > VLAN Settings > Available VLAN*

The Available VLAN page shows a list of configured VLANs by name and VLAN ID. A VLAN membership can be created by clicking the Add button below the List of Available VLANs.

A VLAN membership entry consists of a VLAN identifier and the numerical VLAN ID which is assigned to the VLAN membership. The VLAN ID value can be any number from 2 to 4091. VLAN ID 1 is reserved for the default VLAN, which is used for untagged frames received on the interface. By enabling Inter VLAN Routing, you

will allow traffic from LAN hosts belonging to this VLAN ID to pass through to other configured VLAN IDs that have Inter VLAN Routing enabled.

**Figure 5: Adding VLAN memberships to the LAN**

DSR-1000N //	SETUP	ADVANCED	TOOLS	STATUS						
VWizard										
Internet Settings										
Wireless Settings										
Network Settings										
DMZ Setup										
VPN Settings										
USB Settings										
VLAN Settings										
<b>AVAILABLE VLANS</b> <span style="float: right;">LOGOUT</span> <p>This page allows user to enable/disable VLAN support on the LAN.</p> <p><input type="button" value="Save Settings"/> <input type="button" value="Don't Save Settings"/></p> <hr/> <b>VLAN Configuration</b> <table border="0"> <tr> <td>Name:</td> <td><input type="text"/></td> </tr> <tr> <td>Id:</td> <td><input type="text"/></td> </tr> <tr> <td>Inter VLAN Routing Enable:</td> <td><input checked="" type="checkbox"/></td> </tr> </table>					Name:	<input type="text"/>	Id:	<input type="text"/>	Inter VLAN Routing Enable:	<input checked="" type="checkbox"/>
Name:	<input type="text"/>									
Id:	<input type="text"/>									
Inter VLAN Routing Enable:	<input checked="" type="checkbox"/>									

## 2.2.1 Associating VLANs to ports

In order to tag all traffic through a specific LAN port with a VLAN ID, you can associate a VLAN to a physical port.

### *Setup > VLAN Settings > Port VLAN*

VLAN membership properties for the LAN and wireless LAN are listed on this page. The VLAN Port table displays the port identifier, the mode setting for that port and VLAN membership information. The configuration page is accessed by selecting one of the four physical ports or a configured access point and clicking Edit.

The edit page offers the following configuration options:

- Mode: The mode of this VLAN can be General, Access, or Trunk. The default is access.
- In General mode the port is a member of a user selectable set of VLANs. The port sends and receives data that is tagged or untagged with a VLAN ID. If the data into the port is untagged, it is assigned the defined PVID. In the configuration from Figure 4, Port 3 is a General port with PVID 3, so untagged data into Port 3 will be assigned PVID 3. All tagged data sent out of the port with the same PVID will be untagged. This mode is typically used with IP Phones that have dual Ethernet ports. Data coming from phone to the switch port on the router will be tagged. Data passing through the phone from a connected device will be untagged.

**Figure 6: Port VLAN list**

Port VLANs				
	Port Name	Mode	PVID	VLAN Membership
<input type="checkbox"/>	Port 1	Access	1	1
<input type="checkbox"/>	Port 2	Access	1	1
<input type="checkbox"/>	Port 3	Access	1	1
<input type="checkbox"/>	Port 4	Access	1	1

Wireless VLANs				
	SSID	Mode	PVID	VLAN Membership
<input type="checkbox"/>	DSR-1000N_1	Access	1	1

- In Access mode the port is a member of a single VLAN (and only one). All data going into and out of the port is untagged. Traffic through a port in access mode looks like any other Ethernet frame.
- In Trunk mode the port is a member of a user selectable set of VLANs. All data going into and out of the port is tagged. Untagged coming into the port is not forwarded, except for the default VLAN with PVID=1, which is untagged. Trunk ports multiplex traffic for multiple VLANs over the same physical link.
- Select PVID for the port when the General mode is selected.
- Configured VLAN memberships will be displayed on the VLAN Membership Configuration for the port. By selecting one more VLAN membership options for a General or Trunk port, traffic can be routed between the selected VLAN membership IDs

**Figure 7: Configuring VLAN membership for a port**

DSR-1000N //	<b>SETUP</b>	<b>ADVANCED</b>	<b>TOOLS</b>	<b>STATUS</b>								
Wizard ▶ Internet Settings ▶ Wireless Settings ▶ Network Settings ▶ DMZ Setup ▶ VPN Settings ▶ USB Settings ▶ VLAN Settings ▶	<div style="background-color: #0070C0; color: white; padding: 5px; text-align: right;">LOGOUT</div> <div style="border: 1px solid #ccc; padding: 10px; margin-bottom: 10px;"> <b>VLAN CONFIGURATION</b> <p>This page allows user to configure the port VLAN.</p> </div> <div style="border: 1px solid #ccc; padding: 10px; margin-bottom: 10px;"> <b>VLAN Configuration</b> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Port Name:</td> <td style="width: 70%;">Port 4</td> </tr> <tr> <td>Mode:</td> <td style="text-align: center;"><input type="button" value="Access"/></td> </tr> <tr> <td>PVID:</td> <td style="text-align: center;"><input type="text" value="1"/></td> </tr> </table> <div style="text-align: center; margin-top: 10px;"> <input type="button" value="Apply"/> <input type="button" value="Cancel"/> </div> </div> <div style="border: 1px solid #ccc; padding: 10px;"> <b>VLAN Membership Configuration</b> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">VLAN Membership:</td> <td style="width: 70%; text-align: center;"><input checked="" type="checkbox"/> 1</td> </tr> </table> <div style="text-align: center; margin-top: 10px;"> <input type="button" value="Apply"/> <input type="button" value="Cancel"/> </div> </div>				Port Name:	Port 4	Mode:	<input type="button" value="Access"/>	PVID:	<input type="text" value="1"/>	VLAN Membership:	<input checked="" type="checkbox"/> 1
Port Name:	Port 4											
Mode:	<input type="button" value="Access"/>											
PVID:	<input type="text" value="1"/>											
VLAN Membership:	<input checked="" type="checkbox"/> 1											

## 2.3 Configurable Port: DMZ Setup

This router supports one of the physical ports to be configured as a secondary WAN Ethernet port or a dedicated DMZ port. A DMZ is a subnetwork that is open to the public but behind the firewall. The DMZ adds an additional layer of security to the LAN, as specific services/ports that are exposed to the internet on the DMZ do not have to be exposed on the LAN. It is recommended that hosts that must be exposed to the internet (such as web or email servers) be placed in the DMZ network. Firewall rules can be allowed to permit access specific services/ports to the DMZ from both the LAN or WAN. In the event of an attack to any of the DMZ nodes, the LAN is not necessarily vulnerable as well.

### *Setup > DMZ Setup > DMZ Setup Configuration*

DMZ configuration is identical to the LAN configuration. There are no restrictions on the IP address or subnet assigned to the DMZ port, other than the fact that it cannot be identical to the IP address given to the LAN interface of this gateway.

**Figure 8: DMZ configuration**

DSR-1000N //	SETUP	ADVANCED	TOOLS	STATUS																						
Wizard Internet Settings Wireless Settings Network Settings DMZ Setup VPN Settings USB Settings VLAN Settings	<div style="background-color: #0070C0; color: white; padding: 5px; text-align: right;"> <b>DMZ SETUP</b> <span style="float: right;">LOGOUT</span> </div> <p>The De-Militarized Zone (DMZ) is a network which, when compared to the LAN, has fewer firewall restrictions, by default. This zone can be used to host servers and give public access to them.</p> <p style="text-align: center;"><input type="button" value="Save Settings"/> <input type="button" value="Don't Save Settings"/></p> <div style="background-color: #0070C0; color: white; padding: 5px; text-align: left;"> <b>DMZ Port Setup</b> </div> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">IP Address:</td> <td><input type="text" value="176.16.2.1"/></td> </tr> <tr> <td>Subnet Mask:</td> <td><input type="text" value="255.255.255.0"/></td> </tr> </table> <div style="background-color: #0070C0; color: white; padding: 5px; text-align: left;"> <b>DHCP for DMZ Connected Computers</b> </div> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">DHCP Mode:</td> <td><input type="button" value="DHCP Server"/></td> </tr> <tr> <td>Starting IP Address:</td> <td><input type="text" value="176.16.2.100"/></td> </tr> <tr> <td>Ending IP Address:</td> <td><input type="text" value="176.16.2.254"/></td> </tr> <tr> <td>Primary DNS Server:</td> <td><input type="text"/></td> </tr> <tr> <td>Secondary DNS Server:</td> <td><input type="text"/></td> </tr> <tr> <td>WINS Server:</td> <td><input type="text"/></td> </tr> <tr> <td>Lease Time:</td> <td><input type="text" value="24"/></td> </tr> <tr> <td>Relay Gateway:</td> <td><input type="text"/></td> </tr> </table> <div style="background-color: #0070C0; color: white; padding: 5px; text-align: left;"> <b>DMZ Proxy</b> </div> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">Enable DNS Proxy:</td> <td><input checked="" type="checkbox"/></td> </tr> </table>				IP Address:	<input type="text" value="176.16.2.1"/>	Subnet Mask:	<input type="text" value="255.255.255.0"/>	DHCP Mode:	<input type="button" value="DHCP Server"/>	Starting IP Address:	<input type="text" value="176.16.2.100"/>	Ending IP Address:	<input type="text" value="176.16.2.254"/>	Primary DNS Server:	<input type="text"/>	Secondary DNS Server:	<input type="text"/>	WINS Server:	<input type="text"/>	Lease Time:	<input type="text" value="24"/>	Relay Gateway:	<input type="text"/>	Enable DNS Proxy:	<input checked="" type="checkbox"/>
IP Address:	<input type="text" value="176.16.2.1"/>																									
Subnet Mask:	<input type="text" value="255.255.255.0"/>																									
DHCP Mode:	<input type="button" value="DHCP Server"/>																									
Starting IP Address:	<input type="text" value="176.16.2.100"/>																									
Ending IP Address:	<input type="text" value="176.16.2.254"/>																									
Primary DNS Server:	<input type="text"/>																									
Secondary DNS Server:	<input type="text"/>																									
WINS Server:	<input type="text"/>																									
Lease Time:	<input type="text" value="24"/>																									
Relay Gateway:	<input type="text"/>																									
Enable DNS Proxy:	<input checked="" type="checkbox"/>																									

☞ In order to configure a DMZ port, the router's configurable port must be set to DMZ in the *Setup > Internet Settings > Configurable Port* page.

## 2.4 Universal Plug and Play (UPnP)

### *Advanced > Advanced Network > UPnP*

Universal Plug and Play (UPnP) is a feature that allows the router to discover devices on the network that can communicate with the router and allow for auto configuration. If a network device is detected by UPnP, the router can open internal or external ports for the traffic protocol required by that network device.

Once UPnP is enabled, you can configure the router to detect UPnP-supporting devices on the LAN (or a configured VLAN). If disabled, the router will not allow for automatic device configuration.

Configure the following settings to use UPnP:

- Advertisement Period: This is the frequency that the router broadcasts UPnP information over the network. A large value will minimize network traffic but cause delays in identifying new UPnP devices to the network.
- Advertisement Time to Live: This is expressed in hops for each UPnP packet. This is the number of steps a packet is allowed to propagate before being discarded. Small values will limit the UPnP broadcast range. A default of 4 is typical for networks with few switches.

**Figure 9: UPnP Configuration**

Active	Protocol	Int. Port	Ext. Port	IP Address
Refresh				

#### UPnP Port map Table

The UPnP Port map Table has the details of UPnP devices that respond to the router's advertisements. The following information is displayed for each detected device:

- Active: A yes/no indicating whether the port of the UPnP device that established a connection is currently active
- Protocol: The network protocol (i.e. HTTP, FTP, etc.) used by the device
- Int. Port (Internal Port): The internal ports opened by UPnP (if any)
- Ext. Port (External Port): The external ports opened by UPnP (if any)
- IP Address: The IP address of the UPnP device detected by this router

Click Refresh to refresh the portmap table and search for any new UPnP devices.

# Chapter 3. Connecting to the Internet: WAN Setup

This router has two WAN ports that can be used to establish a connection to the internet. The following ISP connection types are supported: DHCP, Static, PPPoE, PPTP, L2TP, 3G Internet (via USB modem).

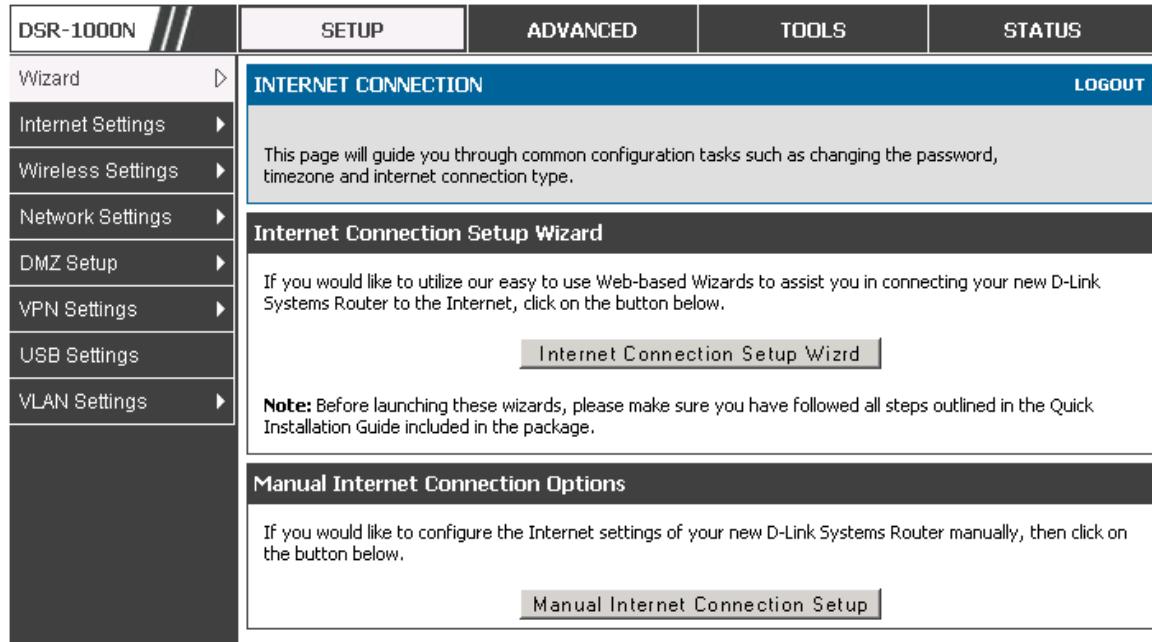
It is assumed that you have arranged for internet service with your Internet Service Provider (ISP). Please contact your ISP or network administrator for the configuration information that will be required to setup the router.

## 3.1 Internet Setup Wizard

### *Setup > Wizard > Internet*

The Internet Connection Setup Wizard is available for users new to networking. By going through a few straightforward configuration pages you can take the information provided by your ISP to get your WAN connection up and enable internet access for your network.

**Figure 10: Internet Connection Setup Wizard**



You can start using the Wizard by logging in with the administrator password for the router. Once authenticated set the time zone that you are located in, and then choose the type of ISP connection type: DHCP, Static, PPPoE, PPTP, L2TP. Depending on the connection type a username/password may be required to register this router with the ISP. In most cases the default settings can be used if the ISP did not specify that parameter. The last step in the Wizard is to click the Connect button, which confirms the settings by establishing a link with the ISP. Once connected, you can move on and configure other features in this router.

 3G Internet access with a USB modem is supported on the secondary WAN port (WAN2). The Internet Connection Setup Wizard assists with the primary WAN port (WAN1) configuration only.

## 3.2 WAN Configuration

### *Setup > Internet Settings > WAN1 Setup*

You must either allow the router to detect WAN connection type automatically or configure manually the following basic settings to enable Internet connectivity:

- ISP Connection type: Based on the ISP you have selected for the primary WAN link for this router, choose Static IP address, DHCP client, Point-to-Point Tunneling Protocol (PPTP), Point-to-Point Protocol over Ethernet (PPPoE), Layer 2 Tunneling Protocol (L2TP). Required fields for the selected ISP type become highlighted. Enter the following information as needed and as provided by your ISP:
- PPPoE Profile Name. This menu lists configured PPPoE profiles, particularly useful when configuring multiple PPPoE connections (i.e. for Japan ISPs that have multiple PPPoE support).
- ISP login information. This is required for PPTP and L2TP ISPs.
  - User Name
  - Password
  - Secret (required for L2TP only)
- MPPE Encryption: For PPTP links, your ISP may require you to enable Microsoft Point-to-Point Encryption (MPPE).
- Split Tunnel (supported for PPTP and L2TP connection). This setting allows your LAN hosts to access internet sites over this WAN link while still permitting VPN traffic to be directed to a VPN configured on this WAN port.

 With split tunneling enabled users can bypass content filtering and other firewall settings. Disable split tunneling on the WAN interface for highest gateway security measures.

- Connectivity Type. To keep the connection always on, click Keep Connected. To log out after the connection is idle for a period of time (useful if your ISP costs are based on logon times), click Idle Timeout and enter the time, in minutes, to wait before disconnecting in the Idle Time field.
- My IP Address: Enter the IP address assigned to you by the ISP.

- Server IP Address: Enter the IP address of the PPTP or L2TP server.

### 3.2.1 WAN Port IP address

Your ISP assigns you an IP address that is either dynamic (newly generated each time you log in) or static (permanent). The IP Address Source option allows you to define whether the address is statically provided by the ISP or should be received dynamically at each login. If static, enter your IP address, IPv4 subnet mask, and the ISP gateway's IP address. PPTP and L2TP ISPs also can provide a static IP address and subnet to configure, however the default is to receive that information dynamically from the ISP.

### 3.2.2 WAN DNS Servers

The IP Addresses of WAN Domain Name Servers (DNS) are typically provided dynamically from the ISP but in some cases you can define the static IP addresses of the DNS servers. DNS servers map Internet domain names (example: www.google.com) to IP addresses. Click to indicate whether to get DNS server addresses automatically from your ISP or to use ISP-specified addresses. If the latter, enter addresses for the primary and secondary DNS servers. To avoid connectivity problems, ensure that you enter the addresses correctly.

### 3.2.3 DHCP WAN

For DHCP client connections, you can choose the MAC address of the router to register with the ISP. In some cases you may need to clone the LAN host's MAC address if the ISP is registered with that LAN host.

Figure 11: Manual WAN configuration

DSR-1000N //	SETUP	ADVANCED	TOOLS	STATUS																																												
<a href="#">Wizard</a> ▾ <a href="#">Internet Settings</a> ▾ <a href="#">Wireless Settings</a> ▾ <a href="#">Network Settings</a> ▾ <a href="#">DMZ Setup</a> ▾ <a href="#">VPN Settings</a> ▾ <a href="#">USB Settings</a> <a href="#">VLAN Settings</a> ▾	<b>WAN1 SETUP</b> <div style="text-align: right;"><a href="#">LOGOUT</a></div> <p>This page allows you to set up your Internet connection. Ensure that you have the Internet connection information such as the IP Addresses, account information, etc. This information is usually provided by your ISP or network administrator. <b>NOTE:</b> If you have a PPPoE connection, first create your PPPoE profile on the Internet Settings &gt; PPPoE Profiles page &gt;WAN1 PPPoE Profiles page.</p> <p><a href="#">Save Settings</a> <a href="#">Don't Save Settings</a></p> <hr/> <div style="background-color: #333; color: white; padding: 2px;"> <b>ISP Connection Type</b> </div> <table border="0"> <tr> <td><b>ISP Connection Type:</b></td> <td><input type="button" value="DHCP"/></td> </tr> <tr> <td><b>PPPoE Profile Name:</b></td> <td><input type="button" value="Japan line 1"/></td> </tr> <tr> <td><b>User Name:</b></td> <td><input type="text" value="admin"/></td> </tr> <tr> <td><b>Password:</b></td> <td><input type="text" value="xxxxx"/></td> </tr> <tr> <td><b>Secret:</b></td> <td><input type="text"/></td> </tr> <tr> <td><b>MPPE Encryption:</b></td> <td><input type="checkbox"/></td> </tr> <tr> <td><b>Split Tunnel:</b></td> <td><input type="checkbox"/></td> </tr> <tr> <td><b>Connectivity Type:</b></td> <td><input type="button" value="Keep Connected"/></td> </tr> <tr> <td><b>Idle Time:</b></td> <td><input type="text"/></td> </tr> <tr> <td><b>My IP Address:</b></td> <td><input type="text"/></td> </tr> <tr> <td><b>Server Address:</b></td> <td><input type="text"/></td> </tr> <tr> <td><b>Gateway IP Address:</b></td> <td><input type="text"/></td> </tr> </table> <hr/> <div style="background-color: #333; color: white; padding: 2px;"> <b>Internet (IP) Address</b> </div> <table border="0"> <tr> <td><b>IP Address Source:</b></td> <td><input type="button" value="Get Dynamically from ISP"/></td> </tr> <tr> <td><b>IP Address:</b></td> <td><input type="text"/></td> </tr> <tr> <td><b>IP Subnet Mask:</b></td> <td><input type="text"/></td> </tr> <tr> <td><b>Gateway IP Address:</b></td> <td><input type="text"/></td> </tr> </table> <hr/> <div style="background-color: #333; color: white; padding: 2px;"> <b>Domain Name System (DNS) Servers</b> </div> <table border="0"> <tr> <td><b>DNS Server Source:</b></td> <td><input type="button" value="Get Dynamically from ISP"/></td> </tr> <tr> <td><b>Primary DNS Server:</b></td> <td><input type="text"/></td> </tr> <tr> <td><b>Secondary DNS Server:</b></td> <td><input type="text"/></td> </tr> </table> <hr/> <div style="background-color: #333; color: white; padding: 2px;"> <b>DHCP Connection (Dynamic IP Address)</b> </div> <table border="0"> <tr> <td><b>MAC Address Source:</b></td> <td><input type="button" value="Use Default Address"/></td> </tr> <tr> <td><b>MAC Address:</b></td> <td><input type="text"/></td> </tr> <tr> <td><b>Host Name:</b></td> <td><input type="text"/></td> </tr> </table>				<b>ISP Connection Type:</b>	<input type="button" value="DHCP"/>	<b>PPPoE Profile Name:</b>	<input type="button" value="Japan line 1"/>	<b>User Name:</b>	<input type="text" value="admin"/>	<b>Password:</b>	<input type="text" value="xxxxx"/>	<b>Secret:</b>	<input type="text"/>	<b>MPPE Encryption:</b>	<input type="checkbox"/>	<b>Split Tunnel:</b>	<input type="checkbox"/>	<b>Connectivity Type:</b>	<input type="button" value="Keep Connected"/>	<b>Idle Time:</b>	<input type="text"/>	<b>My IP Address:</b>	<input type="text"/>	<b>Server Address:</b>	<input type="text"/>	<b>Gateway IP Address:</b>	<input type="text"/>	<b>IP Address Source:</b>	<input type="button" value="Get Dynamically from ISP"/>	<b>IP Address:</b>	<input type="text"/>	<b>IP Subnet Mask:</b>	<input type="text"/>	<b>Gateway IP Address:</b>	<input type="text"/>	<b>DNS Server Source:</b>	<input type="button" value="Get Dynamically from ISP"/>	<b>Primary DNS Server:</b>	<input type="text"/>	<b>Secondary DNS Server:</b>	<input type="text"/>	<b>MAC Address Source:</b>	<input type="button" value="Use Default Address"/>	<b>MAC Address:</b>	<input type="text"/>	<b>Host Name:</b>	<input type="text"/>
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<b>MAC Address:</b>	<input type="text"/>																																															
<b>Host Name:</b>	<input type="text"/>																																															

### 3.2.4 PPPoE Profiles

**Setup > Internet Settings > PPPoE Profiles > WAN1 PPPoE Profiles**

Some ISP's allow for multiple concurrent PPPoE sessions (it is most common in Japan). Each connection can have its own specific authentication requirements and will provide unique IP, gateway, and DNS address parameters to the associated WAN port.

The PPPoE Profiles page offers a convenient way to maintain multiple PPPoE accounts, which can then be associated with one of the available WAN interfaces. Once configured, a PPPoE profile name can be selected on the WAN configuration page to reduce the configuration requirements for that WAN port.

The PPPoE profile is referenced on the WAN Configuration page. The List of PPPoE profiles for a particular WAN (see figure below) outlines the available profile and their status and authentication type.

**Figure 12: List of configured PPPoE profiles**

DSR-1000N //	SETUP	ADVANCED	TOOLS	STATUS															
<a href="#">Wizard</a> ▶ <a href="#">Internet Settings</a> ▶ <a href="#">Wireless Settings</a> ▶ <a href="#">Network Settings</a> ▶ <a href="#">DMZ Setup</a> ▶ <a href="#">VPN Settings</a> ▶ <a href="#">USB Settings</a> <a href="#">VLAN Settings</a> ▶	<b>PPPoE PROFILES</b> <span style="float: right;">LOGOUT</span> <p>The PPPoE Profiles page offers a convenient way to maintain multiple PPPoE accounts, which can then be associated with the WAN interface. The PPPoE profile is referenced on the WAN Configuration page. The Profiles table lists the available PPPoE profiles and some attributes associated with each profile.</p> <table border="1"> <thead> <tr> <th></th> <th>Profile Name</th> <th>Status</th> <th>User Name</th> <th>Authentication Type</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/></td> <td>Japan line 1</td> <td>Disabled</td> <td>admin</td> <td>Auto-negotiate</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Japan line 2</td> <td>Disabled</td> <td>admin</td> <td>MS-CHAPv2</td> </tr> </tbody> </table> <div style="text-align: center;"> <span>Edit</span> <span>Delete</span> <span>Add</span> </div>					Profile Name	Status	User Name	Authentication Type	<input type="checkbox"/>	Japan line 1	Disabled	admin	Auto-negotiate	<input type="checkbox"/>	Japan line 2	Disabled	admin	MS-CHAPv2
	Profile Name	Status	User Name	Authentication Type															
<input type="checkbox"/>	Japan line 1	Disabled	admin	Auto-negotiate															
<input type="checkbox"/>	Japan line 2	Disabled	admin	MS-CHAPv2															

To create a new PPPoE profile, select Add in the PPPoE Profile page. Each profile is associated to one of the two WAN ports. Similar to the PPPoE configuration options in the WAN configuration page, you need to define the ISP logon credentials, authentication type, and connectivity settings for the PPPoE session. This information will be provided by the ISP that offers multiple PPPoE session support.

**Figure 13: PPPoE profile configuration**

The screenshot shows the DSR-1000N router's configuration interface. The left sidebar lists various settings: Wizard, Internet Settings, Wireless Settings, Network Settings, DMZ Setup, VPN Settings, USB Settings, and VLAN Settings. The main content area has tabs for SETUP, ADVANCED, TOOLS, and STATUS, with SETUP selected. The current page is titled "PPPoE PROFILES" and includes a "LOGOUT" link. It displays a message about configuring a PPPoE profile for a WAN connection. Below this are two buttons: "Save Settings" and "Don't Save Settings". The main configuration section is titled "PPPoE Profile Configuration" and contains the following fields:

- Profile Name:** [Input field]
- User Name:** admin
- Password:** [Input field]
- Service:** [Input field] (Optional)
- Authentication Type:** Auto-negotiate
- Connectivity Type:** Keep Connected
- Idle Time:** [Input field] (Minutes)

Below this is the "Internet (IP) Address" section, which includes:

- IP Address Source:** Get Dynamically from ISP
- IP Address:** [Input field]
- IP Subnet Mask:** [Input field]

Finally, the "Domain Name System (DNS) Servers" section contains:

- DNS Server Source:** Get Dynamically from ISP
- Primary DNS Server:** [Input field]
- Secondary DNS Server:** [Input field]

### 3.2.5 WAN Configuration in an IPv6 Network

#### *Setup > IPv6 > IPv6 WAN1 Config*

For IPv6 WAN connections, this router can have a static IPv6 address or receive connection information when configured as a DHCPv6 client. In the case where the ISP assigns you a fixed address to access the internet, the static configuration settings must be completed. In addition to the IPv6 address assigned to your router, the IPv6 prefix length defined by the ISP is needed. The default IPv6 Gateway address is the server at the ISP that this router will connect to for accessing the internet. The primary and secondary DNS servers on the ISP's IPv6 network are used for resolving internet addresses, and these are provided along with the static IP address and prefix length from the ISP.

When the ISP allows you to obtain the WAN IP settings via DHCP, you need to provide details for the DHCPv6 client configuration. The DHCPv6 client on the gateway can be either stateless or stateful. If a stateful client is selected the gateway will connect to the ISP's DHCPv6 server for a leased address. For stateless DHCP there need not be a DHCPv6 server available at the ISP, rather ICMPv6 discover messages will originate from this gateway and will be used for auto configuration. A third option to specify the IP address and prefix length of a preferred DHCPv6 server is available as well.

**Figure 14: IPv6 WAN Setup page**

### 3.2.6 Checking WAN Status

#### *Setup > Internet Settings > WAN Status*

The status and summary of configured settings for both WAN1 and WAN2 are available on the WAN Status page. You can view the following key connection status information for each WAN port:

- Connection time
- Connection type: dynamic IP or static IP

- Connection state: This is whether the WAN is connected or disconnected to an ISP. The Link State is whether the physical WAN connection is in place; the Link State can be UP (i.e. cable inserted) while the WAN Connection State is down.
- IP address / subnet mask
- Gateway IP address

Figure 15: Connection Status information for both WAN ports

The screenshot shows the 'WAN STATUS' page of the DSR-1000N router's web interface. The top navigation bar includes 'DSR-1000N //', 'SETUP' (selected), 'ADVANCED', 'TOOLS', and 'STATUS'. The left sidebar lists various settings: Wizard, Internet Settings, Wireless Settings, Network Settings, DMZ Setup, VPN Settings, USB Settings, and VLAN Settings. The main content area is divided into two sections: 'WAN1 Information(Ipv4)' and 'WAN2 Information(Ipv4)'. Each section contains fields for MAC Address, IPv4 Address, Wan State, NAT (IPv4 only), IPv4 Connection Type, IPv4 Connection State, Link State, WAN Mode, Gateway, Primary DNS, and Secondary DNS. Below each section are 'Renew' and 'Release' buttons for WAN1, and a 'Disable' button for WAN2.

WAN1 Information(Ipv4)	
<b>MAC Address:</b>	00:DE:AD:20:75:01
<b>IPv4 Address:</b>	0.0.0.0 / 0.0.0.0
<b>Wan State:</b>	DOWN
<b>NAT (IPv4 only):</b>	Enabled
<b>IPv4 Connection Type:</b>	Dynamic IP (DHCP)
<b>IPv4 Connection State:</b>	Not Yet Connected
<b>Link State:</b>	LINK DOWN
<b>WAN Mode:</b>	Use only single WAN port: Secondary WAN
<b>Gateway:</b>	0.0.0.0
<b>Primary DNS:</b>	0.0.0.0
<b>Secondary DNS:</b>	0.0.0.0

WAN2 Information(Ipv4)	
<b>MAC Address:</b>	AA:BB:CC:DD:EF:01
<b>IPv4 Address:</b>	0.0.0.0 / 0.0.0.0
<b>Wan State:</b>	DOWN
<b>NAT (IPv4 only):</b>	Enabled
<b>IPv4 Connection Type:</b>	ThreeG
<b>IPv4 Connection State:</b>	Unable To Open Communication Port
<b>Link State:</b>	LINK DOWN
<b>WAN Mode:</b>	Use only single WAN port: Secondary WAN
<b>Gateway:</b>	0.0.0.0
<b>Primary DNS:</b>	0.0.0.0
<b>Secondary DNS:</b>	0.0.0.0

The WAN status page allows you to Enable or Disable static WAN links. For WAN settings that are dynamically received from the ISP, you can Renew or Release the link parameters if required.

### 3.3 Bandwidth Controls

**Advanced > Advanced Network > Traffic Management > Bandwidth Profiles**

Bandwidth profiles allow you to regulate the traffic flow from the LAN to WAN 1 or WAN 2. This is useful to ensure that low priority LAN users (like guests or HTTP service) do not monopolize the available WAN's bandwidth for cost-savings or bandwidth-priority-allocation purposes.

Bandwidth profiles configuration consists of enabling the bandwidth control feature from the GUI and adding a profile which defines the control parameters. The profile can then be associated with a traffic selector, so that bandwidth profile can be applied to the traffic matching the selectors. Selectors are elements like IP addresses or services that would trigger the configured bandwidth regulation.

**Figure 16: List of Configured Bandwidth Profiles**

List of Bandwidth Profiles		
	Name	Bandwidth Rate / Priority
<input type="checkbox"/>	Guests	Low
<input type="checkbox"/>	Engineering	1-1000000 Kbps

To create a new bandwidth profile, click Add in the List of Bandwidth Profiles. The following configuration parameters are used to define a bandwidth profile:

- Profile Name: This identifier is used to associate the configured profile to the traffic selector
- You can choose to limit the bandwidth either using priority or rate.
  - If using priority “Low”, “High”, “Medium” can be selected. If there is a low priority profile associated with traffic selector A and a high priority profile associated with traffic selector B, then the WAN bandwidth allocation preference will be to traffic selector B packets.

- For finer control, the Rate profile type can be used. With this option the minimum and maximum bandwidth allowed by this profile can be limited.
- Choose the WAN interface that the profile should be associated with

**Figure 17: Bandwidth Profile Configuration page**

DSR-1000N //	SETUP	ADVANCED	TOOLS	STATUS												
<a href="#">Application Rules</a> ▾ <a href="#">Website Filter</a> ▾ <a href="#">Firewall Settings</a> ▾ <a href="#">Wireless Settings</a> ▾ <a href="#">Advanced Network</a> ▾ <a href="#">Routing</a> ▾ <a href="#">Certificates</a> <a href="#">Users</a> ▾ <a href="#">IP/MAC Binding</a> <a href="#">IPv6</a> ▾ <a href="#">Radius Settings</a> <a href="#">Power Saving</a>	<h3>BANDWIDTH PROFILES</h3> <p>This page allows user to add a new bandwidth profile.</p> <p><a href="#">Save Settings</a>   <a href="#">Don't Save Settings</a></p> <hr/> <h4>Bandwidth Profile Configuration</h4> <table> <tr> <td><b>Name:</b></td> <td><input type="text"/></td> </tr> <tr> <td><b>Profile Type:</b></td> <td><input type="button" value="Priority"/></td> </tr> <tr> <td><b>Priority:</b></td> <td><input type="button" value="Low"/></td> </tr> <tr> <td><b>Minimum Bandwidth Rate:</b></td> <td><input type="text"/> (1 - Max. Bandwidth Kbps)</td> </tr> <tr> <td><b>Maximum Bandwidth Rate:</b></td> <td><input type="text"/> (100 - 1000000 Kbps)</td> </tr> <tr> <td><b>WAN Interface:</b></td> <td><input type="button" value="Dedicated WAN"/></td> </tr> </table>				<b>Name:</b>	<input type="text"/>	<b>Profile Type:</b>	<input type="button" value="Priority"/>	<b>Priority:</b>	<input type="button" value="Low"/>	<b>Minimum Bandwidth Rate:</b>	<input type="text"/> (1 - Max. Bandwidth Kbps)	<b>Maximum Bandwidth Rate:</b>	<input type="text"/> (100 - 1000000 Kbps)	<b>WAN Interface:</b>	<input type="button" value="Dedicated WAN"/>
<b>Name:</b>	<input type="text"/>															
<b>Profile Type:</b>	<input type="button" value="Priority"/>															
<b>Priority:</b>	<input type="button" value="Low"/>															
<b>Minimum Bandwidth Rate:</b>	<input type="text"/> (1 - Max. Bandwidth Kbps)															
<b>Maximum Bandwidth Rate:</b>	<input type="text"/> (100 - 1000000 Kbps)															
<b>WAN Interface:</b>	<input type="button" value="Dedicated WAN"/>															

#### *[Advanced > Advanced Network > Traffic Management > Traffic Selectors](#)*

Once a profile has been created it can then be associated with a traffic flow from the LAN to WAN. To create a traffic selector, click Add on the Traffic Selectors page. Traffic selector configuration binds a bandwidth profile to a type or source of LAN traffic with the following settings:

- Available profiles: Assign one of the defined bandwidth profiles
- Service: You can have the selected bandwidth regulation apply to a specific service (i.e. FTP) from the LAN. If you do not see a service that you want, you can configure a custom service through the ***Advanced > Firewall Settings > Custom Services*** page. To have the profile apply to all services, select ANY.
- Traffic Selector Match Type: this defines the parameter to filter against when applying the bandwidth profile. A specific machine on the LAN can be identified via IP address or MAC address, or the profile can apply to a LAN port or VLAN group. As well a wireless network can be selected by its BSSID for bandwidth shaping.

**Figure 18: Traffic Selector Configuration**

DSR-1000N ///	<a href="#">SETUP</a>	<b>ADVANCED</b>	<a href="#">TOOLS</a>	<a href="#">STATUS</a>														
<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <a href="#">Application Rules</a> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <a href="#">Website Filter</a> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <a href="#">Firewall Settings</a> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <a href="#">Wireless Settings</a> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <a href="#">Advanced Network</a> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <a href="#">Routing</a> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <a href="#">Certificates</a> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <a href="#">Users</a> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <a href="#">IP/MAC Binding</a> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <a href="#">IPv6</a> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <a href="#">Radius Settings</a> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <a href="#">Power Saving</a> </div>																		
<a href="#">LOGOUT</a>																		
<b>TRAFFIC SELECTORS</b>																		
<p>This page allows user to configure various traffic rules, to which bandwidth profiles can be attached.</p> <p style="text-align: center;"> <a href="#">Save Settings</a> <span style="margin: 0 10px;"> </span> <a href="#">Don't Save Settings</a> </p>																		
<b>Traffic Selector Configuration</b>																		
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; vertical-align: top;"> <b>Available Profiles:</b> </td> <td style="width: 70%; text-align: right;"> <input style="border: 1px solid #ccc; padding: 2px;" type="button" value="Guests"/> </td> </tr> <tr> <td style="vertical-align: top;"> <b>Service:</b> </td> <td style="text-align: right;"> <input style="border: 1px solid #ccc; padding: 2px;" type="button" value="ANY"/> </td> </tr> <tr> <td style="vertical-align: top;"> <b>Traffic Selector Match Type:</b> </td> <td style="text-align: right;"> <input style="border: 1px solid #ccc; padding: 2px;" type="button" value="IP"/> </td> </tr> <tr> <td style="vertical-align: top;"> <b>IP Address:</b> </td> <td style="height: 40px;"></td> </tr> <tr> <td style="vertical-align: top;"> <b>MAC Address:</b> </td> <td style="height: 40px;"></td> </tr> <tr> <td style="vertical-align: top;"> <b>Port Name:</b> </td> <td style="text-align: right;"> <input style="border: 1px solid #ccc; padding: 2px;" type="button" value="Port 1"/> </td> </tr> <tr> <td style="vertical-align: top;"> <b>Interface:</b> </td> <td style="text-align: right;"> <input style="border: 1px solid #ccc; padding: 2px;" type="button" value="1"/> </td> </tr> </table>					<b>Available Profiles:</b>	<input style="border: 1px solid #ccc; padding: 2px;" type="button" value="Guests"/>	<b>Service:</b>	<input style="border: 1px solid #ccc; padding: 2px;" type="button" value="ANY"/>	<b>Traffic Selector Match Type:</b>	<input style="border: 1px solid #ccc; padding: 2px;" type="button" value="IP"/>	<b>IP Address:</b>		<b>MAC Address:</b>		<b>Port Name:</b>	<input style="border: 1px solid #ccc; padding: 2px;" type="button" value="Port 1"/>	<b>Interface:</b>	<input style="border: 1px solid #ccc; padding: 2px;" type="button" value="1"/>
<b>Available Profiles:</b>	<input style="border: 1px solid #ccc; padding: 2px;" type="button" value="Guests"/>																	
<b>Service:</b>	<input style="border: 1px solid #ccc; padding: 2px;" type="button" value="ANY"/>																	
<b>Traffic Selector Match Type:</b>	<input style="border: 1px solid #ccc; padding: 2px;" type="button" value="IP"/>																	
<b>IP Address:</b>																		
<b>MAC Address:</b>																		
<b>Port Name:</b>	<input style="border: 1px solid #ccc; padding: 2px;" type="button" value="Port 1"/>																	
<b>Interface:</b>	<input style="border: 1px solid #ccc; padding: 2px;" type="button" value="1"/>																	

## 3.4 Features with Multiple WAN Links

This router supports multiple WAN links. This allows you to take advantage of failover and load balancing features to ensure certain internet dependent services are prioritized in the event of unstable WAN connectivity on one of the ports.

### *Setup > Internet Settings > WAN Mode*

To use Auto Failover or Load Balancing, WAN link failure detection must be configured. This involves accessing DNS servers on the internet or ping to an internet address (user defined). If required, you can configure the number of retry attempts when the link seems to be disconnected or the threshold of failures that determines if a WAN port is down.

### 3.4.1 Auto Failover

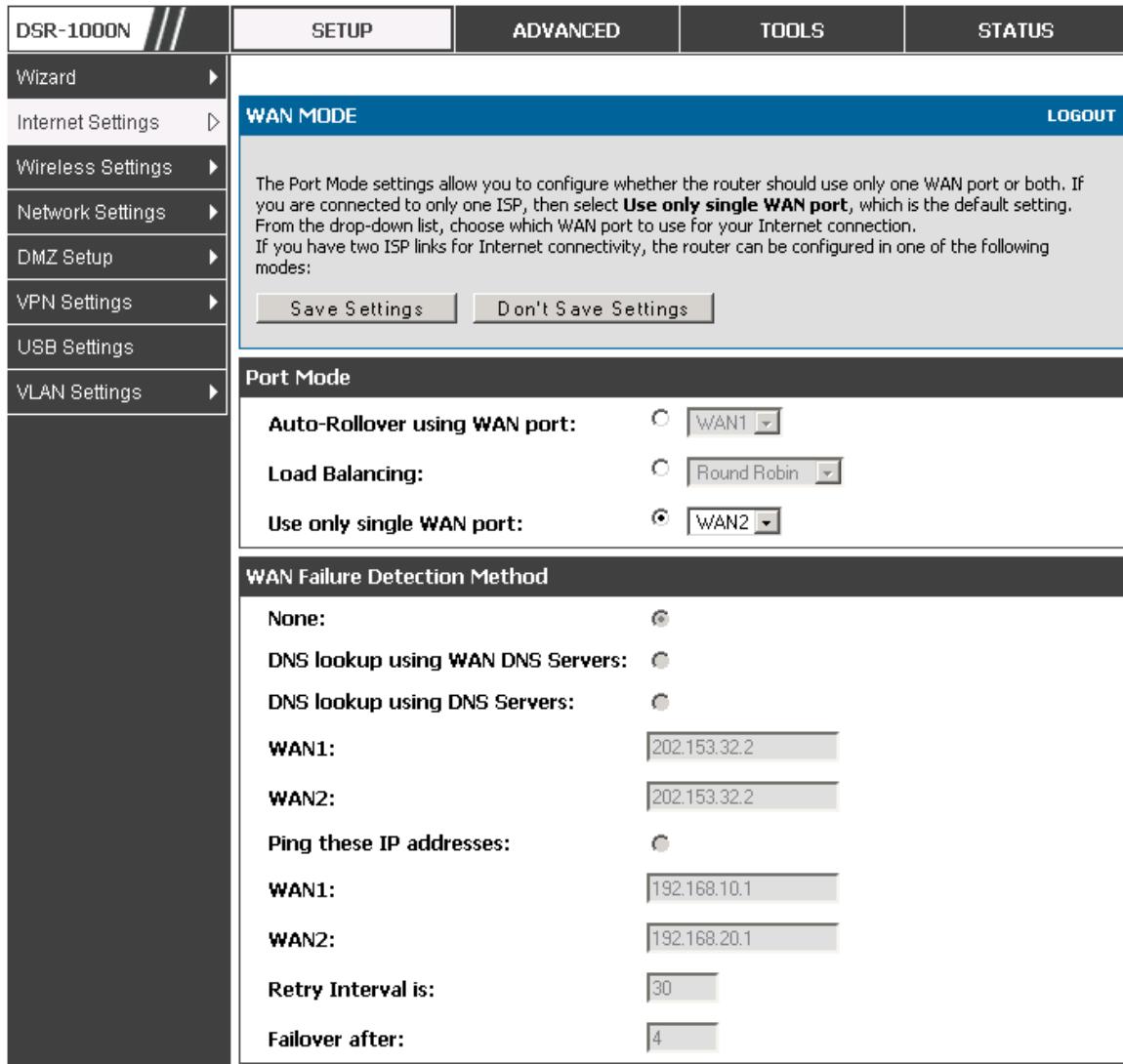
In this case one of your WAN ports is assigned as the primary internet link for all internet traffic. The secondary WAN port is used for redundancy in case the primary link goes down for any reason. Both WAN ports (primary and secondary) must be configured to connect to the respective ISP's before enabling this feature. The secondary WAN port will remain unconnected until a failure is detected on the primary link (either port can be assigned as the primary). In the event of a failure on the primary port, all internet traffic will be rolled over to the backup port. When configured in Auto Failover mode, the link status of the primary WAN port is checked at regular intervals as defined by the failure detection settings.

### 3.4.2 Load Balancing

This feature allows you to use multiple WAN links (and presumably multiple ISP's) simultaneously. After configuring more than one WAN port, the load balancing option is available to carry traffic over more than one link. Protocol bindings are used to segregate and assign services over one WAN port in order to manage internet flow. The configured failure detection method is used at regular intervals on all configured WAN ports when in Load Balancing mode.

Load balancing is particularly useful when the connection speed of one WAN port greatly differs from another. In this case you can define protocol bindings to route low-latency services (such as VOIP) over the higher-speed link and let low-volume background traffic (such as SMTP) go over the lower speed link.

**Figure 19: Load Balancing is available when multiple WAN ports are configured and Protocol Bindings have been defined**

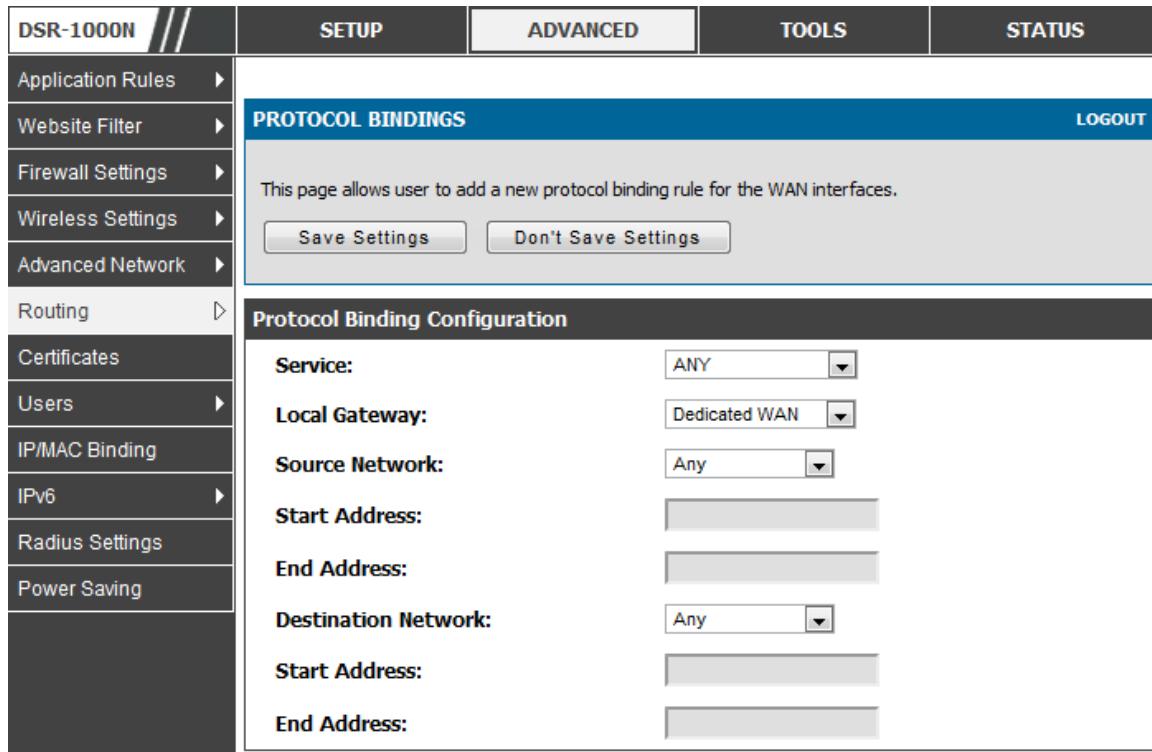


### 3.4.3 Protocol Bindings

#### *Advanced > Routing > Protocol Bindings*

Protocol bindings are required when the Load Balancing feature is in use. Choosing from a list of configured services or any of the user-defined services, the type of traffic can be assigned to go over only one of the available WAN ports. For increased flexibility the source network or machines can be specified as well as the destination network or machines. For example the VOIP traffic for a set of LAN IP addresses can be assigned to one WAN and any VIOP traffic from the remaining IP addresses can be assigned to the other WAN link. Protocol bindings are only applicable when load balancing mode is enabled and more than one WAN is configured.

**Figure 20: Protocol binding setup to associate a service and/or LAN source to a WAN and/or destination network**



## 3.5 Routing Configuration

Routing between the LAN and WAN will impact the way this router handles traffic that is received on any of its physical interfaces. The routing mode of the gateway is core to the behavior of the traffic flow between the secure LAN and the internet.

### 3.5.1 Routing Mode

#### *Setup > Internet Settings > Routing Mode*

This device supports classical routing, network address translation (NAT), and transport mode routing.

- With classical routing, devices on the LAN can be directly accessed from the internet by their public IP addresses (assuming appropriate firewall settings). If your ISP has assigned an IP address for each of the computers that you use, select Classic Routing.
- NAT is a technique which allows several computers on a LAN to share an Internet connection. The computers on the LAN use a "private" IP address range while the WAN port on the router is configured with a single "public"

IP address. Along with connection sharing, NAT also hides internal IP addresses from the computers on the Internet. NAT is required if your ISP has assigned only one IP address to you. The computers that connect through the router will need to be assigned IP addresses from a private subnet.

- Transparent mode routing between the LAN and WAN does not perform NAT. Broadcast and multicast packets that arrive on the LAN interface are switched to the WAN and vice versa, if they do not get filtered by firewall or VPN policies. If the LAN and WAN are in the same broadcast domain, select Transparent mode.

**Figure 21: Routing Mode is used to configure traffic routing between WAN and LAN, as well as Dynamic routing (RIP)**

DSR-1000N //	SETUP	ADVANCED	TOOLS	STATUS
Wizard Internet Settings Wireless Settings Network Settings DMZ Setup VPN Settings USB Settings VLAN Settings	<div style="background-color: #0070C0; color: white; padding: 5px; text-align: center;"> <b>ROUTING MODE</b> <span style="float: right;">LOGOUT</span> </div> <p>This page allows user to configure different routing modes like NAT, Classical Routing and Transparent. This page also allows to configure the RIP (Routing Information Protocol)</p> <p style="text-align: center;"><input type="button" value="Save Settings"/> <input type="button" value="Don't Save Settings"/></p> <div style="background-color: #0070C0; color: white; padding: 2px; margin-top: 5px;"> <b>Routing Mode between WAN and LAN</b> </div> <p>NAT: <input checked="" type="radio"/></p> <p>Classical Routing: <input type="radio"/></p> <p>Transparent <input type="radio"/></p> <div style="background-color: #0070C0; color: white; padding: 2px; margin-top: 5px;"> <b>Dynamic Routing (RIP)</b> <p>RIP Direction: <input type="button" value="None"/></p> <p>RIP Version: <input type="button" value="Disabled"/></p> <div style="background-color: #0070C0; color: white; padding: 2px; margin-top: 5px;"> <b>Authentication for RIP-2B/2M</b> <p>Enable Authentication for RIP-2B/2M: <input type="checkbox"/></p> <p><b>First Key Parameters</b></p> <p>MD5 Key Id: <input type="text"/></p> <p>MD5 Auth Key: <input type="text"/></p> <p>Not Valid Before: MM DD YYYY HH MM SS  <input type="text"/> / <input type="text"/> / <input type="text"/> - <input type="text"/> : <input type="text"/> : <input type="text"/></p> <p>Not Valid After: MM DD YYYY HH MM SS  <input type="text"/> / <input type="text"/> / <input type="text"/> - <input type="text"/> : <input type="text"/> : <input type="text"/></p> <p><b>Second Key Parameters</b></p> <p>MD5 Key Id: <input type="text"/></p> <p>MD5 Auth Key: <input type="text"/></p> <p>Not Valid Before: MM DD YYYY HH MM SS  <input type="text"/> / <input type="text"/> / <input type="text"/> - <input type="text"/> : <input type="text"/> : <input type="text"/></p> <p>Not Valid After: MM DD YYYY HH MM SS  <input type="text"/> / <input type="text"/> / <input type="text"/> - <input type="text"/> : <input type="text"/> : <input type="text"/></p> </div> </div>			

### 3.5.2 Dynamic Routing (RIP)

*Setup > Internet Settings > Routing Mode*

Dynamic routing using the Routing Information Protocol (RIP) is an Interior Gateway Protocol (IGP) that is common in LANs. With RIP this router can exchange routing information with other supported routers in the LAN and allow for dynamic adjustment of routing tables in order to adapt to modifications in the LAN without interrupting traffic flow.

The RIP direction will define how this router sends and receives RIP packets. Choose between:

- Both: The router both broadcasts its routing table and also processes RIP information received from other routers. This is the recommended setting in order to fully utilize RIP capabilities.
- Out Only: The router broadcasts its routing table periodically but does not accept RIP information from other routers.
- In Only: The router accepts RIP information from other routers, but does not broadcast its routing table.
- None: The router neither broadcasts its route table nor does it accept any RIP packets from other routers. This effectively disables RIP.

The RIP version is dependent on the RIP support of other routing devices in the LAN.

- Disabled: This is the setting when RIP is disabled.
- RIP-1 is a class-based routing version that does not include subnet information. This is the most commonly supported version.
- RIP-2 includes all the functionality of RIPv1 plus it supports subnet information. Though the data is sent in RIP-2 format for both RIP-2B and RIP-2M, the mode in which packets are sent is different. RIP-2B broadcasts data in the entire subnet while RIP-2M sends data to multicast addresses.

If RIP-2B or RIP-2M is the selected version, authentication between this router and other routers (configured with the same RIP version) is required. MD5 authentication is used in a first/second key exchange process. The authentication key validity lifetimes are configurable to ensure that the routing information exchange is with current and supported routers detected on the LAN.

### 3.5.3 Static Routing

*Advanced > Routing > Static Routing*

*Advanced > IPv6 > IPv6 Static Routing*

Manually adding static routes to this device allows you to define the path selection of traffic from one interface to another. There is no communication between this router and other devices to account for changes in the path; once configured the static route will be active and effective until the network changes.

The List of Static Routes displays all routes that have been added manually by an administrator and allows several operations on the static routes. The List of IPv4 Static Routes and List of IPv6 Static Routes share the same fields (with one exception):

- Name: Name of the route, for identification and management.
- Active: Determines whether the route is active or inactive. A route can be added to the table and made inactive, if not needed. This allows routes to be used as needed without deleting and re-adding the entry. An inactive route is not broadcast if RIP is enabled.
- Private: Determines whether the route can be shared with other routers when RIP is enabled. If the route is made private, then the route will not be shared in a RIP broadcast or multicast. This is only applicable for IPv4 static routes.
- Destination: the route will lead to this destination host or IP address.
- IP Subnet Mask: This is valid for IPv4 networks only, and identifies the subnet that is affected by this static route
- Interface: The physical network interface (WAN1, WAN2, DMZ or LAN), through which this route is accessible.
- Gateway: IP address of the gateway through which the destination host or network can be reached.
- Metric: Determines the priority of the route. If multiple routes to the same destination exist, the route with the lowest metric is chosen.

**Figure 22: Static route configuration fields**

<b>DSR-1000N //</b>	<b>SETUP</b>	<b>ADVANCED</b>	<b>TOOLS</b>	<b>STATUS</b>																
Application Rules Website Filter Firewall Settings Wireless Settings Advanced Network Routing Certificates Users IP/MAC Binding IPv6 Radius Settings Power Saving	<b>STATIC ROUTE CONFIGURATION</b> <span style="float: right;">LOGOUT</span> <p>This page allows user to add a new static route.</p> <p><b>Save Settings</b> <b>Don't Save Settings</b></p> <hr/> <p><b>Static Route Configuration</b></p> <table border="0"> <tr> <td><b>Route Name:</b></td> <td><input type="text"/></td> </tr> <tr> <td><b>Active:</b></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td><b>Private:</b></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td><b>Destination IP Address:</b></td> <td><input type="text"/></td> </tr> <tr> <td><b>IP Subnet Mask:</b></td> <td><input type="text"/></td> </tr> <tr> <td><b>Interface:</b></td> <td><input type="text"/> Dedicated WAN <input type="button" value="▼"/></td> </tr> <tr> <td><b>Gateway IP Address:</b></td> <td><input type="text"/></td> </tr> <tr> <td><b>Metric:</b></td> <td><input type="text"/></td> </tr> </table>				<b>Route Name:</b>	<input type="text"/>	<b>Active:</b>	<input checked="" type="checkbox"/>	<b>Private:</b>	<input checked="" type="checkbox"/>	<b>Destination IP Address:</b>	<input type="text"/>	<b>IP Subnet Mask:</b>	<input type="text"/>	<b>Interface:</b>	<input type="text"/> Dedicated WAN <input type="button" value="▼"/>	<b>Gateway IP Address:</b>	<input type="text"/>	<b>Metric:</b>	<input type="text"/>
<b>Route Name:</b>	<input type="text"/>																			
<b>Active:</b>	<input checked="" type="checkbox"/>																			
<b>Private:</b>	<input checked="" type="checkbox"/>																			
<b>Destination IP Address:</b>	<input type="text"/>																			
<b>IP Subnet Mask:</b>	<input type="text"/>																			
<b>Interface:</b>	<input type="text"/> Dedicated WAN <input type="button" value="▼"/>																			
<b>Gateway IP Address:</b>	<input type="text"/>																			
<b>Metric:</b>	<input type="text"/>																			

## 3.6 Configurable Port - WAN Option

This router supports one of the physical ports to be configured as a secondary WAN Ethernet port or a dedicated DMZ port. If the port is selected to be a secondary WAN interface, all configuration pages relating to WAN2 are enabled.

### *Setup > Internet Settings > WAN2 Setup*

WAN2 configuration is identical to the WAN1 configuration with one significant exception: configuration for the 3G USB modem is available only on WAN2.

Figure 23: WAN2 configuration for 3G internet (part 1)

DSR-1000N //	SETUP	ADVANCED	TOOLS	STATUS
Wizard Internet Settings Wireless Settings Network Settings DMZ Setup VPN Settings USB Settings VLAN Settings	<h3>WAN2 SETUP</h3> <p><b>LOGOUT</b></p> <p>This page allows you to set up your Internet connection. Ensure that you have the Internet connection information such as the IP Addresses, account information, etc. This information is usually provided by your ISP or network administrator.</p> <p><b>NOTE:</b> If you have a PPPoE connection, first create your PPPoE profile on the Internet Settings &gt; PPPoE Profiles page &gt;WAN2 PPPoE Profiles page</p> <p><b>Save Settings</b>    <b>Don't Save Settings</b></p> <h3>ISP Connection Type</h3> <p><b>ISP Connection Type:</b> <input type="button" value="3G Internet ▾"/></p> <p><b>PPPoE Profile Name:</b> <input type="button" value="▼"/></p> <p><b>User Name:</b> admin</p> <p><b>Password:</b> <input type="text" value="xxxxx"/></p> <p><b>Secret:</b> <input type="text"/></p> <p><b>MPPE Encryption:</b> <input type="checkbox"/></p> <p><b>Split Tunnel:</b> <input type="checkbox"/></p> <p><b>Connectivity Type:</b> <input type="button" value="Keep Connected ▾"/></p> <p><b>Idle Time:</b> <input type="text"/></p> <p><b>My IP Address:</b> <input type="text"/></p> <p><b>Server Address:</b> <input type="text"/></p> <p><b>Gateway IP Address:</b> <input type="text"/></p>			

Cellular 3G internet access is available on WAN2 via a USB modem. The cellular ISP that provides the 3G data plan will provide the authentication requirements to establish a connection. The dial Number and APN are specific to the cellular carriers. Once the connection type settings are configured and saved, navigate to the WAN status page (**Setup > Internet Settings > WAN Status**) and Enable the WAN2 link to establish the 3G connection.

**Figure 24: WAN2 configuration for 3G internet (part 2)**

<b>Internet (IP) Address</b>	
<b>IP Address Source:</b>	<input type="button" value="Get Dynamically from ISP"/>
<b>IP Address:</b>	<input type="text"/>
<b>IP Subnet Mask:</b>	<input type="text"/>
<b>Gateway IP Address:</b>	<input type="text"/>
<b>Domain Name System (DNS) Servers</b>	
<b>DNS Server Source:</b>	<input type="button" value="Get Dynamically from ISP"/>
<b>Primary DNS Server:</b>	<input type="text"/>
<b>Secondary DNS Server:</b>	<input type="text"/>
<b>DHCP Connection (Dynamic IP Address)</b>	
<b>MAC Address Source:</b>	<input type="button" value="Use Default Address"/>
<b>MAC Address:</b>	<input type="text"/>
<b>Host Name:</b>	<input type="text"/>
<b>3G Internet Connection Type</b>	
<b>Username:</b>	<input type="text" value="wap@CINGULARGPR"/> (Optional)
<b>Password:</b>	<input type="text" value="xxxxxxxx"/>
<b>Dial Number:</b>	<input type="text" value="*99#"/>
<b>Authentication Protocol:</b>	<input type="button" value="None"/>
<b>APN:</b>	<input type="text" value="wap.cingular"/> (Optional)

## 3.7 WAN Port Settings

### *Advanced > Advanced Network > WAN Port Setup*

The physical port settings for each WAN link can be defined here. If your ISP account defines the WAN port speed or is associated with a MAC address, this information is required by the router to ensure a smooth connection with the network.

The default MTU size supported by all ports is 1500. This is the largest packet size that can pass through the interface without fragmentation. This size can be increased, however large packets can introduce network lag and bring down the interface speed. Note that a 1500 byte size packet is the largest allowed by the Ethernet protocol at the network layer.

The port speed can be sensed by the router when Auto is selected. With this option the optimal port settings are determined by the router and network. The duplex (half or full) can be defined based on the port support, as well as one of three port speeds: 10 Mbps, 100 Mbps and 1000 Mbps (i.e. 1 Gbps). The default setting is 100 Mbps for all ports.

The default MAC address is defined during the manufacturing process for the interfaces, and can uniquely identify this router. You can customize each WAN port's MAC address as needed, either by letting the WAN port assume the current LAN host's MAC address or by entering a MAC address manually.

**Figure 25: Physical WAN port settings**

DSR-1000N //	SETUP	ADVANCED	TOOLS	STATUS
<ul style="list-style-type: none"><li>Application Rules ▶</li><li>Website Filter ▶</li><li>Firewall Settings ▶</li><li>Wireless Settings ▶</li><li>Advanced Network ▶</li><li>Routing ▶</li><li>Certificates</li><li>Users ▶</li><li>IP/MAC Binding</li><li>IPv6 ▶</li><li>Radius Settings</li><li>Power Saving</li></ul>	<p><b>WAN PORT SETUP</b> <a href="#">LOGOUT</a></p> <p>This page allows user to configure advanced WAN options for the router.</p> <p><input type="button" value="Save Settings"/> <input type="button" value="Don't Save Settings"/></p> <p><b>WANs Ping</b></p> <p><b>Respond to Ping:</b> <input type="checkbox"/></p> <p><b>WAN1 Port Setup</b></p> <p><b>MTU Size:</b> <input type="button" value="Default"/></p> <p><b>Custom MTU:</b> <input type="text" value="1500"/></p> <p><b>Port Speed:</b> <input type="button" value="Auto Sense"/></p> <p><b>WAN2 Port Setup</b></p> <p><b>MTU Size:</b> <input type="button" value="Default"/></p> <p><b>Custom MTU:</b> <input type="text" value="1500"/></p> <p><b>Port Speed:</b> <input type="button" value="Auto Sense"/></p>			

# Chapter 4. Wireless Access Point Setup

This router has an integrated 802.11n radio that allows you to create an access point for wireless LAN clients. The security/encryption/authentication options are grouped in a wireless Profile, and each configured profile will be available for selection in the AP configuration menu. The profile defines various parameters for the AP, including the security between the wireless client and the AP, and can be shared between multiple APs instances on the same device when needed.

Up to four unique wireless networks can be created by configuring multiple “virtual” APs. Each such virtual AP appears as an independent AP (unique SSID) to supported clients in the environment, but is actually running on the same physical radio integrated with this router.

You will need the following information to configure your wireless network:

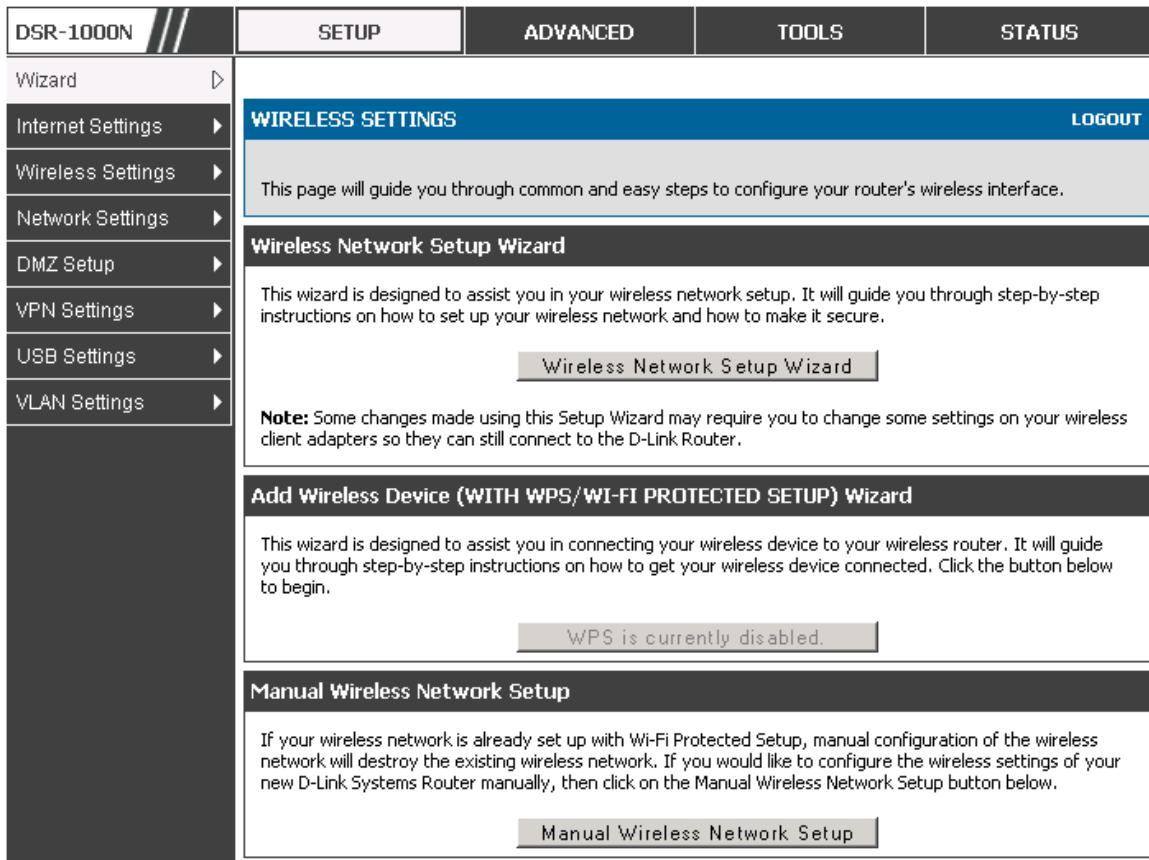
- Types of devices expected to access the wireless network and their supported Wi-Fi™ modes
- The router’s geographical region
- The security settings to use for securing the wireless network.

 Profiles may be thought of as a grouping of AP parameters that can then be applied to not just one but multiple AP instances (SSIDs), thus avoiding duplication if the same parameters are to be used on multiple AP instances or SSIDs.

## 4.1 Wireless Settings Wizard

### *Setup > Wizard > Wireless Settings*

The Wireless Network Setup Wizard is available for users new to networking. By going through a few straightforward configuration pages you can enable a Wi-Fi™ network on your LAN and allow supported 802.11 clients to connect to the configured Access Point.

**Figure 26: Wireless Network Setup Wizards**

### 4.1.1 Wireless Network Setup Wizard

This wizard provides a step-by-step guide to create and secure a new access point on the router. The network name (SSID) is the AP identifier that will be detected by supported clients. The Wizard uses a TKIP+AES cipher for WPA / WPA2 security; depending on support on the client side, devices associate with this AP using either WPA or WPA2 security with the same pre-shared key.

The wizard has the option to automatically generate a network key for the AP. This key is the pre-shared key for WPA or WPA2 type security. Supported clients that have been given this PSK can associate with this AP. The default (auto-assigned) PSK is “passphrase”.

The last step in the Wizard is to click the Connect button, which confirms the settings and enables this AP to broadcast its availability in the LAN.

### 4.1.2 Add Wireless Device with WPS

With WPS enabled on your router, the selected access point allows supported WPS clients to join the network very easily. When the Auto option for connecting a wireless device is chose, you will be presented with two common WPS setup options:

- **Personal Identification Number (PIN):** The wireless device that supports WPS may have an alphanumeric PIN, and if entered in this field the AP will establish a link to the client. Click Connect to complete setup and connect to the client.
- **Push Button Configuration (PBC):** for wireless devices that support PBC, press and hold down on this button and within 2 minutes, click the PBC connect button. The AP will detect the wireless device and establish a link to the client.

 You need to enable at least one AP with WPA/WPA2 security and also enable WPS in the **Advanced > Wireless Settings > WPS** page to use the WPS wizard.

### 4.1.3 Manual Wireless Network Setup

This button on the Wizard page will link to the **Setup > Wireless Settings > Access Points** page. The manual options allow you to create new APs or modify the parameters of APs created by the Wizard.

## 4.2 Wireless Profiles

### *Setup > Wireless Settings > Profiles*

The profile allows you to assign the security type, encryption and authentication to use when connecting the AP to a wireless client. The default mode is “open”, i.e. no security. This mode is insecure as it allows any compatible wireless clients to connect to an AP configured with this security profile.

To create a new profile, use a unique profile name to identify the combination of settings. Configure a unique SSID that will be the identifier used by the clients to communicate to the AP using this profile. By choosing to broadcast the SSID, compatible wireless clients within range of the AP can detect this profile’s availability.

The AP offers all advanced 802.11 security modes, including WEP, WPA, WPA2 and WPA+WPA2 options. The security of the Access point is configured by the Wireless Security Type section:

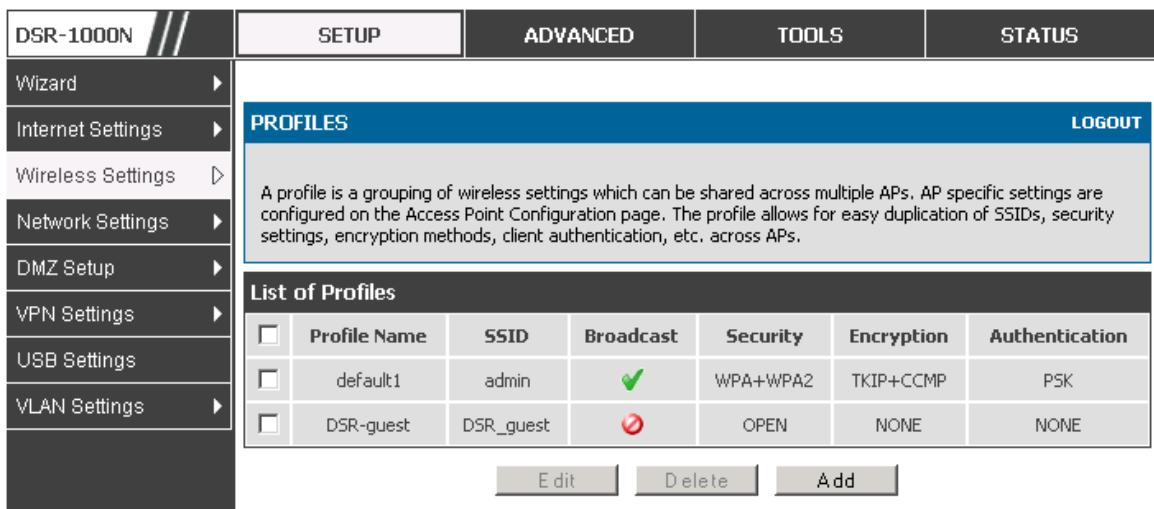
- Open: select this option to create a public “open” network to allow unauthenticated devices to access this wireless gateway.
- WEP (Wired Equivalent Privacy): this option requires a static (pre-shared) key to be shared between the AP and wireless client. Note that WEP does not support 802.11n data rates; is it appropriate for legacy 802.11 connections.
- WPA (Wi-Fi Protected Access): For stronger wireless security than WEP, choose this option. The encryption for WPA will use TKIP and also CCMP if required. The authentication can be a pre-shared key (PSK), Enterprise mode with RADIUS

server, or both. Note that WPA does not support 802.11n data rates; is it appropriate for legacy 802.11 connections.

- WPA2: this security type uses CCMP encryption (and the option to add TKIP encryption) on either PSK (pre-shared key) or Enterprise (RADIUS Server) authentication.
- WPA + WPA2: this uses both encryption algorithms, TKIP and CCMP. WPA clients will use TKIP and WPA2 clients will use CCMP encryption algorithms.

 “WPA+WPA2” is a security option that allows devices to connect to an AP using the strongest security that it supports. This mode allows legacy devices that only support WPA2 keys (such as an older wireless printer) to connect to a secure AP where all the other wireless clients are using WPA2.

**Figure 27: List of Available Profiles shows the variety of options available to secure the wireless link**



Profile Name	SSID	Broadcast	Security	Encryption	Authentication
default1	admin	<input checked="" type="checkbox"/>	WPA+WPA2	TKIP+CCMP	PSK
DSR-guest	DSR_guest	<input type="checkbox"/>	OPEN	NONE	NONE

## 4.2.1 WEP Security

If WEP is the chosen security option, you must set a unique static key to be shared with clients that wish to access this secured wireless network. This static key can be generated from an easy-to-remember passphrase and the selected encryption length.

- Authentication: select between Open System, or Shared Key schemes
- Encryption: select the encryption key size -- 64 bit WEP or 128 bit WEP. The larger size keys provide stronger encryption, thus making the key more difficult to crack
- WEP Passphrase: enter a alphanumeric phrase and click Generate Key to generate 4 unique WEP keys with length determined by the encryption key

size. Next choose one of the keys to be used for authentication. The selected key must be shared with wireless clients to connect to this device.

**Figure 28: Profile configuration to set network security**

DSR-1000N //	SETUP	ADVANCED	TOOLS	STATUS																														
<a href="#">Wizard</a> ▾ <a href="#">Internet Settings</a> ▾ <a href="#">Wireless Settings</a> ▾ <a href="#">Network Settings</a> ▾ <a href="#">DMZ Setup</a> ▾ <a href="#">VPN Settings</a> ▾ <a href="#">USB Settings</a> <a href="#">VLAN Settings</a> ▾	<b>PROFILES</b> <a href="#">LOGOUT</a> <p>The Profile Configuration page allows you to set or modify the network identifiers and wireless settings of a particular wireless profile. Profiles can be applied to more than once access point if needed.</p> <p><a href="#">Save Settings</a> <a href="#">Don't Save Settings</a></p> <p><b>Profile Configuration</b></p> <table> <tr> <td><b>Profile Name:</b></td> <td><input type="text"/></td> </tr> <tr> <td><b>SSID:</b></td> <td><input type="text" value="admin"/></td> </tr> <tr> <td><b>Broadcast SSID:</b></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td><b>Security:</b></td> <td><input type="button" value="OPEN"/></td> </tr> <tr> <td><b>Encryption:</b></td> <td><input type="button" value="TKIP"/></td> </tr> <tr> <td><b>Authentication:</b></td> <td><input type="button" value="PSK"/></td> </tr> <tr> <td><b>WPA Password:</b></td> <td><input type="password"/></td> </tr> <tr> <td><b>Enable Pre-Authentication:</b></td> <td><input type="checkbox"/></td> </tr> </table> <p><b>WEP Index and Keys</b></p> <table> <tr> <td><b>Authentication:</b></td> <td><input type="button" value="Open System"/></td> </tr> <tr> <td><b>Encryption:</b></td> <td><input type="button" value="64 bit WEP"/></td> </tr> <tr> <td><b>WEP Passphrase:</b></td> <td><input type="password"/> <a href="#">generate key</a></td> </tr> <tr> <td><b>WEP Key 1:</b> <input checked="" type="radio"/></td> <td><input type="password"/></td> </tr> <tr> <td><b>WEP Key 2:</b> <input type="radio"/></td> <td><input type="password"/></td> </tr> <tr> <td><b>WEP Key 3:</b> <input type="radio"/></td> <td><input type="password"/></td> </tr> <tr> <td><b>WEP Key 4:</b> <input type="radio"/></td> <td><input type="password"/></td> </tr> </table>				<b>Profile Name:</b>	<input type="text"/>	<b>SSID:</b>	<input type="text" value="admin"/>	<b>Broadcast SSID:</b>	<input checked="" type="checkbox"/>	<b>Security:</b>	<input type="button" value="OPEN"/>	<b>Encryption:</b>	<input type="button" value="TKIP"/>	<b>Authentication:</b>	<input type="button" value="PSK"/>	<b>WPA Password:</b>	<input type="password"/>	<b>Enable Pre-Authentication:</b>	<input type="checkbox"/>	<b>Authentication:</b>	<input type="button" value="Open System"/>	<b>Encryption:</b>	<input type="button" value="64 bit WEP"/>	<b>WEP Passphrase:</b>	<input type="password"/> <a href="#">generate key</a>	<b>WEP Key 1:</b> <input checked="" type="radio"/>	<input type="password"/>	<b>WEP Key 2:</b> <input type="radio"/>	<input type="password"/>	<b>WEP Key 3:</b> <input type="radio"/>	<input type="password"/>	<b>WEP Key 4:</b> <input type="radio"/>	<input type="password"/>
<b>Profile Name:</b>	<input type="text"/>																																	
<b>SSID:</b>	<input type="text" value="admin"/>																																	
<b>Broadcast SSID:</b>	<input checked="" type="checkbox"/>																																	
<b>Security:</b>	<input type="button" value="OPEN"/>																																	
<b>Encryption:</b>	<input type="button" value="TKIP"/>																																	
<b>Authentication:</b>	<input type="button" value="PSK"/>																																	
<b>WPA Password:</b>	<input type="password"/>																																	
<b>Enable Pre-Authentication:</b>	<input type="checkbox"/>																																	
<b>Authentication:</b>	<input type="button" value="Open System"/>																																	
<b>Encryption:</b>	<input type="button" value="64 bit WEP"/>																																	
<b>WEP Passphrase:</b>	<input type="password"/> <a href="#">generate key</a>																																	
<b>WEP Key 1:</b> <input checked="" type="radio"/>	<input type="password"/>																																	
<b>WEP Key 2:</b> <input type="radio"/>	<input type="password"/>																																	
<b>WEP Key 3:</b> <input type="radio"/>	<input type="password"/>																																	
<b>WEP Key 4:</b> <input type="radio"/>	<input type="password"/>																																	

#### 4.2.2 WPA or WPA2 with PSK

A pre-shared key (PSK) is a known passphrase configured on the AP and client both and is used to authenticate the wireless client. An acceptable passphrase is between 8 to 63 characters in length.

### 4.2.3 RADIUS Authentication

*Setup > Wireless Settings > RADIUS Settings*

Enterprise Mode uses a RADIUS Server for WPA and/or WPA2 security. A RADIUS server must be configured and accessible by the router to authenticate wireless client connections to an AP enabled with a profile that uses RADIUS authentication.

- The Authentication IP Address is required to identify the server. A secondary RADIUS server provides redundancy in the event that the primary server cannot be reached by the router when needed.
- Authentication Port: the port for the RADIUS server connection
- Secret: enter the shared secret that allows this router to log into the specified RADIUS server(s). This key must match the shared secret on the RADIUS Server.
- The Timeout and Retries fields are used to either move to a secondary server if the primary cannot be reached, or to give up the RADIUS authentication attempt if communication with the server is not possible.

**Figure 29: RADIUS server (External Authentication) configuration**

DSR-1000N //	SETUP	ADVANCED	TOOLS	STATUS												
Wizard Internet Settings Wireless Settings Network Settings DMZ Setup VPN Settings USB Settings VLAN Settings	<b>RADIUS SERVER</b> <span style="float: right;">LOGOUT</span> <p>This page configures the RADIUS servers to be used for authentication. A RADIUS server maintains a database of user accounts used in larger environments. If a RADIUS server is configured in the LAN, it can be used for authenticating users that want to connect to the wireless network provided by this device. If the first/primary RADIUS server is not accessible at any time, then the device will attempt to contact the secondary RADIUS server for user authentication.</p> <p style="text-align: center;"><input type="button" value="Save Settings"/> <input type="button" value="Don't Save Settings"/></p> <hr/> <p><b>Radius Server Configuration</b></p> <table> <tr> <td><b>Authentication Server IP Address (Primary):</b></td> <td><input type="text" value="192.168.1.2"/></td> </tr> <tr> <td><b>Authentication Server IP Address (Secondary):</b></td> <td><input type="text" value="192.168.1.3"/></td> </tr> <tr> <td><b>Authentication Port:</b></td> <td><input type="text" value="1812"/></td> </tr> <tr> <td><b>Secret:</b></td> <td><input type="text" value="xxxxxxxx"/></td> </tr> <tr> <td><b>Timeout:</b></td> <td><input type="text" value="1"/> (Seconds)</td> </tr> <tr> <td><b>Retries:</b></td> <td><input type="text" value="2"/></td> </tr> </table>				<b>Authentication Server IP Address (Primary):</b>	<input type="text" value="192.168.1.2"/>	<b>Authentication Server IP Address (Secondary):</b>	<input type="text" value="192.168.1.3"/>	<b>Authentication Port:</b>	<input type="text" value="1812"/>	<b>Secret:</b>	<input type="text" value="xxxxxxxx"/>	<b>Timeout:</b>	<input type="text" value="1"/> (Seconds)	<b>Retries:</b>	<input type="text" value="2"/>
<b>Authentication Server IP Address (Primary):</b>	<input type="text" value="192.168.1.2"/>															
<b>Authentication Server IP Address (Secondary):</b>	<input type="text" value="192.168.1.3"/>															
<b>Authentication Port:</b>	<input type="text" value="1812"/>															
<b>Secret:</b>	<input type="text" value="xxxxxxxx"/>															
<b>Timeout:</b>	<input type="text" value="1"/> (Seconds)															
<b>Retries:</b>	<input type="text" value="2"/>															

## 4.3 Creating and Using Access Points

### *Setup > Wireless Settings > Access Points*

Once a profile (a group of security settings) is created, it can be assigned to an AP on the router. The AP SSID can be configured to broadcast its availability to the 802.11 environment can be used to establish a WLAN network.

The AP configuration page allows you to create a new AP and link to it one of the available profiles. This router supports multiple AP's referred to as virtual access points (VAPs). Each virtual AP that has a unique SSIDs appears as an independent access point to clients. This valuable feature allows the router's radio to be configured in a way to optimize security and throughput for a group of clients as required by the user. To create a VAP, click the “add” button on the **Setup > Wireless Settings > Access Points** page. After setting the AP name, the profile dropdown menu is used to select one of the configured profiles.

 The AP Name is a unique identifier used to manage the AP from the GUI, and is not the SSID that is detected by clients when the AP has broadcast enabled.

Figure 30: Virtual AP configuration

The screenshot shows the 'ACCESS POINTS' configuration page. At the top, there is a navigation bar with tabs: SETUP (which is selected), ADVANCED, TOOLS, and STATUS. Below the navigation bar, there is a message: 'This page allows you to create a new AP or edit the configuration of an existing AP. The details will then be displayed in the AP table on the Wireless > Access Points page.' There are two buttons at the bottom of this message: 'Save Settings' and 'Don't Save Settings'. The main section is titled 'Access Point Configuration'. It contains the following fields:

- AP Name:** [Text input field]
- Profile Name:** [Dropdown menu set to 'default1']
- Active Time:** [Checkboxes for active status]
- Start Time:** [Time selection fields for hour and minute, with AM/PM dropdown]
- Stop Time:** [Time selection fields for hour and minute, with AM/PM dropdown]
- WLAN Partition:** [Checkboxes for partition settings]

A valuable power saving feature is the start and stop time control for this AP. You can conserve on the radio power by disabling the AP when it is not in use. For example on evenings and weekends if you know there are no wireless clients, the start and stop time will enable/disable the access point automatically.

Once the AP settings are configured, you must enable the AP on the radio on the **Setup > Wireless Settings > Access Points** page. The status field changes to “Enabled” if the AP is available to accept wireless clients. If the AP is configured to broadcast its SSID (a profile parameter), a green check mark indicating it is broadcasting will be shown in the List of Available Access points.

**Figure 31: List of configured access points (Virtual APs) shows one enabled access point on the radio, broadcasting its SSID**

Status	Virtual AP	SSID	Broadcast	Profile Name	Active Time	Start Time	Stop Time
Enabled	ap1	admin	✓	default1	No	-	-
Enabled	Open_guests	DSR_guest	✗	DSR-guest	Yes	9:3 AM	12:30 PM

The clients connected to a particular AP can be viewed by using the Status Button on the List of Available Access Points. Traffic statistics are shown for that individual AP, as compared to the summary stats for each AP on the Statistics table. Connected clients are sorted by the MAC address and indicate the security parameters used by the wireless link, as well as the time connected to this particular AP. Clicking the Details button next to the connected client will give the detailed send and receive traffic statistics for the wireless link between this AP and the client.

### 4.3.1 Primary benefits of Virtual APs:

- Optimize throughput: if 802.11b, 802.11 g, and 802.11n clients are expected to access the LAN via this router, creating 3 VAPs will allow you to manage or shape traffic for each group of clients. A unique SSID can be created for the network of 802.11b clients and another SSID can be assigned for the 802.11n clients. Each can have different security parameters – remember, the SSID and security of the link is determined by the profile. In this way legacy clients can access the network without bringing down the overall throughput of more capable 802.11n clients.
- Optimize security: you may wish to support select legacy clients that only offer WEP security while using WPA2 security for the majority of clients for the radio. By creating two VAPs configured with different SSIDs and different security parameters, both types of clients can connect to the LAN. Since WPA2 is more secure, you may want to broadcast this SSID and not broadcast the SSID for the VAP with WEP since it is meant to be used for a few legacy devices in this scenario.

## 4.4 Tuning Radio Specific Settings

### *Setup > Wireless Settings > Radio Settings*

The Radio Settings page lets you configure the channels and power levels available for the AP's enabled on the device. The router has a dual band 802.11n radio, meaning either 2.4 GHz or 5 GHz frequency of operation can be selected (not concurrently though). Based on the selected operating frequency, the mode selection will let you define whether legacy connections or only 802.11n connections (or both) are accepted on configured APs.

**Figure 32: Radio card configuration options**

DSR-1000N //	SETUP	ADVANCED	TOOLS	STATUS																		
<a href="#">Wizard</a> ▶ <a href="#">Internet Settings</a> ▶ <a href="#">Wireless Settings</a> ▶ <a href="#">Network Settings</a> ▶ <a href="#">DMZ Setup</a> ▶ <a href="#">VPN Settings</a> ▶ <a href="#">USB Settings</a> <a href="#">VLAN Settings</a> ▶	<b>RADIO SETTINGS</b> <a href="#">LOGOUT</a> <p>This page allows you to configure the hardware settings for each available radio card.</p> <p><a href="#">Save Settings</a> <a href="#">Don't Save Settings</a></p> <hr/> <b>Radio Configuration</b> <table> <tr> <td><b>Operating Frequency:</b></td> <td><input type="button" value="2.4GHz"/></td> </tr> <tr> <td><b>Mode:</b></td> <td><input type="button" value="ng"/></td> </tr> <tr> <td><b>Channel Spacing:</b></td> <td><input type="button" value="20/40MHz"/></td> </tr> <tr> <td><b>Control Side Band:</b></td> <td><input type="button" value="Upper"/></td> </tr> <tr> <td><b>Current Channel:</b></td> <td>Auto</td> </tr> <tr> <td><b>Channel:</b></td> <td><input type="button" value="Auto"/></td> </tr> <tr> <td><b>Default Transmit Power:</b></td> <td><input type="text" value="31"/> (dBm)</td> </tr> <tr> <td><b>Transmit Power:</b></td> <td>15 dBm</td> </tr> <tr> <td><b>Transmission Rate:</b></td> <td><input type="button" value="Best(Automatic)"/></td> </tr> </table>				<b>Operating Frequency:</b>	<input type="button" value="2.4GHz"/>	<b>Mode:</b>	<input type="button" value="ng"/>	<b>Channel Spacing:</b>	<input type="button" value="20/40MHz"/>	<b>Control Side Band:</b>	<input type="button" value="Upper"/>	<b>Current Channel:</b>	Auto	<b>Channel:</b>	<input type="button" value="Auto"/>	<b>Default Transmit Power:</b>	<input type="text" value="31"/> (dBm)	<b>Transmit Power:</b>	15 dBm	<b>Transmission Rate:</b>	<input type="button" value="Best(Automatic)"/>
<b>Operating Frequency:</b>	<input type="button" value="2.4GHz"/>																					
<b>Mode:</b>	<input type="button" value="ng"/>																					
<b>Channel Spacing:</b>	<input type="button" value="20/40MHz"/>																					
<b>Control Side Band:</b>	<input type="button" value="Upper"/>																					
<b>Current Channel:</b>	Auto																					
<b>Channel:</b>	<input type="button" value="Auto"/>																					
<b>Default Transmit Power:</b>	<input type="text" value="31"/> (dBm)																					
<b>Transmit Power:</b>	15 dBm																					
<b>Transmission Rate:</b>	<input type="button" value="Best(Automatic)"/>																					

The ratified 802.11n support on this radio requires selecting the appropriate broadcast (NA or NG etc.) mode, and then defining the channel spacing and control side band for 802.11n traffic. The default settings are appropriate for most networks. For example, changing the channel spacing to 40 MHz can improve bandwidth at the expense of supporting earlier 802.11n clients.

The available transmission channels are governed by regulatory constraints based on the region setting of the router. The maximum transmission power is similarly governed by regulatory limits; you have the option to decrease from the default maximum to reduce the signal strength of traffic out of the radio.

## 4.5 Advanced Wireless Settings

### *Advanced > Wireless Settings > Advanced Wireless*

Sophisticated wireless administrators can modify the 802.11 communication parameters in this page. Generally, the default settings are appropriate for most networks. Please refer to the GUI integrated help text for further details on the use of each configuration parameter.

**Figure 33: Advanced Wireless communication settings**

DSR-1000N //	SETUP	ADVANCED	TOOLS	STATUS																		
<a href="#">Application Rules</a> ▶ <a href="#">Website Filter</a> ▶ <a href="#">Firewall Settings</a> ▶ <a href="#">Wireless Settings</a> ▶ <a href="#">Advanced Network</a> ▶ <a href="#">Routing</a> ▶ <a href="#">Certificates</a> <a href="#">Users</a> ▶ <a href="#">IP/MAC Binding</a> <a href="#">IPv6</a> ▶ <a href="#">Power Saving</a>	<div style="background-color: #0070C0; color: white; padding: 5px; text-align: center;"> <b>ADVANCED WIRELESS</b> <span style="float: right;">LOGOUT</span> </div> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <p>This page is used to specify advanced configuration settings for the radio.</p> <p style="text-align: center;"><input type="button" value="Save Settings"/> <input type="button" value="Don't Save Settings"/></p> <hr/> <p><b>Advanced Wireless Configuration</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Beacon Interval:</td> <td style="width: 70%; text-align: right;">100 <small>(Milliseconds)</small></td> </tr> <tr> <td>Dtim Interval:</td> <td style="text-align: right;">2</td> </tr> <tr> <td>RTS Threshold:</td> <td style="text-align: right;">2346</td> </tr> <tr> <td>Fragmentation Threshold:</td> <td style="text-align: right;">2346</td> </tr> <tr> <td>Preamble Mode:</td> <td style="text-align: right;"><input type="button" value="Long"/></td> </tr> <tr> <td>Protection Mode:</td> <td style="text-align: right;"><input type="button" value="None"/></td> </tr> <tr> <td>Power Save Enable:</td> <td style="text-align: right;"><input type="checkbox"/></td> </tr> <tr> <td>Short Retry Limit:</td> <td style="text-align: right;">16</td> </tr> <tr> <td>Long Retry Limit:</td> <td style="text-align: right;">16</td> </tr> </table> </div>				Beacon Interval:	100 <small>(Milliseconds)</small>	Dtim Interval:	2	RTS Threshold:	2346	Fragmentation Threshold:	2346	Preamble Mode:	<input type="button" value="Long"/>	Protection Mode:	<input type="button" value="None"/>	Power Save Enable:	<input type="checkbox"/>	Short Retry Limit:	16	Long Retry Limit:	16
Beacon Interval:	100 <small>(Milliseconds)</small>																					
Dtim Interval:	2																					
RTS Threshold:	2346																					
Fragmentation Threshold:	2346																					
Preamble Mode:	<input type="button" value="Long"/>																					
Protection Mode:	<input type="button" value="None"/>																					
Power Save Enable:	<input type="checkbox"/>																					
Short Retry Limit:	16																					
Long Retry Limit:	16																					

## 4.6 Wi-Fi Protected Setup (WPS)

### *Advanced > Wireless Settings > WPS*

WPS is a simplified method to add supporting wireless clients to the network. WPS is only applicable for APs that employ WPA or WPA2 security. To use WPS, select the eligible VAPs from the dropdown list of APs that have been configured with this security and enable WPS status for this AP.

The WPS Current Status section outlines the security, authentication, and encryption settings of the selected AP. These are consistent with the AP's profile. There are two setup options available for WPS:

- **Personal Identification Number (PIN):** The wireless device that supports WPS may have an alphanumeric PIN, if so add the PIN in this field. The router will

connect within 60 seconds of clicking the “Configure via PIN” button immediately below the PIN field. There is no LED indication that a client has connected.

- **Push Button Configuration (PBC):** for wireless devices that support PBC, press and hold down on this button and within 2 minutes click the PBC connect button. The AP will detect the wireless device and establish a link to the client.

 More than one AP can use WPS, but only one AP can be used to establish WPS links to client at any given time.

**Figure 34: WPS configuration for an AP with WPA/WPA2 profile**

DSR-1000N //	SETUP	ADVANCED	TOOLS	STATUS																
Application Rules Website Filter Firewall Settings Wireless Settings Advanced Network Routing Certificates Users IP/MAC Binding IPv6 Power Saving	<div style="background-color: #0070C0; color: white; padding: 5px; text-align: center;"> <b>WPS</b> <span style="float: right;">LOGOUT</span> </div> <p>This page allows you to define and modify the Wi-Fi Protected Setup (WPS) configuration parameters.</p> <p style="text-align: center;"><input type="button" value="Save Settings"/> <input type="button" value="Don't Save Settings"/></p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>WPS Configuration</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Select VAP:</td> <td style="width: 70%;"><input type="text" value="ap1"/></td> </tr> <tr> <td>WPS Status:</td> <td><input type="text" value="Disabled"/></td> </tr> </table> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>WPS Current Status</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Security:</td> <td style="width: 70%;">N/A</td> </tr> <tr> <td>Authentication:</td> <td>N/A</td> </tr> <tr> <td>Encryption:</td> <td>N/A</td> </tr> </table> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>WPS Setup Method</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Station PIN:</td> <td style="width: 70%;"><input type="text"/></td> </tr> <tr> <td colspan="2" style="text-align: center;"><input type="button" value="Configure via PIN"/></td> </tr> <tr> <td>Session Status:</td> <td>N/A</td> </tr> </table> </div>				Select VAP:	<input type="text" value="ap1"/>	WPS Status:	<input type="text" value="Disabled"/>	Security:	N/A	Authentication:	N/A	Encryption:	N/A	Station PIN:	<input type="text"/>	<input type="button" value="Configure via PIN"/>		Session Status:	N/A
Select VAP:	<input type="text" value="ap1"/>																			
WPS Status:	<input type="text" value="Disabled"/>																			
Security:	N/A																			
Authentication:	N/A																			
Encryption:	N/A																			
Station PIN:	<input type="text"/>																			
<input type="button" value="Configure via PIN"/>																				
Session Status:	N/A																			



# Chapter 5. Securing the Private Network

You can secure your network by creating and applying rules that your router uses to selectively block and allow inbound and outbound Internet traffic. You then specify how and to whom the rules apply. To do so, you must define the following:

- Services or traffic types (examples: web browsing, VoIP, other standard services and also custom services that you define)
- Direction for the traffic by specifying the source and destination of traffic; this is done by specifying the “From Zone” (LAN/WAN/DMZ) and “To Zone” (LAN/WAN/DMZ)
- Schedules as to when the router should apply rules
- Any Keywords (in a domain name or on a URL of a web page) that the router should allow or block
- Rules for allowing or blocking inbound and outbound Internet traffic for specified services on specified schedules
- MAC addresses of devices that should not access the internet
- Port triggers that signal the router to allow or block access to specified services as defined by port number
- Reports and alerts that you want the router to send to you

You can, for example, establish restricted-access policies based on time-of-day, web addresses, and web address keywords. You can block Internet access by applications and services on the LAN, such as chat rooms or games. You can block just certain groups of PCs on your network from being accessed by the WAN or public DMZ network.

## 5.1 Firewall Rules

### *Advanced > Firewall Settings > Firewall Rules*

Inbound (WAN to LAN/DMZ) rules restrict access to traffic entering your network, selectively allowing only specific outside users to access specific local resources. By default all access from the insecure WAN side are blocked from accessing the secure LAN, except in response to requests from the LAN or DMZ. To allow outside devices to access services on the secure LAN, you must create an inbound firewall rule for each service.

If you want to allow incoming traffic, you must make the router’s WAN port IP address known to the public. This is called “exposing your host.” How you make your address known depends on how the WAN ports are configured; for this router you

may use the IP address if a static address is assigned to the WAN port, or if your WAN address is dynamic a DDNS (Dynamic DNS) name can be used.

Outbound (LAN/DMZ to WAN) rules restrict access to traffic leaving your network, selectively allowing only specific local users to access specific outside resources. The default outbound rule is to allow access from the secure zone (LAN) to either the public DMZ or insecure WAN. You can change this default behavior in the **Firewall Settings > Default Outbound Policy** page. When the default outbound policy is allow always, you can to block hosts on the LAN from accessing internet services by creating an outbound firewall rule for each service.

**Figure 35: List of Available Firewall Rules**

Status	From Zone	To Zone	Service	Action	Source Hosts	Destination Hosts	Local Server	Internet Destination	Log
Disabled	LAN	WAN	ANY	ALLOW by schedule,otherwise block	176.16.2.200 - 176.16.2.254	Any			Never
Disabled	WAN	LAN	FTP	ALLOW by schedule,otherwise block	Any		176.16.2.155	WAN1	Never
Disabled	WAN	DMZ	DocServer	ALLOW always	Any		172.16.1.11	WAN1	Never

## 5.2 Defining Rule Schedules

### Tools > Schedules

Firewall rules can be enabled or disabled automatically if they are associated with a configured schedule. The schedule configuration page allows you to define days of the week and the time of day for a new schedule, and then this schedule can be selected in the firewall rule configuration page.

- ☞ All schedules will follow the time in the routers configured time zone. Refer to the section on choosing your Time Zone and configuring NTP servers for more information.

**Figure 36: List of Available Schedules to bind to a firewall rule**

<input type="checkbox"/>	Name	Days	Start Time	End Time
<input type="checkbox"/>	Guests	Monday, Tuesday, Wednesday, Thursday, Friday	09:00 AM	05:00 PM
<input type="checkbox"/>	Marketing	Tuesday, Wednesday, Thursday	12:00 AM	11:59 PM
<input type="checkbox"/>	EngineeringWeekend	Sunday, Saturday	12:00 AM	11:59 PM

## 5.3 Configuring Firewall Rules

### *Advanced > Firewall Settings > Firewall Rules*

All configured firewall rules on the router are displayed in the Firewall Rules list. This list also indicates whether the rule is enabled (active) or not, and gives a summary of the From/To zone as well as the services or users that the rule affects.

To create a new firewall rules, follow the steps below:

1. View the existing rules in the List of Available Firewall Rules table.
2. To edit or add an outbound or inbound services rule, do the following:
  - To edit a rule, click the checkbox next to the rule and click Edit to reach that rule's configuration page.
  - To add a new rule, click Add to be taken to a new rule's configuration page. Once created, the new rule is automatically added to the original table.
3. Choose the From Zone to be the source of originating traffic: either the secure LAN, public DMZ, or insecure WAN. For an inbound rule WAN should be selected as the From Zone.
4. Choose the To Zone to be the destination of traffic covered by this rule. If the From Zone is the WAN, the To Zone can be the public DMZ or secure LAN. Similarly if the From Zone is the LAN, then the To Zone can be the public DMZ or insecure WAN.
5. Parameters that define the firewall rule include the following:

- Service: ANY means all traffic is affected by this rule. For a specific service the drop down list has common services, or you can select a custom defined service.
- Action & Schedule: Select one of the 4 actions that this rule defines: BLOCK always, ALLOW always, BLOCK by schedule otherwise ALLOW, or ALLOW by schedule otherwise BLOCK. A schedule must be preconfigured in order for it to be available in the dropdown list to assign to this rule.
- Source & Destination users: For each relevant category, select the users to which the rule applies:
  - Any (all users)
  - Single Address (enter an IP address)
  - Address Range (enter the appropriate IP address range)
- Log: traffic that is filtered by this rule can be logged; this requires configuring the router's logging feature separately.
- QoS Priority: Outbound rules (where To Zone = insecure WAN only) can have the traffic marked with a QoS priority tag. Select a priority level:
  - Normal-Service: ToS=0 (lowest QoS)
  - Minimize-Cost: ToS=1
  - Maximize-Reliability: ToS=2
  - Maximize-Throughput: ToS=4
- Minimize-Delay: ToS=8 (highest QoS)

## 6. Inbound rules can use Destination NAT (DNAT) for managing traffic from the WAN.

Destination NAT is available when the To Zone = DMZ or secure LAN.

- With an inbound allow rule you can enter the internal server address that is hosting the selected service.
- You can enable port forwarding for an incoming service specific rule (From Zone = WAN) by selecting the appropriate checkbox. This will allow the selected service traffic from the internet to reach the appropriate LAN port via a port forwarding rule.
- Translate Port Number: With port forwarding, the incoming traffic to be forwarded to the port number entered here.

- External IP address: The rule can be bound to a specific WAN interface by selecting either the primary WAN or configurable port WAN as the source IP address for incoming traffic.

 This router supports multi-NAT and so the External IP address does not necessarily have to be the WAN address. On a single WAN interface, multiple public IP addresses are supported. If your ISP assigns you more than one public IP address, one of these can be used as your primary IP address on the WAN port, and the others can be assigned to servers on the LAN or DMZ. In this way the LAN/DMZ server can be accessed from the internet by its aliased public IP address.

7. Outbound rules can use Source NAT (SNAT) in order to statically map (bind) all LAN/DMZ traffic matching the rule parameters to a specific WAN interface or external IP address (usually provided by your ISP).

Once the new or modified rule parameters are saved, it appears in the master list of firewall rules. To enable or disable a rule, click the checkbox next to the rule in the list of firewall rules and choose Enable or Disable.

 The router applies firewall rules in the order listed. As a general rule, you should move the strictest rules (those with the most specific services or addresses) to the top of the list. To reorder rules, click the checkbox next to a rule and click up or down.

**Figure 37:** The firewall rule configuration page allows you to define the To/From zone, service, action, schedules, and specify source/destination IP addresses as needed.

DSR-1000N //	SETUP	ADVANCED	TOOLS	STATUS
Application Rules ▶ Website Filter ▶ Firewall Settings ▶ Wireless Settings ▶ Advanced Network ▶ Routing ▶ Certificates Users ▶ IP/MAC Binding IPv6 ▶ Power Saving	<div style="background-color: #0070C0; color: white; padding: 5px; text-align: center;"> <b>IPV4 FIREWALL RULES</b> <span style="float: right;">LOGOUT</span> </div> <div style="border: 1px solid #ccc; padding: 10px; margin-bottom: 10px;"> <p>This page allows you to add a new firewall rule or edit the configuration of an existing firewall rule. The details will then be displayed in the List of Available Firewall Rules table on the Firewall Rules page.</p> <p style="text-align: center;"><input type="button" value="Save Settings"/> <input type="button" value="Don't Save Settings"/></p> </div> <div style="background-color: #333; color: white; padding: 5px; text-align: left;"> <b>Firewall Rule Configuration</b> </div> <div style="border: 1px solid #ccc; padding: 10px; margin-bottom: 10px;"> <p><b>From Zone:</b> SECURE (LAN) ▾</p> <p><b>To Zone:</b> INSECURE (Dedicated WAN/Configurable WAN) ▾</p> <p><b>Service:</b> ANY ▾</p> <p><b>Action:</b> Always Block ▾</p> <p><b>Select Schedule:</b> Guests ▾</p> <p><b>Source Hosts:</b> Any ▾</p> <p><b>From:</b> <input type="text"/></p> <p><b>To:</b> <input type="text"/></p> <p><b>Destination Hosts:</b> Any ▾</p> <p><b>From:</b> <input type="text"/></p> <p><b>To:</b> <input type="text"/></p> <p><b>Log:</b> Never ▾</p> <p><b>QoS Priority:</b> Normal-Service ▾</p> </div> <div style="background-color: #333; color: white; padding: 5px; text-align: left;"> <b>Source NAT Settings</b> </div> <div style="border: 1px solid #ccc; padding: 10px; margin-bottom: 10px;"> <p><b>External IP Address:</b> <input type="text"/> WAN Interface Address ▾</p> <p><b>Single IP Address:</b> <input type="text"/></p> <p><b>WAN Interface:</b> WAN1 ▾</p> </div> <div style="background-color: #333; color: white; padding: 5px; text-align: left;"> <b>Destination NAT Settings</b> </div> <div style="border: 1px solid #ccc; padding: 10px;"> <p><b>Internal IP Address:</b> <input type="text"/></p> <p><b>Enable Port Forwarding:</b> <input type="checkbox"/></p> <p><b>Translate Port Number:</b> <input type="text"/></p> <p><b>External IP Address:</b> <input type="text"/> Dedicated WAN ▾</p> <p><b>Other IP Address:</b> <input type="text"/></p> </div>			

### 5.3.1 Firewall Rule Configuration Examples

**Example 1:** Allow inbound HTTP traffic to the DMZ

**Situation:** You host a public web server on your local DMZ network. You want to allow inbound HTTP requests from any outside IP address to the IP address of your web server at any time of day.

**Solution:** Create an inbound rule as follows.

Parameter	Value
From Zone	Insecure (WAN1/WAN2)
To Zone	Public (DMZ)
Service	HTTP
Action	ALLOW always
Send to Local Server (DNAT IP)	192.168.5.2 (web server IP address)
Destination Users	Any
Log	Never

**Example 2:** Allow videoconferencing from range of outside IP addresses

**Situation:** You want to allow incoming videoconferencing to be initiated from a restricted range of outside IP addresses (132.177.88.2 - 132.177.88.254), from a branch office.

**Solution:** Create an inbound rule as follows. In the example, CUSeeMe (the video conference service used) connections are allowed only from a specified range of external IP addresses.

Parameter	Value
From Zone	Insecure (WAN1/WAN2)
To Zone	Secure (LAN)
Service	CU-SEEME:UDP
Action	ALLOW always
Send to Local Server (DNAT IP)	192.168.10.11
Destination Users	Address Range
From	132.177.88.2
To	132.177.88.254
Enable Port Forwarding	Yes (enabled)

**Example 3:** Multi-NAT configuration

**Situation:** You want to configure multi-NAT to support multiple public IP addresses on one WAN port interface.

**Solution:** Create an inbound rule that configures the firewall to host an additional public IP address. Associate this address with a web server on the DMZ. If you

arrange with your ISP to have more than one public IP address for your use, you can use the additional public IP addresses to map to servers on your LAN. One of these public IP addresses is used as the primary IP address of the router. This address is used to provide Internet access to your LAN PCs through NAT. The other addresses are available to map to your DMZ servers.

The following addressing scheme is used to illustrate this procedure:

#### Router

- WAN IP address: 10.1.0.118
- LAN IP address: 192.168.10.1; subnet 255.255.255.0
- Web server host in the DMZ, IP address: 192.168.12.222
- Access to Web server: (simulated) public IP address 10.1.0.52

Parameter	Value
From Zone	Insecure (WAN1/WAN2)
To Zone	Public (DMZ)
Service	HTTP
Action	ALLOW always
Send to Local Server (DNAT IP)	192.168.12.222 ( web server local IP address)
Destination Users	Single Address
From	10.1.0.52
WAN Users	Any
Log	Never

k traffic by schedule if generated from specific range of machines

**Use Case:** Block all HTTP traffic on the weekends if the request originates from a specific group of machines in the LAN having a known range of IP addresses, and anyone coming in through the Network from the WAN (i.e. all remote users).

#### Configuration:

##### 1. Setup a schedule:

- To setup a schedule that affects traffic on weekends only, navigate to Security: Schedule, and name the schedule “Weekend”
- Define “weekend” to mean 12 am Saturday morning to 12 am Monday morning – all day Saturday & Sunday
- In the Scheduled days box, check that you want the schedule to be active for “specific days”. Select “Saturday” and “Sunday”
- In the scheduled time of day, select “all day” – this will apply the schedule between 12 am to 11:59 pm of the selected day.

- Click apply – now schedule “Weekend” isolates all day Saturday and Sunday from the rest of the week.

**Figure 38: Schedule configuration for the above example.**

DSR-1000N //	SETUP	ADVANCED	TOOLS	STATUS														
Admin Date and Time Log Settings System Firmware Firmware via USB Dynamic DNS System Check <b>Schedules</b>	<h3>SCHEDULE CONFIGURATION</h3> <p>This page allows user to configure schedules. These schedules then can be applied to firewall rules to achieve schedule based firewall.</p> <p><input type="button" value="Save Settings"/> <input type="button" value="Don't Save Settings"/></p> <p><b>Schedule Name</b></p> <p>Name: <input type="text"/></p> <p><b>Scheduled Days</b></p> <p>Do you want this schedule to be active on all days or specific days? <input type="button" value="All Days"/></p> <table> <tr> <td>Monday:</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Tuesday:</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Wednesday:</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Thursday:</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Friday:</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Saturday:</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Sunday:</td> <td><input type="checkbox"/></td> </tr> </table> <p><b>Scheduled Time of Day</b></p> <p>Do you want this schedule to be active all day or at specific times during the day? <input type="button" value="All Day"/></p> <p><b>Start Time:</b></p> <p>Hour: <input type="text"/> Minute: <input type="text"/> AM <input type="button" value="▼"/></p> <p><b>End Time:</b></p> <p>Hour: <input type="text"/> Minute: <input type="text"/> AM <input type="button" value="▼"/></p>				Monday:	<input type="checkbox"/>	Tuesday:	<input type="checkbox"/>	Wednesday:	<input type="checkbox"/>	Thursday:	<input type="checkbox"/>	Friday:	<input type="checkbox"/>	Saturday:	<input type="checkbox"/>	Sunday:	<input type="checkbox"/>
Monday:	<input type="checkbox"/>																	
Tuesday:	<input type="checkbox"/>																	
Wednesday:	<input type="checkbox"/>																	
Thursday:	<input type="checkbox"/>																	
Friday:	<input type="checkbox"/>																	
Saturday:	<input type="checkbox"/>																	
Sunday:	<input type="checkbox"/>																	

2. Since we are trying to block HTTP requests, it is a service with To Zone: Insecure (WAN1/WAN2) that is to be blocked according to schedule “Weekend”.

3. Select the Action to “Block by Schedule, otherwise allow”. This will take a predefined schedule and make sure the rule is a blocking rule during the defined dates/times. All other times outside the schedule will not be affected by this firewall blocking rule
4. As we defined our schedule in schedule “Weekend”, this is available in the dropdown menu
5. We want to block the IP range assigned to the marketing group. Let’s say they have IP 192.168.10.20 to 192.168.10.30. On the Source Users dropdown, select Address Range and add this IP range as the From and To IP addresses.
6. We want to block all HTTP traffic to any services going to the insecure zone. The Destination Users dropdown should be “any”.
7. We don’t need to change default QoS priority or Logging (unless desired) – clicking apply will add this firewall rule to the list of firewall rules.
8. The last step is to enable this firewall rule. Select the rule, and click “enable” below the list to make sure the firewall rule is active

## 5.4 Security on Custom Services

### *Advanced > Firewall Settings > Custom Services*

Custom services can be defined to add to the list of services available during firewall rule configuration. While common services have known TCP/UDP/ICMP ports for traffic, many custom or uncommon applications exist in the LAN or WAN. In the custom service configuration menu you can define a range of ports and identify the traffic type (TCP/UDP/ICMP) for this service. Once defined, the new service will appear in the services list of the firewall rules configuration menu.

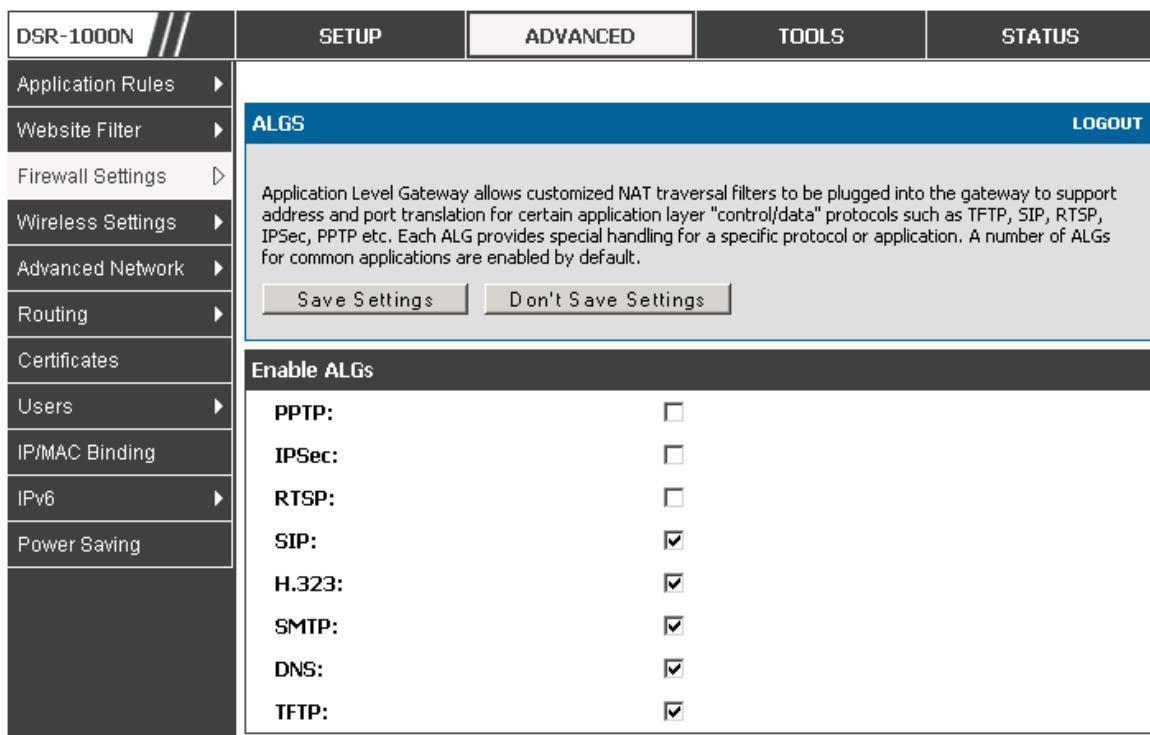
**Figure 39: List of user defined services.**

Name	Type	ICMP Type / Port Range
DocServer	TCP	4554 - 4556

## 5.5 ALG support

### *Advanced > Firewall Settings > ALGs*

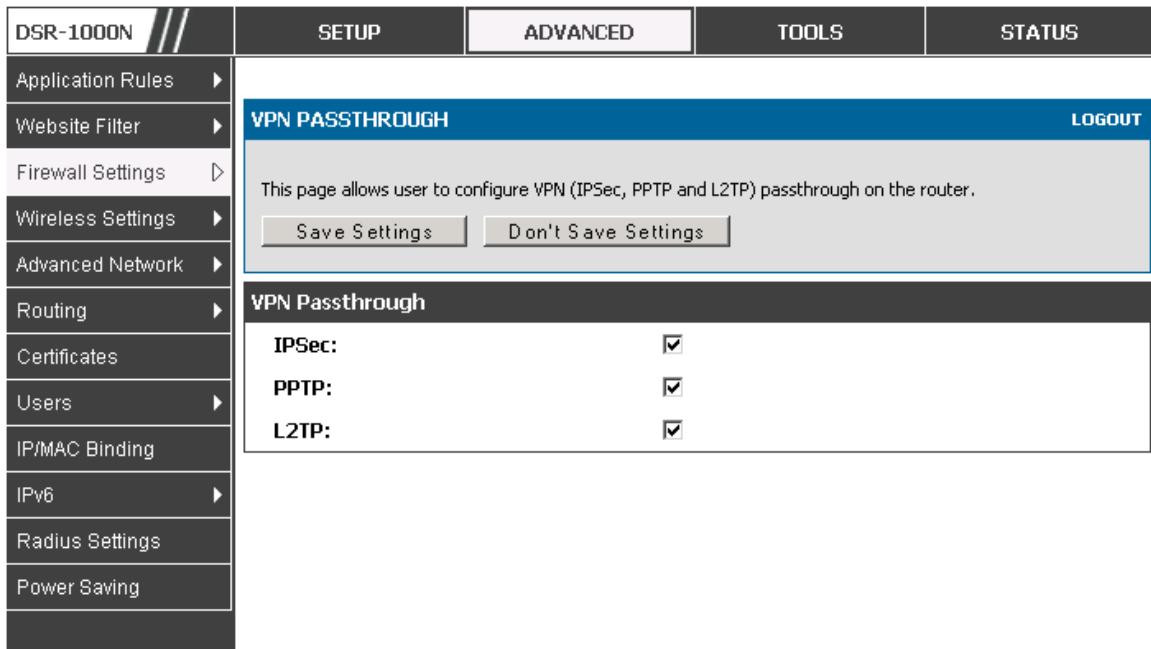
Application Level Gateways (ALGs) are security component that enhance the firewall and NAT support of this router to seamlessly support application layer protocols. In some cases enabling the ALG will allow the firewall to use dynamic ephemeral TCP/ UDP ports to communicate with the known ports a particular client application (such as H.323 or RTSP) requires, without which the admin would have to open large number of ports to accomplish the same support. Because the ALG understands the protocol used by the specific application that it supports, it is a very secure and efficient way of introducing support for client applications through the router's firewall.

**Figure 40: Available ALG support on the router.**

## 5.6 VPN Passthrough for Firewall

### *Advanced > Firewall Settings > VPN Passthrough*

This router's firewall settings can be configured to allow encrypted VPN traffic for IPSec, PPTP, and L2TP VPN tunnel connections between the LAN and internet. A specific firewall rule or service is not appropriate to introduce this passthrough support; instead the appropriate check boxes in the VPN Passthrough page must be enabled.

**Figure 41: Passthrough options for VPN tunnels**

## 5.7 Application Rules

### *Advanced > Application Rules > Application Rules*

Application rules are also referred to as port triggering. This feature allows devices on the LAN or DMZ to request one or more ports to be forwarded to them. Port triggering waits for an outbound request from the LAN/DMZ on one of the defined outgoing ports, and then opens an incoming port for that specified type of traffic. This can be thought of as a form of dynamic port forwarding while an application is transmitting data over the opened outgoing or incoming port(s).

Port triggering application rules are more flexible than static port forwarding that is an available option when configuring firewall rules. This is because a port triggering rule does not have to reference a specific LAN IP or IP range. As well ports are not left open when not in use, thereby providing a level of security that port forwarding does not offer.

 Port triggering is not appropriate for servers on the LAN, since there is a dependency on the LAN device making an outgoing connection before incoming ports are opened.

Some applications require that when external devices connect to them, they receive data on a specific port or range of ports in order to function properly. The router must send all incoming data for that application only on the required port or range of ports. The router has a list of common applications and games with corresponding outbound and inbound ports to open. You can also specify a port triggering rule by defining the type of traffic (TCP or UDP) and the range of incoming and outgoing ports to open when enabled.

**Figure 42: List of Available Application Rules showing 4 unique rules**

The screenshot shows the 'APPLICATION RULES' section of the router's configuration interface. The table lists four rules:

	Name	Enable	Protocol	Interface	Outgoing Ports		Incoming Ports	
					Start Port	End Port	Start Port	End Port
<input type="checkbox"/>	XBoxUDP	Yes	UDP	LAN	88	88	88	88
<input type="checkbox"/>	XBoxUDP2	No	UDP	LAN	3074	3074	3074	3074
<input type="checkbox"/>	XBoxTCP	Yes	TCP	LAN	3074	3074	3074	3074
<input type="checkbox"/>	mIRC	Yes	TCP	LAN	2024	6000	1024	5000

Buttons at the bottom include 'Edit', 'Delete', and 'Add'.

The application rule status page will list any active rules, i.e. incoming ports that are being triggered based on outbound requests from a defined outgoing port.

## 5.8 Web Content Filtering

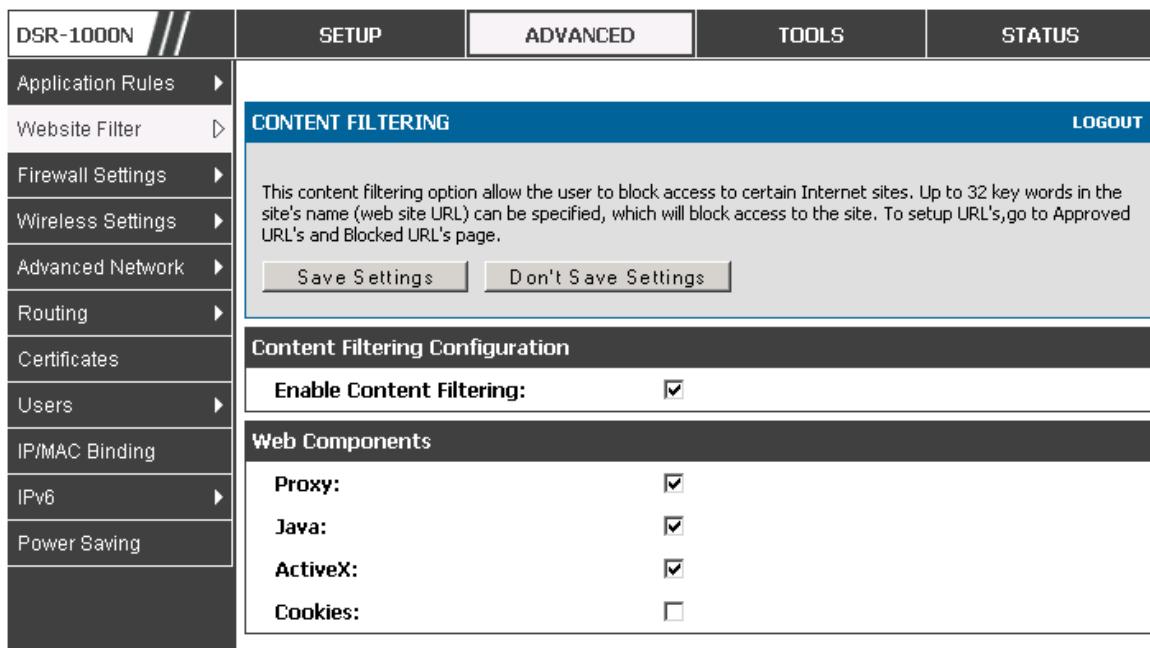
The gateway offers some standard web filtering options to allow the admin to easily create internet access policies between the secure LAN and insecure WAN. Instead of creating policies based on the type of traffic (as is the case when using firewall rules), web based content itself can be used to determine if traffic is allowed or dropped.

- Content Filtering

### *Advanced > Website Filter > Content Filtering*

Content filtering must be enabled to configure and use the subsequent features (list of Trusted Domains, filtering on Blocked Keywords, etc.). Proxy servers, which can be used to circumvent certain firewall rules and thus a potential security gap, can be blocked for all LAN devices. Java applets can be prevented from being downloaded from internet sites, and similarly the gateway can prevent ActiveX controls from being downloaded via Internet Explorer. For added security cookies, which typically contain session information, can be blocked as well for all devices on the private network.

**Figure 43: Content Filtering used to block access to proxy servers and prevent ActiveX controls from being downloaded**



- Approved URLs

#### ***Advanced > Website Filter > Approved URLs***

The Approved URLs is an acceptance list for all URL domain names. Domains added to this list are allowed in any form. For example, if the domain “yahoo” is added to this list then all of the following URL’s are permitted access from the LAN: www.yahoo.com, yahoo.co.uk, etc.

**Figure 44: Two trusted domains added to the Approved URLs List**

DSR-1000N //		SETUP	ADVANCED	TOOLS	STATUS												
<a href="#">Application Rules</a> ▶ <a href="#">Website Filter</a> ▶ <a href="#">Firewall Settings</a> ▶ <a href="#">Wireless Settings</a> ▶ <a href="#">Advanced Network</a> ▶ <a href="#">Routing</a> ▶ <a href="#">Certificates</a> <a href="#">Users</a> ▶ <a href="#">IP/MAC Binding</a> <a href="#">IPv6</a> ▶ <a href="#">Radius Settings</a> <a href="#">Power Saving</a>		<div style="background-color: #0070C0; color: white; padding: 5px; text-align: center;"> <b>APPROVED URLs</b> </div> <div style="border: 1px solid #ccc; padding: 10px; margin-top: -10px;"> <p style="margin: 0;">Please Turn On <a href="#">Content Filtering</a> to configure Approved URLs</p> <p style="margin: 0;"><b>LOGOUT</b></p> <p style="margin: 0; background-color: #0070C0; color: white; padding: 2px 0;">This page displays the approved URLs.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th colspan="2" style="background-color: #0070C0; color: white; text-align: left; padding: 2px;">Approved URLs List</th> <th style="background-color: #0070C0; color: white; text-align: right; padding: 2px;">Trusted Domains</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 2px;"><input type="checkbox"/></td> <td style="text-align: center; padding: 2px;"></td> <td style="text-align: right; padding: 2px;">www.yahoo.com</td> </tr> <tr> <td style="text-align: center; padding: 2px;"><input type="checkbox"/></td> <td style="text-align: center; padding: 2px;"></td> <td style="text-align: right; padding: 2px;">www.dlink.com</td> </tr> <tr> <td colspan="2"></td> <td style="text-align: right; padding: 2px;"> <a href="#">Edit</a>   <a href="#">Delete</a>   <a href="#">Add</a> </td> </tr> </tbody> </table> </div>				Approved URLs List		Trusted Domains	<input type="checkbox"/>		www.yahoo.com	<input type="checkbox"/>		www.dlink.com			<a href="#">Edit</a> <a href="#">Delete</a> <a href="#">Add</a>
Approved URLs List		Trusted Domains															
<input type="checkbox"/>		www.yahoo.com															
<input type="checkbox"/>		www.dlink.com															
		<a href="#">Edit</a> <a href="#">Delete</a> <a href="#">Add</a>															

- Blocked Keywords

#### ***Advanced > Website Filter > Blocked Keywords***

Keyword blocking allows you to block all website URL's or site content that contains the keywords in the configured list. This is lower priority than the Approved URL List; i.e. if the blocked keyword is present in a site allowed by a Trusted Domain in the Approved URL List, then access to that site will be allowed.

**Figure 45: Two keywords added to the block list**

The screenshot shows the router's configuration interface with a sidebar menu and a main content area. The sidebar includes options like Application Rules, Website Filter, Firewall Settings, Wireless Settings, Advanced Network, Routing, Certificates, Users, IP/MAC Binding, IPv6, Radius Settings, and Power Saving. The main content area has tabs for SETUP, ADVANCED (which is selected), TOOLS, and STATUS. Under ADVANCED, the 'BLOCKED KEYWORDS' section displays a table with two entries: 'gun' and 'bomb', both marked as 'Enabled'. Buttons for Edit, Enable, Disable, Delete, and Add are visible at the bottom of the table.

Status	Blocked Keyword
Enabled	gun
Enabled	bomb

## 5.9 IP/MAC Binding

### *Advanced > IP/MAC Binding*

Another available security measure is to only allow outbound traffic (from the LAN to WAN) when the LAN node has an IP address matching the MAC address bound to it. This is IP/MAC Binding, and by enforcing the gateway to validate the source traffic's IP address with the unique MAC Address of the configured LAN node, the administrator can ensure traffic from that IP address is not spoofed. In the event of a violation (i.e. the traffic's source IP address doesn't match up with the expected MAC address having the same IP address) the packets will be dropped and can be logged for diagnosis.

**Figure 46: The above example of IP/MAC Binding binds a LAN host's MAC Address to an IP address. If there is an IP/MAC Binding violation, the violating packet will be dropped and logs will be captured**

The screenshot shows the DSR-1000N router's web-based management interface. The top navigation bar includes tabs for SETUP, ADVANCED (which is selected), TOOLS, and STATUS. On the left, a sidebar menu lists various configuration options: Application Rules, Website Filter, Firewall Settings, Wireless Settings, Advanced Network, Routing, Certificates, Users, IP/MAC Binding (which is selected and highlighted in light blue), IPv6, and Power Saving. The main content area is titled "IP/MAC BINDING" and contains a sub-section titled "List of IP/MAC Binding". This section displays a table with three rows of data:

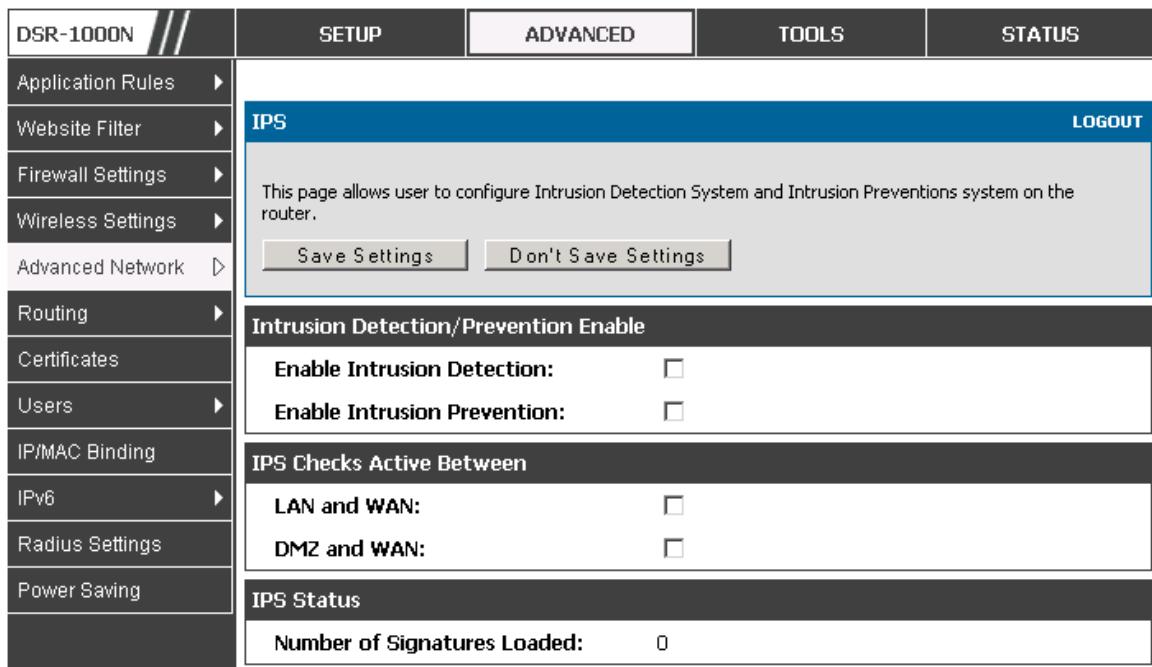
	Name	MAC Address	IP Address	Log Dropped Packets
<input type="checkbox"/>	test-ipmac1	AD:21:00:BC:32:25	97.0.0.8	Disabled
<input type="checkbox"/>	test-ipmac2	24:67:AB:CD:24:12	192.168.25.49	Enabled

Below the table are three buttons: "Edit", "Delete", and "Add".

## 5.10 Intrusion Prevention (IPS)

### *Advanced > Advanced Network > IPS*

The gateway's Intrusion Prevention System (IPS) prevents malicious attacks from the internet from accessing the private network. Static attack signatures loaded to the device allow common attacks to be detected and prevented. The checks can be enabled between the WAN and DMZ or LAN, and a running counter will allow the administrator to see how many malicious intrusion attempts from the WAN have been detected and prevented.

**Figure 47: Intrusion Prevention features on the router**

## 5.10.1 Protecting from Internet Attacks

### *Advanced > Advanced Network > Attack Checks*

Attacks can be malicious security breaches or unintentional network issues that render the router unusable. Attack checks allow you to manage WAN security threats such as continual ping requests and discovery via ARP scans. TCP and UDP flood attack checks can be enabled to manage extreme usage of WAN resources.

Additionally certain Denial-of-Service (DoS) attacks can be blocked. These attacks, if uninhibited, can use up processing power and bandwidth and prevent regular network services from running normally. ICMP packet flooding, SYN traffic flooding, and Echo storm thresholds can be configured to temporarily suspect traffic from the offending source.

**Figure 48: Protecting the router and LAN from internet attacks**

DSR-1000N //	SETUP	ADVANCED	TOOLS	STATUS
<ul style="list-style-type: none"><li>Application Rules ▶</li><li>Website Filter ▶</li><li>Firewall Settings ▶</li><li>Wireless Settings ▶</li><li>Advanced Network ▶</li><li>Routing ▶</li><li>Certificates</li><li>Users ▶</li><li>IP/MAC Binding</li><li>IPv6 ▶</li><li>Power Saving</li></ul>	<p><b>ATTACK CHECKS</b> <a href="#">LOGOUT</a></p> <p>This page allows you to specify whether or not to protect against common attacks from the LAN and WAN networks.</p> <p><input type="button" value="Save Settings"/> <input type="button" value="Don't Save Settings"/></p> <p><b>WAN Security Checks</b></p> <p><b>Enable Stealth Mode:</b> <input type="checkbox"/></p> <p><b>Block TCP flood:</b> <input checked="" type="checkbox"/></p> <p><b>LAN Security Checks</b></p> <p><b>Block UDP flood:</b> <input checked="" type="checkbox"/></p> <p><b>ICSA Settings</b></p> <p><b>Block ICMP Notification:</b> <input checked="" type="checkbox"/></p> <p><b>Block Fragmented Packets:</b> <input type="checkbox"/></p> <p><b>Block Multicast Packets:</b> <input type="checkbox"/></p> <p><b>DoS Attacks</b></p> <p><b>SYN Flood Detect Rate [max/sec]:</b> <input type="text" value="128"/></p> <p><b>Echo Storm [ping pkts./sec]:</b> <input type="text" value="15"/></p> <p><b>ICMP Flood [ICMP pkts./sec]:</b> <input type="text" value="100"/></p>			

# Chapter 6. IPSec / PPTP / L2TP VPN

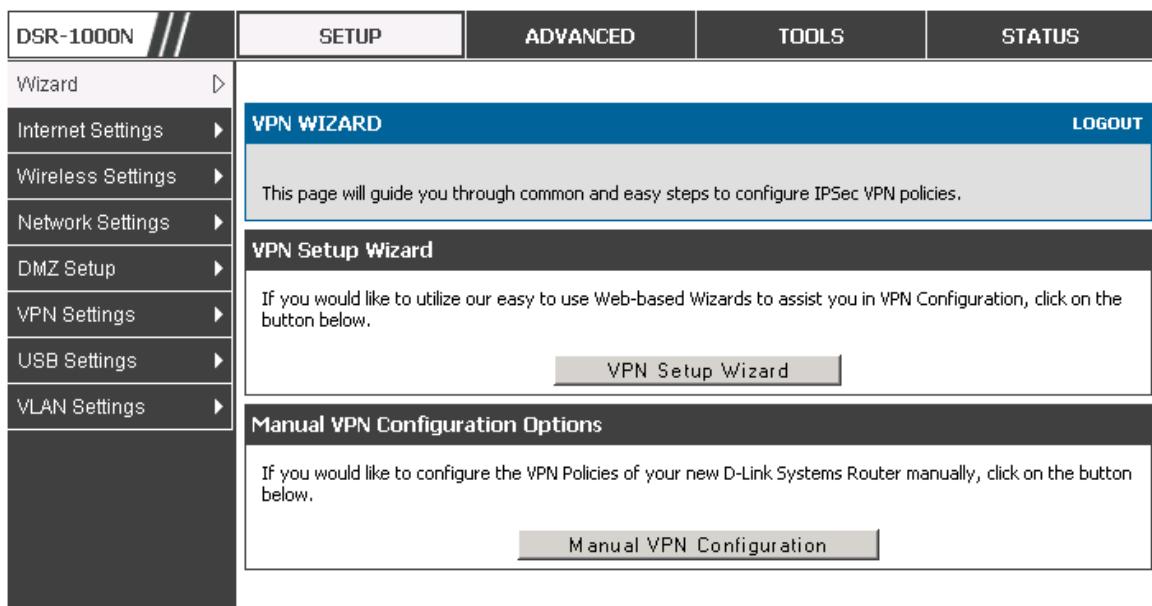
A VPN provides a secure communication channel (“tunnel”) between two gateway routers or a remote PC client. The following types of tunnels can be created:

- Gateway-to-gateway VPN: to connect two or more routers to secure traffic between remote sites.
- Remote Client (client-to-gateway VPN tunnel): A remote client initiates a VPN tunnel as the IP address of the remote PC client is not known in advance. The gateway in this case acts as a responder.
- Remote client behind a NAT router: The client has a dynamic IP address and is behind a NAT Router. The remote PC client at the NAT router initiates a VPN tunnel as the IP address of the remote NAT router is not known in advance. The gateway WAN port acts as responder.
- PPTP server for LAN / WAN PPTP client connections.
- L2TP server for LAN / WAN L2TP client connections.

## 6.1 VPN Wizard

### *Setup > Wizard > VPN Wizard*

You can use the VPN wizard to quickly create both IKE and VPN policies. Once the IKE or VPN policy is created, you can modify it as required.

**Figure 49: VPN Wizard launch screen**

To easily establish a VPN tunnel using VPN Wizard, follow the steps below:

1. Step 1: Select the VPN tunnel type to create
  - The tunnel can either be a gateway to gateway connection (site-to-site) or a tunnel to a host on the internet (remote access).
  - Set the Connection Name and pre-shared key: the connection name is used for management, and the pre-shared key will be required on the VPN client or gateway to establish the tunnel
  - Determine the local gateway for this tunnel; if there is more than 1 WAN configured the tunnel can be configured for either of the gateways.
2. Step 2: Configure Remote and Local WAN address for the tunnel endpoints
  - Remote Gateway Type: identify the remote endpoint of the tunnel by FQDN or static IP address
  - Remote WAN IP address / FQDN: This field is enabled only if the peer you are trying to connect to is a Gateway. For VPN Clients, this IP address or Internet Name is determined when a connection request is received from a client.
  - Local Gateway Type: identify this router's endpoint of the tunnel by FQDN or static IP address

- Local WAN IP address / FQDN: This field can be left blank if you are not using a different FQDN or IP address than the one specified in the WAN port's configuration.
3. Step 3: Configure the Secure Connection Remote Accessibility fields to identify the remote network:
- Remote LAN IP address: address of the LAN behind the peer gateway
  - Remote LAN Subnet Mask: the subnet mask of the LAN behind the peer

 **Note:** The IP address range used on the remote LAN must be different from the IP address range used on the local LAN.

4. Step4: review the settings and click Connect to establish the tunnel.

The Wizard will create a Auto IPSec policy with the following default values for a VPN Client or Gateway policy (these can be accessed from a link on the Wizard page):

Parameter	Default value from Wizard
Exchange Mode	Aggressive (Client policy ) or Main (Gateway policy)
ID Type	FQDN
Local WAN ID	wan_local.com (only applies to Client policies)
Remote WAN ID	wan_remote.com (only applies to Client policies)
Encryption Algorithm	3DES
Authentication Algorithm	SHA-1
Authentication Method	Pre-shared Key
PFS Key-Group	DH-Group 2(1024 bit)
Life Time (Phase 1)	24 hours
Life Time (Phase 2)	8 hours
NETBIOS	Enabled (only applies to Gateway policies)

 The VPN Wizard is the recommended method to set up an Auto IPSec policy. Once the Wizard creates the matching IKE and VPN policies required by the Auto policy, one can modify the required fields through the edit link. Refer to the online help for details.

## 6.2 Configuring IPSec Policies

### *Setup > VPN Settings > IPSec > IPSec Policies*

A IPSec policy is between this router and another gateway or this router and a IPSec client on a remote host. The IPSec mode can be either tunnel or transport depending on the network being traversed between the two policy endpoints.

- Transport: This is used for end-to-end communication between this router and the tunnel endpoint, either another IPSec gateway or an IPSec VPN client on a host. Only the data payload is encrypted and the IP header is not modified or encrypted.
- Tunnel: This mode is used for network-to-network IPSec tunnels where this gateway is one endpoint of the tunnel. In this mode the entire IP packet including the header is encrypted and/or authenticated.

When tunnel mode is selected, you can enable NetBIOS and DHCP over IPSec. DHCP over IPSec allows this router to serve IP leases to hosts on the remote LAN. As well in this mode you can define the single IP address, range of IPs, or subnet on both the local and remote private networks that can communicate over the tunnel.

Figure 50: IPSec policy configuration

DSR-1000N //	<a href="#">SETUP</a> <span style="margin: 0 10px;">ADVANCED</span> <a href="#">TOOLS</a> <span style="margin: 0 10px;">STATUS</span>
Wizard Internet Settings Wireless Settings Network Settings DMZ Setup VPN Settings USB Settings VLAN Settings	<p><b>IPSEC CONFIGURATION</b></p> <p>This page allows user to configure a auto VPN (IPSec) policy.</p> <p style="text-align: right;"><a href="#">LOGOUT</a></p> <hr/> <p><b>General</b></p> <p><b>Policy Name:</b> <input type="text"/></p> <p><b>Policy Type:</b> <input type="button" value="Auto Policy"/></p> <p><b>IPSec Mode:</b> <input type="button" value="Tunnel Mode"/></p> <p><b>Select Local Gateway:</b> <input type="button" value="Dedicated WAN"/></p> <p><b>Remote Endpoint:</b> <input type="button" value="IP Address"/></p> <p><input type="text"/></p> <p><b>Enable NetBIOS:</b> <input type="checkbox"/></p> <p><b>Local IP:</b> <input type="button" value="Any"/></p> <p><b>Local Start IP Address:</b> <input type="text"/></p> <p><b>Local End IP Address:</b> <input type="text"/></p> <p><b>Local Subnet Mask:</b> <input type="text"/></p> <p><b>Remote IP:</b> <input type="button" value="Any"/></p> <p><b>Remote Start IP Address:</b> <input type="text"/></p> <p><b>Remote End IP Address:</b> <input type="text"/></p> <p><b>Remote Subnet Mask:</b> <input type="text"/></p>

Once the tunnel type and endpoints of the tunnel are defined you can determine the Phase 1 / Phase 2 negotiation to use for the tunnel. This is covered in the IPSec mode setting, as the policy can be Manual or Auto. For Auto policies, the Internet Key Exchange (IKE) protocol dynamically exchanges keys between two IPSec hosts. The Phase 1 IKE parameters are used to define the tunnel's security association details. The Phase 2 Auto policy parameters cover the security association lifetime and encryption/authentication details of the phase 2 key negotiation.

The VPN policy is one half of the IKE/VPN policy pair required to establish a Auto IPSec VPN tunnel. The IP addresses of the machine or machines on the two VPN endpoints are configured here, along with the policy parameters required to secure the tunnel

**Figure 51: IPSec policy configuration continued (Auto policy via IKE)**

The screenshot shows a configuration dialog box titled "Phase1(IKE SA Parameters)". It contains various settings for an IKE SA:

Setting	Value
Exchange Mode:	Main
Direction / Type:	Both
Nat Traversal:	<input checked="" type="radio"/> On <input type="radio"/> Off
NAT Keep Alive Frequency (in seconds):	20
Local Identifier Type:	Local Wan IP
Local Identifier:	[Text input field]
Remote Identifier Type:	Remote Wan IP
Remote Identifier:	[Text input field]
Encryption Algorithm:	3DES
Authentication Algorithm:	SHA-1
Authentication Method:	Pre-shared key
Pre-shared key:	[Text input field]
Diffie-Hellman (DH) Group:	Group 2 (1024 bit)
SA-Lifetime (sec):	28800
Enable Dead Peer Detection:	<input type="checkbox"/>
Detection Period:	10
Reconnect after failure count:	3
Enable Extended Authentication:	<input type="checkbox"/>
Username:	admin
Password:	[Text input field]

A Manual policy does not use IKE and instead relies on manual keying to exchange authentication parameters between the two IPSec hosts. The incoming and outgoing security parameter index (SPI) values must be mirrored on the remote tunnel endpoint. As well the encryption and integrity algorithms and keys must match on the remote IPSec host exactly in order for the tunnel to establish successfully. Note that using Auto policies with IKE are preferred as in some IPSec implementations the SPI (security parameter index) values require conversion at each endpoint.

**Figure 52: IPSec policy configuration continued (Auto / Manual Phase 2)**

The screenshot shows two stacked sections of the IPSec policy configuration interface:

- Phase2-(Manual Policy Parameters):**
  - SPI-Incoming: [Input field]
  - SPI-Outgoing: [Input field]
  - Encryption Algorithm: 3DES [Dropdown]
  - Key Length: [Input field]
  - Key-In: [Input field]
  - Key-Out: [Input field]
  - Integrity Algorithm: SHA-1 [Dropdown]
  - Key-In: [Input field]
  - Key-Out: [Input field]
- Phase2-(Auto Policy Parameters):**
  - SA Lifetime: [Input field] Seconds [Dropdown]
  - Encryption Algorithm: 3DES [Dropdown]
  - Key Length: [Input field]
  - Integrity Algorithm: SHA-1 [Dropdown]
  - PFS Key Group:  DH Group 1 (768 bit) [Dropdown]

### 6.2.1 Extended Authentication (XAUTH)

You can also configure extended authentication (XAUTH). Rather than configure a unique VPN policy for each user, you can configure the VPN gateway router to authenticate users from a stored list of user accounts or with an external authentication server such as a RADIUS server. With a user database, user accounts created in the router are used to authenticate users.

With a configured RADIUS server, the router connects to a RADIUS server and passes to it the credentials that it receives from the VPN client. You can secure the connection between the router and the RADIUS server with the authentication protocol supported by the server (PAP or CHAP). For RADIUS – PAP, the router first checks in the user database to see if the user credentials are available; if they are not, the router connects to the RADIUS server.

## 6.3 Configuring VPN clients

Remote VPN clients must be configured with the same VPN policy parameters used in the VPN tunnel that the client wishes to use: encryption, authentication, life time, and PFS key-group. Upon establishing these authentication parameters, the VPN Client user database must also be populated with an account to give a user access to the tunnel.

 VPN client software is required to establish a VPN tunnel between the router and remote endpoint. Open source software (such as OpenVPN or Openswan) as well as Microsoft IPSec VPN software can be configured with the required IKE policy parameters to establish an IPSec VPN tunnel. Refer to the client software guide for detailed instructions on setup as well as the router's online help.

The user database contains the list of VPN user accounts that are authorized to use a given VPN tunnel. Alternatively VPN tunnel users can be authenticated using a configured Radius database. Refer to the online help to determine how to populate the user database and/or configure RADIUS authentication.

## 6.4 PPTP / L2TP Tunnels

This router supports VPN tunnels from either PPTP or L2TP ISP servers. The router acts as a broker device to allow the ISP's server to create a TCP control connection between the LAN VPN client and the VPN server.

### 6.4.1 PPTP Tunnel Support

#### *Setup > VPN Settings > PPTP > PPTP Server*

A PPTP VPN can be established through this router. Once enabled a PPTP server is available on the router for LAN and WAN PPTP client users to access. Once the PPTP server is enabled, PPTP clients that are within the range of configured IP addresses of allowed clients can reach the router's PPTP server. Once authenticated by the PPTP server (the tunnel endpoint), PPTP clients have access to the network managed by the router.

**Figure 53: PPTP tunnel configuration – PPTP Server**

DSR-1000N ///	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #333; color: white; text-align: center; padding: 2px;">SETUP</th> <th style="background-color: #333; color: white; text-align: center; padding: 2px;">ADVANCED</th> <th style="background-color: #333; color: white; text-align: center; padding: 2px;">TOOLS</th> <th style="background-color: #333; color: white; text-align: center; padding: 2px;">STATUS</th> </tr> </thead> <tbody> <tr> <td colspan="4" style="padding: 10px;"> <b>PPTP SERVER</b> <div style="text-align: right; margin-bottom: 5px;"><a href="#">LOGOUT</a></div> <p>PPTP allows an external user to connect to your router through the internet. This section allows you to enable/disable PPTP server and define a range of IP addresses for clients connecting to your router. The connected clients can function as if they are on your LAN (they can communicate with LAN hosts, access any servers present etc.)</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <span><input type="button" value="Save Settings"/></span> <span><input type="button" value="Don't Save Settings"/></span> </div> <hr/> <p><b>PPTP Server Configuration</b></p> <p><b>Enable PPTP Server?</b> <input type="checkbox"/></p> <p><b>Enter the range of IP addresses that is allocated to PPTP Clients</b></p> <p><b>Starting IP Address:</b> <input type="text"/></p> <p><b>Ending IP Address:</b> <input type="text"/></p> </td> </tr> </tbody> </table>	SETUP	ADVANCED	TOOLS	STATUS	<b>PPTP SERVER</b> <div style="text-align: right; margin-bottom: 5px;"><a href="#">LOGOUT</a></div> <p>PPTP allows an external user to connect to your router through the internet. This section allows you to enable/disable PPTP server and define a range of IP addresses for clients connecting to your router. The connected clients can function as if they are on your LAN (they can communicate with LAN hosts, access any servers present etc.)</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <span><input type="button" value="Save Settings"/></span> <span><input type="button" value="Don't Save Settings"/></span> </div> <hr/> <p><b>PPTP Server Configuration</b></p> <p><b>Enable PPTP Server?</b> <input type="checkbox"/></p> <p><b>Enter the range of IP addresses that is allocated to PPTP Clients</b></p> <p><b>Starting IP Address:</b> <input type="text"/></p> <p><b>Ending IP Address:</b> <input type="text"/></p>			
SETUP	ADVANCED	TOOLS	STATUS						
<b>PPTP SERVER</b> <div style="text-align: right; margin-bottom: 5px;"><a href="#">LOGOUT</a></div> <p>PPTP allows an external user to connect to your router through the internet. This section allows you to enable/disable PPTP server and define a range of IP addresses for clients connecting to your router. The connected clients can function as if they are on your LAN (they can communicate with LAN hosts, access any servers present etc.)</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <span><input type="button" value="Save Settings"/></span> <span><input type="button" value="Don't Save Settings"/></span> </div> <hr/> <p><b>PPTP Server Configuration</b></p> <p><b>Enable PPTP Server?</b> <input type="checkbox"/></p> <p><b>Enter the range of IP addresses that is allocated to PPTP Clients</b></p> <p><b>Starting IP Address:</b> <input type="text"/></p> <p><b>Ending IP Address:</b> <input type="text"/></p>									

## 6.4.2 L2TP Tunnel Support

*Setup > VPN Settings > L2TP > L2TP Server*

A L2TP VPN can be established through this router. Once enabled a L2TP server is available on the router for LAN and WAN L2TP client users to access. Once the L2TP server is enabled, L2TP clients that are within the range of configured IP addresses of allowed clients can reach the router's L2TP server. Once authenticated by the L2TP server (the tunnel endpoint), L2TP clients have access to the network managed by the router.

**Figure 54: L2TP tunnel configuration – L2TP Server**

DSR-1000N ///	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #333; color: white; text-align: center; padding: 2px;">SETUP</th> <th style="background-color: #333; color: white; text-align: center; padding: 2px;">ADVANCED</th> <th style="background-color: #333; color: white; text-align: center; padding: 2px;">TOOLS</th> <th style="background-color: #333; color: white; text-align: center; padding: 2px;">STATUS</th> </tr> </thead> <tbody> <tr> <td colspan="4" style="padding: 10px;"> <b>L2TP SERVER</b> <div style="text-align: right; margin-bottom: 5px;"><a href="#">LOGOUT</a></div> <p>L2TP allows an external user to connect to your router through the internet, forming a VPN. This section allows you to enable/disable L2TP server and define a range of IP addresses for clients connecting to your router. The connected clients can function as if they are on your LAN (they can communicate with LAN hosts, access any servers present etc.)</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <span><input type="button" value="Save Settings"/></span> <span><input type="button" value="Don't Save Settings"/></span> </div> <hr/> <p><b>L2TP Server Configuration</b></p> <p><b>Enable L2TP Server?</b> <input type="checkbox"/></p> <p><b>Enter the range of IP addresses that is allocated to L2TP Clients</b></p> <p><b>Starting IP Address:</b> <input type="text"/></p> <p><b>Ending IP Address:</b> <input type="text"/></p> </td> </tr> </tbody> </table>	SETUP	ADVANCED	TOOLS	STATUS	<b>L2TP SERVER</b> <div style="text-align: right; margin-bottom: 5px;"><a href="#">LOGOUT</a></div> <p>L2TP allows an external user to connect to your router through the internet, forming a VPN. This section allows you to enable/disable L2TP server and define a range of IP addresses for clients connecting to your router. The connected clients can function as if they are on your LAN (they can communicate with LAN hosts, access any servers present etc.)</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <span><input type="button" value="Save Settings"/></span> <span><input type="button" value="Don't Save Settings"/></span> </div> <hr/> <p><b>L2TP Server Configuration</b></p> <p><b>Enable L2TP Server?</b> <input type="checkbox"/></p> <p><b>Enter the range of IP addresses that is allocated to L2TP Clients</b></p> <p><b>Starting IP Address:</b> <input type="text"/></p> <p><b>Ending IP Address:</b> <input type="text"/></p>			
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# Chapter 7. SSL VPN

The router provides an intrinsic SSL VPN feature as an alternate to the standard IPSec VPN. SSL VPN differs from IPSec VPN mainly by removing the requirement of a pre-installed VPN client on the remote host. Instead, users can securely login through the SSL User Portal using a standard web browser and receive access to configured network resources within the corporate LAN. The router supports multiple concurrent sessions to allow remote users to access the LAN over an encrypted link through a customizable user portal interface, and each SSL VPN user can be assigned unique privileges and network resource access levels.

The remote user can be provided different options for SSL service through this router:

- **VPN Tunnel:** The remote user's SSL enabled browser is used in place of a VPN client on the remote host to establish a secure VPN tunnel. A SSL VPN client (Active-X or Java based) is installed in the remote host to allow the client to join the corporate LAN with pre-configured access/policy privileges. At this point a virtual network interface is created on the user's host and this will be assigned an IP address and DNS server address from the router. Once established, the host machine can access allocated network resources.
- **Port Forwarding:** A web-based (ActiveX or Java) client is installed on the client machine again. Note that Port Forwarding service only supports TCP connections between the remote user and the router. The router administrator can define specific services or applications that are available to remote port forwarding users instead of access to the full LAN like the VPN tunnel.



ActiveX clients are used when the remote user accesses the portal using the Internet Explorer browser. The Java client is used for other browsers like Mozilla Firefox, Netscape Navigator, Google Chrome, and Apple Safari.

## 7.1 Users, Groups, and Domains

*Advanced > Users > Users*

Authentication of the users (IPSec, SSL VPN, or GUI) is done by the router using either a local database on the router or external authentication servers (i.e. LDAP or RADIUS). The remote user must specify the user, group and domain when logging in to the router. One or more users are members of a Group. One or more Groups belong to an authentication Domain.

**Figure 55: Available Users with login status and associated Group/Domain**

DSR-1000N //		SETUP	ADVANCED	TOOLS	STATUS																									
<a href="#">Application Rules</a> ▾ <a href="#">Website Filter</a> ▾ <a href="#">Firewall Settings</a> ▾ <a href="#">Wireless Settings</a> ▾ <a href="#">Advanced Network</a> ▾ <a href="#">Routing</a> ▾ <a href="#">Certificates</a> <a href="#">Users</a> ▾ <a href="#">IP/MAC Binding</a> <a href="#">IPv6</a> ▾ <a href="#">Radius Settings</a> <a href="#">Power Saving</a>		<h3>USERS</h3> <p>This page shows a list of available users in the system. A user can add, delete and edit the users also. This page can also be used for setting policies on users.</p> <table border="1"> <thead> <tr> <th>User Name</th> <th>Group</th> <th>Type</th> <th>Authentication Domain</th> <th>Login Status</th> </tr> </thead> <tbody> <tr> <td>admin *</td> <td>SSLVPN</td> <td>Administrator</td> <td>Local User Database</td> <td>Enabled (LAN and WAN)</td> </tr> <tr> <td>guest *</td> <td>SSLVPN</td> <td>Guest</td> <td>Local User Database</td> <td>Disabled</td> </tr> <tr> <td>Engineering</td> <td>SSLVPN</td> <td>SSL VPN User</td> <td>Local User Database</td> <td>Enabled (LAN and WAN)</td> </tr> <tr> <td>sdg</td> <td>SSLVPN</td> <td>Local User</td> <td>Local User Database</td> <td>Enabled (LAN and WAN)</td> </tr> </tbody> </table> <p> <input type="button" value="Edit"/> <input type="button" value="Delete"/> <input type="button" value="Add"/>   <input type="button" value="Login Policies"/> <input type="button" value="Policies By Browsers"/> <input type="button" value="Policies By IP"/> </p>				User Name	Group	Type	Authentication Domain	Login Status	admin *	SSLVPN	Administrator	Local User Database	Enabled (LAN and WAN)	guest *	SSLVPN	Guest	Local User Database	Disabled	Engineering	SSLVPN	SSL VPN User	Local User Database	Enabled (LAN and WAN)	sdg	SSLVPN	Local User	Local User Database	Enabled (LAN and WAN)
User Name	Group	Type	Authentication Domain	Login Status																										
admin *	SSLVPN	Administrator	Local User Database	Enabled (LAN and WAN)																										
guest *	SSLVPN	Guest	Local User Database	Disabled																										
Engineering	SSLVPN	SSL VPN User	Local User Database	Enabled (LAN and WAN)																										
sdg	SSLVPN	Local User	Local User Database	Enabled (LAN and WAN)																										

#### *Advanced > Users > Domains*

The Domain determines the authentication method (local user database, external server) to be used when validating the remote user's connection. As well the Domain determines the portal layout presented to the remote SSL user. Since the portal layout assigns access to SSL VPN tunnel and/or SSL VPN Port Forwarding features, the domain is essential in defining the authentication and features exposed to SSL users.

#### *Advanced > Users > Groups*

Groups are used to assign access policies to a set of SSL users within a domain. Groups are domain subsets that can be seen as types of SSL users; some groups require access to all available network resources and some can be provided access to a select few. With groups, a very secure hierarchy of SSL VPN remote access can be created for all types of users with minimal number of policies to configure.

 You must create a Domain first, and then a new Group can be created and assigned to the Domain. The last step is to add specific SSL VPN users to an already-configured Group.

### 7.1.1 User Types and Passwords

#### *Advanced > Users > Users*

User level policies can be specified by browser, IP address of the host, and whether the user can login to the router's GUI in addition to the SSL VPN portal. The

following user types are assigned to a user that reaches the GUI login screen from the LAN or WAN:

- Administrator: This is the router's super-user, and can manage the router, use SSL VPN to access network resources, and login to L2TP/PPTP servers on the WAN. There will always be one default administrator user for the GUI.
- Guest (read only): The guest user gains read only access to the GUI to observe and review configuration settings. The guest does not have SSL VPN access.
- SSL VPN User: This user has access to the SSL VPN services as determined by the group policies and authentication domain of which it is a member. The domain-determined SSL VPN portal will be displayed when logging in with this user type.
- XAuth User: This user's authentication is performed by an externally configured RADIUS or other Enterprise server. It is not part of the local user database.
- L2TP User: These are L2TP VPN tunnel LAN users that can establish a tunnel with the L2TP server on the WAN.
- PPTP User: These are PPTP VPN tunnel LAN users that can establish a tunnel with the PPTP server on the WAN.
- Local User: This user's authentication domain is located on the router itself.

Once the user type is determined, you can define/modify the password and idle login timeout for the user. It is recommended that passwords contains no dictionary words from any language, and is a mixture of letters (both uppercase and lowercase), numbers, and symbols. The password can be up to 30 characters.

Figure 56: User configuration options

DSR-1000N //	SETUP	ADVANCED	TOOLS	STATUS																
<a href="#">Application Rules</a> ▾ <a href="#">Website Filter</a> ▾ <a href="#">Firewall Settings</a> ▾ <a href="#">Wireless Settings</a> ▾ <a href="#">Advanced Network</a> ▾ <a href="#">Routing</a> ▾ <a href="#">Certificates</a> <a href="#">Users</a> ▾ <a href="#">IP/MAC Binding</a> <a href="#">IPv6</a> ▾ <a href="#">Radius Settings</a> <a href="#">Power Saving</a>	<b>USERS CONFIGURATION</b> <div style="text-align: right;">LOGOUT</div> <p>This page allows a user to add new system users.</p> <div style="display: flex; justify-content: space-around;"> <input type="button" value="Save Settings"/> <input type="button" value="Don't Save Settings"/> </div> <hr/> <h3>Users Configuration</h3> <table> <tbody> <tr> <td><b>User Name:</b></td> <td><input type="text"/></td> </tr> <tr> <td><b>First Name:</b></td> <td><input type="text"/></td> </tr> <tr> <td><b>Last Name:</b></td> <td><input type="text"/></td> </tr> <tr> <td><b>User Type:</b></td> <td><input type="text" value="SSL VPN User"/></td> </tr> <tr> <td><b>Select Group:</b></td> <td><input type="text" value="SSLVPN"/></td> </tr> <tr> <td><b>Password:</b></td> <td><input type="text"/></td> </tr> <tr> <td><b>Confirm Password:</b></td> <td><input type="text"/></td> </tr> <tr> <td><b>Idle Timeout:</b></td> <td><input type="text"/> (Minutes)</td> </tr> </tbody> </table>				<b>User Name:</b>	<input type="text"/>	<b>First Name:</b>	<input type="text"/>	<b>Last Name:</b>	<input type="text"/>	<b>User Type:</b>	<input type="text" value="SSL VPN User"/>	<b>Select Group:</b>	<input type="text" value="SSLVPN"/>	<b>Password:</b>	<input type="text"/>	<b>Confirm Password:</b>	<input type="text"/>	<b>Idle Timeout:</b>	<input type="text"/> (Minutes)
<b>User Name:</b>	<input type="text"/>																			
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<b>Confirm Password:</b>	<input type="text"/>																			
<b>Idle Timeout:</b>	<input type="text"/> (Minutes)																			

## 7.2 Using SSL VPN Policies

### *Setup > VPN Settings > SSL VPN Server > SSL VPN Policies*

SSL VPN Policies can be created on a Global, Group, or User level. User level policies take precedence over Group level policies and Group level policies take precedence over Global policies. These policies can be applied to a specific network resource, IP address or ranges on the LAN, or to different SSL VPN services supported by the router. The List of Available Policies can be filtered based on whether it applies to a user, group, or all users (global).

- ☞ A more specific policy takes precedence over a generic policy when both are applied to the same user/group/global domain. I.e. a policy for a specific IP address takes precedence over a policy for a range of addresses containing the IP address already referenced.

**Figure 57: List of SSL VPN polices (Global filter)**

List of SSL VPN Policies				
	Name	Service	Destination	Permission
<input type="checkbox"/>	Port2525open	VPN Tunnel	0.0.0.0/2525-2525	Permit

To add a SSL VPN policy, you must first assign it to a user, group, or make it global (i.e. applicable to all SSL VPN users). If the policy is for a group, the available configured groups are shown in a drop down menu and one must be selected. Similarly, for a user defined policy a SSL VPN user must be chosen from the available list of configured users.

The next step is to define the policy details. The policy name is a unique identifier for this rule. The policy can be assigned to a specific Network Resource (details follow in the subsequent section), IP address, IP network, or all devices on the LAN of the router. Based on the selection of one of these four options, the appropriate configuration fields are required (i.e. choosing the network resources from a list of defined resources, or defining the IP addresses). For applying the policy to addresses the port range/port number can be defined.

The final steps require the policy permission to be set to either permit or deny access to the selected addresses or network resources. As well the policy can be specified for one or all of the supported SSL VPN services (i.e. VPN tunnel)

Once defined, the policy goes into effect immediately. The policy name, SSL service it applies to, destination (network resource or IP addresses) and permission (deny/permit) is outlined in a list of configured policies for the router.

**Figure 58: SSL VPN policy configuration**

DSR-1000N ///	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #333; color: white; text-align: center; padding: 2px;">SETUP</th> <th style="background-color: #333; color: white; text-align: center; padding: 2px;">ADVANCED</th> <th style="background-color: #333; color: white; text-align: center; padding: 2px;">TOOLS</th> <th style="background-color: #333; color: white; text-align: center; padding: 2px;">STATUS</th> </tr> </thead> <tbody> <tr> <td colspan="4" style="padding: 10px;"> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <b>SSL VPN POLICY CONFIGURATION</b> <span style="float: right;">LOGOUT</span> <p>This page allows you to add a new SSL VPN Policy or edit the configuration of an existing SSL VPN Policy.</p> <p style="text-align: center;"><input type="button" value="Save Settings"/> <input type="button" value="Don't Save Settings"/></p> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <b>Policy For</b> <p><b>Policy For:</b> <input type="button" value="Global"/></p> <p><b>Available Groups:</b> <input type="button"/></p> <p><b>Available Users:</b> <input type="button"/></p> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <b>SSL VPN Policy</b> <p><b>Apply Policy to:</b> <input type="button" value="Network Resource"/></p> <p><b>Policy Name:</b> <input type="text"/></p> <p><b>IP Address:</b> <input type="text"/></p> <p><b>Mask Length:</b> <input type="text"/></p> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <b>Port Range / Port Number</b> <p><b>Begin:</b> <input type="text"/></p> <p><b>End:</b> <input type="text"/></p> <p><b>Service:</b> <input type="button" value="VPN Tunnel"/></p> <p><b>Defined Resources:</b> <input type="button" value="DocServer"/></p> <p><b>Permission:</b> <input type="button" value="Permit"/></p> </div> </td> </tr> </tbody> </table>	SETUP	ADVANCED	TOOLS	STATUS	<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <b>SSL VPN POLICY CONFIGURATION</b> <span style="float: right;">LOGOUT</span> <p>This page allows you to add a new SSL VPN Policy or edit the configuration of an existing SSL VPN Policy.</p> <p style="text-align: center;"><input type="button" value="Save Settings"/> <input type="button" value="Don't Save Settings"/></p> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <b>Policy For</b> <p><b>Policy For:</b> <input type="button" value="Global"/></p> <p><b>Available Groups:</b> <input type="button"/></p> <p><b>Available Users:</b> <input type="button"/></p> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <b>SSL VPN Policy</b> <p><b>Apply Policy to:</b> <input type="button" value="Network Resource"/></p> <p><b>Policy Name:</b> <input type="text"/></p> <p><b>IP Address:</b> <input type="text"/></p> <p><b>Mask Length:</b> <input type="text"/></p> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <b>Port Range / Port Number</b> <p><b>Begin:</b> <input type="text"/></p> <p><b>End:</b> <input type="text"/></p> <p><b>Service:</b> <input type="button" value="VPN Tunnel"/></p> <p><b>Defined Resources:</b> <input type="button" value="DocServer"/></p> <p><b>Permission:</b> <input type="button" value="Permit"/></p> </div>			
SETUP	ADVANCED	TOOLS	STATUS						
<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <b>SSL VPN POLICY CONFIGURATION</b> <span style="float: right;">LOGOUT</span> <p>This page allows you to add a new SSL VPN Policy or edit the configuration of an existing SSL VPN Policy.</p> <p style="text-align: center;"><input type="button" value="Save Settings"/> <input type="button" value="Don't Save Settings"/></p> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <b>Policy For</b> <p><b>Policy For:</b> <input type="button" value="Global"/></p> <p><b>Available Groups:</b> <input type="button"/></p> <p><b>Available Users:</b> <input type="button"/></p> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <b>SSL VPN Policy</b> <p><b>Apply Policy to:</b> <input type="button" value="Network Resource"/></p> <p><b>Policy Name:</b> <input type="text"/></p> <p><b>IP Address:</b> <input type="text"/></p> <p><b>Mask Length:</b> <input type="text"/></p> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <b>Port Range / Port Number</b> <p><b>Begin:</b> <input type="text"/></p> <p><b>End:</b> <input type="text"/></p> <p><b>Service:</b> <input type="button" value="VPN Tunnel"/></p> <p><b>Defined Resources:</b> <input type="button" value="DocServer"/></p> <p><b>Permission:</b> <input type="button" value="Permit"/></p> </div>									

## 7.2.1 Using Network Resources

### *Setup > VPN Settings > SSL VPN Server > Resources*

Network resources are services or groups of LAN IP addresses that are used to easily create and configure SSL VPN policies. This shortcut saves time when creating similar policies for multiple remote SSL VPN users.

Adding a Network Resource involves creating a unique name to identify the resource and assigning it to one or all of the supported SSL services. Once this is done, editing one of the created network resources allows you to configure the object type (either IP address or IP range) associated with the service. The Network Address, Mask Length, and Port Range/Port Number can all be defined for this resource as required.

**Figure 59: List of configured resources, which are available to assign to SSL VPN policies**

DSR-1000N //		SETUP	ADVANCED	TOOLS	STATUS
Wizard	▶				
Internet Settings	▶				
Wireless Settings	▶				
Network Settings	▶				
DMZ Setup	▶				
VPN Settings	▶				
USB Settings					
VLAN Settings	▶				

RESOURCES			LOGOUT
You can configure resources to use when configuring SSL VPN policies. Resources are groups of host names, IP addresses, or IP networks. The table lists the resources that have been added and allows several operations on the resources.			
List of Resources			
	Resource Name	Service	
<input type="checkbox"/>	DocServer	VPN Tunnel	
			<a href="#">Delete</a> <a href="#">Configure</a> <a href="#">Add</a>

## 7.3 Application Port Forwarding

### *Setup > VPN Settings > SSL VPN Server > Port Forwarding*

Port forwarding allows remote SSL users to access specified network applications or services after they login to the User Portal and launch the Port Forwarding service. Traffic from the remote user to the router is detected and re-routed based on configured port forwarding rules.

Internal host servers or TCP applications must be specified as being made accessible to remote users. Allowing access to a LAN server requires entering the local server IP address and TCP port number of the application to be tunneled. The table below lists some common applications and corresponding TCP port numbers:

TCP Application	Port Number
FTP Data (usually not needed)	20
FTP Control Protocol	21
SSH	22
Telnet	23
SMTP (send mail)	25
HTTP (web)	80
POP3 (receive mail)	110
NTP (network time protocol)	123
Citrix	1494
Terminal Services	3389
VNC (virtual network computing)	5900 or 5800

As a convenience for remote users, the hostname (FQDN) of the network server can be configured to allow for IP address resolution. This host name resolution provides

users with easy-to-remember FQDN's to access TCP applications instead of error-prone IP addresses when using the Port Forwarding service through the SSL User Portal.

- ☞ Defining the hostname is optional as minimum requirement for port forwarding is identifying the TCP application and local server IP address. The local server IP address of the configured hostname must match the IP address of the configured application for port forwarding.

**Figure 60: List of Available Applications for SSL Port Forwarding**

List of Configured Applications for Port Forwarding		
	Local Server IP Address	TCP Port Number
<input type="checkbox"/>	97.0.0.64	125

List of Configured Host Names for Port Forwarding		
	Local Server IP Address	Fully Qualified Domain Name
<input type="checkbox"/>	192.168.15.25	test

## 7.4 SSL VPN Client Configuration

### *Setup > VPN Settings > SSL VPN Client > SSL VPN Client*

An SSL VPN tunnel client provides a point-to-point connection between the browser-side machine and this router. When a SSL VPN client is launched from the user portal, a "network adapter" with an IP address from the corporate subnet, DNS and WINS settings is automatically created. This allows local applications to access services on the private network without any special network configuration on the remote SSL VPN client machine.

It is important to ensure that the virtual (PPP) interface address of the VPN tunnel client does not conflict with physical devices on the LAN. The IP address range for the SSL VPN virtual network adapter should be either in a different subnet or non-overlapping range as the corporate LAN.

 The IP addresses of the client's network interfaces (Ethernet, Wireless, etc.) cannot be identical to the router's IP address or a server on the corporate LAN that is being accessed through the SSL VPN tunnel.

**Figure 61: SSL VPN client adapter and access configuration**

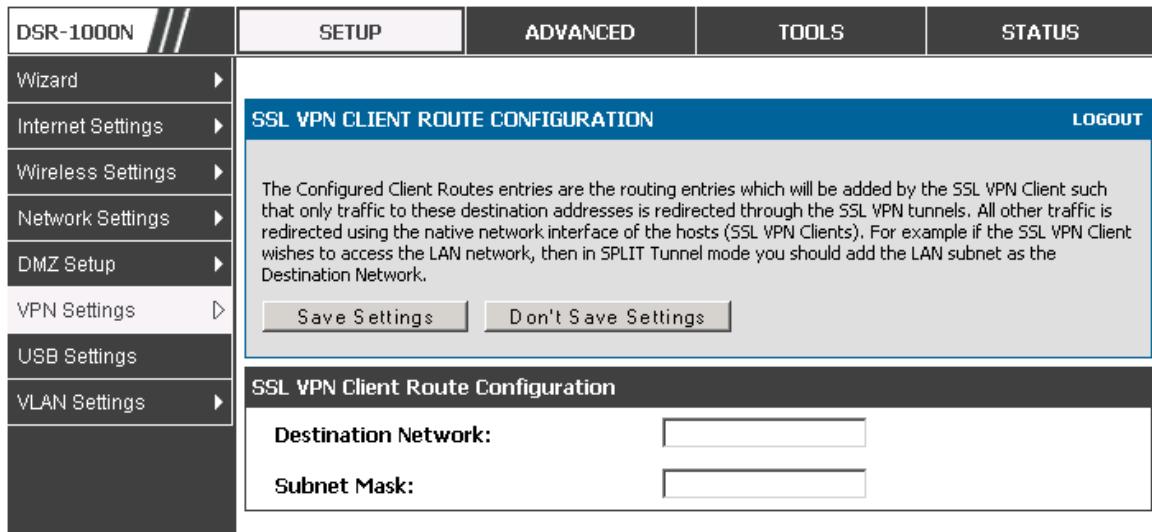
DSR-1000N //	SETUP	ADVANCED	TOOLS	STATUS
<a href="#">WWizard</a> ▶ <a href="#">Internet Settings</a> ▶ <a href="#">Wireless Settings</a> ▶ <a href="#">Network Settings</a> ▶ <a href="#">DMZ Setup</a> ▶ <a href="#">VPN Settings</a> ▶ <a href="#">USB Settings</a> <a href="#">VLAN Settings</a> ▶	<b>SSL VPN CLIENT</b> <a href="#">LOGOUT</a> <p>An SSL VPN tunnel client provides a point-to-point connection between the browser-side machine and this device. When a SSL VPN client is launched from the user portal, a "network adapter" with an IP address, DNS and WINS settings is automatically created, which allows local applications to talk to services on the private network without any special network configuration on the remote SSL VPN client machine.</p> <p><a href="#">Save Settings</a> <a href="#">Don't Save Settings</a></p> <hr/> <p><b>Client IP Address Range</b></p> <p><b>Enable Split Tunnel Support:</b> <input type="checkbox"/></p> <p><b>DNS Suffix (Optional) :</b> <input type="text"/></p> <p><b>Primary DNS Server (Optional) :</b> <input type="text"/></p> <p><b>Secondary DNS Server (Optional) :</b> <input type="text"/></p> <p><b>Client Address Range Begin:</b> <input type="text" value="192.168.251.1"/></p> <p><b>Client Address Range End:</b> <input type="text" value="192.168.251.254"/></p> <p><b>LCP Timeout:</b> <input type="text" value="60"/> (Seconds)</p>			

The router allows full tunnel and split tunnel support. Full tunnel mode just sends all traffic from the client across the VPN tunnel to the router. Split tunnel mode only sends traffic to the private LAN based on pre-specified client routes. These client routes give the SSL client access to specific private networks, thereby allowing access control over specific LAN services.

#### ***Setup > VPN Settings > SSL VPN Client > Configured Client Routes***

If the SSL VPN client is assigned an IP address in a different subnet than the corporate network, a client route must be added to allow access to the private LAN through the VPN tunnel. As well a static route on the private LAN's firewall (typically this router) is needed to forward private traffic through the VPN Firewall to the remote SSL VPN client.

**Figure 62: Configured client routes only apply in split tunnel mode**

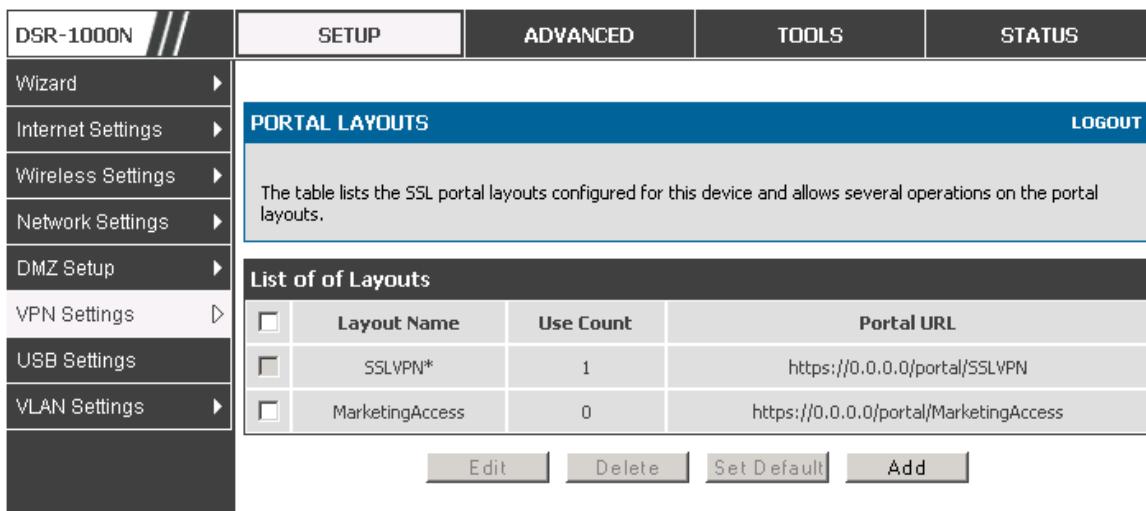


## 7.5 User Portal

*Setup > VPN Settings > SSL VPN Client > SSL VPN Client Portal*

When remote users want to access the private network through an SSL tunnel (either using the Port Forwarding or VPN tunnel service), they login through a user portal. This portal provides the authentication fields to provide the appropriate access levels and privileges as determined by the router administrator. The domain where the user account is stored must be specified, and the domain determines the authentication method and portal layout screen presented to the remote user.

**Figure 63: List of configured SSL VPN portals. The configured portal can then be associated with an authentication domain**



## 7.5.1 Creating Portal Layouts

### *Setup > VPN Settings > SSL VPN Server > Portal Layouts*

The router allows you to create a custom page for remote SSL VPN users that is presented upon authentication. There are various fields in the portal that are customizable for the domain, and this allows the router administrator to communicate details such as login instructions, available services, and other usage details in the portal visible to remote users. During domain setup, configured portal layouts are available to select for all users authenticated by the domain.

 The default portal LAN IP address is <https://192.168.10.1/scgi-bin/userPortal/portal>. This is the same page that opens when the “User Portal” link is clicked on the SSL VPN menu of the router GUI.

The router administrator creates and edits portal layouts from the configuration pages in the SSL VPN menu. The portal name, title, banner name, and banner contents are all customizable to the intended users for this portal. The portal name is appended to the SSL VPN portal URL. As well, the users assigned to this portal (through their authentication domain) can be presented with one or more of the router’s supported SSL services such as the VPN Tunnel page or Port Forwarding page.

**Figure 64: SSL VPN Portal configuration**

DSR-1000N //	<b>SETUP</b>	<b>ADVANCED</b>	<b>TOOLS</b>	<b>STATUS</b>
<ul style="list-style-type: none"><li>Wizard ▶</li><li>Internet Settings ▶</li><li>Wireless Settings ▶</li><li>Network Settings ▶</li><li>DMZ Setup ▶</li><li>VPN Settings ▶</li><li>USB Settings</li><li>VLAN Settings ▶</li></ul>	<div style="background-color: #e0f2e0; border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"><b>PORTRAL LAYOUT CONFIGURATION</b> <span style="float: right;">LOGOUT</span><p>This page allows you to add a new portal layout or edit the configuration of an existing portal layout. The details will then be displayed in the List of Portal Layouts table on the SSL VPN Server &gt; Portal Layouts page under the VPN menu.</p><p style="text-align: center;"><input type="button" value="Save Settings"/> <input type="button" value="Don't Save Settings"/></p></div> <div style="background-color: #e0f2e0; border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"><b>Portal Layout and Theme Name</b><p><b>Portal Layout Name:</b> <input type="text"/></p><p><b>Portal Site Title (Optional) :</b> <input type="text"/></p><p><b>Banner Title (Optional) :</b> <input type="text"/></p><p><b>Banner Message (Optional) :</b> <input type="text"/></p><p><b>Display banner message on login page:</b> <input type="checkbox"/></p><p><b>HTTP meta tags for cache control (recommended):</b> <input type="checkbox"/></p><p><b>ActiveX web cache cleaner:</b> <input type="checkbox"/></p></div> <div style="background-color: #e0f2e0; border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"><b>SSL VPN Portal Pages to Display</b><p><b>VPN Tunnel page:</b> <input checked="" type="checkbox"/></p><p><b>Port Forwarding:</b> <input type="checkbox"/></p></div>			

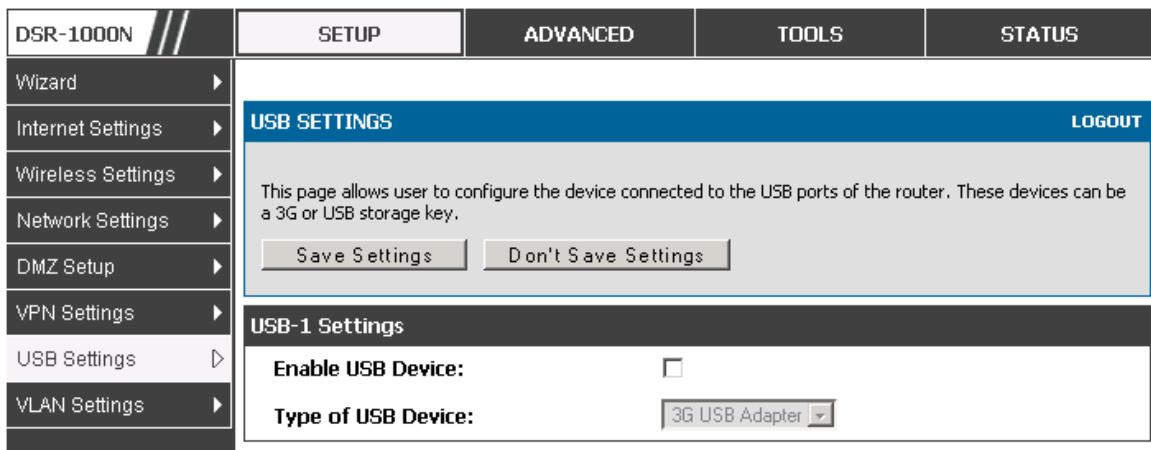
# Chapter 8. Advanced Configuration Tools

## 8.1 USB Device Setup

### *Setup > USB Settings*

There are two USB ports on the DSR Unified Services Router. The port supports a 3G modem where the USB dongle is used as a secondary WAN interface. Additionally, the port can be used for a USB storage device if USB Disc is type is selected. This storage can be accessed by LAN devices if appropriate policies are configured.

**Figure 65: USB device configuration**



## 8.2 Authentication Certificates

### *Advanced > Certificates*

This gateway uses digital certificates for IPSec VPN authentication as well as SSL validation (for HTTPS and SSL VPN authentication). You can obtain a digital certificate from a well known Certificate Authority (CA) such as VeriSign, or generate and sign your own certificate using functionality available on this gateway. The gateway comes with a self-signed certificate, and this can be replaced by one signed by a CA as per your networking requirements. A CA certificate provides strong assurance of the server's identity and is a requirement for most corporate network VPN solutions.

The certificates menu allows you to view a list of certificates (both from a CA and self-signed) currently loaded on the gateway. The following certificate data is displayed in the list of Trusted (CA) certificates:

CA Identity (Subject Name): The certificate is issued to this person or organization

Issuer Name: This is the CA name that issued this certificate

Expiry Time: The date after which this Trusted certificate becomes invalid

A self certificate is a certificate issued by a CA identifying your device (or self-signed if you don't want the identity protection of a CA). The Active Self Certificate table lists the self certificates currently loaded on the gateway. The following information is displayed for each uploaded self certificate:

Name: The name you use to identify this certificate, it is not displayed to IPSec VPN peers or SSL users.

Subject Name: This is the name that will be displayed as the owner of this certificate. This should be your official registered or company name, as IPSec or SSL VPN peers are shown this field.

Serial Number: The serial number is maintained by the CA and used to identify this signed certificate.

Issuer Name: This is the CA name that issued (signed) this certificate

Expiry Time: The date after which this signed certificate becomes invalid – you should renew the certificate before it expires.

To request a self certificate to be signed by a CA, you can generate a Certificate Signing Request from the gateway by entering identification parameters and passing it along to the CA for signing. Once signed, the CA's Trusted Certificate and signed certificate from the CA are uploaded to activate the self-certificate validating the identity of this gateway. The self certificate is then used in IPSec and SSL connections with peers to validate the gateway's authenticity.

**Figure 66: Certificate summary for IPSec and HTTPS management**

DSR-1000N //		SETUP	ADVANCED	TOOLS	STATUS																																
<a href="#">Application Rules</a> ▶ <a href="#">Website Filter</a> ▶ <a href="#">Firewall Settings</a> ▶ <a href="#">Wireless Settings</a> ▶ <a href="#">Advanced Network</a> ▶ <a href="#">Routing</a> ▶ <a href="#">Certificates</a> <a href="#">Users</a> ▶ <a href="#">IP/MAC Binding</a> <a href="#">IPv6</a> ▶ <a href="#">Radius Settings</a> <a href="#">Power Saving</a>		<h3>CERTIFICATES</h3> <p>Digital Certificates (also known as X509 Certificates) are used to authenticate the identity of users and systems, and are issued by Certification Authorities (CA) such as VeriSign, Thawte and other organizations. Digital Certificates are used by this router during the Internet Key Exchange (IKE) authentication phase to authenticate connecting VPN gateways or clients, or to be authenticated by remote entities.</p> <h4>Trusted Certificates (CA Certificate)</h4> <table border="1"> <thead> <tr> <th><input type="checkbox"/></th> <th>CA Identity (Subject Name)</th> <th>Issuer Name</th> <th>Expiry Time</th> </tr> </thead> <tbody> <tr> <td><input type="button" value="Upload"/></td> <td><input type="button" value="Delete"/></td> <td></td> <td></td> </tr> </tbody> </table> <h4>Active Self Certificates</h4> <table border="1"> <thead> <tr> <th><input type="checkbox"/></th> <th>Name</th> <th>Subject Name</th> <th>Serial Number</th> <th>Issuer Name</th> <th>Expiry Time</th> </tr> </thead> <tbody> <tr> <td><input type="button" value="Upload"/></td> <td><input type="button" value="Delete"/></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <h4>Self Certificate Requests</h4> <table border="1"> <thead> <tr> <th><input type="checkbox"/></th> <th>Name</th> <th>Status</th> <th>Action</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/></td> <td>Router_1</td> <td>Active Self Certificate Not Uploaded</td> <td><input type="button" value="View"/></td> </tr> <tr> <td></td> <td><input type="button" value="New Self Certificate"/></td> <td><input type="button" value="Delete"/></td> <td></td> </tr> </tbody> </table>				<input type="checkbox"/>	CA Identity (Subject Name)	Issuer Name	Expiry Time	<input type="button" value="Upload"/>	<input type="button" value="Delete"/>			<input type="checkbox"/>	Name	Subject Name	Serial Number	Issuer Name	Expiry Time	<input type="button" value="Upload"/>	<input type="button" value="Delete"/>					<input type="checkbox"/>	Name	Status	Action	<input type="checkbox"/>	Router_1	Active Self Certificate Not Uploaded	<input type="button" value="View"/>		<input type="button" value="New Self Certificate"/>	<input type="button" value="Delete"/>	
<input type="checkbox"/>	CA Identity (Subject Name)	Issuer Name	Expiry Time																																		
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	<input type="button" value="New Self Certificate"/>	<input type="button" value="Delete"/>																																			

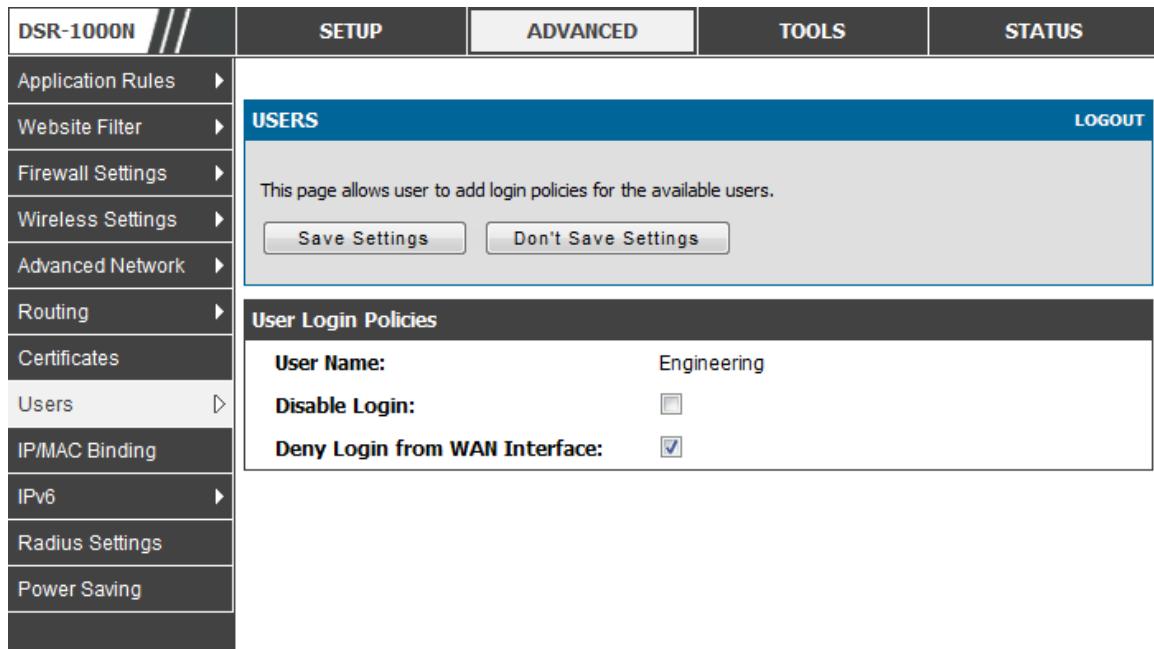
# Chapter 9. Administration & Management

## 9.1 Configuration Access Control

The primary means to configure this gateway via the browser-independent GUI. The GUI can be accessed from LAN node by using the gateway's LAN IP address and HTTP, or from the WAN by using the gateway's WAN IP address and HTTPS (HTTP over SSL).

Administrator and Guest users are permitted to login to the router's management interface. The user type is set in the **Advanced > Users > Users** page. The Admin or Guest user can be configured to access the router GUI from the LAN or the Internet (WAN) by enabling the corresponding Login Policy.

**Figure 67: User Login policy configuration**



### 9.1.1 Remote Management

Both HTTPS and telnet access can be restricted to a subset of IP addresses. The router administrator can define a known PC, single IP address or range of IP addresses that are allowed to access the GUI with HTTPS. The opened port for SSL traffic can be changed from the default of 443 at the same time as defining the allowed remote management IP address range.

**Figure 68: Remote Management from the WAN**

DSR-1000N //	SETUP	ADVANCED	TOOLS	STATUS												
Admin ▶ Date and Time Log Settings ▶ System Firmware Firmware via USB Dynamic DNS System Check Schedules	<div style="background-color: #0070C0; color: white; padding: 5px; text-align: center;"> <b>REMOTE MANAGEMENT</b> <span style="float: right;">LOGOUT</span> </div> <p>From this page a user can configure the remote management feature. This feature can be used to manage the box remotely from WAN side.</p> <div style="text-align: center; margin-top: 10px;"> <input type="button" value="Save Settings"/> <input type="button" value="Don't Save Settings"/> </div> <div style="background-color: #0070C0; color: white; padding: 5px; text-align: center; margin-top: 10px;"> <b>Remote Management Enable</b> </div> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; vertical-align: top;"> <b>Enable Remote Management:</b> </td> <td style="width: 70%; text-align: right;"> <input checked="" type="checkbox"/> </td> </tr> <tr> <td> <b>Access Type:</b> </td> <td style="text-align: right;"> <input type="button" value="All IP Addresses"/> </td> </tr> <tr> <td> <b>From:</b> </td> <td style="text-align: right;"> <input type="text"/> </td> </tr> <tr> <td> <b>To:</b> </td> <td style="text-align: right;"> <input type="text"/> </td> </tr> <tr> <td> <b>IP Address:</b> </td> <td style="text-align: right;"> <input type="text"/> </td> </tr> <tr> <td> <b>Port Number:</b> </td> <td style="text-align: right;"> <input type="text" value="662"/> </td> </tr> </table>				<b>Enable Remote Management:</b>	<input checked="" type="checkbox"/>	<b>Access Type:</b>	<input type="button" value="All IP Addresses"/>	<b>From:</b>	<input type="text"/>	<b>To:</b>	<input type="text"/>	<b>IP Address:</b>	<input type="text"/>	<b>Port Number:</b>	<input type="text" value="662"/>
<b>Enable Remote Management:</b>	<input checked="" type="checkbox"/>															
<b>Access Type:</b>	<input type="button" value="All IP Addresses"/>															
<b>From:</b>	<input type="text"/>															
<b>To:</b>	<input type="text"/>															
<b>IP Address:</b>	<input type="text"/>															
<b>Port Number:</b>	<input type="text" value="662"/>															

## 9.1.2 CLI Access

In addition to the web-based GUI, the gateway supports SSH and Telnet management for command-line interaction. The CLI login credentials are shared with the GUI for administrator users. To access the CLI, type “cli” in the SSH or console prompt and login with administrator user credentials.

## 9.2 SNMP Configuration

### *Tools > Admin > SNMP*

SNMP is an additional management tool that is useful when multiple routers in a network are being managed by a central Master system. When an external SNMP manager is provided with this router’s Management Information Base (MIB) file, the manager can update the router’s hierachal variables to view or update configuration parameters. The router as a managed device has an SNMP agent that allows the MIB configuration variables to be accessed by the Master (the SNMP manager). The Access Control List on the router identifies managers in the network that have read-only or read-write SNMP credentials. The Traps List outlines the port over which notifications from this router are provided to the SNMP community (managers) and also the SNMP version (v1, v2c, v3) for the trap.

**Figure 69: SNMP Users, Traps, and Access Control**

Name	Privilege	Security level
dlink	RWUSER	NoAuthNoPriv
guest	ROUSER	NoAuthNoPriv

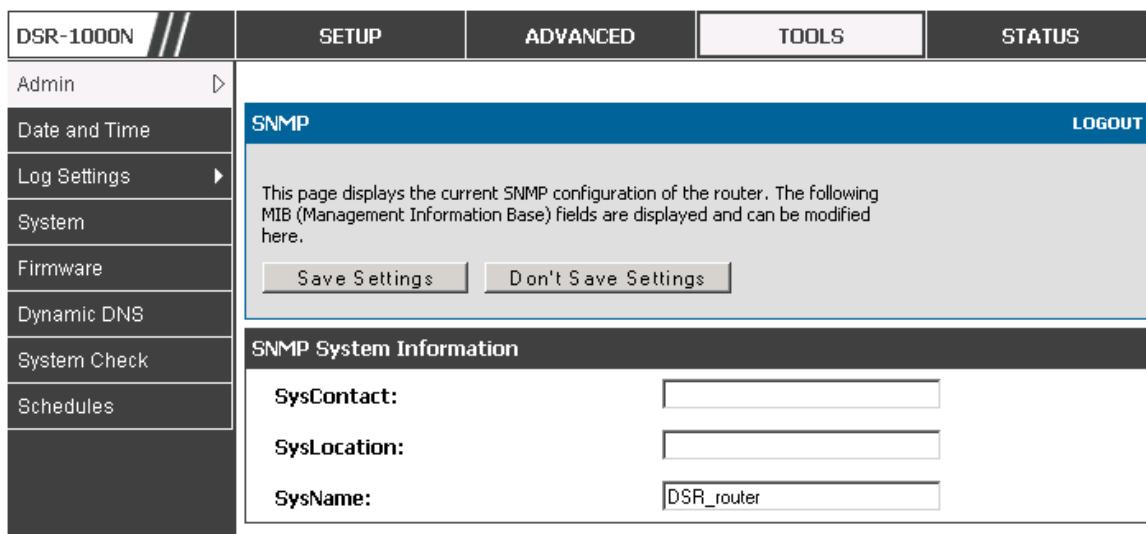
IP Address	Port	Community	SNMP Version

IP Address	Subnet Mask	Community	Access Type

***Tools > Admin > SNMP System Info***

The router is identified by an SNMP manager via the System Information. The identifier settings The SysName set here is also used to identify the router for SysLog logging.

**Figure 70: SNMP system information for this router**

## 9.3 Configuring Time Zone and NTP

### *Tools > Date and Time*

You can configure your time zone, whether or not to adjust for Daylight Savings Time, and with which Network Time Protocol (NTP) server to synchronize the date and time. You can choose to set Date and Time manually, which will store the information on the router's real time clock (RTC). If the router has access to the internet, the most accurate mechanism to set the router time is to enable NTP server communication.

Accurate date and time on the router is critical for firewall schedules, Wi-Fi power saving support to disable APs at certain times of the day, and accurate logging.

Please follow the steps below to configure the NTP server:

1. Select the router's time zone, relative to Greenwich Mean Time (GMT).
2. If supported for your region, click to Enable Daylight Savings.
3. Determine whether to use default or custom Network Time Protocol (NTP) servers. If custom, enter the server addresses or FQDN.

**Figure 71: Date, Time, and NTP server setup**

The screenshot shows the router's configuration interface with a sidebar menu and several configuration tabs.

- DSR-1000N //** (Router Model)
- SETUP** (Active tab)
- ADVANCED**
- TOOLS**
- STATUS**

**Admin** (dropdown menu)

- Date and Time
- Log Settings
- System
- Firmware
- Dynamic DNS
- System Check
- Schedules

**DATE AND TIME** (Section)

This page allows us to set the date, time and NTP servers. Network Time Protocol (NTP) is a protocol that is used to synchronize computer clock time in a network of computers. Accurate time across a network is important for many reasons.

**LOGOUT**

**Save Settings** | **Don't Save Settings**

**Date and Time** (Section)

**Current Router Time:** Mon Feb 1 14:44:03 GMT 2010

**Time Zone:** (GMT-08:00) Pacific Time (US and Canada)

**Enable Daylight Saving:**

**Configure NTP Servers:**

**Set Date and Time Manually:**

**NTP Servers Configuration** (Section)

**Default NTP Server:**

**Custom NTP Server:**

**Primary NTP Server:** 0.us.pool.ntp.org

**Secondary NTP Server:** 1.us.pool.ntp.org

**Set Date And Time** (Section)

Year Month Day Hours Min Sec  
 /  /  -  :  :

## 9.4 Log Configuration

This router allows you to capture log messages for traffic through the firewall, VPN, and over the wireless AP. As an administrator you can monitor the type of traffic that goes through the router and also be notified of potential attacks or errors when they are detected by the router. The following sections describe the log configuration settings and the ways you can access these logs.

### 9.4.1 Defining What to Log

#### *Tools > Log Settings > Logs Facility*

The Logs Facility page allows you to determine the granularity of logs to receive from the router. There are three core components of the router, referred to as Facilities:

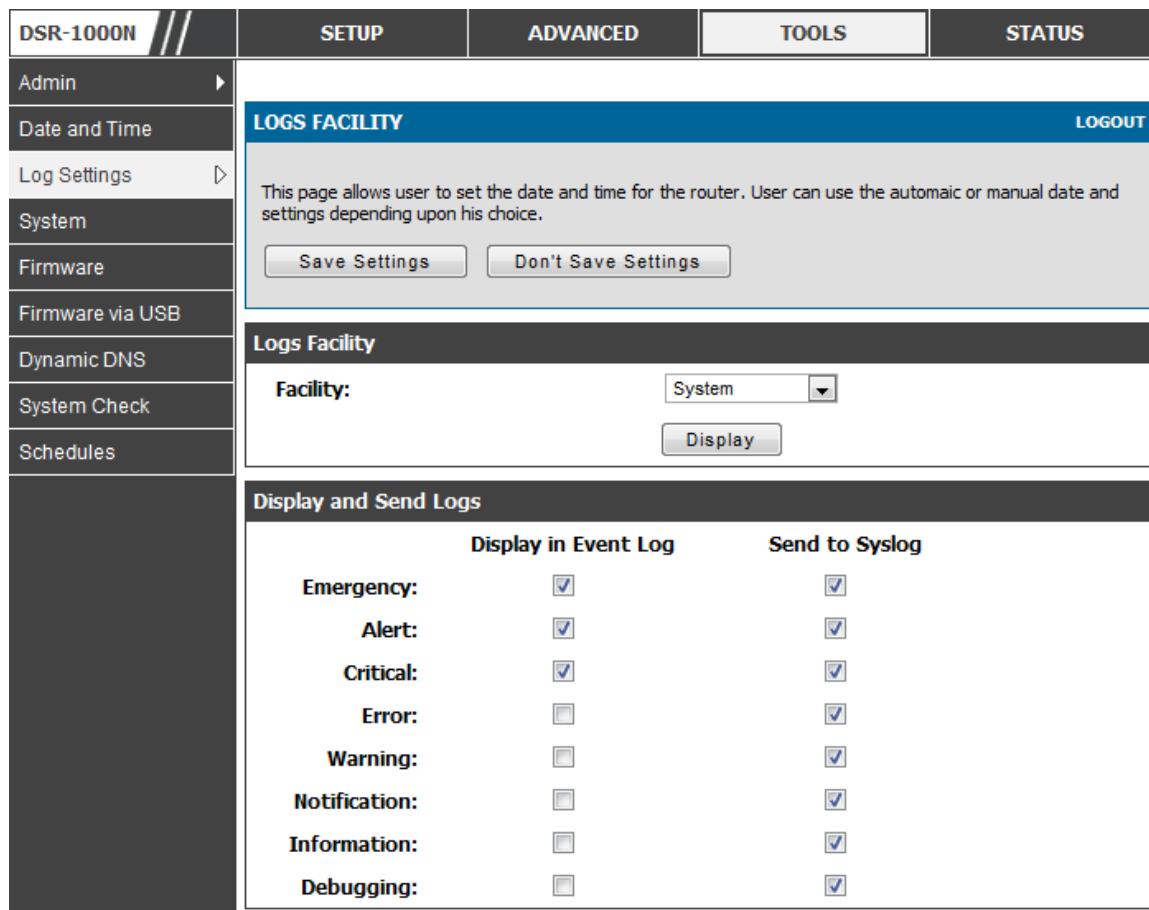
- Kernel: This refers to the Linux kernel. Log messages that correspond to this facility would correspond to traffic through the firewall or network stack.

- System: This refers to application and management level features available on this router, including SSL VPN and administrator changes for managing the unit.
- Wireless: This facility corresponds to the 802.11 driver used for providing AP functionality to your network.

For each facility, the following events (in order of severity) can be logged: Emergency, Alert, Critical, Error, Warning, Notification, Information, Debugging. When a particular severity level is selected, all events with severity equal to and greater than the chosen severity are captured. For example if you have configured CRITICAL level logging for the Wireless facility, then 802.11 logs with severities CRITICAL, ALERT, and EMERGENCY are logged. The severity levels available for logging are:

- EMERGENCY: system is unusable
- ALERT: action must be taken immediately
- CRITICAL: critical conditions
- ERROR: error conditions
- WARNING: warning conditions
- NOTIFICATION: normal but significant condition
- INFORMATION: informational
- DEBUGGING: debug-level messages

**Figure 72: Facility settings for Logging**



The display for logging can be customized based on where the logs are sent, either the Event Log viewer in the GUI (the Event Log viewer is in the **Status > Logs** page) or a remote Syslog server for later review. E-mail logs, discussed in a subsequent section, follow the same configuration as logs configured for a Syslog server.

#### **Tools > Log Settings > Logs Configuration**

This page allows you to determine the type of traffic through the router that is logged for display in Syslog, E-mailed logs, or the Event Viewer. Denial of service attacks, general attack information, login attempts, dropped packets, and similar events can be captured for review by the IT administrator.

Traffic through each network segment (LAN, WAN, DMZ) can be tracked based on whether the packet was accepted or dropped by the firewall.

Accepted Packets are those that were successfully transferred through the corresponding network segment (i.e. LAN to WAN). This option is particularly useful when the Default Outbound Policy is “Block Always” so the IT admin can monitor traffic that is passed through the firewall.

- Example: If Accept Packets from LAN to WAN is enabled and there is a firewall rule to allow SSH traffic from LAN, then whenever a LAN machine tries to make an SSH connection, those packets will be accepted and a message will be logged. (Assuming the log option is set to Allow for the SSH firewall rule.)

Dropped Packets are packets that were intentionally blocked from being transferred through the corresponding network segment. This option is useful when the Default Outbound Policy is “Allow Always”.

- Example: If Drop Packets from LAN to WAN is enabled and there is a firewall rule to block ssh traffic from LAN, then whenever a LAN machine tries to make an ssh connection, those packets will be dropped and a message will be logged. (Make sure the log option is set to allow for this firewall rule.)

 Enabling accepted packet logging through the firewall may generate a significant volume of log messages depending on the typical network traffic. This is recommended for debugging purposes only.

In addition to network segment logging, unicast and multicast traffic can be logged. Unicast packets have a single destination on the network, whereas broadcast (or multicast) packets are sent to all possible destinations simultaneously. One other useful log control is to log packets that are dropped due to configured bandwidth profiles over a particular interface. This data will indicate to the admin whether the bandwidth profile has to be modified to account for the desired internet traffic of LAN users.

**Figure 73: Log configuration options for traffic through router**

DSR-1000N //	SETUP	ADVANCED	TOOLS	STATUS
Admin				
Date and Time				
Log Settings				
System				
Firmware				
Firmware via USB				
Dynamic DNS				
System Check				
Schedules				

LOGS CONFIGURATION		
		LOGOUT
This page allows user to configure system wide log settings.		
<input type="button" value="Save Settings"/>	<input type="button" value="Don't Save Settings"/>	

ROUTING LOGS		
	Accepted Packets	Dropped Packets
LAN to WAN:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
WAN to LAN:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
WAN to DMZ:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DMZ to WAN:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
LAN to DMZ:	<input type="checkbox"/>	<input checked="" type="checkbox"/>
DMZ to LAN:	<input type="checkbox"/>	<input checked="" type="checkbox"/>

SYSTEM LOGS		
All Unicast Traffic:	<input checked="" type="checkbox"/>	
All Broadcast / Multicast Traffic:	<input checked="" type="checkbox"/>	

OTHER EVENTS LOGS		
Bandwidth Limit:	<input checked="" type="checkbox"/>	

## 9.4.2 Sending Logs to E-mail or Syslog

### *Tools > Log Settings > Remote Logging*

Once you have configured the type of logs that you want the router to collect, they can be sent to either a Syslog server or an E-Mail address. For remote logging a key configuration field is the Remote Log Identifier. Every logged message will contain the configured prefix of the Remote Log Identifier, so that syslog servers or email addresses that receive logs from more than one router can sort for the relevant device's logs.

Once you enable the option to e-mail logs, enter the e-mail server's address (IP address or FQDN) of the SMTP server. The router will connect to this server when sending e-mails out to the configured addresses. The SMPT port and return e-mail addresses are required fields to allow the router to package the logs and send a valid e-mail that is accepted by one of the configured "send-to" addresses. Up to three e-mail addresses can be configured as log recipients.

In order to establish a connection with the configured SMPT port and server, define the server's authentication requirements. The router supports Login Plain (no encryption) or CRAM-MD5 (encrypted) for the username and password data to be sent to the SMPT server. Authentication can be disabled if the server does not have

this requirement. In some cases the SMTP server may send out IDENT requests, and this router can have this response option enabled as needed.

Once the e-mail server and recipient details are defined you can determine when the router should send out logs. E-mail logs can be sent out based on a defined schedule by first choosing the unit (i.e. the frequency) of sending logs: Hourly, Daily, or Weekly. Selecting Never will disable log e-mails but will preserve the e-mail server settings.

**Figure 74: E-mail configuration as a Remote Logging option**

DSR-1000N //	SETUP	ADVANCED	TOOLS	STATUS
Admin Date and Time Log Settings ▶ System Firmware Firmware via USB Dynamic DNS System Check Schedules	<div style="background-color: #0070C0; color: white; padding: 5px; text-align: center;"> <b>REMOTE LOGGING CONFIGURATION</b> </div> <div style="background-color: #F0F0F0; padding: 10px; margin-top: -1px;"> <p>This page allows user to configure the remote logging options for the router.</p> <p style="text-align: right;"><a href="#">LOGOUT</a></p> <p style="text-align: center;"> <a href="#">Save Settings</a>   <a href="#">Don't Save Settings</a> </p> <hr/> <p><b>Log Options</b></p> <p><b>Remote Log Identifier:</b> <input type="text" value="DSR-1000N"/></p> <hr/> <p><b>Enable E-Mail Logs</b></p> <p><b>Enable E-Mail Logs:</b> <input type="checkbox"/></p> <p><b>E-Mail Server Address:</b> <input type="text"/></p> <p><b>SMTP Port:</b> <input type="text" value="25"/></p> <p><b>Return E-Mail Address:</b> <input type="text"/></p> <p><b>Send to E-Mail Address(1):</b> <input type="text"/></p> <p><b>Send to E-Mail Address(2):</b> <input type="text"/> (Optional)</p> <p><b>Send to E-Mail Address(3):</b> <input type="text"/> (Optional)</p> <p><b>Authentication with SMTP Server:</b> <input type="button" value="None"/></p> <p><b>User Name:</b> <input type="text" value="admin"/></p> <p><b>Password:</b> <input type="password" value="*****"/></p> <p><b>Respond to Identd from SMTP Server:</b> <input type="checkbox"/></p> <hr/> <p><b>Send E-mail logs by Schedule</b></p> <p><b>Unit:</b> <input type="button" value="Never"/></p> <p><b>Day:</b> <input type="button" value="Sunday"/></p> <p><b>Time:</b> <input type="text" value="1:00"/> <input checked="" type="radio"/> (AM) <input type="radio"/> (PM)</p> </div>			

An external Syslog server is often used by network administrator to collect and store logs from the router. This remote device typically has less memory constraints than

the local Event Viewer on the router's GUI, and thus can collect a considerable number of logs over a sustained period. This is typically very useful for debugging network issues or to monitor router traffic over a long duration.

This router supports up to 8 concurrent Syslog servers. Each can be configured to receive different log facility messages of varying severity. To enable a Syslog server select the checkbox next to an empty Syslog server field and assign the IP address or FQDN to the Name field. The selected facility and severity level messages will be sent to the configured (and enabled) Syslog server once you save this configuration page's settings.

**Figure 75: Syslog server configuration for Remote Logging (continued)**



SYS LOG SERVER CONFIGURATION			
	Name	SysLog Facility	SysLog Severity
<input type="checkbox"/>	SysLog Server1:	All	All
<input type="checkbox"/>	SysLog Server2:	All	All
<input type="checkbox"/>	SysLog Server3:	All	All
<input type="checkbox"/>	SysLog Server4:	All	All
<input type="checkbox"/>	SysLog Server5:	All	All
<input type="checkbox"/>	SysLog Server6:	All	All
<input type="checkbox"/>	SysLog Server7:	All	All
<input type="checkbox"/>	SysLog Server8:	All	All

### 9.4.3 Event Log Viewer in GUI

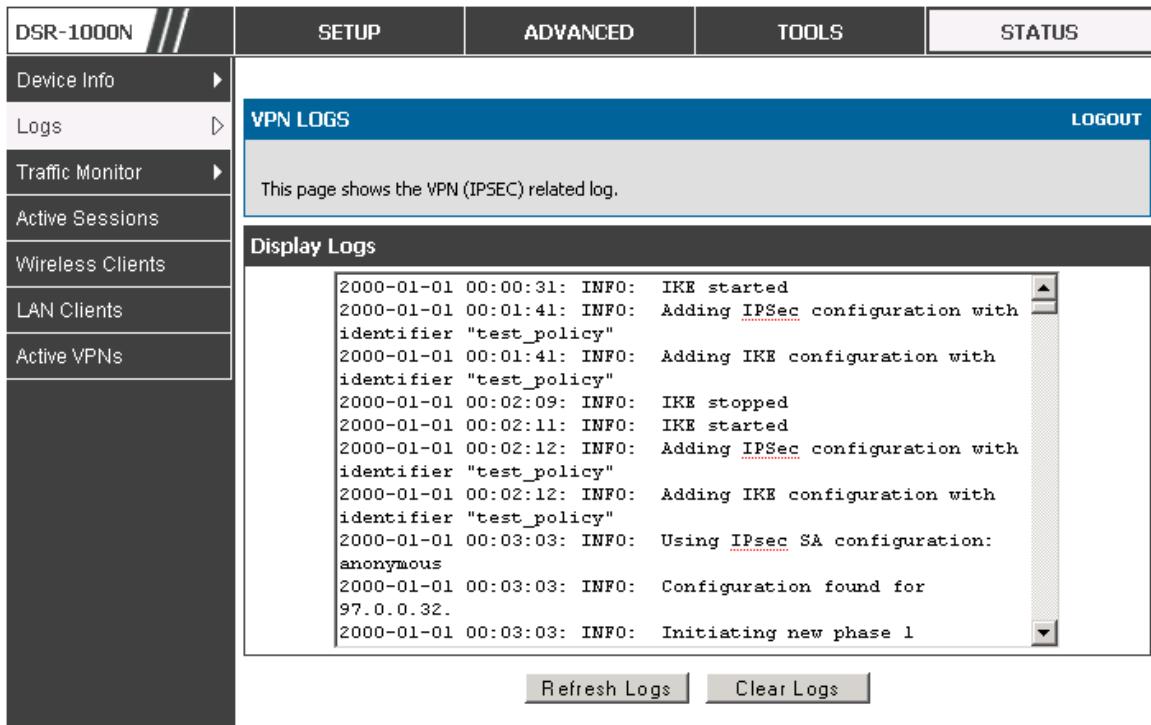
#### *Status > Logs > View All Logs*

The router GUI lets you observe configured log messages from the Status menu. Whenever traffic through or to the router matches the settings determined in the **Tools > Log Settings > Logs Facility** or **Tools > Log Settings > Logs Configuration** pages, the corresponding log message will be displayed in this window with a timestamp.

- ☞ It is very important to have accurate system time (manually set or from a NTP server) in order to understand log messages.

#### *Status > Logs > VPN Logs*

This page displays IPSec VPN log messages as determined by the configuration settings for facility and severity. This data is useful when evaluating IPSec VPN traffic and tunnel health.

**Figure 76:** VPN logs displayed in GUI event viewer

## 9.5 Backing up and Restoring Configuration Settings

### *Tools > System*

You can back up the router's custom configuration settings to restore them to a different device or the same router after some other changes. During backup, your settings are saved as a file on your host. You can restore the router's saved settings from this file as well. This page will also allow you revert to factory default settings or execute a soft reboot of the router.

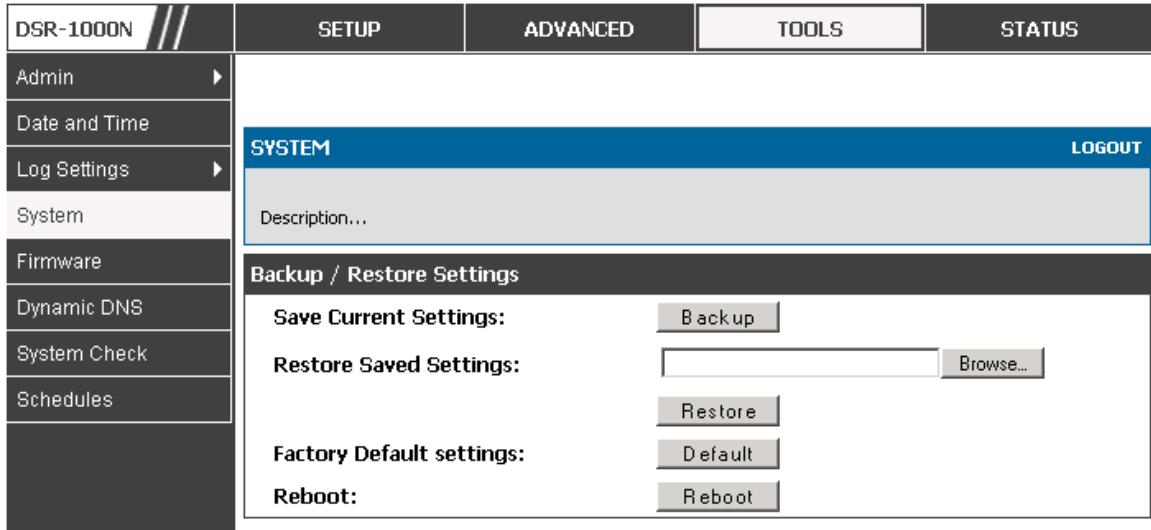
**IMPORTANT!** During a restore operation, do NOT try to go online, turn off the router, shut down the PC, or do anything else to the router until the operation is complete. This will take approximately 1 minute. Once the LEDs are turned off, wait a few more seconds before doing anything with the router.

For backing up configuration or restoring a previously saved configuration, please follow the steps below:

1. To save a copy of your current settings, click the Backup button in the Save Current Settings option. The browser initiates an export of the configuration file and prompts to save the file on your host.

2. To restore your saved settings from a backup file, click Browse then locate the file on the host. After clicking Restore, the router begins importing the file's saved configuration settings. After the restore, the router reboots automatically with the restored settings.
3. To erase your current settings and revert to factory default settings, click the Default button. The router will then restore configuration settings to factory defaults and will reboot automatically. (See Appendix B for the factory default parameters for the router).

**Figure 77: Restoring configuration from a saved file will result in the current configuration being overwritten and a reboot**

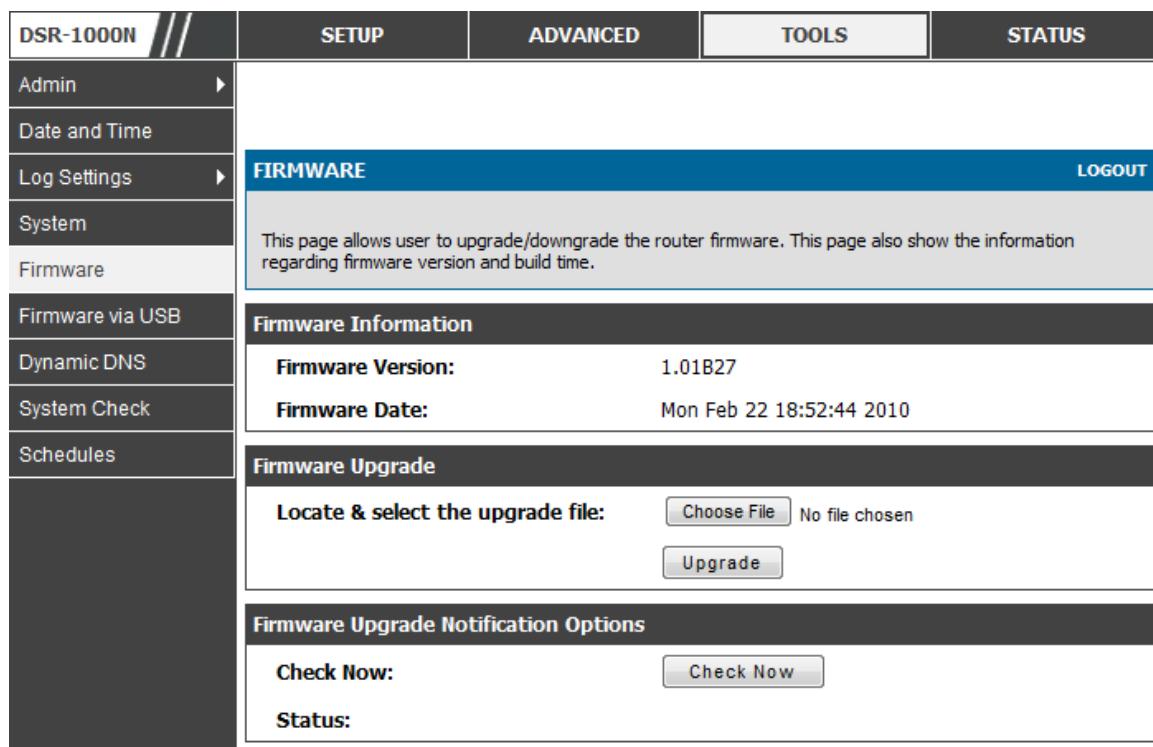


## 9.6 Upgrading Router Firmware

### Tools > Firmware

You can upgrade to a newer software version from the Administration web page. In the Firmware Upgrade section, to upgrade your firmware, click Browse, locate and select the firmware image on your host, and click Upgrade. After the new firmware image is validated, the new image is written to flash, and the router is automatically rebooted with the new firmware. The Firmware Information and also the **Status > Device Info > Device Status** page will reflect the new firmware version.

**⚠️ IMPORTANT!** During firmware upgrade, do NOT try to go online, turn off the device, shut down the PC, or interrupt the process in anyway until the operation is complete. This should take only a minute or so including the reboot process. Interrupting the upgrade process at specific points when the flash is being written to may corrupt the flash memory and render the router unusable without a low-level process of restoring the flash firmware (not through the web GUI).

**Figure 78: Firmware version information and upgrade option**

This router also supports an automated notification to determine if a newer firmware version is available for this router. By clicking the Check Now button in the notification section, the router will check a D-Link server to see if a newer firmware version for this router is available for download and update the Status field below.

## 9.7 Dynamic DNS Setup

### *Tools > Dynamic DNS*

Dynamic DNS (DDNS) is an Internet service that allows routers with varying public IP addresses to be located using Internet domain names. To use DDNS, you must setup an account with a DDNS provider such as DynDNS.org, D-Link DDNS, or Oray.net.

Each configured WAN can have a different DDNS service if required. Once configured, the router will update DDNS services changes in the WAN IP address so that features that are dependent on accessing the router's WAN via FQDN will be directed to the correct IP address. When you set up an account with a DDNS service, the host and domain name, username, password and wildcard support will be provided by the account provider.

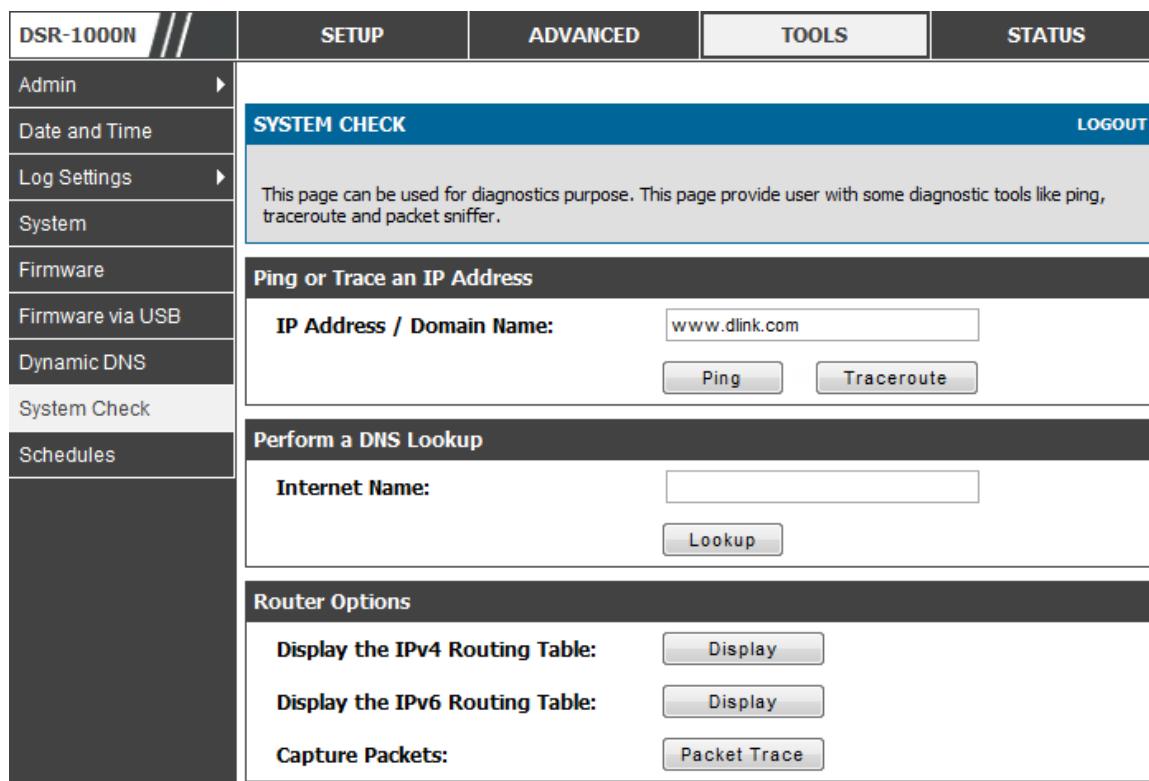
**Figure 79: Dynamic DNS configuration**

DSR-1000N //	SETUP	ADVANCED	TOOLS	STATUS
Admin Date and Time Log Settings System Firmware Dynamic DNS System Check Schedules	<b>DYNAMIC DNS</b> <div style="text-align: right;">LOGOUT</div> <p>Dynamic DNS (DDNS) is an Internet service that allows routers with varying public IP addresses to be located using Internet domain names. To use DDNS, you must setup an account with a DDNS provider such as DynDNS.com, LinkDDNS.com or Oray.net.</p> <p><input type="button" value="Save Settings"/> <input type="button" value="Don't Save Settings"/></p> <hr/> <p><b>WAN Mode</b></p> <p><b>Current WAN Mode:</b> Use only single WAN port Configurable WAN</p> <hr/> <p><b>Dedicated WAN (DDNS Status: )</b></p> <p>Select the Dynamic DNS Service: <input type="button" value="None"/></p> <p>Host and Domain Name: <input type="text"/></p> <p>User Name: <input type="text" value="admin"/></p> <p>Password: <input type="text" value="xxxx"/></p> <p>Use wildcards: <input type="checkbox"/></p> <p>Update every 30 days: <input checked="" type="checkbox"/></p> <hr/> <p><b>Configurable WAN (DDNS Status: DDNS IS ENABLED)</b></p> <p>Select the Dynamic DNS Service: <input type="button" value="dyndns"/></p> <p>Host and Domain Name: <input type="text" value="test.dyndns.com"/></p> <p>User Name: <input type="text" value="dsr"/></p> <p>Password: <input type="text" value="***"/></p> <p>Use wildcards: <input type="checkbox"/></p> <p>Update every 30 days: <input checked="" type="checkbox"/></p>			

## 9.8 Using Diagnostic Tools

### *Tools > System Check*

The router has built in tools to allow an administrator to evaluate the communication status and overall network health.

**Figure 80: Router diagnostics tools available in the GUI**

### 9.8.1 Ping

This utility can be used to test connectivity between this router and another device on the network connected to this router. Enter an IP address and click PING. The command output will appear indicating the ICMP echo request status.

### 9.8.2 Trace Route

This utility will display all the routers present between the destination IP address and this router. Up to 30 “hops” (intermediate routers) between this router and the destination will be displayed.

**Figure 81: Sample traceroute output**

The screenshot shows the 'SYSTEM CHECK' page of the DSR-1000N router's web interface. At the top, there is a menu bar with tabs: SETUP, ADVANCED, TOOLS (which is selected), and STATUS. Below the menu, a red link reads 'Trace Route To www.dlink.com...'. The main content area has a header 'SYSTEM CHECK' and a 'LOGOUT' link. A message states: 'This page displays the output of the diagnostic command which user runs.' Below this is a section titled 'Command Output' containing a table of kernel routing table entries:

Destination	Gateway	Genmask	Flags	Metric	Ref	Use	Iface
127.0.0.1	127.0.0.1	255.255.255.255	UGH	1	0	0	lo
192.168.2.0	*	255.255.255.0	U	0	0	0	bdg22
192.168.2.0	192.168.2.1	255.255.255.0	UG	1	0	0	bdg22
192.168.75.0	*	255.255.255.0	U	0	0	0	eth1
192.168.75.0	192.168.75.100	255.255.255.0	UG	1	0	0	eth1
97.0.0.0	*	255.0.0.0	U	0	0	0	bdg1
97.0.0.0	97.0.0.2	255.0.0.0	UG	1	0	0	bdg1
default	192.168.75.4	0.0.0.0	UG	0	0	0	eth1

At the bottom right of the content area is a 'Back...' button.

### 9.8.3 DNS Lookup

To retrieve the IP address of a Web, FTP, Mail or any other server on the Internet, type the Internet Name in the text box and click Lookup. If the host or domain entry exists, you will see a response with the IP address. A message stating “Unknown Host” indicates that the specified Internet Name does not exist.

This feature assumes there is internet access available on the WAN link(s).

### 9.8.4 Router Options

The static and dynamic routes configured on this router can be shown by clicking Display for the corresponding routing table. Clicking the Packet Trace button will allow the router to capture and display traffic through the device between the LAN and WAN interface as well. This information is often very useful in debugging traffic and routing issues.

# Chapter 10. Router Status and Statistics

## 10.1 System Overview

The Status page allows you to get a detailed overview of the system configuration. The settings for the wired and wireless interfaces are displayed in the Device Status page, and then the resulting hardware resource and router usage details are summarized on the router's Dashboard.

### 10.1.1 Device Status

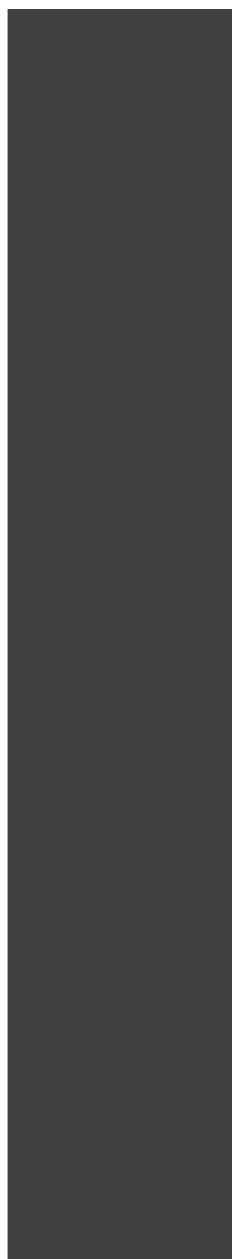
#### *Status > Device Info > Device Status*

The Device Status page gives a summary of the router configuration settings configured in the Setup and Advanced menus. The static hardware serial number and current firmware version are presented in the General section. The WAN and LAN interface information shown on this page are based on the administrator configuration parameters. The radio band and channel settings are presented below along with all configured and active APs that are enabled on this router.

**Figure 82: Device Status display**

DSR-1000N //	SETUP	ADVANCED	TOOLS	STATUS				
Device Info	D							
Logs	▶							
Traffic Monitor	▶							
Active Sessions								
Wireless Clients								
LAN Clients								
Active VPNs								
<b>DEVICE STATUS</b>								
				<b>LOGOUT</b>				
This page displays the current settings of the ports and displays a snapshot of the system information.								
<b>General</b>								
<b>System Name:</b>	DSR_router							
<b>Firmware Version:</b>	1.01B18							
<b>Serial Number:</b>	00000000000001							
<b>WAN1 Information</b>								
<b>MAC Address:</b>	00:DE:AD:20:75:01							
<b>IPv4 Address:</b>	0.0.0.0 / 0.0.0.0							
<b>IPv6 Address:</b>								
<b>Wan State:</b>	DOWN							
<b>NAT (IPv4 only):</b>	Enabled							
<b>IPv4 Connection Type:</b>	Dynamic IP (DHCP)							
<b>IPv6 Connection Type:</b>	IPv6 is disabled							
<b>IPv4 Connection State:</b>	Not Yet Connected							
<b>IPv6 Connection State:</b>	IPv6 is disabled							
<b>Link State:</b>	LINK DOWN							
<b>WAN Mode:</b>	Use only single WAN port: Secondary WAN							
<b>Gateway:</b>	0.0.0.0							
<b>Primary DNS:</b>	0.0.0.0							
<b>Secondary DNS:</b>	0.0.0.0							

Figure 83: Device Status display (continued)



WAN2 Information	
<b>MAC Address:</b>	AA:BB:CC:DD:EF:01
<b>IPv4 Address:</b>	0.0.0.0 / 0.0.0.0
<b>IPv6 Address:</b>	
<b>Wan State:</b>	DOWN
<b>NAT (IPv4 only):</b>	Enabled
<b>IPv4 Connection Type:</b>	ThreeG
<b>IPv6 Connection Type:</b>	IPv6 is disabled
<b>IPv4 Connection State:</b>	Unable To Open Communication Port
<b>IPv6 Connection State:</b>	IPv6 is disabled
<b>Link State:</b>	LINK DOWN
<b>WAN Mode:</b>	Use only single WAN port: Secondary WAN
<b>Gateway:</b>	0.0.0.0
<b>Primary DNS:</b>	0.0.0.0
<b>Secondary DNS:</b>	0.0.0.0

LAN Information	
<b>MAC Address:</b>	00:DE:AD:20:75:00
<b>IP Address:</b>	176.16.2.40 / 255.255.255.0
<b>IPv6 Address:</b>	
<b>DHCP Server:</b>	Disabled
<b>DHCP Relay:</b>	Disabled
<b>DHCPv6 Server:</b>	IPv6 is disabled

Wireless LAN	
<b>Operating Frequency:</b>	2.4GHz
<b>Mode:</b>	N/G-Mixed
<b>Channel:</b>	Auto

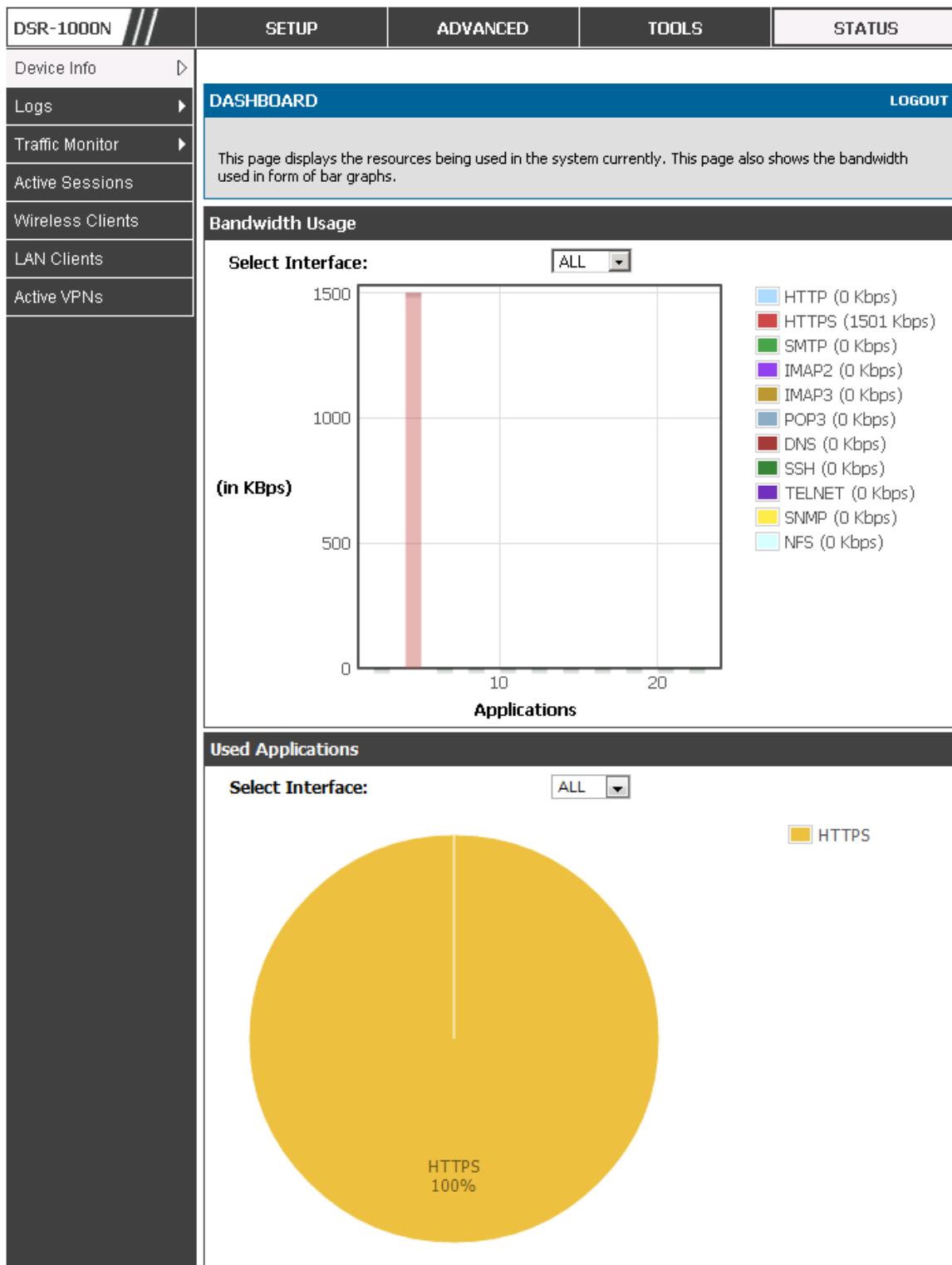
  

Available Access Points			
SSID	SECURITY	ENCRYPTION	AUTHENTICATION
admin	WPA+WPA2	TKIP+CCMP	PSK

## 10.1.2 Resource Utilization

### *Status > Device Info > Dashboard*

The Dashboard page presents hardware and usage statistics. The CPU and Memory utilization is a function of the available hardware and current configuration and traffic through the router. Interface statistics for the wired connections (LAN, WAN1, WAN2/DMZ, VLANs) provide indication of packets through and packets dropped by the interface. Click refresh to have this page retrieve the most current statistics.

**Figure 84: Resource Utilization statistics**



**Figure 85: Resource Utilization data (continued)**

<b>CPU Utilization</b>	
<b>CPU usage by user:</b>	27 %
<b>CPU usage by kernel:</b>	11 %
<b>CPU idle:</b>	62 %
<b>CPU waiting for IO:</b>	0 %
<b>Memory Utilization</b>	
<b>Total Memory:</b>	247908 KB
<b>Used Memory:</b>	172848 KB
<b>Free Memory:</b>	75060 KB
<b>Cached Memory:</b>	30840 KB
<b>Buffer Memory:</b>	7800 KB
<b>Interface (LAN)</b>	
<b>Incoming Packets:</b> :	49900
<b>Outgoing Packets:</b>	5259
<b>Dropped In Packets:</b>	0
<b>Dropped Out Packets:</b>	0
<b>Interface (WAN1)</b>	
<b>Incoming Packets:</b> :	0
<b>Outgoing Packets:</b>	8
<b>Dropped In Packets:</b>	0
<b>Dropped Out Packets:</b>	0
<b>Interface (DMZ/WAN2)</b>	
<b>Incoming Packets:</b>	0
<b>Outgoing Packets:</b>	10
<b>Dropped In Packets:</b>	0
<b>Dropped Out Packets:</b>	0

**Figure 86: Resource Utilization data (continued)**

Interface (VLAN)	
<b>Incoming Packets:</b>	
<b>Outgoing Packets:</b>	
<b>Dropped In Packets:</b>	
<b>Dropped Out Packets:</b>	
<b>Delayed Packets:</b>	
<b>ICMP Received:</b>	9
<b>Frags Received:</b>	
<b>Frag Reass OK:</b>	
<b>Frag Reass fail:</b>	
<b>Active VPN Tunnels:</b>	0
<b>Active VLANs:</b>	2
<b>Active Interfaces:</b>	6
<b>Active Connection:</b>	

## 10.2 Traffic Statistics

### 10.2.1 Wired Port Statistics

*Status > Traffic Monitor > Device Statistics*

Detailed transmit and receive statistics for each physical port are presented here. Each interface (WAN1, WAN2/DMZ, LAN, and VLANs) have port specific packet level information provided for review. Transmitted/received packets, port collisions, and the cumulating bytes/sec for transmit/receive directions are provided for each interface along with the port up time. If you suspect issues with any of the wired ports, this table will help diagnose uptime or transmit level issues with the port.

The statistics table has auto-refresh control which allows display of the most current port level data at each page refresh. The default auto-refresh for this page is 10 seconds.

**Figure 87: Physical port statistics**

The screenshot shows the 'Physical port statistics' page for a DSR-1000N router. The top navigation bar includes 'SETUP', 'ADVANCED', 'TOOLS', and 'STATUS'. A sidebar on the left lists 'Device Info', 'Logs', 'Traffic Monitor', 'Active Sessions', 'Wireless Clients', 'LAN Clients', and 'Active VPNs'. The main content area displays 'DEVICE STATISTICS' with a message about auto-refresh. It shows system up time as '0 days, 1 hours, 11 minutes, 56 seconds'. Below this is a 'Port Statistics' table:

Port	Tx Pkts	Rx Pkts	Collisions	Tx B/s	Rx B/s	Up time
Dedicated WAN	96	0	0	0	0	0 Days 01:10:22
Configurable Port (WAN)	8	0	0	0	0	0 Days 01:09:55
LAN	12014	10292	0	0	0	0 Days 01:09:55
LAN22				0	0	Not Yet Available

At the bottom, there is a 'Poll Interval:' input field set to '10' with '(Seconds)' unit, and 'Start' and 'Stop' buttons.

## 10.2.2 Wireless Statistics

### *Status > Traffic Monitor > Wireless Statistics*

The Wireless Statistics tab displays the incrementing traffic statistics for each enabled access point. This page will give a snapshot of how much traffic is being transmitted over each wireless link. If you suspect that a radio or VAP may be down, the details on this page would confirm if traffic is being sent and received through the VAP.

The clients connected to a particular AP can be viewed by using the Status Button on the list of APs in the **Setup > Wireless > Access Points** page. Traffic statistics are shown for that individual AP, as compared to the summary stats for each AP on this Statistics page. The poll interval (the refresh rate for the statistics) can be modified to view more frequent traffic and collision statistics.

**Figure 88: AP specific statistics**

The screenshot shows the 'WIRELESS STATISTICS' page. The left sidebar has links for Device Info, Logs, Traffic Monitor, Active Sessions, Wireless Clients, LAN Clients, and Active VPNs. The main area has a 'Logout' link at the top right. A message says 'The page will auto-refresh in 1 seconds'. Below it is a table titled 'Wireless Statistics' with columns for AP Name, Radio, Packets (rx/tx), Bytes (rx/tx), Errors (rx/tx), Dropped (rx/tx), Multicast, and Collisions. Two rows are shown: 'ap1' and 'Open\_guests'. The 'ap1' row shows 0 traffic. The 'Open\_guests' row shows 0 traffic. At the bottom, there's a 'Poll Interval:' input set to 10 (Seconds) with 'Start' and 'Stop' buttons.

AP Name	Radio	Packets		Bytes		Errors		Dropped		Multicast	Collisions
		rx	tx	rx	tx	rx	tx	rx	tx		
ap1	1	0	0	0	0	0	0	173	0	0	
Open_guests	1	0	0	0	0	0	0	127	0	0	

## 10.3 Active Connections

### 10.3.1 Sessions through the Router

#### *Status > Active Sessions*

This table lists the active internet sessions through the router's firewall. The session's protocol, state, local and remote IP addresses are shown.

**Figure 89: List of current Active Firewall Sessions**

DSR-1000N //		SETUP	ADVANCED	TOOLS	STATUS
Device Info	▶				
Logs	▶				<a href="#">LOGOUT</a>
Traffic Monitor	▶				
Active Sessions					
Wireless Clients					
LAN Clients					
Active VPNs					
<b>ACTIVE SESSIONS</b>					
This page displays a list of active sessions on your router.					
<b>Active Sessions</b>					
Local	Internet	Protocol	State		
97.0.0.5:3465	97.0.0.2:443	tcp	TIME_WAIT		
97.0.0.5:3525	97.0.0.2:443	tcp	TIME_WAIT		
97.0.0.5:3491	97.0.0.2:443	tcp	TIME_WAIT		
97.0.0.5:3459	97.0.0.2:443	tcp	TIME_WAIT		
97.0.0.5:3487	97.0.0.2:443	tcp	TIME_WAIT		
97.0.0.5:3408	97.0.0.2:443	tcp	TIME_WAIT		
97.0.0.5:3493	97.0.0.2:443	tcp	TIME_WAIT		
97.0.0.5:3431	97.0.0.2:443	tcp	TIME_WAIT		
97.0.0.5:3479	97.0.0.2:443	tcp	TIME_WAIT		
97.0.0.5:3515	97.0.0.2:443	tcp	TIME_WAIT		
97.0.0.5:3501	97.0.0.2:443	tcp	TIME_WAIT		
97.0.0.5:3527	97.0.0.2:443	tcp	CLOSE		
192.168.75.100:500	97.0.0.32:500	udp	none		
97.0.0.5:3427	97.0.0.2:443	tcp	TIME_WAIT		
97.0.0.5:3519	97.0.0.2:443	tcp	CLOSE		
97.0.0.5:3507	97.0.0.2:443	tcp	TIME_WAIT		
97.0.0.5:3543	97.0.0.2:443	tcp	CLOSE		
97.0.0.5:3437	97.0.0.2:443	tcp	TIME_WAIT		
97.0.0.5:3409	97.0.0.2:443	tcp	TIME_WAIT		
97.0.0.5:3497	97.0.0.2:443	tcp	TIME_WAIT		
97.0.0.5:3541	97.0.0.2:443	tcp	TIME_WAIT		
97.0.0.5:3489	97.0.0.2:443	tcp	TIME_WAIT		
97.0.0.5:3482	97.0.0.2:443	tcp	TIME_WAIT		
97.0.0.5:3535	97.0.0.2:443	tcp	TIME_WAIT		
97.0.0.5:3509	97.0.0.2:443	tcp	TIME_WAIT		
97.0.0.5:3467	97.0.0.2:443	tcp	TIME_WAIT		
97.0.0.5:3415	97.0.0.2:443	tcp	TIME_WAIT		
97.0.0.5:3450	97.0.0.2:443	tcp	TIME_WAIT		
97.0.0.5:3499	97.0.0.2:443	tcp	TIME_WAIT		

## 10.3.2 Wireless Clients

### *Status > Wireless Clients*

The clients connected to a particular AP can be viewed on this page. Connected clients are sorted by the MAC address and indicate the security parameters used by the wireless link, as well as the time connected to the corresponding AP.

The statistics table has auto-refresh control which allows display of the most current port level data at each page refresh. The default auto-refresh for this page is 10 seconds.

**Figure 90: List of connected 802.11 clients per AP**

AP Name	MAC Address	Radio	Security	Encryption	Authentication	Time Connected

## 10.3.3 LAN Clients

### *Status > LAN Clients*

The LAN clients to the router are identified by an ARP scan through the LAN switch. The NetBios name (if available), IP address and MAC address of discovered LAN hosts are displayed.

**Figure 91: List of LAN hosts**

DSR-1000N //	SETUP	ADVANCED	TOOLS	STATUS
Device Info				
Logs				
Traffic Monitor				
Active Sessions				
Wireless Clients				
LAN Clients				
Active VPNs				

**LAN CLIENTS** [LOGOUT](#)

This page displays a list of LAN clients connected to the router.

List of LAN Clients		
Name	IP Address	MAC Address
EITHSTINTEL645	97.0.0.5	00:0F:1F:8E:B6:36

### 10.3.4 Active VPN Tunnels

#### *Status > Active VPNs*

You can view and change the status (connect or drop) of the router's IPSec security associations. Here, the active IPSec SAs (security associations) are listed along with the traffic details and tunnel state. The traffic is a cumulative measure of transmitted/received packets since the tunnel was established.

If a VPN policy state is “IPSec SA Not Established”, it can be enabled by clicking the Connect button of the corresponding policy. The Active IPSec SAs table displays a list of active IPSec SAs. Table fields are as follows.

Field	Description
Policy Name	IKE or VPN policy associated with this SA.
Endpoint	IP address of the remote VPN gateway or client.
Tx (KB)	Kilobytes of data transmitted over this SA.
Tx (Packets)	Number of IP packets transmitted over this SA.
State	Status of the SA for IKE policies: Not Connected or IPSec SA Established.

**Figure 92: List of current Active VPN Sessions**

The screenshot shows the 'ACTIVE VPN' section of the router's web interface. At the top, a message says 'The page will auto-refresh in 7 seconds'. Below it, a sub-section titled 'Active IPsec SAs' lists two entries:

Policy Name	Endpoint	tx ( KB )	tx ( Packets )	State	Action
test_policy	97.0.0.32	0.00	0	IPsec SA Not Established	<button>Connect</button>
test_manual_pol	97.0.0.58	0.00	0	IPsec SA Not Established	<button>Connect</button>

Below this is another section titled 'Active SSL VPN Connections' with a table:

User Name	IP Address	Local PPP Interface	Peer PPP Interface IP	Connect Status
-----------	------------	---------------------	-----------------------	----------------

At the bottom, there is a 'Poll Interval:' input field set to '10' with '(Seconds)' next to it, and 'Start' and 'Stop' buttons.

All active SSL VPN connections, both for VPN tunnel and VPN Port forwarding, are displayed on this page as well. Table fields are as follows.

Field	Description
User Name	The SSL VPN user that has an active tunnel or port forwarding session to this router.
IP Address	IP address of the remote VPN client.
Local PPP Interface	The interface (WAN1 or WAN2) through which the session is active.
Peer PPP Interface IP	The assigned IP address of the virtual network adapter.
Connect Status	Status of the SSL connection between this router and the remote VPN client: Not Connected or Connected.

# Chapter 11. Trouble Shooting

## 11.1 Internet connection

**Symptom:** You cannot access the router's web-configuration interface from a PC on your LAN.

**Recommended action:**

1. Check the Ethernet connection between the PC and the router.
2. Ensure that your PC's IP address is on the same subnet as the router. If you are using the recommended addressing scheme, your PC's address should be in the range 192.168.10.2 to 192.168.10.254.
3. Check your PC's IP address. If the PC cannot reach a DHCP server, some versions of Windows and Mac OS generate and assign an IP address. These auto-generated addresses are in the range 169.254.x.x. If your IP address is in this range, check the connection from the PC to the firewall and reboot your PC.
4. If your router's IP address has changed and you don't know what it is, reset the router configuration to factory defaults (this sets the firewall's IP address to 192.168.10.1).
5. If you do not want to reset to factory default settings and lose your configuration, reboot the router and use a packet sniffer (such as Ethereal<sup>TM</sup>) to capture packets sent during the reboot. Look at the Address Resolution Protocol (ARP) packets to locate the router's LAN interface address.
6. Launch your browser and ensure that Java, JavaScript, or ActiveX is enabled. If you are using Internet Explorer, click Refresh to ensure that the Java applet is loaded. Close the browser and launch it again.
7. Ensure that you are using the correct login information. The factory default login name is admin and the password is password. Ensure that CAPS LOCK is off when entering this information.

**Symptom:** Router does not save configuration changes.

**Recommended action:**

1. When entering configuration settings, click Apply before moving to another menu or tab; otherwise your changes are lost.
2. Click Refresh or Reload in the browser. Your changes may have been made, but the browser may be caching the old configuration.

**Symptom:** Router cannot access the Internet.

**Possible cause:** If you use dynamic IP addresses, your router may not have requested an IP address from the ISP.

**Recommended action:**

1. Launch your browser and go to an external site such as [www.google.com](http://www.google.com).
2. Access the firewall's configuration main menu at <http://192.168.10.1>.
3. Select ***Monitoring > Router Status***.
4. Ensure that an IP address is shown for the WAN port. If 0.0.0.0 is shown, your firewall has not obtained an IP address from your ISP. See the next symptom.

**Symptom:** Router cannot obtain an IP address from the ISP.

**Recommended action:**

1. Turn off power to the cable or DSL modem.
2. Turn off the router.
3. Wait 5 minutes, and then reapply power to the cable or DSL modem.
4. When the modem LEDs indicate that it has resynchronized with the ISP, reapply power to the router. If the router still cannot obtain an ISP address, see the next symptom.

**Symptom:** Router still cannot obtain an IP address from the ISP.

**Recommended action:**

1. Ask your ISP if it requires a login program — PPP over Ethernet (PPPoE) or some other type of login.
2. If yes, verify that your configured login name and password are correct.
3. Ask your ISP if it checks for your PC's hostname.
4. If yes, select ***Network Configuration > WAN Settings > Ethernet ISP Settings*** and set the account name to the PC hostname of your ISP account.
5. Ask your ISP if it allows only one Ethernet MAC address to connect to the Internet, and therefore checks for your PC's MAC address.
6. If yes, inform your ISP that you have bought a new network device, and ask them to use the firewall's MAC address.
7. Alternatively, select ***Network Configuration > WAN Settings > Ethernet ISP Settings*** and configure your router to spoof your PC's MAC address.

**Symptom:** Router can obtain an IP address, but PC is unable to load Internet pages.

**Recommended action:**

1. Ask your ISP for the addresses of its designated Domain Name System (DNS) servers.

Configure your PC to recognize those addresses. For details, see your operating system documentation.

2. On your PC, configure the router to be its TCP/IP gateway.

## 11.2 Date and time

**Symptom:** Date shown is January 1, 1970.

**Possible cause:** The router has not yet successfully reached a network time server (NTS).

**Recommended action:**

1. If you have just configured the router, wait at least 5 minutes, select **Administration > Time Zone**, and recheck the date and time.
2. Verify your Internet access settings.

**Symptom:** Time is off by one hour.

**Possible cause:** The router does not automatically adjust for Daylight Savings Time.

**Recommended action:**

1. Select **Administration > Time Zone** and view the current date and time settings.
2. Click to check or uncheck “Automatically adjust for Daylight Savings Time”, then click Apply.

## 11.3 Pinging to Test LAN Connectivity

Most TCP/IP terminal devices and firewalls contain a ping utility that sends an ICMP echo-request packet to the designated device. The device responds with an echo reply. Troubleshooting a TCP/IP network is made very easy by using the ping utility in your PC or workstation.

### 11.3.1 Testing the LAN path from your PC to your router

1. From the PC’s Windows toolbar, select Start > Run.
2. Type ping <IP\_address> where <IP\_address> is the router’s IP address. Example: ping 192.168.10.1.
3. Click OK.

4. Observe the display:
  - If the path is working, you see this message sequence:

Pinging <IP address> with 32 bytes of data  
Reply from <IP address>: bytes=32 time=NN ms TTL=xxx
  - If the path is not working, you see this message sequence:

Pinging <IP address> with 32 bytes of data  
Request timed out
5. If the path is not working, Test the physical connections between PC and router
  - If the LAN port LED is off, go to the “LED displays” section on page B-1 and follow instructions for “LAN or Internet port LEDs are not lit.”
  - Verify that the corresponding link LEDs are lit for your network interface card and for any hub ports that are connected to your workstation and firewall.
6. If the path is still not up, test the network configuration:
  - Verify that the Ethernet card driver software and TCP/IP software are installed and configured on the PC.
  - Verify that the IP address for the router and PC are correct and on the same subnet.

### 11.3.2 Testing the LAN path from your PC to a remote device

1. From the PC’s Windows toolbar, select Start > Run.
2. Type ping -n 10 <IP\_address> where -n 10 specifies a maximum of 10 tries and <IP address> is the IP address of a remote device such as your ISP’s DNS server. Example: ping -n 10 10.1.1.1.
3. Click OK and then observe the display (see the previous procedure).
4. If the path is not working, do the following:
  - Check that the PC has the IP address of your firewall listed as the default gateway. (If the IP configuration of your PC is assigned by DHCP, this information is not visible in your PC’s Network Control Panel.)

- Verify that the network (subnet) address of your PC is different from the network address of the remote device.
- Verify that the cable or DSL modem is connected and functioning.
- Ask your ISP if it assigned a hostname to your PC.

If yes, select **Network Configuration > WAN Settings > Ethernet ISP Settings** and enter that hostname as the ISP account name.

- Ask your ISP if it rejects the Ethernet MAC addresses of all but one of your PCs.

Many broadband ISPs restrict access by allowing traffic from the MAC address of only your broadband modem; but some ISPs additionally restrict access to the MAC address of just a single PC connected to that modem. If this is the case, configure your firewall to clone or spoof the MAC address from the authorized PC.

## 11.4 Restoring factory-default configuration settings

To restore factory-default configuration settings, do either of the following:

1. Do you know the account password and IP address?
  - If yes, select **Administration > Settings Backup & Upgrade** and click default.
  - If no, do the following:

On the rear panel of the router, press and hold the Reset button about 10 seconds, until the test LED lights and then blinks.

Release the button and wait for the router to reboot.

2. If the router does not restart automatically; manually restart it to make the default settings effective.
3. After a restore to factory defaults —whether initiated from the configuration interface or the Reset button — the following settings apply:
  - LAN IP address: 192.168.10.1
  - Username: admin
  - Password: password
  - DHCP server on LAN: enabled
  - WAN port configuration: Get configuration via DHCP



# **Chapter 12. Credits**

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# Appendix A. Glossary

<b>ARP</b>	Address Resolution Protocol. Broadcast protocol for mapping IP addresses to MAC addresses.
<b>CHAP</b>	Challenge-Handshake Authentication Protocol. Protocol for authenticating users to an ISP.
<b>DDNS</b>	Dynamic DNS. System for updating domain names in real time. Allows a domain name to be assigned to a device with a dynamic IP address.
<b>DHCP</b>	Dynamic Host Configuration Protocol. Protocol for allocating IP addresses dynamically so that addresses can be reused when hosts no longer need them.
<b>DNS</b>	Domain Name System. Mechanism for translating H.323 IDs, URLs, or e-mail IDs into IP addresses. Also used to assist in locating remote gatekeepers and to map IP addresses to hostnames of administrative domains.
<b>FQDN</b>	Fully qualified domain name. Complete domain name, including the host portion. Example: serverA.companyA.com.
<b>FTP</b>	File Transfer Protocol. Protocol for transferring files between network nodes.
<b>HTTP</b>	Hypertext Transfer Protocol. Protocol used by web browsers and web servers to transfer files.
<b>IKE</b>	Internet Key Exchange. Mode for securely exchanging encryption keys in ISAKMP as part of building a VPN tunnel.
<b>IPSec</b>	IP security. Suite of protocols for securing VPN tunnels by authenticating or encrypting IP packets in a data stream. IPSec operates in either transport mode (encrypts payload but not packet headers) or tunnel mode (encrypts both payload and packet headers).
<b>ISAKMP</b>	Internet Key Exchange Security Protocol. Protocol for establishing security associations and cryptographic keys on the Internet.
<b>ISP</b>	Internet service provider.
<b>MAC Address</b>	Media-access-control address. Unique physical-address identifier attached to a network adapter.
<b>MTU</b>	Maximum transmission unit. Size, in bytes, of the largest packet that can be passed on. The MTU for Ethernet is a 1500-byte packet.
<b>NAT</b>	Network Address Translation. Process of rewriting IP addresses as a packet passes through a router or firewall. NAT enables multiple hosts on a LAN to access the Internet using the single public IP address of the LAN's gateway router.
<b>NetBIOS</b>	Microsoft Windows protocol for file sharing, printer sharing, messaging, authentication, and name resolution.
<b>NTP</b>	Network Time Protocol. Protocol for synchronizing a router to a single clock on the network, known as the clock master.
<b>PAP</b>	Password Authentication Protocol. Protocol for authenticating users to a remote access server or ISP.

<b>PPPoE</b>	Point-to-Point Protocol over Ethernet. Protocol for connecting a network of hosts to an ISP without the ISP having to manage the allocation of IP addresses.
<b>PPTP</b>	Point-to-Point Tunneling Protocol. Protocol for creation of VPNs for the secure transfer of data from remote clients to private servers over the Internet.
<b>RADIUS</b>	Remote Authentication Dial-In User Service. Protocol for remote user authentication and accounting. Provides centralized management of usernames and passwords.
<b>RSA</b>	Rivest-Shamir-Adleman. Public key encryption algorithm.
<b>TCP</b>	Transmission Control Protocol. Protocol for transmitting data over the Internet with guaranteed reliability and in-order delivery.
<b>UDP</b>	User Data Protocol. Protocol for transmitting data over the Internet quickly but with no guarantee of reliability or in-order delivery.
<b>VPN</b>	Virtual private network. Network that enables IP traffic to travel securely over a public TCP/IP network by encrypting all traffic from one network to another. Uses tunneling to encrypt all information at the IP level.
<b>WINS</b>	Windows Internet Name Service. Service for name resolution. Allows clients on different IP subnets to dynamically resolve addresses, register themselves, and browse the network without sending broadcasts.
<b>XAUTH</b>	IKE Extended Authentication. Method, based on the IKE protocol, for authenticating not just devices (which IKE authenticates) but also users. User authentication is performed after device authentication and before IPSec negotiation.



# Appendix B. Factory Default Settings

Feature	Description	Default Setting
Device login	User login URL	http://192.168.10.1
	User name (case sensitive)	admin
	Login password (case sensitive)	admin
Internet Connection	WAN MAC address	Use default address
	WAN MTU size	1500
	Port speed	Autosense
Local area network (LAN)	IP address	192.168.10.1
	IPv4 subnet mask	255.255.255.0
	RIP direction	None
	RIP version	Disabled
	RIP authentication	Disabled
	DHCP server	Enabled
	DHCP starting IP address	192.168.10.2
	DHCP ending IP address	192.168.10.100
	Time zone	GMT
	Time zone adjusted for Daylight Saving Time	Disabled
	SNMP	Disabled
	Remote management	Disabled
Firewall	Inbound communications from the Internet	Disabled (except traffic on port 80, the HTTP port)
	Outbound communications to the Internet	Enabled (all)
	Source MAC filtering	Disabled
	Stealth mode	Enabled

## Appendix C. Standard Services Available for Port Forwarding & Firewall Configuration

ANY	ICMP-TYPE-8	RLOGIN
AIM	ICMP-TYPE-9	RTELNET
BGP	ICMP-TYPE-10	RTSP:TCP
BOOTP_CLIENT	ICMP-TYPE-11	RTSP:UDP
BOOTP_SERVER	ICMP-TYPE-13	SFTP
CU-SEEME:UDP	ICQ	SMTP
CU-SEEME:TCP	IMAP2	SNMP:TCP
DNS:UDP	IMAP3	SNMP:UDP
DNS:TCP	IRC	SNMP-TRAPS:TCP
FINGER	NEWS	SNMP-TRAPS:UDP
FTP	NFS	SQL-NET
HTTP	NNTP	SSH:TCP
HTTPS	PING	SSH:UDP
ICMP-TYPE-3	POP3	STRMWORKS
ICMP-TYPE-4	PPTP	TACACS
ICMP-TYPE-5	RCMD	TELNET
ICMP-TYPE-6	REAL-AUDIO	TFTP
ICMP-TYPE-7	RExec	VDOLIVE

# Appendix D. Log Output Reference

## Facility: System (Networking)

Log Message	Severity	Log Message	Severity
DBUpdate event: Table: %s opCode:%d rowId:%d	DEBUG	BridgeConfig: too few arguments to command %s	ERROR
networkIntable.txt not found	DEBUG	BridgeConfig: too few arguments to command %s	ERROR
sqlite3QueryResGet failed	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
Interface is already deleted in bridge	DEBUG	ddnsDisable failed	ERROR
removing %s from bridge %s... %s	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
adding %s to bridge %s... %s	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
stopping bridge...	DEBUG	ddnsDisable failed	ERROR
stopping bridge...	DEBUG	failed to call ddns enable	ERROR
stopping bridge...	DEBUG	ddnsDisable failed	ERROR
%s:DBUpdate event: Table: %s opCode:%d rowId:%d	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
Wan is not up	DEBUG	Error in executing DB update handler	ERROR
%s:DBUpdate event: Table: %s opCode:%d rowId:%d	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
doDNS:failed	DEBUG	Illegal invocation of ddnsView (%s)	ERROR
doDNS:failed	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
doDNS:Result = FAILED	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
doDNS:Result SUCCESS	DEBUG	ddns: SQL error: %s	ERROR
Write Old Entry: %s %s %s: to %s	DEBUG	Illegal operation interface got deleted	ERROR
Write New Entry: %s %s #%s : to %s	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
Write Old Entry: %s %s %s: to %s	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
Write New Entry: %s %s #%s : to %s	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
ifStaticMgmtDBUpdateHandler: returning with "	DEBUG	ddnsDisable failed	ERROR
nimfLinkStatusGet: buffer: \nimfLinkStatusGetErr: returning with status: %d	DEBUG	ddns: SQL error: %s	ERROR
nimfAdvOptSetWrap: current Mac Option: %d	DEBUG	Failed to call ddns enable	ERROR
nimfAdvOptSetWrap: current Port Speed Option: %d	DEBUG	ddns: SQL error: %s	ERROR
nimfAdvOptSetWrap: current Mtu Option: %d	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
nimfAdvOptSetWrap: looks like we are reconnecting. "	DEBUG	Failed to call ddns enable	ERROR
nimfAdvOptSetWrap: Mtu Size: %d	DEBUG	ddns: SQL error: %s	ERROR
nimfAdvOptSetWrap: NIMF table is %s	DEBUG	ddnsDisable failed	ERROR
nimfAdvOptSetWrap:WAN_MODE TRIGGER	DEBUG	ddns: SQL error: %s	ERROR
nimfAdvOptSetWrap: MTU: %d	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
nimfAdvOptSetWrap: MacAddress: %s	DEBUG	Failed to call ddns enable	ERROR
nimfAdvOptSetWrap: old Mtu Flag: %d	DEBUG	ddns: SQL error: %s	ERROR
		ddnsDisable failed	ERROR

nimfAdvOptSetWrap: user has changed MTU option	DEBUG	ddns: SQL error: %s	ERROR
nimfAdvOptSetWrap: MTU: %d	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
nimfAdvOptSetWrap: old MTU size: %d	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
nimfAdvOptSetWrap: old Port Speed Option: %d	DEBUG	ddnsDisable failed	ERROR
nimfAdvOptSetWrap: old Mac Address Option: %d	DEBUG	ddns: SQL error: %s	ERROR
nimfAdvOptSetWrap: MacAddress: %s Setting LED [%d]:[%d] For %s	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
I2tpEnable: command string: %s	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
nimfAdvOptSetWrap: handling reboot scenario	DEBUG	ddnsDisable failed	ERROR
nimfAdvOptSetWrap: failed to call ddns enable	DEBUG	ddns: SQL error: %s	ERROR
nimfAdvOptSetWrap: INDICATOR = %d	DEBUG	ddnsDisable failed	ERROR
nimfAdvOptSetWrap: UpdateFlag: %d	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
nimfAdvOptSetWrap: returning with status: %s	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
nimfGetUpdateMacFlag: MacTable Flag is: %d	DEBUG	Error in executing DB update handler	ERROR
nimfMacGet: Mac Option changed	DEBUG	Failed to open the resolv.conf file. Exiting./n	ERROR
nimfMacGet: Update Flag: %d	DEBUG	Could not write to the resolv.conf file. Exiting.	ERROR
nimfMacGet: MacAddress: %s	DEBUG	Error opening the lanUptime File	ERROR
nimfMacGet: MacAddress: %s	DEBUG	Error Opening the lanUptime File.	ERROR
nimfMacGet: MacAddress: %s	DEBUG	failed to open %s	ERROR
nimfMacGet: MacAddress: %s	DEBUG	failed to open %s	ERROR
nimfMacGet: MacAddress: %s	DEBUG	failed to query networkInterface table	ERROR
nimfMacGet: Mac option Not changed \	DEBUG	failed to query networkInterface table	ERROR
nimfMacGet: MacAddress: %s	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
nimfMacGet: MacAddress: %s	DEBUG	failed to enable IPv6 forwarding	ERROR
nimfMacGet: MacAddress: %s	DEBUG	failed to set capabilities on the "	ERROR
nimfMacGet: returning with status: %s	DEBUG	failed to enable IPv6 forwarding	ERROR
Now in enableing LanBridge function	DEBUG	failed to set capabilities on the "	ERROR
sucessfully executed the command %s	DEBUG	failed to disable IPv6 forwarding	ERROR
Now in disableing LanBridge function	DEBUG	failed to set capabilities on the "	ERROR
sucessfully executed the command %s	DEBUG	failed to open %s	ERROR
configPortTblHandler:Now we are in Sqlite Update "	DEBUG	Could not create ISATAP Tunnel	ERROR
The Old Configuration of ConfiPort was:%s	DEBUG	Could not destroy ISATAP Tunnel	ERROR
The New Configuration of ConfiPort was:%s	DEBUG	Could not configure ISATAP Tunnel	ERROR
The user has deselected the configurable port	DEBUG	Could not de-configure ISATAP Tunnel	ERROR
failed query %s	DEBUG	nimfStatusUpdate: updating NimfStatus failed	ERROR
failed query %s	DEBUG	nimfStatusUpdate: updating NimfStatus failed	ERROR
failed query %s	DEBUG	nimfLinkStatusGet: determinig link's status failed	ERROR
%s:DBUpdate event: Table: %s opCode:%d rowId:%d	DEBUG	nimfLinkStatusGet: opening status file failed	ERROR

%s:DBUpdate event: Table: %s opCode:%d rowId:%d	DEBUG	Failed to commit	ERROR
%s:%d SIP ENABLE: %s	DEBUG	ifStatusDBUpdate: Failed to begin "	ERROR
sipTblHandler:failed to update ifStatic	DEBUG	%s: SQL error: %s	ERROR
sipTblHandler:failed to update Configport	DEBUG	%s: Failed to commit "	ERROR
%s:%d SIP DISABLE: %s	DEBUG	nimfNetifaceTblHandler: unable to get LedPinId	ERROR
%s:%d SIP SET CONF: %s	DEBUG	nimfNetifaceTblHandler: unable to get LedPinId	ERROR
Failed to open %s: %s	DEBUG	nimfNetifaceTblHandler: unable to get LedPinId	ERROR
Failed to start sipalg	DEBUG	%s: unable to kill dhclient	ERROR
Failed to stop sipalg	DEBUG	nimfAdvOptSetWrap: unable to get current Mac Option	ERROR
Failed to get config info	DEBUG	nimfAdvOptSetWrap: unable to get current Port "	ERROR
Network Mask: 0x%x	DEBUG	nimfAdvOptSetWrap: unable to get current MTU Option	ERROR
RTP DSCP Value: 0x%x	DEBUG	nimfAdvOptSetWrap: error getting Mac Address from "	ERROR
Need more arguments	DEBUG	nimfAdvOptSetWrap: unable to get the MTU	ERROR
Invalid lanaddr	DEBUG	nimfAdvOptSetWrap: error setting interface advanced "	ERROR
Invalid lanmask	DEBUG	nimfAdvOptSetWrap: error getting MTU size	ERROR
Invalid option	DEBUG	nimfAdvOptSetWrap: unable to get Mac Address	ERROR
Failed to set config info	DEBUG	nimfAdvOptSetWrap: error setting interface advanced "	ERROR
Unknown option	DEBUG	nimfAdvOptSetWrap: failed to get old connectiontype	ERROR
sshdTblHandler	DEBUG	nimfAdvOptSetWrap: old connection type is: %s	ERROR
pPort: %s	DEBUG	nimfAdvOptSetWrap: failed to get old MTU Option	ERROR
pProtocol: %s	DEBUG	nimfAdvOptSetWrap: error getting MTU size	ERROR
pListerAddr: %s	DEBUG	nimfOldFieldValueGet: failed to get old "	ERROR
pKeyBits: %s	DEBUG	nimfOldFieldValueGet: user has changed MTU size	ERROR
pRootEnable: %s	DEBUG	nimfAdvOptSetWrap: failed to get old Port Speed "	ERROR
pRsaEnable: %s	DEBUG	nimfAdvOptSetWrap: user has changed Port Speed	ERROR
pDsaEnable: %s	DEBUG	nimfAdvOptSetWrap: failed to get old Mac Address "	ERROR
pPassEnable: %s	DEBUG	nimfAdvOptSetWrap: user has changed Mac Address "	ERROR
pEmptyPassEnable: %s	DEBUG	nimfAdvOptSetWrap: unable to get Mac Address	ERROR
pSftpEnable: %s	DEBUG	nimfAdvOptSetWrap:Failed to RESET the flag	ERROR
pScpEnable: %s	DEBUG	nimfAdvOptSetWrap: setting advanced options failed	ERROR
pSshdEnable: %s	DEBUG	nimfAdvOptSetWrap: interface advanced options applied	ERROR

pPrivSep: %s	DEBUG	nimfGetUpdateMacFlag: unable to get Flag from MacTable	ERROR
%s:DBUpdate event: Table: %s opCode:%d rowId:%d	DEBUG	nimfMacGet: Updating MAC address failed	ERROR
Re-Starting sshd daemon....	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
sshd re-started successfully.	DEBUG	error executing the command %s	ERROR
sshd stopped .	DEBUG	error executing the command %s	ERROR
failed query %s	DEBUG	error executing the command %s	ERROR
vlan disabled, not applying vlan configuration..	DEBUG	disableLan function is failed to disable ConfigPort"	ERROR
failed query %s	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
failed query %s	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
Unable to Disable configurable port from	DEBUG	configPortTblHandler has failed	ERROR
no ports present in this vlanId %d	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
failed query %s	DEBUG	sqlite3QueryResGet failed	ERROR
vlan disabled, not applying vlan configuration..	DEBUG	Failed to execute switchConfig for port\	ERROR
disabling vlan	DEBUG	Failed to execute switchConfig for port enable	ERROR
enabling vlan	DEBUG	Failed to execute ifconfig for port enable	ERROR
vlan disabled, not applying vlan configuration..	DEBUG	Failed to execute ethtool for\	ERROR
no ports present in this vlanId %d	DEBUG	Failed to execute switchConfig for port disable	ERROR
failed query %s	DEBUG	Failed to execute ifconfig for port disable	ERROR
vlan disabled, not applying vlan configuration..	DEBUG	sqlite3QueryResGet failed	ERROR
removing %s from bridge%... %s	DEBUG	sqlite3_mprintf failed	ERROR
adding %s to bridge%... %s	DEBUG	sqlite3QueryResGet failed	ERROR
restarting bridge...	DEBUG	Failed to execute switchConfig for port mirroring	ERROR
[switchConfig] Ignoring event on port number %d	DEBUG	Usage:%s <DB Name> <Entry Name> <logFile> <subject>	ERROR
executing %s ... %s	DEBUG	sqlite3QueryResGet failed	ERROR
restarting bridge...	DEBUG	Could not get all the required variables to email the Logs.	ERROR
[switchConfig] Ignoring event on %s	DEBUG	runSmtpClient failed	ERROR
restarting bridge...	DEBUG	getaddrinfo returned %s	ERROR
[switchConfig] Ignoring event on port number %d	DEBUG	file not found	ERROR
[switchConfig] executing %s ... %s	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
restarting bridge...	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
UserName: %s	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
Password: %s	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
IspName: %s	DEBUG	No memory to allocate	ERROR
DialNumber: %s	DEBUG	Failed to Open SSHD Configuration File	ERROR
Apn: %s	DEBUG	Ipaddress should be provided with accessocion 1	ERROR

GetDnsFromIsp: %s	DEBUG	Subnetaddress should be provided with accessoption 2	ERROR
IdleTimeOutFlag: %s	DEBUG	Failed to restart sshd	ERROR
IdleTimeOutValue: %d	DEBUG	unable to open the "	ERROR
AuthMetho: %d	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
executing %s ... %s	DEBUG	Error in executing DB update handler	ERROR
removing %s from bridge%d... %s	DEBUG	Error in executing DB update handler	ERROR
adding %s to bridge%d... %s	DEBUG	unknown vlan state	ERROR
stopping bridge...	DEBUG	Failed to execute vlanConfig binary for vlanId %d	ERROR
restarting bridge...	DEBUG	sqlite3_mprintf failed	ERROR
Could not configure 6to4 Tunnel Interface	DEBUG	Access port can be present only in single vlan	ERROR
Could not de-configure 6to4 Tunnel Interface	DEBUG	Failed to execute vlanConfig binary for vlanId %d	ERROR
failed to restart 6to4 tunnel interfaces	DEBUG	unknown vlan state	ERROR
BridgeConfig: too few arguments to command %s	DEBUG	Failed to execute vlanConfig binary for port number %d	ERROR
BridgeConfig: unsupported command %d	DEBUG	Failed to clear vlan for oldPVID %d	ERROR
BridgeConfig returned error=%d	DEBUG	Failed to execute vlanConfig binary for port number %d	ERROR
sqlite3QueryResGet failed	DEBUG	Failed to clear vlan for %d	ERROR
Error in executing DB update handler	DEBUG	Failed to set vlan entry for vlan %d	ERROR
sqlite3QueryResGet failed	DEBUG	Failed to set vlan entries, while enabling \	ERROR
Failed to remove vlan Interface for vlanId \	DEBUG	sqlite3QueryResGet failed	ERROR
sqlite3QueryResGet failed	DEBUG	Failed to execute vlanConfig binary for port number %d	ERROR
Invalid oidp passed	DEBUG	Failed to execute vlanConfig binary for vlanId %d	ERROR
Invalid oidp passed	DEBUG	Failed to enable vlan	ERROR
Failed to get oid from the tree	DEBUG	Failed to disable vlan	ERROR
threegEnable: Input to wrapper %s	DEBUG	Failed to set vlanPort table entries, while \	ERROR
threegEnable: spawning command %s	DEBUG	Failed to enable vlan	ERROR
threegMgmtHandler: query string: %s	DEBUG	unknown vlan state	ERROR
threegMgmtHandler: returning with status: %s	DEBUG	Error in executing DB update handler	ERROR
adding to dhcrealy ifgroup failed	DEBUG	unknown vlan state	ERROR
adding to ipset fwDhcpRelay failed	DEBUG	Failed to execute vlanConfig binary for vlanId %d	ERROR
Disabling Firewall Rule for DHCP Relay Protocol	DEBUG	sqlite3_mprintf failed	ERROR
Enabling Firewall Rule for DHCP Relay Protocol	DEBUG	Access port can be present only in single vlan	ERROR
prerouting Firewall Rule add for Relay failed	DEBUG	Failed to execute vlanConfig binary for vlanId %d	ERROR
prerouting Firewall Rule add for Relay failed	DEBUG	unknown vlan state	ERROR
%s: SQL get query: %s	DEBUG	Failed to execute vlanConfig binary for port number %d	ERROR
%s: sqlite3QueryResGet failed	DEBUG	Failed to clear vlan for oldPVID %d	ERROR
%s: no result found	DEBUG	Failed to execute vlanConfig binary for port number %d	ERROR

%s: buffer overflow	DEBUG	Failed to clear vlan for %d	ERROR
%s: value of %s in %s table is: %s	DEBUG	Failed to set vlan entry for vlan %d	ERROR
%s: returning with status: %s	DEBUG	Failed to set vlan entries, while enabling \	ERROR
dnsResolverConfigure: addressFamily: %d	DEBUG	Failed to execute vlanConfig binary for port number %d	ERROR
dnsResolverConfigure: LogicalIfName: %s	DEBUG	Failed to execute vlanConfig binary for vlanId %d	ERROR
chap-secrets File found	DEBUG	Failed to enable vlan	ERROR
PID File for xl2tpd found	DEBUG	Failed to disable vlan	ERROR
pid: %d	DEBUG	Failed to set vlanPort table entries, while \	ERROR
options.xl2tpd file found	DEBUG	Failed to enable vlan	ERROR
options.xl2tpd file not found	DEBUG	unknown vlan state	ERROR
Conf File for xl2tpd found	DEBUG	threeegMgmtInit: unable to open the database file %s	ERROR
xl2tpd.conf not found	DEBUG	threeegConnEnable: failed to get the WanMode	ERROR
Chap Secrets file found	DEBUG	threeegEnable:spawning failed	ERROR
Chap Secrets file not found	DEBUG	threeegDisable: unable to kill ppp daemon	ERROR
%s:DBUpdate event: Table: %s opCode:%d rowId:%d	DEBUG	threeegMgmtHandler: Query: %s	ERROR
chap-secrets File found	DEBUG	threeegMgmtHandler: error in executing database update	ERROR
PID File for pptpd found	DEBUG	Error in executing DB update handler	ERROR
pid: %d	DEBUG	are we getting invoked twice ??	ERROR
PID File for pptpd interface found	DEBUG	could not open %s to append	ERROR
pid: %d	DEBUG	could not write nameserver %s to %s	ERROR
options.pptpd file found	DEBUG	could not write nameserver %s to %s	ERROR
options.pptpd file not found	DEBUG	could not open %s to truncate	ERROR
Conf File for pptpd found	DEBUG	dnsResolverConfigMgmtInit: unable to open the "	ERROR
pptpd.conf not found	DEBUG	resolverConfigDBUpdateHandler: sqlite3QueryResGet "	ERROR
Chap Secrets file found	DEBUG	could not configure DNS resolver	ERROR
Chap Secrets file not found	DEBUG	dnsResolverConfigure: could not write nameserver:%s,"	ERROR
%s:DBUpdate event: Table: %s opCode:%d rowId:%d	DEBUG	unboundMgmt: unable to open the " ioctl call Failed-could not update active user Details	ERROR
chap-secrets File found	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
pppoeMgmtTblHandler: MtuFlag: %d	DEBUG	Can't kill xl2tpd	ERROR
pppoeMgmtTblHandler: IdleTimeOutFlag: %d	DEBUG	xl2tpd restart failed	ERROR
pppoeMgmtTblHandler: IdleTimeOutValue: %d	DEBUG	failed to get field value	ERROR
pppoeMgmtTblHandler: UserName: %s	DEBUG	failed to get field value	ERROR
pppoeMgmtTblHandler: Password: %s	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
pppoeMgmtTblHandler: DNS specified: %s	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
pppoeMgmtTblHandler: Service: %s	DEBUG	unboundMgmt: unable to open the "	ERROR
pppoeMgmtTblHandler: StaticIp: %s	DEBUG	writing options.xl2tpd failed	ERROR

pppoeMgmtTblHandler: NetMask: %s	DEBUG	xl2tpdStop failed	ERROR
pppoeMgmtTblHandler: AuthOpt: %d	DEBUG	writing xl2tpd.conf failed	ERROR
pppoeMgmtTblHandler: Status: %d	DEBUG	writing options.xl2tpd failed	ERROR
pppoeEnable: ppp dial string: %s	DEBUG	xl2tpdStop failed	ERROR
pppoeMgmtDBUpdateHandler: returning with status: %s	DEBUG	xl2tpdStart failed	ERROR
pptpMgmtTblHandler: MtuFlag: %d	DEBUG	sqlite3QueryResGet failed.Query:%s writing Chap-secrets/Pap-Secrets failed	ERROR
pptpMgmtTblHandler: Mtu: %d	DEBUG		ERROR
pptpMgmtTblHandler: IdleTimeOutFlag: %d	DEBUG	xl2tpdStop failed	ERROR
pptpMgmtTblHandler: IdleTimeOutValue: %d	DEBUG	xl2tpdStart failed	ERROR
pptpMgmtTblHandler: GetDnsFromIsp: %d	DEBUG	sqlite3QueryResGet failed.Query:%s writing Chap-secrets/Pap-Secrets failed	ERROR
pptpMgmtTblHandler: UserName: %s	DEBUG		ERROR
pptpMgmtTblHandler: Password: %s	DEBUG	xl2tpdStop failed	ERROR
pptpMgmtTblHandler: dynamic MyIp configured	DEBUG	xl2tpdStart failed	ERROR
pptpMgmtTblHandler: MyIp: %s	DEBUG	sqlite3QueryResGet failed.Query:%s writing Chap-secrets/Pap-Secrets failed	ERROR
pptpMgmtTblHandler: ServerIp: %s	DEBUG		ERROR
pptpMgmtTblHandler: StaticIp: %s	DEBUG	Error in executing DB update handler	ERROR
pptpMgmtTblHandler: NetMask: %s	DEBUG	unboundMgmt: unable to open the "	ERROR
pptpMgmtTblHandler: MppeEncryptSupport: %s	DEBUG	Can't kill pptpd	ERROR
pptpMgmtTblHandler: SplitTunnel: %s	DEBUG	pptpd restart failed	ERROR
pptpEnable: ppp dial string: %s	DEBUG	Can't kill pptpd	ERROR
pptpEnable: spawning command %s	DEBUG	failed to get field value	ERROR
PID File for dhcpc found	DEBUG	failed to get field value	ERROR
pid: %d	DEBUG	unboundMgmt: unable to open the "	ERROR
pptpMgmtDBUpdateHandler: query string: %s	DEBUG	writing options.pptpd failed	ERROR
pptpMgmtDBUpdateHandler: returning with status: %s	DEBUG	pptpdStop failed	ERROR
dhcpcReleaseLease: dhcpc release command: %s	DEBUG	writing pptpd.conf failed	ERROR
dhcpcMgmtTblHandler: MtuFlag: %d	DEBUG	writing options.pptpd failed	ERROR
dhcpcMgmtTblHandler: Mtu: %d	DEBUG	xl2tpdStop failed	ERROR
DHCPv6 Server started successfully.	DEBUG	xl2tpdStart failed	ERROR
DHCPv6 Server stopped successfully	DEBUG	writing Chap-secrets/Pap-Secrets failed	ERROR
DHCPv6 Client started successfully.	DEBUG	Error in executing DB update handler	ERROR
DHCPv6 Client stopped successfully.	DEBUG	pppStatsUpdate: unable to get default MTU	ERROR
DHCPv6 Client Restart successful	DEBUG	pppoeMgmtInit: unable to open the database file %s	ERROR
I2tpMgmtTblHandler: MtuFlag: %d	DEBUG	pppoeDisable: unable to kill ppp daemon	ERROR
I2tpMgmtTblHandler: Mtu: %d	DEBUG	pppoeMultipleEnableDisable: pppoe enable failed	ERROR
I2tpMgmtTblHandler: IspName: %s	DEBUG	pppoeMultipleEnableDisable: pppoe disable failed	ERROR

I2tpMgmtTblHandler: UserName: %s	DEBUG	pppoeMgmtTblHandler: unable to get current Mtu Option	ERROR
I2tpMgmtTblHandler: Password: %s	DEBUG	pppoeMgmtTblHandler: unable to get the Mtu	ERROR
I2tpMgmtTblHandler: AccountName: %s	DEBUG	pppoeMgmtTblHandler: pppoe enable failed	ERROR
I2tpMgmtTblHandler: DomainName: %s	DEBUG	pppoeMgmtDBUpdateHandler: failed query: %s	ERROR
I2tpMgmtTblHandler: Secret: not specified	DEBUG	pppoeMgmtDBUpdateHandler: error in executing "	ERROR
I2tpMgmtTblHandler: Secret: %s	DEBUG	pptpMgmtInit: unable to open the database file %s	ERROR
I2tpMgmtTblHandler: dynamic MyIp configured	DEBUG	pptpEnable: error executing command: %s	ERROR
I2tpMgmtTblHandler: MyIp: %s	DEBUG	pptpEnable: unable to resolve address: %s	ERROR
I2tpMgmtTblHandler: ServerIp: %s	DEBUG	pptpEnable: inet_aton failed	ERROR
I2tpMgmtTblHandler: StaticIp: %s	DEBUG	pptpEnable: inet_aton failed	ERROR
I2tpMgmtTblHandler: NetMask: %s	DEBUG	pptpEnable: spawning failed	ERROR
I2tpMgmtTblHandler: SplitTunnel: %s	DEBUG	pptpDisable: unable to kill ppp daemon	ERROR
needToStartHealthMonitor: returning with status: %s	DEBUG	pptpMgmtTblHandler: unable to get current MTU Option	ERROR
I2tpEnable: command string: %s	DEBUG	pptpMgmtTblHandler: unable to get the Mtu	ERROR
I2tpEnable: command: %s	DEBUG	pptpMgmtTblHandler: dbRecordValueGet failed for %s "	ERROR
I2tpEnable: command string: %s	DEBUG	pptpMgmtTblHandler: pptp enable failed	ERROR
PID File for dhcpc found	DEBUG	pptpMgmtTblHandler: pptp disable failed	ERROR
pid: %d	DEBUG	pptpMgmtDBUpdateHandler: sqlite3QueryResGet "	ERROR
I2tpMgmtDBUpdateHandler: query string: %s	DEBUG	pptpMgmtDBUpdateHandler: error in executing "	ERROR
I2tpMgmtDBUpdateHandler: returning with status: %s	DEBUG	Illegal invocation of dhcpConfig (%s)	ERROR
RADVd started successfully	DEBUG	dhcpLibInit: unable to open the database file %s	ERROR
RADVd stopped successfully	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
empty update. nRows=%d nCols=%d	WARN	dhcpcMgmtInit: unable to open the database file %s	ERROR
Wan is not up or in load balancing mode	WARN	dhcpcReleaseLease: unable to release lease	ERROR
threegMgmtHandler: no row found.	WARN		
nRows = %d nCols = %d	WARN	dhcpcEnable: unable to kill dhclient	ERROR
pppoeMgmtDBUpdateHandler: empty update.	WARN	dhcpcEnable: enabling dhcpc failed on: %s	ERROR
dhcpcEnable: dhclient already running on: %s	WARN	dhcpcDisable: unable to kill dhclient	ERROR
dhcpcDisable: deleted dhclient.leases	WARN	dhcpcDisable: delete failed for dhclient.leases	ERROR
I2tpMgmtInit: unable to open the database file %s	ERROR	dhcpcDisable: failed to reset the ip	ERROR
I2tpEnable: unable to resolve address: %s	ERROR	dhcpcMgmtTblHandler: unable to get current Mtu Option	ERROR
I2tpEnable: inet_aton failed	ERROR	dhcpcMgmtTblHandler: unable to get the Mtu	ERROR

The Enable Command is %s	ERROR	dhcpcMgmtTblHandler: dhclient enable failed	ERROR
I2tpEnable: Executing the Command failed	ERROR	dhcpcMgmtTblHandler: dhcpc release failed	ERROR
I2tpDisable: command string: %s	ERROR	dhcpcMgmtTblHandler: dhcpc disable failed	ERROR
I2tpDisable: unable to stop I2tp session	ERROR	dhcpcMgmtDBUpdateHandler: failed query: %s	ERROR
I2tpMgmtTblHandler: unable to get current MTU option	ERROR	dhcpcMgmtDBUpdateHandler: error in executing "	ERROR
I2tpMgmtTblHandler: unable to get the Mtu	ERROR	DHCPv6 Client start failed.	ERROR
I2tpMgmtTblHandler: dbRecordValueGet failed for %s "	ERROR	DHCPv6 Client stop failed.	ERROR
I2tpMgmtTblHandler: I2tpEnable failed	ERROR	failed to create/open DHCPv6 client "	ERROR
I2tpMgmtTblHandler: disabling I2tp failed	ERROR	failed to write DHCPv6 client configuration file	ERROR
I2tpMgmtDBUpdateHandler: sqlite3QueryResGet "	ERROR	failed to restart DHCPv6 Client	ERROR
I2tpMgmtDBUpdateHandler: error in executing	ERROR	failed to create/open DHCPv6 Server "	ERROR
Illegal invocation of tcpdumpConfig (%s)	ERROR	Restoring old configuration..	ERROR
Failed to start tcpdump	ERROR	DHCPv6 Server configuration update failed	ERROR
Failed to stop tcpdump	ERROR	DHCPv6 Server Restart failed	ERROR
Invalid tcpdumpEnable value	ERROR	sqlite3QueryResGet failed.Query:%s	ERROR

**Facility: System (VPN)**

Log Message	Severity	Log Message	Severity
%d command not supported by eapAuth	DEBUG	PEAP key derive: ERROR	ERROR
pCtx NULL.	DEBUG	PEAP context is NULL: ERROR	ERROR
Current cert subject name= %s	DEBUG	Constructing P2 response: ERROR	ERROR
X509_STORE_CTX_get_ex_data failed.	DEBUG	innerEapRecv is NULL: ERROR	ERROR
Cannot get cipher, no session est.	DEBUG	Decrypting TLS data: ERROR	ERROR
%s:			
SSL_ERROR_WANT_X509_LOOKUP	DEBUG	Wrong identity size: ERROR	ERROR
err code = (%d) in %s	DEBUG	Wrong size for extensions packet: ERROR	ERROR
BIO_write: Error	DEBUG	innerEapRecv is NULL: ERROR.	ERROR
Decrypting: BIO reset failed	DEBUG	Inner EAP processing: ERROR	ERROR
Encrypting BIO reset: ERROR	DEBUG	TLS handshake: ERROR.	ERROR
BIO_read: Error	DEBUG	Sending P1 response: ERROR	ERROR
EAP state machine changed from %s to %s.	DEBUG	Unexpected tlsGlueContinue return value.	ERROR
EAP state machine changed from %s to %s.	DEBUG	No more fragments in message.	ERROR
Received EAP Packet with code %d	DEBUG	No phase 2 data or phase 2 data buffer NULL: ERROR	ERROR
Response ID %d	DEBUG	Allocating memory for PEAP Phase 2 payload: ERROR	ERROR
Response Method %d	DEBUG	TLS encrypting response: ERROR	ERROR

Created EAP/PEAP context: OK	DEBUG	Setting message in fragment buffer: ERROR	ERROR
Deleted EAP/PEAP context: OK	DEBUG	Allocating TLS read buffer is NULL: ERROR	ERROR
Upper EAP sent us: decision = %d method state = %d	DEBUG	Setting last fragment: ERROR	ERROR
P2 decision=(%d); methodState=(%d)	DEBUG	Getting message: ERROR	ERROR
Writing message to BIO: ERROR.	DEBUG	Processing PEAP message: ERROR	ERROR
Encrypted (%d) bytes for P2	DEBUG	Setting fragment: ERROR	ERROR
P2: sending fragment.	DEBUG	Creating receive buffer: ERROR	ERROR
P2: message size = %d	DEBUG	Setting first fragment: ERROR	ERROR
P2: sending unfragmented message.	DEBUG	Sending P1 response: ERROR	ERROR
P1: Sending fragment.	DEBUG	NULL request (or response) PDU or NULL context: ERROR	ERROR
P1: Total TLS message size = (%d)	DEBUG	Expecting start packet, got something else: ERROR	ERROR
P1: sending unfragmented message. peapFragFirstProcess: TLS record size to receive = (%d)	DEBUG	Protocol version mismatch: ERROR	ERROR
Setting version %d	DEBUG	Processing PEAP message (from frag): ERROR	ERROR
PEAP pkt rcvd: data len=(%d) flags=(%d) version=(%d)	DEBUG	Processing PEAP message: ERROR	ERROR
Got PEAP/Start packet.	DEBUG	Indicated length not valid: ERROR	ERROR
Did not get Acknowledged result:			
Got first fragment	DEBUG	ERROR	ERROR
Cannot understand AVP value:			
Got fragment (n)	DEBUG	ERROR	ERROR
Got last fragment	DEBUG	eapExtResp is NULL: ERROR	ERROR
eapWscCtxCreate:			
Got unfragmented message	DEBUG	EAPAUTH_MALLOC failed.	ERROR
eapWscProcess: umilctl req to WSC failed, status = %d			
Got frag ack.	DEBUG	ERROR	ERROR
Ext AVP parsed: flags=(0x%x)	DEBUG	eapWscCheck: Invalid frame	ERROR
Mandatory bit not set: WARNING	DEBUG	eapWscBuildReq: Invalid state %d	ERROR
eapWscProcessWscResp: Invalid data recd pData = %p, dataLen"			
Ext AVP parsed: type=(%d)	DEBUG	ERROR	ERROR
Ext AVP parsed: value=(%d)	DEBUG	Data received for invalid context, dropping it	ERROR
Got PEAPv0 success!	DEBUG	eapWscProcessWscResp: Build Request failed	ERROR
eapWscProcessWscResp: Invalid			
Got PEAPv0 failure!	DEBUG	state %d	ERROR
eapWscProcessWscResp: Message processing failed 0x%X			
pCtx NULL.	DEBUG	ERROR	ERROR
Authenticator response check: Error	DEBUG	eapWscProcessWscData: Invalid notification recd %d	ERROR
Authenticator response check: Failed	DEBUG	unable to initialize MD5	ERROR
MS-CHAP2 Response AVP size = %u	DEBUG	MDString: adpDigestInit for md5 failed	ERROR
Created EAP/MS-CHAP2 context: OK.	DEBUG	EAPAUTH_MALLOC failed.	ERROR
pCtx NULL.	DEBUG	EAPAUTH_MALLOC failed.	ERROR
Deleted EAP/MS-CHAPv2 context: OK	DEBUG	NULL context created: Error	ERROR
Not authenticated yet.	DEBUG	NULL context received: Error	ERROR
Authenticator response invalid	DEBUG	Authenticator ident invalid.	ERROR
EAP-MS-CHAPv2 password changed.	DEBUG	Success request message invalid:	ERROR

		Error	
rcvd. opCode %d.	DEBUG	Plugin context is NULL	ERROR
pCtx NULL.	DEBUG	Deriving implicit challenge: Error	ERROR
TLS message len changed in the fragment, ignoring. no data to send while fragment ack received.	DEBUG	Generating NT response: Error	ERROR
TLS handshake successful.	DEBUG	NULL in/out buffer: Error	ERROR
Created EAP/TTLS context: OK	DEBUG	Incorrect vendor id.	ERROR
Deleted EAP/TTLS context: OK	DEBUG	Allocating memory for outBuff: ERROR	ERROR
No more fragments in message. ERROR Upper EAP sent us: method state = %d; decision = %d	DEBUG	AVP code not recognized	ERROR
P2: sending fragment.	DEBUG	EAPAUTH_MALLOC failed.	ERROR
P2 send unfragmented message.	DEBUG	Converting password to unicode: Error	ERROR
P1: sending fragment.	DEBUG	Generating password hash: Error.	ERROR
P1: sending unfragmented message.	DEBUG	Generating password hash hash: Error.	ERROR
P1: sending unfragmented message.	DEBUG	Generating master key: Error.	ERROR
\tTLSMsgLen = 0x%x Send req ptr = 0x%x; Send resp ptr = 0x%x	DEBUG	Generating first 16 bytes of session key: Error.n	ERROR
P2 decision=(%d); methodState=(%d) Default EAP: method state = %d; decision = %d	DEBUG	Generating second 16 bytes of session key: Error.n	ERROR
TTLS pkt: data len=(%d) flags=(0x%08x)	DEBUG	Constructing failure response: ERROR	ERROR
Got start	DEBUG	Error checking authenticator response.	ERROR
Got first fragment (n).	DEBUG	Error generating NT response.	ERROR
Got fragment (n).	DEBUG	Username string more than 256 ASCII characters: ERROR	ERROR
Got last fragment	DEBUG	Invalid Value-Size.	ERROR
Got unfragmented message.	DEBUG	Invalid MS-Length. Got (%d), expected (%d)	ERROR
Got frag ack.	DEBUG	Error constructing response.	ERROR
Rcvd. AVP Code-%u: flags-0x%x: len-%u: vendorId-%u: "	DEBUG	Got type (%d), expecting (%d)	ERROR
MOD EAP: method state from upper = %d; decision = %d	DEBUG	Cannot handle message; opCode = %d	ERROR
Got AVP len = %ul. Should be less than 16777215	DEBUG	EAPAUTH_MALLOC failed.	ERROR
Got AVP len = %ul. Should be less than 16777215	DEBUG	client certificate must be set in the profile.	ERROR
AVP length extract: Error	DEBUG	received tls message length too big.	ERROR
pFB is NULL	DEBUG	total frags len > initial total tls length.	ERROR
Requesting message before assembly complete	DEBUG	total frags len > initial total tls length.	ERROR
pFB is NULL	DEBUG	total data rcvd(%d) doesnt match the initial "	ERROR
pFB is NULL	DEBUG	couldnt write %d data to TLS buffer.	ERROR
Buffer cannot hold message: ERROR	DEBUG	invalid flags %s passed to eapTlsBuildResp.	ERROR
pFB is NULL: Error	DEBUG	invalid flags %s passed to eapTlsBuildResp.	ERROR
pFB is NULL	DEBUG	EAPAUTH_MALLOC failed.	ERROR
TLS_FB* is NULL.	DEBUG	tlsGlueCtxCreate failed.	ERROR
TLS_FB* is NULL.	DEBUG	Context NULL: ERROR	ERROR

pFB->msgBuff is NULL.	DEBUG	Setting profile to glue layer: ERROR.	ERROR
Error calculating binary.	DEBUG	_eapCtxCreate failed.	ERROR
Error calculating binary.	DEBUG	%d authentication not enabled in the system.	ERROR
adpDigestInit for SHA1 failed.	DEBUG	Initializing inner non-EAP auth plugin: ERROR	ERROR
adpDigestInit for SHA1 failed.	DEBUG	TTLS key derive: ERROR	ERROR
E = %d	DEBUG	TTLS context from EAP plugin is NULL: ERROR	ERROR
R = %d	DEBUG	Allocating memory for TTLS Phase 2 payload: ERROR	ERROR
Could not initialize des-ecb	DEBUG	TLS Encrypting response: ERROR	ERROR
adpDigestInit for MD4 failed.	DEBUG	Allocating TLS read buffer is NULL: ERROR	ERROR
adpDigestInit for SHA1 failed.	DEBUG	Inner authentication (id: %d) unhandled	ERROR
adpDigestInit for SHA1 failed.	DEBUG	innerEapRecv is NULL: ERROR.	ERROR
Error converting received auth reponse to bin.	DEBUG	Decrypting TLS data: ERROR	ERROR
Gnerating challenge hash: Error	DEBUG	Processing Phase 2 method: Error	ERROR
Generating password hash: Error	DEBUG	Writing message to BIO: ERROR.	ERROR
Generating challenge response: Error	DEBUG	TLS handshake: ERROR.	ERROR
Conn cipher name=%s ver=%s: %s	DEBUG	Unexpected tlsGlueContinue return value.	ERROR
Send req ptr = 0x%x; Send resp ptr = 0x%x	DEBUG	NULL request (or response) PDU or NULL context	ERROR
Request ptr = 0x%x;	DEBUG	Protocol version mismatch: ERROR	ERROR
Response ptr = 0x%x	DEBUG	Creating receive buffer: ERROR	ERROR
Rcvd. AVP Code - %ul	DEBUG	Setting first fragment: ERROR	ERROR
Rcvd. AVP flags - 0x%02x	DEBUG	Setting fragment: ERROR	ERROR
Rcvd. AVP len - %ul	DEBUG	Setting last fragment: ERROR	ERROR
Rcvd. AVP vendor id - %ul	DEBUG	Getting message: ERROR	ERROR
\tCode = %d	DEBUG	Processing TTLS message: ERROR	ERROR
\tIdent = %d	DEBUG	Processing TTLS message: ERROR	ERROR
\tLen = %d	DEBUG	Processing TTLS message: ERROR	ERROR
\tType = %d	DEBUG	Decapsulating AVP: ERROR	ERROR
\tOpCode = %d	DEBUG	Processing EAP receive: Error	ERROR
\tMSID = %d	DEBUG	AVP code not EAP: Error	ERROR
\tmsLen = %d	DEBUG	Encapsulating AVP: ERROR	ERROR
\tvalSize = %d	DEBUG	profile %s doesnt exist.	ERROR
Frag Buffer bytes left = (%d)	DEBUG	profile %s is in use.	ERROR
Stripped username=(%s)	DEBUG	profile %s already exists.	ERROR
digestLen = %d.	DEBUG	EAPAUTH_MALLOC failed	ERROR
ClearText =	DEBUG	User not found.	ERROR
CipherText =	DEBUG	EAP-MD5 not enabled in system configuration.	ERROR
digestLen = %d.	DEBUG	EAP-MSCHAPV2 not enabled in system configuration.	ERROR
digestLen1 = %d.	DEBUG	EAP-TLS not enabled in system configuration.	ERROR
digestLen2 = %d.	DEBUG	EAP-TTLS not enabled in system configuration.	ERROR

password change is not allowed for this user	DEBUG	EAP-PEAP not enabled in system configuration.	ERROR
completed writing the policy	DEBUG	EAP-WSC not enabled in system configuration.	ERROR
completed writing the SA	DEBUG	PAP not enabled in system configuration.	ERROR
completed writing the proposal block	DEBUG	CHAP not enabled in system configuration.	ERROR
cmdBuf: %s	DEBUG	MSCHAP not enabled in system configuration.	ERROR
X509_DEBUG : Invalid Certificate for the generated"	DEBUG	MSCHAPV2 not enabled in system configuration.	ERROR
X590_ERROR : Failed to create File '%s'	DEBUG	PAP/Token not enabled in system configuration.	ERROR
x509TblHandler	DEBUG	EAP-MD5 not enabled in system configuration.	ERROR
pCertType: %s	DEBUG	EAP-MSCHAPV2 not enabled in system config.	ERROR
pRowQueryStr: %s	DEBUG	EAP-TLS not enabled in system configuration.	ERROR
x509SelfCertTblHandler	DEBUG	EAP-TTLS and EAP-PEAP are not valid as inner"	ERROR
pRowQueryStr: %s	DEBUG	invalid innerAuth %d.	ERROR
%s:DBUpdate event: Table: %s opCode:%d rowId:%d	DEBUG	profile %s doesnt exist. Re-assembling fragments incorrect size	ERROR
umiRegister failed	ERROR		ERROR
eapAuthHandler: Invalid data received	ERROR	Error creating cipher context.	ERROR
EPAUTH_MALLOC failed.	ERROR	Error initializing cipher context.	ERROR
malloc failed.	ERROR	Error creating digest context.	ERROR
BIO_new_mem_buf failed.	ERROR	Error initializing digest context.	ERROR
malloc failed.	ERROR	Error initializing DES in Klite	ERROR
BIO_new_mem_buf failed.	ERROR	Error initializing MD4 in Klite	ERROR
SSL_CTX_new (TLSv1_client_method) failed.	ERROR	Error initializing RC4 in Klite	ERROR
unable to set user configured CIPHER list %s	ERROR	Error initializing SHA in Klite	ERROR
Certificate verification failed.	ERROR	Error cleaning cipher context.	ERROR
Server name match failed. Got (%s) expected "	ERROR	Error destroying cipher context.	ERROR
SSL_CTX_use_certificate_file (cert, PEM) failed.	ERROR	Error cleaning digest context.	ERROR
SSL_CTX_use_PrivateKey_file failed.	ERROR	Error destroying digest context.	ERROR
private key does not match public key	ERROR	Error stripping domain name.	ERROR
SSL_CTX_load_verify_locations failed	ERROR	Error cleaning digest context.	ERROR
SSL_new failed.	ERROR	Error cleaning digest context.	ERROR
Both SSL_VERIFY_PEER and SSL_VERIFY_NONE set: Error	ERROR	Challenge not present in failure packet.	ERROR
EPAUTH_MALLOC failed.	ERROR	Wrong challenge length.	ERROR
EPAUTH_MALLOC failed.	ERROR	Incorrect password change version value.	ERROR
eapTimerCreate failed.	ERROR	Error generating password hash.	ERROR
eapCtxDelete:pCtx == NULL	ERROR	Error generating password hash.	ERROR
eapRole != EAP_ROLE_PEER or EAP_ROLE_AUTHENTICATOR	ERROR	Error encrypting password hash with block	ERROR

pEapCtx == NULL or pPDU == NULL.	ERROR	Could not initialize des-ecb	ERROR
received EAP pdu bigger than EAP_MTU_SIZE.	ERROR	Error cleaning cipher context.	ERROR
received EAP pdu bigger than EAP_MTU_SIZE.	ERROR	Error cleaning cipher context.	ERROR
state machine is in invalid state.	ERROR	Error cleaning digest context.	ERROR
unable to create method context.	ERROR	Error cleaning digest context.	ERROR
method ctxCreate failed.	ERROR	adpDigestInit for SHA1 failed.	ERROR
method profile set failed.	ERROR	X509_ERROR : .Query:%s	ERROR
state machine is in invalid state.	ERROR	X509_ERROR : Invalid Certificate for the "	ERROR
Only StandAlone authenticator supported currently.	ERROR	invalid x509 certificate	ERROR
state machine is in invalid state.	ERROR	Couldn't get the x509 cert hash	ERROR
BuildReq operation failed	ERROR	Memory allocation failed	ERROR
No method ops defined for current method	ERROR	FileName too lengthy	ERROR
Process operation failed	ERROR	Couldn't execute command	ERROR
state machine is in invalid state.	ERROR	Memory allocation failed	ERROR
Packet length mismatch %d, %d	ERROR	Memory allocation failed	ERROR
eapAuthTypeToType: Invalid eapAuthType %d	ERROR	invalid certificate data	ERROR
eapTypeToAuthType: Invalid eapType %d	ERROR	.Query:%s	ERROR
unable to create method context.	ERROR	.Query:%s	ERROR
method ctxCreate failed.	ERROR	Memory allocation failed	ERROR
Invalid condition, methodState = %d, respMethod = %d	ERROR	X509_ERROR : Failed to validate the certificate "	ERROR
A EAP Ctx map already exists	ERROR	Memory allocation failed	ERROR
eapTimerCreate: Currently unsupported for Peer role	ERROR	.Query:%s	ERROR
eapTimerStart: Currently unsupported for Peer role	ERROR	Invalid Sign Key Length : %d	ERROR
eapTimerDestroy: Currently unsupported for Peer role	ERROR	Invalid Hash Alg : %d	ERROR
eapTimerCancel: Currently unsupported for Peer role	ERROR	Invalid Sign Alg : %d	ERROR
eapTimerHandler: Currently unsupported for Peer role	ERROR	No Memory Available	ERROR
pCtx is NULL: ERROR	ERROR	Certificate Request Failed	ERROR
tlsGlueCtxCreate failed	ERROR	File Open Failed	ERROR
eapVars is NULL	ERROR	File is Empty	ERROR
Context NULL: ERROR	ERROR	Memory Allocation Failed	ERROR
Initializing inner EAP auth: ERROR	ERROR	File Open Failed	ERROR
pCtx is NULL: ERROR	ERROR	File is Empty	ERROR
Memory Allocation Failed	ERROR	Error in executing DB update handler	ERROR

**Facility: System (Admin)**

Log Message	Severity	Log Message	Severity
Usage:%s <DBFile>	DEBUG	unable to register to UMI	ERROR

Could not open database: %s	DEBUG	sqlite3QueryResGet failed	ERROR
CPU LOG File not found	DEBUG	radSendtoServer: socket: %s radSendtoServer: bind() Failed: %s: %s	ERROR
MEM LOG File not found	DEBUG	radRecvfromServer: recvfrom() Failed: %s	ERROR
cpuMemUsageDBUpdateHandler: update query: %s	DEBUG	radRecvfromServer: Packet too small from %s:%d: %s	ERROR
Printing the whole list after inserting %s at %d(minute) %d(hour) %d(dayOfMonth) %d(month)"	DEBUG	radCheckMsgAuth: Invalid Message- Authenticator length in"	ERROR
adpCmdExec exited with return code=%d	DEBUG	radDictLoad: couldn't open dictionary %s: %s	ERROR
%s op=%d row=%d	DEBUG	radBuildAndSendReq: Invalid Request Code %d	ERROR
sqlite3_mprintf failed	DEBUG	radPairAssign: bad attribute value length	ERROR
sqlite3QueryResGet failed: query=%s	DEBUG	radPairAssign: unknown attribute type %d	ERROR
Printing the whole list after delete %s at %d(minute) %d(hour) %d(dayOfMonth) %d(month)"	DEBUG	radPairNew: unknown attribute %d radPairGen: Attribute(%d) has invalid length	ERROR
Printing the whole list after inserting %s at %d(minute) %d(hour) %d(dayOfMonth) %d(month)"	DEBUG	radPairValue: unknown attribute type %d	ERROR
email logs: No logging events enabled	DEBUG	radPairValueLen: unknown attribute type %d	ERROR
%s	DEBUG	radPairLocate: Attribute(%d) has invalid length	ERROR
Mail sent and the Database is reset.	DEBUG	radConfigure: can't open %s: %s	ERROR
Disabled syslog server	DEBUG	radConfigure: %s: line %d: bogus format: %s	ERROR
Event logs are full, sending logs to email	DEBUG	radConfAssert: No AuthServer Specified	ERROR
Email logs sending failed	DEBUG	radConfAssert: No Default Timeout Specified	ERROR
Packing attribute: %s	DEBUG	radConfAssert: No Default Retry Count Specified	ERROR
Server found: %s, secret: %s	DEBUG	radExtractMppeKey: Invalid MS- MPPE-Key Length	ERROR
Packed Auth. Request: code:%d, id:%d, len:%d	DEBUG	radVendorMessage: Invalid Length in Vendor Message	ERROR
Sending Packet to %x:%d ....	DEBUG	radVendorMessage: Unknown Vendor ID received:%d	ERROR
Receiving Reply Packet....	DEBUG	radVendorAttrGet: Invalid Length in Vendor Message	ERROR
Verified Reply Packet Integrity	DEBUG	radVendorAttrGet: Unknown Vendor ID:%d	ERROR
Generated Reply Attribute-Value pairs	DEBUG	radVendorMessagePack: Unknown Vendor ID:%d	ERROR
Verified Message-Authenticator	DEBUG	radGetIPByName: couldn't resolve hostname: %s	ERROR
Unloaded RADIUS Dictionary	DEBUG	radGetHostIP: couldn't get hostname	ERROR
Adding Dictionary Attribute %s	DEBUG	radGetHostIP: couldn't get host IP address	ERROR
Adding Dictionary Value %s	DEBUG	radius dictionary loading failed	ERROR
Loaded Dictionary %s	DEBUG	Failed to set default timeout value	ERROR

Adding Dictionary Attribute '%s'	DEBUG	Failed to set default retries value ERROR: incomplete DB update information.	ERROR
Adding Dictionary Value %s	DEBUG	old values result does not contain 2 rows	ERROR
Receiving attribute: %s	DEBUG	sqlite3QueryResGet failed	ERROR
Processing attribute: %s	DEBUG	empty update. nRows=%d nCols=%d	ERROR
Processing attribute: %s	DEBUG	Error in executing DB update handler	ERROR
Processing attribute: %s	DEBUG	sqlite3QueryResGet failed	ERROR
radConfGet: "	DEBUG	Invalid SQLITE operation code - %d	ERROR
Added Server %s:%d with "	DEBUG	sqlite3QueryResGet failed	ERROR
Added Server %s:%d with "	DEBUG	empty result. nRows=%d nCols=%d	ERROR
Default Timeout Set to %d	DEBUG	sqlite3QueryResGet failed	ERROR
Default Retry Count Set to %d	DEBUG	empty result. nRows=%d nCols=%d	ERROR
%s - %s : %d	DEBUG	RADIUS Accounting Exchange Failed	ERROR
Deleting Server %s:%d with "	DEBUG	Unable to set debug for radAcct.	ERROR
Adding RowId:%d to Server %s:%d with "	DEBUG	Unable to set debug level for radAcct.	ERROR
rowIds: %d - %d	DEBUG	ERROR: option value not specified	ERROR
Deleting Server %s:%d with "	DEBUG	ERROR: option value not specified	ERROR
RADIUS Deconfigured	DEBUG	Unable to initialize radius	ERROR
Found Option %s on line %d of file %s	DEBUG	radEapMsgQueueAdd: Invalid EAP packet length(%d)	ERROR
Setting Option %s with value %s	DEBUG	radEapRecvTask: invalid EAP code:%d	ERROR
RADIUS Configured	DEBUG	radEapRecvTask: Packet length mismatch %d, %d	ERROR
%d : Server %s:%d with "	DEBUG	No attributes received in Access-Challenge message	ERROR
DBUpdate event: Table: %s opCode:%d rowId:%d	DEBUG	No State Attribute in Access-Challenge message	ERROR
Host IP address: %s	DEBUG	radEapRecvTask: "	ERROR
Adding Packet for existing cookie:%p	DEBUG	failed to initialize UMI	ERROR
Adding Packet and cookie:%p	DEBUG	umiRegister failed. errno=%d	ERROR
Releasing Packet and cookie:%p	DEBUG	Invalid arguments to ioctl handler	ERROR
Releasing Packet with cookie:%p	DEBUG	radEapSendRtn: Invalid Arguments radEapSendRtn: failed to allocate buffer	ERROR
Received EAP-Identity from Pnac: %s	DEBUG	ERROR	ERROR
Filling User-Name: %s	DEBUG	umiloctl failed	ERROR
Filling State:	DEBUG	failed to initialize EAP message queue	ERROR
Filling EAP-Message:	DEBUG	Unable to set debug for radEap.	ERROR
Filling Service-Type: %d	DEBUG	Unable to set debug level for radEap.	ERROR
Filling Framed-MTU: %d	DEBUG	ERROR: option value not specified	ERROR
Received Access-Challenge from Server	DEBUG	ERROR: option value not specified	ERROR
Sending Reply EAP Packet to Pnac	DEBUG	could not initialize MGMT framework	ERROR
Error sending packet to Pnac	DEBUG	Unable to initialize radius	ERROR
RADIUS Authentication Failed; "	DEBUG	Unable to set debug for radEap.	ERROR
RADIUS Authentication Successful; "	DEBUG	Unable to set debug level for radEap.	ERROR
Got Packet with cookie:%p	DEBUG	ERROR: option value not specified	ERROR
Next DNS Retry after 1 min	DEBUG	Unable to initialize radius	ERROR
Next Synchronization after"	DEBUG	Invalid username or password	ERROR

Next Synchronization after"	DEBUG	Unable to set debug for radAuth.	ERROR
Next Synchronization after %d \	DEBUG	Unable to set debug level for radAuth.	ERROR
Primary is not available, "	DEBUG	ERROR: option value not specified	ERROR
Secondary is not available, "	DEBUG	Unable to initialize radius	ERROR
Invalid value for use default servers, "	DEBUG	Invalid username, challenge or response	ERROR
No server is configured, "	DEBUG	Unable to set debug for radAuth.	ERROR
Backing off for %d seconds	DEBUG	Unable to set debug level for radAuth.	ERROR
Requesting time from %s	DEBUG	ERROR: option value not specified	ERROR
Synchronized time with %s	DEBUG	Unable to initialize radius	ERROR
Received KOD packet from %s	DEBUG	Invalid username or password	ERROR
No suitable server found %s	DEBUG	usage : %s <DB fileName>	ERROR
Received Invalid Length packet from %s	DEBUG	ntpd : umi initialization failed	ERROR
Received Invalid Version packet from %s	DEBUG	ntpd : ntpInit failed	ERROR
Received Invalid Mode packet from %s	DEBUG	ntpd : ntpMgmtInit failed	ERROR
Request Timed out from %s	DEBUG	There was an error while getting the timeZoneChangeScript."	ERROR
Looking Up %s	DEBUG	unexpected reply from %d cmd=%d !	ERROR
Timezone difference :%d	DEBUG	cmd %d not supported. caller %d	ERROR
Could not open file: %s	DEBUG	default reached	ERROR
Could not read data from file	DEBUG	Unable to initialize ntpControl	ERROR
ntpTblHandler	DEBUG	ntpMgmt : Couldn't open database %s	ERROR
		ERROR : incomplete DB update information	ERROR
status: %d	DEBUG		ERROR
tz: %d	DEBUG	empty update. nRows=%d nCols=%d	ERROR
DayLightsaving: %d	DEBUG	Error in executing DB update handler	ERROR
pNtpControl->ServerNames[PRIMARY_SERVER]: %s	DEBUG	requestNtpTime: Invalid addr	ERROR
pNtpControl->ServerNames[SECONDARY_SERVER] : %s	DEBUG	failed to take lock for comId: %d	ERROR
		failed to convert ioctl args to buffer for"	ERROR
DS: %d	DEBUG		ERROR
pPriServ %s	DEBUG	request timeout dst(%d) <- src(%d)	ERROR
pSecServ %s	DEBUG	failed to take lock for comId: %d	ERROR
Making request from %d --> %d	DEBUG	umiloctlArgsToBuf: failed to allocate memory	ERROR
sent request dst(%d) <- src(%d) using option %d	DEBUG	umiRecvFrom: could not allocate memory	ERROR
received request too small!(%d bytes)	DEBUG	adpMalloc failed	ERROR
Received a UMI request from %d	DEBUG	context with ID: %d already registered	ERROR
		Failed to allocate memory for creating UMI context	ERROR
sent a reply src(%d) ---> dst(%d)	DEBUG		ERROR
		Failed to create recvSem for UMI context	ERROR
umiRegister (%x,%x,%x,%x)	DEBUG		ERROR
srclId=%d(%s) --> destId=%d(%s)	DEBUG	Failed to create mutex locks for UMI context	ERROR
cmd=%d inLen=%d outLen=%d	DEBUG		ERROR
		Failed to create mutex recvQLock for UMI context	ERROR
waiting for reply...Giving Up	DEBUG		ERROR
No request in the list after semTake	DEBUG	Invalid arguments to umiloctl	ERROR
reply timeout	DEBUG	could not find the destination context	ERROR

timeout after semTake	DEBUG	memPartAlloc for %d size failed	ERROR
srcId=%d(%s) <-- destId=%d(%s)	DEBUG	memPartAlloc for %d size failed	ERROR
cmd=%d		No Handler registered for this UMI context	ERROR
Un-registerting component with Id %d	DEBUG	Couldn't find component with ID (%d),"	ERROR
failed to send ioctl request: dst(%d) <--- src(%d)	DEBUG	id=%d handler=%x	ERROR
processed a reply dst(%d) <-- src(%d)	DEBUG	Received NULL buffer in umiBufToIoctlArgs()	ERROR
request with no result option dst(%d) <-- src(%d)	DEBUG	usbMgmtInit: unable to open the database file %s	ERROR
cmd = %s	DEBUG	call to printConfig failed	ERROR
cmdstring is %s %s:%d	DEBUG	Failed to Disable Network Storage"	ERROR
Calling printerConfig binary ...	DEBUG	Some error occurred while removing device	ERROR
Calling unmount for USB ...	DEBUG	Some error occurred while removing device	ERROR
Calling mount for USB ...	DEBUG	Sqlite update failed	ERROR
usbdevice is %d %s:%d	DEBUG	Failed to enable printer properly	ERROR
Query string: %s	DEBUG	Failed to mount device on system	ERROR
sqlite3QueryResGet failed.Query:%s	DEBUG	Failed to enable network storage device"	ERROR
%s: 1. usb is already disconnected for old usb type. "	DEBUG	Failed to mount device on system	ERROR
%s: 2.call disable for new usb type !	DEBUG	Sqlite update failed	ERROR
%s: 3. usb is already disconnected for old usb type. "	DEBUG	USB1 Touch failed	ERROR
%s: 4. Disabled old usb type . Now "	DEBUG	USB2 Touch failed	ERROR
usbdevice is %d %s:%d	DEBUG	Sqlite update failed	ERROR
USB: failed to begin transaction: %s	DEBUG	Failed query: %s	ERROR
USB: SQL error: %s pSetString = %s	DEBUG	Failed to execute usb database update handler	ERROR
USB: failed to commit transaction: %s	DEBUG	Usage:%s <DBFile> <opType> <tblName> <rowId>	ERROR
USB: updated table: %s	DEBUG	Illegal invocation of snmpConfig (%s)	ERROR
USB: returning with status: %s	DEBUG	Invalid Community Access Type	ERROR
%s:DBUpdate event: Table: %s opCode:%d rowId:%d	DEBUG	Invalid User Access Type	ERROR
executing %s status =%d	DEBUG	Invalid Security Level	ERROR
executing %s	DEBUG	Invalid Authentication Algorithm	ERROR
%s returned status=%d	DEBUG	Invalid Privacy Algorithm	ERROR
snmpd.conf not found	DEBUG	Invalid Argument	ERROR
[SNMP_DEBUG] : Fwrite Successful	DEBUG	Failed to allocate memory for engineID	ERROR
[SNMP_DEBUG] : Fwrite failed	DEBUG	[SNMP_DEBUG]: Failed to get host address	ERROR
radPairGen: received unknown attribute %d of length %d	WARN	[SNMP_DEBUG] : FOPEN failed	ERROR
radPairGen: %s has unknown type	WARN	sqlite3QueryResGet failed.Query:%s	ERROR
radPairLocate: unknown attribute %ld of length %d	WARN	sqlite3QueryResGet failed.Query:%s	ERROR
radPairLocate: %s has unknown type	WARN	Invalid Security Level	ERROR
Illegal invocation of cpuMemUsage (%s)	ERROR	Invalid Authentication Algorithm	ERROR

cpuMemUsageDBUpdateHandler: SQL error: %s	ERROR	Invalid Privacy Algorithm	ERROR
unable to open the DB file %s	ERROR	Failed to Get Host Address	ERROR
umilnit failed	ERROR	Invalid version	ERROR
unable to register to UMI	ERROR	snmp v3 Trap Configuration Failed	ERROR
Error Reading from the Database.	ERROR	sqlite3QueryResGet failed query:%s	ERROR
short DB update event request!	ERROR	sqlite3QueryResGet failed.Query:%s	ERROR
Error in executing DB update handler	ERROR	Failed to Open Snmp Configuration File	ERROR
adpListNodeRemove : Returned with an error	ERROR	Failed to write access control entries	ERROR
command too long. Try increasing "	ERROR	Failed to write snmpv3 users entries	ERROR
failed to allocate memory for CRON_NODE	ERROR	Failed to write snmp trap entries	ERROR
sqlite3QueryResGet failed	ERROR	Failed to write system entries.	ERROR
There was an error while reading the schedules.	ERROR	Failed to restart snmp	ERROR
unable to register to UMI	ERROR	%s failed with status	ERROR
short DB update event request!	ERROR	Error in executing DB update handler	ERROR
malloc(DB_UPDATE_NODE) failed	ERROR	%s: Unable to open file: %s	ERROR
short ifDev event request!	ERROR	RADVD start failed	ERROR
sqlite3_mprintf failed	ERROR	RADVD stop failed	ERROR
no component id matching %s	ERROR	failed to create/open RADVD configuration file %s	ERROR
umilctl (%s, UMI_CMD_DB_UPDATE(%d)) failed.	ERROR	Restoring old configuration.. failed to write/update RADVD configuration file	ERROR
sqlite3_mprintf failed	ERROR	upnpDisableFunc failed	ERROR
sqlite3_mprintf failed	ERROR	upnpEnableFunc failed	ERROR
no component id matching %s	ERROR	sqlite3QueryResGet failed.Query:%s	ERROR
umilctl (%s, UMI_CMD_IFDEV_EVENT(%d)) failed.	ERROR	Error in executing DB update handler	ERROR
klogctl(9) failed	ERROR	unable to open the DB file %s	ERROR
malloc failed for %d bytes	ERROR	umilnit failed	ERROR
klogctl(4) failed	ERROR	unable to register to UMI	ERROR
emailLogs: Invalid Number of Arguments!! Exiting.	ERROR	short DB update event request!	ERROR
sqlite3QueryResGet failed	ERROR	short ifDev event request!	ERROR
Could not execute the smtpClient.	ERROR	sqlite3_mprintf failed	ERROR
Error while cleaning the database.Exiting. %s	ERROR	%s failed. status=%d	ERROR

**Facility: System (Firewall)**

Log Message	Severity	Log Message	Severity
Enabling rule for protocol binding.	DEBUG	Disable all NAT rules.	DEBUG
Disabling rule for protocol binding.	DEBUG	Enable all NAT rules.	DEBUG
Enabling Remote SNMP on WAN.	DEBUG	Enabling NAT URL filter rules.	DEBUG
Disabling Remote SNMP on WAN	DEBUG	Restarting all NAT rules.	DEBUG

wan traffic counters are restored	DEBUG	Deleting schedule based firewall rules.	DEBUG
Traffic limit has been reached	DEBUG	Deleting schedule based firewall rules from DB.	DEBUG
Traffic meter monthly limit has been changed to %d.	DEBUG	Update schedule based firewall rules in DB.	DEBUG
Enabling traffic meter for only download.	DEBUG	Restart schedule based firewall rules.	DEBUG
Enabling traffic meter for both directions.	DEBUG	inter vlan routing enabled	DEBUG
Enabling traffic meter with no limit.	DEBUG	inter vlan routing disabled	DEBUG
Email alert in traffic meter disabled.	DEBUG	Disabling Content Filter for %d	DEBUG
Email alert in traffic meter enabled.	DEBUG	Enabling Content Filter for %d	DEBUG
Traffic Meter:Monthly limit %d MB has been "	DEBUG	./src/firewall/linux/user/firewalld.c:59:#undef ADP_DEBUG2	DEBUG
Traffic Metering: Adding rule to drop all traffic	DEBUG	./src/firewall/linux/user/firewalld.c:61:#define ADP_DEBUG2 printf	DEBUG
Traffic Metering: %sabling Email traffic	DEBUG	Enabling Source MAC Filtering	DEBUG
Disabling attack checks for IPv6 rules.	DEBUG	Disabling Source MAC Filtering	DEBUG
Enabling attack checks for IPv6 rules.	DEBUG	Adding MAC Filter Policy for Block & Permit Rest	DEBUG
Configuring one to one NAT settings with %s private start IP "	DEBUG	Adding MAC Filter Policy for Permit & Block Rest	DEBUG
Deleting forward one to one NAT having setting %s private start"	DEBUG	Restarting Source MAC Address Policy	DEBUG
Disabling attack check for Block ping to WAN interface.	DEBUG	Disabling Firewall Rule for DHCP Relay Protocol	DEBUG
Disabling attack check for Stealth mode for tcp	DEBUG	Enabling Firewall Rule for DHCP Relay Protocol	DEBUG
Disabling attack check for Stealth mode for udp	DEBUG	prerouting Firewall Rule add for Relay failed	DEBUG
Disabling attack check for TCP Flood.	DEBUG	prerouting Firewall Rule add for Relay failed	DEBUG
Disabling attack check for UDP Flood.	DEBUG	Deleting MAC Filter Policy for Address %s	DEBUG
Disabling attack check for IPSec.	DEBUG	Adding MAC Filter Policy for Address %s	DEBUG
Disabling attack check for PPTP.	DEBUG	Disabling Firewall Rules for DMZ host	DEBUG
Disabling attack check for L2TP.	DEBUG	Enabling Firewall Rules for DMZ host	DEBUG
Disabling attack check for UDP Flood.	DEBUG	Disabling Firewall Rules for Spill Over Load Balancing	DEBUG
Disabling attack check for IPSec.	DEBUG	Disabling Firewall Rules for Load Balancing	DEBUG
Disabling attack check for PPTP.	DEBUG	Enabling Firewall Rules for Load Balancing	DEBUG
Disabling attack check for L2TP.	DEBUG	Enabling Firewall Rules for Spill Over Load Balancing	DEBUG
Enabling attack check for Block ping to WAN "	DEBUG	Enabling Firewall Rules for Auto Failover	DEBUG
Enabling attack check for Stealth Mode for tcp.	DEBUG	Enabling Firewall Rules for Load Balancing .	DEBUG
Enabling attack check for Stealth Mode for udp.	DEBUG	Enabling Firewall Rules for Spill Over Load Balancing .	DEBUG
Enabling attack check for TCP Flood.	DEBUG	Enabling Firewall Rules for Auto Failover	DEBUG
Enabling attack check for UDP Flood.	DEBUG	Deleting BlockSites Keyword \	DEBUG
Enabling attack check for IPSec.	DEBUG	Enabling BlockSites Keyword \	DEBUG
Enabling attack check for PPTP.	DEBUG	Disabling BlockSites Keyword \	DEBUG

Enabling attack check for L2TP.	DEBUG	Updating BlockSites Keyword from \	DEBUG
Enabling attack check for UDP Flood.	DEBUG	Inserting BlockSites Keyword \	DEBUG
Enabling attack check for IPSec.	DEBUG	Deleting Trusted Domain \	DEBUG
Enabling attack check for PPTP.	DEBUG	Adding Trusted Domain \	DEBUG
Enabling attack check for L2TP.	DEBUG	Restarting Schedule Based Firewall Rules	DEBUG
Enabling DoS attack check with %d SyncFlood detect rate, "	DEBUG	Enabling Remote SNMP	DEBUG
Disabling DoS attack check having %d SyncFlood detect rate, "	DEBUG	Disabling Remote SNMP	DEBUG
Enabling ICSA Notification Item for ICMP notification.	DEBUG	Enabling Remote SNMP	DEBUG
Enabling ICSA Notification Item for Fragmented Packets.	DEBUG	Disabling DOS Attacks	DEBUG
Enabling ICSA Notification Item for Multi cast Packets.	DEBUG	Enabling DOS Attacks	DEBUG
Disabling ICSA Notification Item for ICMP notification.	DEBUG	Enabling DOS Attacks	DEBUG
Disabling ICSA Notification Item for Fragmented Packets.	DEBUG	Restarting Firewall [%d]:[%d] For %s restartStatus = %d for LogicalIfName = %s	DEBUG
Disabling ICSA Notification Item for Multi cast Packets.	DEBUG	Deleting Lan Group %s	DEBUG
Adding IP/MAC binding rule for %s MAC address "	DEBUG	Adding Lan Group %s	DEBUG
Deleting IP/MAC binding rule for %s MAC "	DEBUG	Deleting lan host %s from group %s	DEBUG
./src/firewall/linux/user/firewalld.c:60:#undef ADP_DEBUG	DEBUG	Adding lan host %s from group %s	DEBUG
./src/firewall/linux/user/firewalld.c:62:#define ADP_DEBUG printf	DEBUG	Disabling Firewall Rule for IGMP Protocol	DEBUG
Restarting traffic meter with %d mins, %d hours, "	DEBUG	Enabling Firewall Rule for IGMP Protocol	DEBUG
Updating traffic meter with %d mins, %d hours, "	DEBUG	Deleting IP/MAC Bind Rule for MAC address %s and IP "	DEBUG
Deleting traffic meter.	DEBUG	Adding IP/MAC Bind Rule for MAC address %s and IP	DEBUG
Disabling block traffic for traffic meter.	DEBUG	Deleting Protocol Bind Rule for Service %s	DEBUG
Enabling traffic meter.	DEBUG	Deleting Protocol Bind Rule for Service %s	DEBUG
Adding lan group %s.	DEBUG	Adding Protocol Bind Rule for Service %s	DEBUG
Deleting lan group %s.	DEBUG	Deleting Protocol Bind Rule for Service %s	DEBUG
Renaming lan group from %s to %s.	DEBUG	Adding Protocol Bind Rule for Service %s	DEBUG
Deleting host %s from %s group.	DEBUG	%s Session Settings	DEBUG
Adding host %s to %s group.	DEBUG	Restarting IPv6 Firewall Rules...	DEBUG
Enabling Keyword blocking for %s keyword.	DEBUG	Deleting Port Trigger Rule for %d:%d:%d:%d:%d	DEBUG
Disabling keyword Blocking for %s keyword .	DEBUG	Deleting Port Trigger Rule for %d:%d:%d:%d:%d	DEBUG
Deleting trusted domain with keyword %s.	DEBUG	Enabling Port Trigger Rule for %d:%d:%d:%d:%d	DEBUG
Adding %s keyword to trusted domain.	DEBUG	Disabling Port Trigger Rule for %d:%d:%d:%d:%d	DEBUG
Enabling Management Access from	DEBUG	Enabling Port Trigger Rule for	DEBUG

Internet on port %d		%d:%d:%d:%d:%d	
Enabling remote access management for IP address range"	DEBUG	Disabling Port Trigger Rule for %d:%d:%d:%d:%d	DEBUG
Enabling remote access management to only this PC.	DEBUG	Adding Port Trigger Rule for %d:%d:%d:%d:%d	DEBUG
Disabling Management Access from Internet on port %d	DEBUG	Enabling Content Filter	DEBUG
Disabling remote access management for IP address range"	DEBUG	Disabling Content Filter	DEBUG
Disabling remote access management only to this PC.	DEBUG	Enabling Content Filter	DEBUG
MAC Filtering %sabled for BLOCK and PERMIT REST.	DEBUG	Setting NAT mode for pLogicalIfName = %s	DEBUG
MAC Filtering %sabled for PERMIT and BLOCK REST.	DEBUG	Enabling DROP for INPUT	DEBUG
Enabling Content Filtering.	DEBUG	Enabling DROP for FORWARD	DEBUG
Disabling Content Filtering.	DEBUG	Enabling NAT based Firewall Rules	DEBUG
Deleting rule, port triggering for protocol TCP.	DEBUG	Setting transparent mode for pLogicalIfName \	DEBUG
Deleting rule, port triggering for protocol UDP.	DEBUG	Enabling Accept for INPUT	DEBUG
Deleting rule, port triggering for protocol TCP.	DEBUG	Enabling Accept for FORWARD	DEBUG
Deleting rule, port triggering for protocol UDP.	DEBUG	Setting Routing mode for pLogicalIfName \	DEBUG
Enabling rule, port triggering for protocol TCP.	DEBUG	Enabling DROP for INPUT	DEBUG
Enabling rule, port triggering for protocol UDP.	DEBUG	Enabling DROP for FORWARD	DEBUG
Enabling rule, port triggering for protocol TCP.	DEBUG	Disabling NAT based Firewall Rules	DEBUG
Enabling rule, port triggering for protocol UDP.	DEBUG	Enabling Firewall Rules for URL Filtering & "	DEBUG
Enabling DNS proxy.	DEBUG	Adding Firewall Rule for RIP Protocol	DEBUG
Restarting DNS proxy.	DEBUG	Restarting Schedule Based Firewall Rules	DEBUG
checking DNS proxy for Secure zone.	DEBUG	enabling IPS checks between %s and %s zones.	DEBUG
checking DNS proxy for Public zone.	DEBUG	disabling IPS checks between %s and %s zones.	DEBUG
Enabling Block traffic from %s zone.	DEBUG	Stopping IPS...%s	DEBUG
Configuring firewall session settings for "	DEBUG	IPS started.	DEBUG
Disabling DMZ	DEBUG	Route already exists	DEBUG
Disabling WAN-DMZ rules .	DEBUG	Route addition failed: Network Unreachable	DEBUG
Enabling WAN DMZ rules .	DEBUG	Route addition failed: Network is down	DEBUG
Restarting DMZ rule having %s address with %s address.	DEBUG	Route addition failed	DEBUG
Enabling LAN DHCP relay.	DEBUG	Failed to add rule in iptables	DEBUG
OneToOneNat configured successfully	DEBUG	Failed to delete rule from iptables fwLBSpillOverConfigure: Something going wrong here	DEBUG
OneToOneNat configuration failed	DEBUG	fwLBSpillOverConfigure: unable to get interfaceName	ERROR
Deleting scheduled IPv6 rules. delete from FirewallRules6 where ScheduleName = '%s'.	DEBUG	fwLBSpillOverConfigure: Could not set PREROUTING rules	ERROR

Update FirewallRules6 where ScheduleName = "%s" to New "	DEBUG	fwLBSpillOverConfigure: Could not set POSTROUTING rules	ERROR
Dns proxy Restart failed	DEBUG	fwLBSpillOverConfigure: Something going wrong Here	ERROR
deleting interface to ifgroup failed	DEBUG	fwL2TPGenericRules.c: unable to open the database file "	ERROR
adding interface to ifgroup failed	DEBUG	fwL2TPGenericRules.c: inet_aton failed	ERROR
deleting interface pVirtIface %s from ifgroup %d"	DEBUG	fwPPTPGenericRules.c: unable to open the database file "	ERROR
adding interface pVirtIface %s to ifgroup %d failed	DEBUG	fwPPTPGenericRules.c: inet_aton failed	ERROR
Deleting IP address %s.	DEBUG	DNS proxy firewall rule add failed for %s	ERROR
Adding new IP address %s.	DEBUG	deleting interface %s from ifgroup %d failed	ERROR
Updating old IP address %s to new IP address %s.	DEBUG	adding interface %s to ifgroup %d failed	ERROR
Restarting Firewall For %s Address Update from %s:%s	DEBUG	nimfBridgeTblHandler: unable to get interfaceName	ERROR
Disabling Firewall Rule for MSS packet marking	DEBUG	nimfBridgeTblHandler: \	ERROR
Enabling Firewall Rule for MSS packet marking	DEBUG	nimfBridgeTblHandler: unable to get \	ERROR
Enabling packet marking rule for %s IDLE timer	DEBUG	Failed to %s traffic from %s to %s to IPS.	ERROR
Deleted firewall rule %s for service %s with action %s	DEBUG	Failed to %s traffic from %s to %s to IPS.	ERROR
%s firewall rule %s for service %s with action %s	DEBUG	failed to start IPS service.	ERROR
Added firewall rule %s for service %s with action %s	DEBUG	Timeout in waiting for IPS service to start.	ERROR
Deleting inbound(WAN-LAN) firewall rule.	DEBUG	Usage:%s <DBFile> <opType> <tblName> <rowId> "	ERROR
Deleting inbound(WAN-DMZ) firewall rule.	DEBUG	xlr8NatConfig: illegal invocation of (%s)	ERROR
RIPng disabled.	DEBUG	Illegal invocation of [%s]	ERROR
RIPng enabled.	DEBUG	xlr8NatMgmtTblHandler: failed query: %s	ERROR
Disable IPv6 firewall rule.	DEBUG	Could not open file: %s	ERROR
Enable IPv6 firewall rule.	DEBUG	Rip Error Command Too Long	ERROR
Deleting IGMP proxy rule.	DEBUG	No authentication for RIPv1	ERROR
Enable IGMP proxy rule.	DEBUG	Invalid Rip Direction	ERROR
Restarting IGMP rule.	DEBUG	Invalid Rip Version	ERROR
Traffic meter enabled with no limit type.	DEBUG	Invalid Password for 1st Key	ERROR
Traffic meter enabled for only download.	DEBUG	Invalid Time for 1st Key	ERROR
Traffic meter enabled for both directions.	DEBUG	Invalid Password for 2nd Key	ERROR
Deleted firewall rule %s for service %s with action %s	DEBUG	Invalid Time for 2nd Key	ERROR
%s firewall rule %s for service %s with action %s	DEBUG	Invalid First KeyId	ERROR
Added firewall rule %s for service %s with action %s	DEBUG	Invalid Second KeyId	ERROR
Enabling Inter VLAN routing.	DEBUG	Invalid Authentication Type	ERROR
Updating inter VLAN routing status.	DEBUG	ripDisable failed	ERROR
Deleting inter VLAN routing.	DEBUG	ripEnable failed	ERROR

**Facility: Local0 (Wireless)**

<b>Log Message</b>	<b>Severity</b>	<b>Log Message</b>	<b>Severity</b>
(node=%s) setting %s to val = %d	DEBUG	sqlite3QueryResGet failed	ERROR
Custom wireless event: '%s'	DEBUG	sqlite3QueryResGet failed	ERROR
Wireless event: cmd=0x%x len=%d	DEBUG	VAP(%s) set beacon interval failed	ERROR
New Rogue AP (%02x:%02x:%02x:%02x:%02x: detected	DEBUG	VAP(%s) set DTIM interval failed	ERROR
WPS session in progress, ignoring enrolle assoc request	DEBUG	VAP(%s) set RTS Threshold failed	ERROR
ran query %s	DEBUG	VAP(%s) set Fragmentation Threshold failed	ERROR
DBUpdate event: Table: %s opCode:%d rowId:%d	DEBUG	VAP(%s) set Protection Mode failed	ERROR
%sing VAPs using profile %s	DEBUG	VAP(%s) set Tx Power failed	ERROR
%sing VAP %s	DEBUG	WDS Profile %s not found	ERROR
ran query %s	DEBUG	Failed to initalize WPS on %s	ERROR
%sing VAP instance %s	DEBUG	failed to get profile %s	ERROR
VAP(%s) set Short Preamble failed	DEBUG	could not initialize MGMT framework	ERROR
VAP(%s) set Short Retry failed	DEBUG	could not initialize MGMT framework	ERROR
VAP(%s) set Long Retry failed	DEBUG	dot11VapBssidUpdt SQL error: %s	ERROR
Decrypting context with key %s	DEBUG	sqlite3QueryResGet failed.Query:%s KDOT11_GET_PARAM(IEEE80211_I OC_CHANNEL) failed	ERROR
Unknown IAPP command %d received.	DEBUG	Failed to get the channel setting for %s	ERROR
unexpected reply from %d cmd=%d !	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
unexpected reply from %d cmd=%d !	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
Recvied DOT11_EAPOL_KEYMSG	DEBUG	sqlite3QueryResGet failed.Query:%s	ERROR
shutting down AP:%s	DEBUG	profile %s not found	ERROR
APCtx Found	DEBUG	sqlite3QueryResGet failed.Query:%s Interface name and policy must be specified	ERROR
APCtx Not-Found	DEBUG	Interface name and policy must be specified	ERROR
node not found *.*.*.%x:%x:%x	DEBUG	invalid ACL type %d	ERROR
error installing unicast key for %s	DEBUG	interface name not specified	ERROR
cmd =%d i_type =%d i_val=%d	DEBUG	interface name not specified	ERROR
join event for new node %s	DEBUG	Invalid interface - %s specified	ERROR
wpa/rsn IE id %d/%d not supported	DEBUG	buffer length not specified	ERROR
wpa IE id %d not supported	DEBUG	Invalid length(%d) specified	ERROR
leave event for node %s	DEBUG	failed created iappdLock	ERROR
NodeFree request for node : %s	DEBUG	failed to create cipher contexts.	ERROR
installing key to index %d	DEBUG	unable to register to UMI	ERROR
iReq.i_val : %d	DEBUG	iappSockInit() failed	ERROR
plfName : %s	DEBUG	iapplInit got error, unregistering it with UMI	ERROR
iReq.i_val : %d	DEBUG	umiloctl(UMI_COMP_UDOT11,%d,%d ) failed	ERROR
setting mode: %d	DEBUG	umiloctl(UMI_COMP_KDOT11,%d,%d ) failed	ERROR
Global counter wrapped, re-generating...	DEBUG		ERROR

Got PNAC_EVENT_PREAUTH_SUCCESS event for : %s	DEBUG	UDP failed, received Length is %d	ERROR
event for non-existent node %s	DEBUG	umiloctl(UMI_COMP_KDOT11, umiloctl(UMI_COMP_UDOT11,%d,%d )\	ERROR
PNAC_EVENT_EAPOL_START event received	DEBUG	umiloctl(UMI_COMP_KDOT11,%d,%d )\	ERROR
PNAC_EVENT_EAPOL_LOGOFF event received	DEBUG	umiloctl(UMI_COMP_KDOT11,%d,%d )\	ERROR
PNAC_EVENT_REAUTH event received	DEBUG	No IAPP Node found for req id %d	ERROR
PNAC_EVENT_AUTH_SUCCESS event received	DEBUG	umiloctl(UMI_COMP_UDOT11,%d,%d )\	ERROR
PNAC_EVENT_PORT_STATUS_CHAN GED event received	DEBUG	umiloctl(UMI_COMP_KDOT11,%d,%d )\	ERROR
unsupported event %d from PNAC event for non-existent node %s. Create new node.	DEBUG	umiloctl(UMI_COMP_UDOT11,%d,%d ) failed	ERROR
Add new node to DOT11 Node list	DEBUG	UDP socket is not created	ERROR
Update dot11STA database	DEBUG	UDP send failed	ERROR
Add PMKSA to the list	DEBUG	IAPP: socket (SOCK_STREAM) failed.	ERROR
eapolRecvAuthKeyMsg: received key message	DEBUG	IAPP: TCP connect failed to %s.	ERROR
node not found	DEBUG	cmd %d not supported.sender=%d umiloctl(UMI_COMP_KDOT11,%d,%d ) failed	ERROR
eapolRecvKeyMsg: replay counter not incremented	DEBUG	IAPP-CACHE-NOTIFY-REQUEST send to	ERROR
eapolRecvKeyMsg: replay counter is not same	DEBUG	/src/dot11/iapp/iappLib.c:1314: ADP_ERROR (	ERROR
processing pairwise key message 2	DEBUG	BSSID value passed is NULL	ERROR
RSN IE matching: OK	DEBUG	reserved requestId is passed	ERROR
processing pairwise key message 4	DEBUG	interface name is NULL	ERROR
processing group key message 2	DEBUG	IP address value passed is NULL	ERROR
processing key request message from client	DEBUG	opening receive UDP socket failed enabling broadcast for UDP socket failed	ERROR
WPA version %2x %2x not supported	DEBUG	opening receive TCP socket for new AP failed	ERROR
(%s) group cipher %2x doesn't match	DEBUG	/src/dot11/iapp/iappLib.c:1784: ADP_ERROR(	ERROR
(%s)Pairwise cipher %s not supported	DEBUG	/src/dot11/iapp/iappLib.c:1794: ADP_ERROR(	ERROR
(%s) authentication method %d not supported	DEBUG	/src/dot11/iapp/iappLib.c:1803: ADP_ERROR(	ERROR
%s:Auth method=%s pairwise cipher=%s IE size=%d	DEBUG	failed created dot11dLock.	ERROR
WPA version %2x %2x not supported	DEBUG	failed initialize profile library.	ERROR
Unable to obtain IE of type %d	DEBUG	failed to create cipher contexts.	ERROR
PTK state changed from %s to %s	DEBUG	unable to register to UMI	ERROR
using PMKSA from cache	DEBUG	could not create MIB tree	ERROR
PTK GK state changed from %s to %s	DEBUG	unable to register to PNAC	ERROR
GK state changed from %s to %s	DEBUG	Max registration attempts by DOT11 to PNAC exceeded	ERROR
Sending PTK Msg1	DEBUG	Creation of EAP WPS Profile Failed	ERROR
Sending PTK Msg3	DEBUG	umiloctl(UMI_COMP_IAPP,%d ) failed	ERROR
Sending GTK Msg1	DEBUG		

sending EAPOL pdu to PNAC...	DEBUG	DOT11_RX_EAPOL_KEYMSG: unknown ifname %s	ERROR
creating pnac authenticator with values %d %d - %s	DEBUG	cmd %d not supported.sender=%d	ERROR
Profile %s does not exist	DEBUG	inteface name passed is NULL	ERROR
IAPP initialized.	DEBUG	BSSID passed is NULL	ERROR
Encrypting context key=%s for could not find access point context for %s	DEBUG	inteface name passed is NULL unable to allocate memory for DOT11_CTX	ERROR
join event for existing node %s failed to send PNAC_FORCEAUTHORIZED "	DEBUG	unable to install wme mapping on %s	ERROR
failed to send PNAC_AUTHORIZED "	DEBUG	unable to get %s mac address	ERROR
failed to send PNAC_VAR_KEY_AVAILABLE (TRUE) "	DEBUG	Failed to set %s SSID	ERROR
failed to send PNAC_VAR_KEY_TX_EN (TRUE) "	DEBUG	Failed to set SSID broadcast status	ERROR
failed to send PNAC_VAR_KEY_TX_EN (FALSE) "	DEBUG	Failed to set PreAuth mode	ERROR
failed to send PNAC_FORCEAUTHORIZED "	DEBUG	unable to install key KDOT11_SET_PARAM:IEEE80211_I OC_AUTHMODE failed	ERROR
failed to send PNAC_AUTHORIZED "	DEBUG	KDOT11_SET_PARAM:IEEE80211_I OC_PRIVACY failed	ERROR
mic verification: OK	DEBUG	wpalnit failed	ERROR
pnacIfConfig: Invalid supplicant"	DEBUG	dot11InstallProfile: unable to get interface index	ERROR
Failed to process user request	DEBUG	adpHmacInit(%s) failed	ERROR
Failed to process user request - %s(%d)	DEBUG	interface %s not found	ERROR
pnacIfConfigUmlioctl: umloctl failed	DEBUG	AP not found on %s	ERROR
pnacIfConfigUmlioctl: usrPnac returned %d	DEBUG	keyLen > PNAC_KEY_MAX_SIZE	ERROR
pnacIfConfigUmlioctl: usrPnac returned %d	DEBUG	Invalid profile name passed	ERROR
pnacIfConfigUmlioctl: usrPnac returned %d	DEBUG	Creation of WPS EAP Profile failed	ERROR
pnacKernNotifier: invalid PAE configuration "	DEBUG	unsupported command %d	ERROR
From pnacEapDemoAuthRecv: unsupported response "	DEBUG	device %s not found	ERROR
From pnacEapDemoAuthRecv: invalid codes received	DEBUG	unsupported command %d	ERROR
From pnacRadXlateDemoRecv: received unknown "	DEBUG	dot11NodeAlloc failed	ERROR
From pnacRadXlateDemoRecv: invalid codes received	DEBUG	Getting WPA IE failed for %s	ERROR
Error from pnacRadXlateDemoRecv: malloc failed	DEBUG	Getting WPS IE failed for %s	ERROR
From pnacRadXlateRadPktHandle: received a non-supported"	DEBUG	Failed initialize authenticator for node %s	ERROR
Only md5 authentication scheme currently supported. "	DEBUG	Failed to get the system up time while adding node %s	ERROR
Message from authenticator: from pnacPDUXmit: bufsize = %d, pktType = %d,"	DEBUG	error creating PNAC port for node %s	ERROR
pnacPDUXmit: sending eap packet. code = %d, "	DEBUG	dot11NodeAlloc failed	ERROR
	DEBUG	Invalid arguments.	ERROR

pnacRecvRtn: no corresponding pnac port pae found	DEBUG	umiloctl(UMI_COMP_IAPP,%d) failed	ERROR
sending unicast key	DEBUG	Invalid IE.	ERROR
sending broadcast key	DEBUG	umiloctl(UMI_COMP_KDOT11_VAP, %d ) failed	ERROR
from pnacAuthPAEDisconnected: calling pnacTxCannedFail	DEBUG	umiloctl(UMI_COMP_KDOT11,%d ,%d) failed	ERROR
from pnacAuthPAEForceUnauth: calling pnacTxCannedFail	DEBUG	KDOT11_SET_PARAM:IEEE80211_I OC_WME_CWMIN failed	ERROR
state changed from %s to %s	DEBUG	KDOT11_SET_PARAM:IEEE80211_I OC_WME_CWMAX failed	ERROR
PNAC user comp id not set. dropping event %d	DEBUG	KDOT11_SET_PARAM:IEEE80211_I OC_WME_AIFS failed	ERROR
sending event %d to %d	DEBUG	KDOT11_SET_PARAM:80211_IOC_WME_TXOPLIMIT failed	ERROR
requesting keys informantion from %d	DEBUG	KDOT11_SET_PARAM:IEEE80211_I OC_WME_ACN failed	ERROR
pnacUmiPortPaeParamSet: error in getting port pae	DEBUG	KDOT11_SET_PARAM:IEEE80211_I OC_WME failed	ERROR
pnacUmiPortPaeParamSet: invalid param - %d	DEBUG	invalid group cipher %d	ERROR
pnacRecvASInfoMessage: Skey of length %d set	DEBUG	KDOT11_SET_PARAM:IEEE80211_I OC_MCASTCIPHER failed	ERROR
pnacRecvASInfoMessage: reAuthPeriod set to: %d	DEBUG	KDOT11_SET_PARAM:IEEE80211_I OC_MCASTKEYLEN failed	ERROR
pnacRecvASInfoMessage: suppTimeout set to: %d	DEBUG	KDOT11_SET_PARAM:IEEE80211_I OC_UCASTCIPHERS failed	ERROR
PORt SUCCESSFULLY DESTROYED	DEBUG	KDOT11_SET_PARAM:IEEE80211_I OC_KEYMGMTALGS failed	ERROR
creating physical port for %s	DEBUG	KDOT11_SET_PARAM:IEEE80211_I OC_WPA failed	ERROR
pnacAuthInit: using defualt pnacAuthParams	DEBUG	unknow cipher type = %d	ERROR
pnacSuplInit: using defualt pnacSuppParams	DEBUG	umiloctl(UMI_COMP_IAPP,%d) failed	ERROR
Error from pnacCombinedStMachTriggerFunc: "	DEBUG	invalid media value=%d	ERROR
Error from pnacCombinedStMachTriggerFunc: "	DEBUG	invalid mediaOpt value=%d	ERROR
Error from pnacCombinedStMachTriggerFunc: "	DEBUG	invalid mode value=%d	ERROR
Error from pnacCombinedStMachTriggerFunc: "	DEBUG	dot11PnaclfCreate failed	ERROR
Error from pnacCombinedStMachTriggerFunc: "	DEBUG	wpaPRF failed	ERROR
Error from pnacCombinedStMachTriggerFunc: "	DEBUG	Error generating global key counter	ERROR
Error from pnacCombinedStMachTriggerFunc: "	DEBUG	wpaCalcMic: unsupported key descriptor version	ERROR
Error from pnacCombinedStMachTriggerFunc: "	DEBUG	integrity failed. need to stop all stations "	ERROR
Error from pnacCombinedStMachTriggerFunc: "	DEBUG	couldn't find AP context for %s interface	ERROR
received a pdu on %s	DEBUG	dot11Malloc failed	ERROR
pnacRecvMapi: protoType: %04x pPhyPort->authToASSendRtn:%p	DEBUG	dot11Malloc failed	ERROR
port not found	DEBUG	eapolRecvKeyMsg: unknown descType =%d	ERROR

from pnacRecvMapi: pkt body len = %d, pktType = %d	DEBUG	eapolRecvKeyMsg: invalid descriptor version	ERROR
from pnacPDUProcess: received PNAC_EAP_PACKET	DEBUG	eapolRecvKeyMsg: incorrect descriptor version	ERROR
from pnacPDUProcess: currentId = %d	DEBUG	eapolRecvKeyMsg: Ack must not be set	ERROR
from pnacPDUProcess: code = %d, identifier = %d, "	DEBUG	eapolRecvKeyMsg: MIC bit must be set	ERROR
from pnacPDUProcess: setting rxResp true	DEBUG	wpaAuthRecvPTKMsg2: unexpected packet received	ERROR
from pnacPDUProcess: code = %d, identifier = %d, "	DEBUG	wpaAuthRecvPTKMsg2: mic check failed	ERROR
from pnacPDUProcess: received "	DEBUG	wpaAuthRecvPTKMsg2: rsn ie mismatch	ERROR
from pnacPDUProcess: received "	DEBUG	wpaAuthRecvPTKMsg4: unexpected packet received	ERROR
from pnacPDUProcess: received PNAC_EAPOL_KEY_PACKET	DEBUG	wpaAuthRecvPTKMsg4: keyDataLength not zero	ERROR
doing pnacTxCannedFail	DEBUG	wpaAuthRecvPTKMsg4: mic check failed	ERROR
doing pnacTxCannedSuccess	DEBUG	wpaAuthRecvGTKMsg2: unexpected packet received	ERROR
doing pnacTxReqId	DEBUG	secureBit not set in GTK Msg2	ERROR
doing pnacTxReq	DEBUG	wpaAuthRecvGTKMsg2: keyDataLength not zero	ERROR
doing pnacTxStart	DEBUG	wpaAuthRecvGTKMsg2: mic check failed	ERROR
doing pnacTxLogoff	DEBUG	wpaAuthRecvKeyReq: unexpected packet received	ERROR
doing pnacTxRsId: 1st cond	DEBUG	wpaAuthRecvKeyReq: keyDataLength not zero	ERROR
doing pnacTxRsId: entering 2nd cond	DEBUG	wpaAuthRecvKeyReq: mic check failed	ERROR
from pnacTxRsId: code = %d, identifier = %d, length = %d, "	DEBUG	invalid OUI %x %x %x	ERROR
doing pnacTxRsId: 2nd cond	DEBUG	(%s) invalid OUI %x %x %x	ERROR
doing pnacTxRspAuth: 1st cond	DEBUG	[%s:%d] Cipher in WPA IE : %x	ERROR
doing pnacTxRspAuth: 2nd cond	DEBUG	(%s) invalid OUI %x %x %x	ERROR
message for unknown port PAE	DEBUG	short WPA IE (length = %d) received	ERROR
from pnacACToSuppRecvRtn: calling pnacEapPktRecord	DEBUG	PTK state machine in unknown state.	ERROR
from pnacEapPktRecord: code = %d, identifier = %d, "	DEBUG	dot11InstallKeys failed	ERROR
from pnacEapPktRecord: received success pkt	DEBUG	group state machine entered into WPA_AUTH_GTK_INIT	ERROR
from pnacEapPktRecord: received failure pkt	DEBUG	dot11Malloc failed	ERROR
from pnacEapPktRecord: received request pkt	DEBUG	dot11Malloc failed	ERROR
unknown EAP-code %d	DEBUG	dot11Malloc failed	ERROR
Authenticator[%d]:	DEBUG	aesWrap failed	ERROR
Auth PAE state = %s	DEBUG	unknown key descriptor version %d	ERROR
Auth Reauth state = %s	DEBUG	dot11Malloc failed	ERROR
Back auth state = %s	DEBUG	could not initialize AES128ECB	ERROR
Supplicant[%d]:	DEBUG	could not initialize AES-128-ECB	ERROR
Supp Pae state = %s	DEBUG	MD5 initialization failed	ERROR

from pnacBackAuthFail: calling pnacTxCannedFail %s returned ERROR	DEBUG	RC4 framework initialization failed	ERROR
pnacUmiOctlHandler: cmd: %s(%d) %s not configured for 802.1x could not process PDU received from the wire	DEBUG	ERROR: option value not specified	ERROR
pnacPDUForward: failed to forward the received PDU	DEBUG	ERROR: -u can be used only with -s	ERROR
pnacPDUForward: failed to forward the received PDU	DEBUG	ERROR: user-name not specified	ERROR
Creating PHY port with AUTH backend : %s SendRtn: %p RecvRtn:%p pnacUmiAuthConfig: %s not configured for 802.1x	DEBUG	failed to enable debug	ERROR
pnacUmiAuthConfig: %s not configured for 802.1x	DEBUG	[%s]: failed to convert string to MAC "	ERROR
pnacSuppRegisterUserInfo: not a valid AC	DEBUG	failed to initialize UMI	ERROR
pnacPhyPortParamSet:invalid arguments	DEBUG	pnacPhyPortParamSet:Failed to create socket	ERROR
pnacIfConfig: autoAuth Enabled pnacSendRtn: no pnac port pae found for "	DEBUG	Error from pnacPhyPortParamSet:%s-device invalid	ERROR
sending portStatus: %s[%d] to dot11 pnacRecvASInfoMessage: Rkey of length %d set	DEBUG	Error from pnacPhyPortParamSet:%s-Getting MAC address "	ERROR
pnacRecvASInfoMessage: Rkey of length %d set	DEBUG	pnacPhyPortParamSet:Failed to add 802.1X multicast "	ERROR
ASSendRtn: %p ASToAuthRecv: %p adpRand failed:unable to generate random unicast key	DEBUG	pnacIfInterfaceUp: failed to create a raw socket	ERROR
using group key as unicast key	WARN	pnacIfInterfaceUp: failed to get interface flags	ERROR
Integrity check failed more than once in last 60 secs.	WARN	failed to allocate buffer	ERROR
MIC failed twice in last 60 secs, taking countermeasures	WARN	UMI initialization failed	ERROR
Failed to set dot11 port status	WARN	Error from pnacEapDemoAuthLibInit: malloc failed	ERROR
PTK state machine in NO_STATE.	WARN	Error from pnacEapDemoAuthRecv: received null EAP pkt	ERROR
PTK state machine in NO_STATE!!	WARN	Error from pnacEapDemoAuthRecv: send "	ERROR
PMKSA refcount not 1	WARN	Error from pnacRadXlateASAdd: cannot open socket	ERROR
IV verification failedknown subtype> pnacIfConfig: overwriting previous interface "	WARN	Error from pnacRadXlateDemoRecv: received null EAP pkt	ERROR
pnacIfConfig: overwriting previous "	WARN	From pnacRadXlateDemoRecv: send "	ERROR
pnacIfConfig: overwriting previous username"	WARN	Error from pnacRadXlateDemoRecv: radius "	ERROR
pnacIfConfig: overwriting previous password"	WARN	Error from pnacRadXlateDemoRecv: radius "	ERROR
pnacIfConfig: overwriting previous password"	WARN	Error from pnacRadXlateRadIdRespSend: send to failed	ERROR
%s: Failed to set port status	WARN	Error from pnacRadXlateRadNonIdRespSend: send to failed	ERROR
%s: Failed to notify event to dot11	WARN	Error from pnacRadXlateRadRecvProc: recvfrom failed	ERROR
pnacLibDeinit: Failed to destroy the	WARN	From	ERROR

phyPort:%s		pnacRadXlateRadPktIntegrityChk: no corresponding "	
pnacPortPaeDeconfig:kpnacPortPaeDec onfig failed	WARN	Error from pnacRadXlateRadPktIntegrityChk: no message "	ERROR
pnacPortPaeDeconfig:kpnacPortPaeDec onfig failed	WARN	Error from pnacRadXlateRadPktIntegrityChk: "From	ERROR
pnacBackAuthSuccess: failed to notify the destination "	WARN	pnacRadXlateRadChalPktHandle: no encapsulated eap "	ERROR
could not initialize MGMT framework	ERROR	Error from pnacRadXlateRadChalPktHandle: malloc for eap "	ERROR
umilinit failed	ERROR	Error from pnacEapDemoSuppUserInfoRegister: invalid "	ERROR
iappInit failed	ERROR	Error from pnacEapDemoSuppRecv: received null EAP pkt	ERROR
could not initialize IAPP MGMT.	ERROR	Error from pnacEapDemoSuppRecv: send ptr to pnac supplicant"	ERROR
dot11Malloc failed	ERROR	From pnacEapDemoSuppRecv: user info not entered yet	ERROR
buffer length not specified	ERROR	Error from pnacEapDemoSuppRecv: couldn't "	ERROR
Invalid length(%d) specified	ERROR	MDString: adpDigestInit for md5 failed	ERROR
Failed to get information about authorized AP list.	ERROR	pnacUmlinit: UMI initialization failed	ERROR
Recd IE data for non-existent AP %s	ERROR	could not start PNAC task	ERROR
Recd IE data for wrong AP %s	ERROR	invalid aruments	ERROR
Received Invalid IE data from WSC	ERROR	pnacIfNameToIndex failed	ERROR
Recd IE data for non-existent AP %s	ERROR	pnacPhyPortParamSet: device invalid %s%d	ERROR
Recd WSC Start command without interface name	ERROR	pnacPhyPortParamSet: EIOCGADDR ioctl failed	ERROR
Recd WSC start for non-existent AP %s	ERROR	pnacPhyPortParamSet: multicast addr add ioctl failed	ERROR
Recd WSC start for wrong AP %s	ERROR	pnacPhyPortParamUnset: multicast addr del ioctl failed	ERROR
Unable to send WSC_WLAN_CMD_PORT to WSC	ERROR	pnacPDUXmit: Invalid arguments	ERROR
Failed to get the ap context for %s	ERROR	pnacPDUXmit: failed to get M_BLK_ID	ERROR
WPS can only be applied to WPA/WPA2 security profiles	ERROR	from pnacIsInterfaceUp: device %s%d invalid	ERROR
wpsEnable: running wsccmd failed	ERROR	pnacRecvRtn: dropping received packet as port is"	ERROR
Failed to get the ap context for %s	ERROR	pnacSendRtn: Invalid arguments	ERROR
WPS conf. under non WPA/WPA2 security setting	ERROR	pnacSendRtn: no physical port corresponding to"	ERROR
Failed to reset the Beacon Frame IE in the driver	ERROR	pnacSendRtn: dropping packet as port"	ERROR
Failed to reset the Beacon Frame IE in the driver	ERROR	pnacAuthBuildRC4KeyDesc: adpEncryptInit(RC4) failed	ERROR
WPS method cannot be NULL	ERROR	pnacAuthBuildRC4KeyDesc: adpCipherContextCtrl"	ERROR
PIN value length should be a multiple of 4 !!	ERROR	pnacDot11UserSet: incorrect buffer length	ERROR
Failed to initiate PIN based association, PIN = %s	ERROR	PNAC user component id not set.	ERROR

Failed to initiate PBC based enrolle association	ERROR	pnacKeyInfoGet:failed to allocate buffer	ERROR
Invalid association mode. (Allowed modes : PIN/PBC)	ERROR	PNAC user comp id not set. dropping EAPOL key pkt	ERROR
wpsEnable: running wsccmd failed	ERROR	pnacUmiPortPaeParamSet: invalid buffer received	ERROR
Failed to send QUIT command to WSC from DOT11	ERROR	Error from pnacRecvASInfoMessage: "	ERROR
Failed to clear off the WPS process	ERROR	pnacRecvASInfoMessage: "	ERROR
missing profile name	ERROR	pnacRecvASInfoMessage: Bad info length	ERROR
A profile exists with the same name	ERROR	Error from pnacLibInit: malloc failed	ERROR
Error in allocating memory for profile	ERROR	could not create phy ports lock	ERROR
missing profile name	ERROR	could not create nodes ports lock	ERROR
missing profile name	ERROR	port exists for iface - %s	ERROR
Profile name and interface name must be specified	ERROR	pnacPhyPortCreate failed	ERROR
Profile %s does not exist	ERROR	kpnacPhyPortCreate failed	ERROR
Could not set profile %s on the interface %s	ERROR	invalid argument	ERROR
missing profile name	ERROR	pnacAuthConfig: maxAuth limit reached	ERROR
Profile %s does not exist	ERROR	pnacAuthConfig: malloc failed	ERROR
Profile %s does not exist	ERROR	Error from pnacAuthConfig: pAsArg cannot be NULL	ERROR
SSID should not be longer than %d	ERROR	Error from pnacAuthConfig: receive routine hook "	ERROR
Profile %s does not exist	ERROR	pnacAuthConfig: pnacAuthInit failed	ERROR
Profile %s does not exist	ERROR	kpnacPortPaeConfig failed	ERROR
Profile %s does not exist	ERROR	Invalid arguments	ERROR
Profile %s does not exist	ERROR	Error from pnacSuppConfig: malloc failed	ERROR
Profile %s does not exist	ERROR	Error from pnacSuppConfig: receive routine hook "	ERROR
Profile %s does not exist	ERROR	Error from pnacSuppConfig: pnacSuppInit failed	ERROR
SSID not set. SSID is needed to generate password hash	ERROR	kpnacPortPaeConfig failed	ERROR
password string too big	ERROR	pnacAuthDeconfig failed: pPortPae NULL	ERROR
dot11Malloc failed	ERROR	Error from pnacPhyPortDestroy: port not configured	ERROR
Profile %s does not exist	ERROR	pnacPhyPortDestroy: Failed to deconfigure port	ERROR
Hex string should only have %d hex chars	ERROR	pnacPhyPortParamUnset FAILED	ERROR
dot11Malloc failed	ERROR	Error from pnacPhyPortCreate: malloc failed	ERROR
Profile %s does not exist	ERROR	Error from pnacPhyPortCreate: pnacPhyPortParamSet"	ERROR
invalid key index %d. key index should be 0-3.	ERROR	error from pnacPhyPortCreate: malloc failed	ERROR
wepKey length incorrect	ERROR	Error from pnacAuthInit: pnacPortTimersInit failed	ERROR
Profile %s does not exist	ERROR	Error from pnacAuthInit: pnacAuthPAEInit failed	ERROR

Invalid Cipher type %d	ERROR	Error from pnacAuthInit: pnacAuthKeyTxInit failed	ERROR
Profile supports WEP stas, Group cipher must be WEP	ERROR	Error from pnacAuthInit: pnacReauthTimerInit failed	ERROR
Profile %s does not exist	ERROR	Error from pnacAuthInit: pnacBackAuthInit failed	ERROR
Profile %s does not exist	ERROR	Error from pnacAuthInit: pnacCtrlDirInit failed	ERROR
Profile %s does not exist	ERROR	Error from pnacAuthInit: pnacKeyRecvInit failed	ERROR
invalid pairwise cipher type %d	ERROR	Error from pnacSuppInit: malloc failed	ERROR
Cipher %s is already in the list.	ERROR	Error from pnacSuppInit: pnacPortTimersInit failed	ERROR
Profile %s does not exist	ERROR	Error from pnacSuppInit: pnacKeyRecvInit failed	ERROR
Invalid Cipher type %d	ERROR	Error from pnacSuppInit: pnacSuppKeyTxInit failed	ERROR
Cipher %s not found in the list.	ERROR	Error from pnacSuppInit: pnacSuppPAEInit failed	ERROR
Profile %s does not exist	ERROR	Error from pnacRecvRtn: invalid arguments	ERROR
Profile %s does not exist	ERROR	Error from pnacRecvMapi: unsupported PDU received	ERROR
Auth method %s is already in the list	ERROR	suppToACSendRtn returned not OK!	ERROR
Profile %s does not exist	ERROR	Error from pnacBasicPktCreate: malloc failed	ERROR
Auth method %s not found in the list.	ERROR	Error from pnacEAPPktCreate: basic pkt create failed	ERROR
Profile %s does not exist	ERROR	Error from pnacTxCannedFail: eap pkt create failed	ERROR
Profile %s does not exist	ERROR	Error from pnacTxCannedSuccess: eap pkt create failed	ERROR
Profile %s does not exist	ERROR	Error from pnacTxReqId: eap pkt create failed	ERROR
invalid type value %d. supported values are 1,2,3,4	ERROR	Error from pnacTxReq: eap pkt create failed	ERROR
Profile %s does not exist	ERROR	Error from pnacSendRespToServer: malloc failed	ERROR
invalid type value %d. supported values are 1,2,3,4	ERROR	Error from pnacSendRespToServer: no AS configured	ERROR
Profile %s does not exist	ERROR	Error from pnacTxStart: basic pkt create failed	ERROR
invalid type value %d. supported values are 1,2,3,4	ERROR	Error from pnacTxStart: basic pkt create failed	ERROR
Profile %s does not exist	ERROR	Error from pnacTxRspld: eap pkt create failed	ERROR
invalid type value %d. supported values are 1,2,3,4	ERROR	Error from pnacTxRspAuth: eap pkt create failed	ERROR
Profile %s does not exist	ERROR	Error from pnacEapPktRecord: EAP packet too"	ERROR
invalid type value %d. supported values are 1,2,3,4	ERROR	Error from pnacEapPktRecord: " from pnacBackAuthTimeout: calling pnacTxCannedFail	ERROR
Profile %s does not exist	ERROR	hmac_md5: adpHmacContextCreate failed	ERROR
ERROR: incomplete DB update information.	ERROR		ERROR
old values result does not contain 2 rows	ERROR	hmac_md5:adpHmacInit failed	ERROR
sqlite3QueryResGet failed	ERROR	pnacUmiioctlHandler: invalid cmd: %d	ERROR

Error in executing DB update handler	ERROR	pnacEapRadAuthSend: Invalid arguments pnacEapRadAuthSend: failed to allocate inbuffer	ERROR
sqlite3QueryResGet failed ERROR: incomplete DB update information.	ERROR	pnacXmit : umilctl failed[%d]	ERROR
old values result does not contain 2 rows	ERROR	pnacPDUForward: Invalid input pnacPDUForward: error in getting port pae information	ERROR
sqlite3QueryResGet failed	ERROR	pnacPDUForward: error allocating memory	ERROR
Error in executing DB update handler	ERROR	pnacUmlfMacAddrChange: %s not configured for 802.1x	ERROR
sqlite3QueryResGet failed.Query:%s	ERROR	pnacUmlfMacAddrChange: could not process PDU received"	ERROR
sqlite3QueryResGet failed.Query:%s	ERROR	pnacUmiPhyPortConfig: Invalid config data	ERROR
sqlite3QueryResGet failed.Query:%s	ERROR	pnacUmiPhyPortConfig: Invalid backend name specified	ERROR
sqlite3QueryResGet failed.Query:%s	ERROR	pnacUmiPhyPortConfig: could not create PNAC physical"	ERROR
startStopVap failed to stop %s	ERROR	pnacUmiAuthConfig: Invalid config data	ERROR
Invalid SQLITE operation code - %d .src/dot11/mgmt/dot11Mgmt.c:1177: ADP_ERROR (	ERROR	pnacUmiAuthConfig: Invalid backend name specified	ERROR
only delete event expected on dot11RogueAP.	ERROR	unable to create new EAP context. unable to apply %s profile on the EAP context.	ERROR
sqlite3QueryResGet failed	ERROR	pnacUmiAuthConfig: could not configure PNAC PAE "	ERROR
unhandled database operation %d	ERROR	pnacUmiSuppConfig: Invalid config data	ERROR
sqlite3QueryResGet failed	ERROR	pnacUmiSuppConfig: Invalid backend name specified	ERROR
failed to configure WPS on %s	ERROR	pnacUmiSuppConfig: %s not configured for 802.1x	ERROR
sqlite3QueryResGet failed	ERROR	pnacUmiSuppConfig: could not PNAC port Access"	ERROR
sqlite3QueryResGet failed	ERROR	pnacUmiSuppConfig: Failed to register user information	ERROR
sqlite3QueryResGet failed	ERROR	pnacPortByMacDeconfig: port not found	ERROR
sqlite3QueryResGet failed	ERROR	pnacPortByMacDeconfig: port not found	ERROR
no VAP rows returned. expected one multiple VAP rows returned. expected one	ERROR	pnacUmlfDown: Invalid config data	ERROR
	ERROR	pnacUmlfDown: Invalid config data Error from pnacPortDeconfig: port not configured	ERROR
sqlite3QueryResGet failed	ERROR	pnacUmlfDown: could not de-configure port	ERROR
invalid query result. ncols=%d nrows=%d	ERROR	pnacUmiPhyPortDestroy: Invalid config data	ERROR
%s:VAP(%s) create failed	ERROR	pnacUmiPhyPortDestroy: Invalid config data	ERROR
sqlite3QueryResGet failed	ERROR	pnacUmiPhyPortDestroy: Failed to destroy the port	ERROR
invalid query result. ncols=%d nrows=%d	ERROR		

	Invalid config data	ERROR
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## Facility: Kernel

Log Message	Severity	Log Message	Severity
DNAT: multiple ranges no longer supported	DEBUG	%s: %s%s:%d -> %s:%d %s,	DEBUG
DNAT: Target size %u wrong for %u ranges,	DEBUG	%s: %s%s:%d %s,	DEBUG
DNAT: wrong table %s, tablename	DEBUG	%s: Failed to add WDS MAC: %s, dev->name,	DEBUG
DNAT: hook mask 0x% hook_mask	DEBUG	%s: Device already has WDS mac address attached,	DEBUG
%s%d: resetting MPPC/MPPE compressor,	DEBUG	%s: Added WDS MAC: %s, dev->name,	DEBUG
%s%d: wrong offset value: %d,	DEBUG	%s: WDS MAC address %s is not known by this interface,	DEBUG
%s%d: wrong length of match value: %d,	DEBUG	[madwifi] %s() : Not enough space., __FUNCTION__	DEBUG
%s%d: too big offset value: %d,	DEBUG	Returning to chan %d, ieeeChan	DEBUG
%s%d: cannot decode offset value,	DEBUG	WEP	DEBUG
%s%d: wrong length code: 0x%X,	DEBUG	AES	DEBUG
%s%d: short packet (len=%d), __FUNCTION__	DEBUG	AES_CCM	DEBUG
%s%d: bad sequence number: %d, expected: %d,	DEBUG	CKIP	DEBUG
%s%d: bad sequence number: %d, expected: %d,	DEBUG	TKIP	DEBUG
PPPIOCDETACH file->f_count=%d,	DEBUG	%s: cannot map channel to mode; freq %u flags 0x%x,	DEBUG
PPP: outbound frame not passed	DEBUG	%s: %s, vap->iv_dev->name, buf	DEBUG
PPP: VJ decompression error	DEBUG	%s: [%s] %s, vap->iv_dev->name,	DEBUG
PPP: inbound frame not passed	DEBUG	%s: [%s] %s, vap->iv_dev->name, ether_sprintf(mac), buf	DEBUG
PPP: reconstructed packet	DEBUG	[%s:%s] discard %s frame, %s, vap->iv_dev->name,	DEBUG
PPP: no memory for	DEBUG	[%s:%s] discard frame, %s, vap->iv_dev->name,	DEBUG
missed pkts %u..%u,	DEBUG	[%s:%s] discard %s information element, %s,	DEBUG
%s%d: resetting MPPC/MPPE compressor,	DEBUG	[%s:%s] discard information element, %s,	DEBUG
%s%d: wrong offset value: %d,	DEBUG	[%s:%s] discard %s frame, %s, vap->iv_dev->name,	DEBUG
%s%d: wrong length of match value: %d,	DEBUG	[%s:%s] discard frame, %s, vap->iv_dev->name,	DEBUG
%s%d: too big offset value: %d,	DEBUG	ifmedia_add: null ifm	DEBUG
%s%d: cannot decode offset value,	DEBUG	Adding entry for	DEBUG
%s%d: wrong length code: 0x%X,	DEBUG	ifmedia_set: no match for 0x%x/0x%x,	DEBUG
%s%d: short packet (len=%d), __FUNCTION__	DEBUG	ifmedia_set: target	DEBUG
%s%d: bad sequence number: %d, expected: %d,	DEBUG	ifmedia_set: setting to	DEBUG

%s%d: bad sequence number: %d, expected: %d,	DEBUG	ifmedia_ioctl: no media found for 0x%x, ifmedia_ioctl: switching %s to , dev->name	DEBUG
PPPIOCDETACH file->f_count=%d,	DEBUG	ifmedia_match: multiple match for <unknown type>	DEBUG
PPP: outbound frame not passed	DEBUG	desc->ifmt_string	DEBUG
PPP: VJ decompression error	DEBUG	mode %s, desc->ifmt_string	DEBUG
PPP: inbound frame not passed	DEBUG	<unknown subtype>	DEBUG
PPP: reconstructed packet	DEBUG	%s, desc->ifmt_string	DEBUG
PPP: no memory for missed pkts %u..%u,	DEBUG	%s: INC_USE_COUNT, now %d, __FUNCTION__, mod_use_count \	DEBUG
%s: DEC_USE_COUNT, now %d, __FUNCTION__, mod_use_count \	DEBUG	%s: seen_option++ ? , : ,	DEBUG
PPPOL2TP %s: _fmt,	DEBUG	%s: seen_option ? > :	DEBUG
PPPOL2TP: --> %s, __FUNCTION__)	DEBUG	%s: %s, dev->name, buf	DEBUG
PPPOL2TP: <- %s, __FUNCTION__)	DEBUG	%s: no memory for sysctl table!, __func__	DEBUG
%s: recv: , tunnel->name	DEBUG	%s: no memory for VAP name!, __func__	DEBUG
%s: xmit:, session->name	DEBUG	%s: failed to register sysctls!, vap->iv_dev->name	DEBUG
%s: xmit:, session->name	DEBUG	%s: no memory for new proc entry (%s)!, __func__,	DEBUG
%s: module use_count is %d, __FUNCTION__, mod_use_count	DEBUG	%s: 0x%p len %u, tag, p, len	DEBUG
PPPOL2TP %s: _fmt,	DEBUG	%03d:, i	DEBUG
PPPOL2TP: --> %s, __FUNCTION__)	DEBUG	%02x, ((u_int8_t *)p)[i]	DEBUG
PPPOL2TP: <- %s, __FUNCTION__)	DEBUG	first difference at byte %u, i	DEBUG
%s: recv: , tunnel->name	DEBUG	%s: , t->name	DEBUG
%s: xmit:, session->name	DEBUG	FAIL: ieee80211_crypto_newkey failed	DEBUG
%s: xmit:, session->name	DEBUG	FAIL: ieee80211_crypto_setkey failed	DEBUG
PPPOL2TP %s: _fmt,	DEBUG	FAIL: unable to allocate skbuff	DEBUG
PPPOL2TP: --> %s, __FUNCTION__)	DEBUG	FAIL: wep decap failed	DEBUG
PPPOL2TP: <- %s, __FUNCTION__)	DEBUG	FAIL: decap botch; length mismatch	DEBUG
%s: recv: , tunnel->name	DEBUG	FAIL: decap botch; data does not compare	DEBUG
%s: xmit:, session->name	DEBUG	FAIL: wep encapsulation failed	DEBUG
%s: xmit:, session->name	DEBUG	FAIL: encapsulation data length mismatch	DEBUG
IRQ 31 is triggered	DEBUG	FAIL: encrypt data does not compare	DEBUG
[%s:%d] , __func__ , __LINE__\	DEBUG	PASS	DEBUG
\t[R%s %#0x %#0x 0x%08x%08x], (status == ERROR ? # : ), page, addr, (uint32_t)(*pValue >> 32), (uint32_t)(*pValue & 0xffffffff)	DEBUG	%u of %u 802.11i WEP test vectors passed, pass, total	DEBUG
\t[W%s %#0x %#0x 0x%08x%08x], (status == ERROR ? # : ), page, addr, (uint32_t)(value >> 32), (uint32_t)(value & 0xffffffff)	DEBUG	%s: 0x%p len %u, tag, p, len	DEBUG
%s: mac_add %02X:%02X:%02X:%02X:%02X: dev->name, addr[0], addr[1], addr[2], addr[3], addr[4], addr[5]	DEBUG	%03d:, i	DEBUG

%s: mac_del %02X:%02X:%02X:%02X:%02X: dev->name, addr[0], addr[1], addr[2], addr[3], addr[4], addr[5]	DEBUG	%02x, ((u_int8_t *)p)[i]	DEBUG
%s: mac_kick %02X:%02X:%02X:%02X:%02X: dev->name, addr[0], addr[1], addr[2], addr[3], addr[4], addr[5]	DEBUG	first difference at byte %u, i	DEBUG
%s: mac_undefined %02X:%02X:%02X:%02X:%02X: dev->name, addr[0], addr[1], addr[2], addr[3], addr[4], addr[5]	DEBUG	%s: , t->name	DEBUG
%s: addr_add %02X:%02X:%02X:%02X:%02X: dev->name, addr[0], addr[1], addr[2], addr[3], addr[4], addr[5]	DEBUG	FAIL: ieee80211_crypto_newkey failed	DEBUG
%s: addr_del %02X:%02X:%02X:%02X:%02X: dev->name, addr[0], addr[1], addr[2], addr[3], addr[4], addr[5]	DEBUG	FAIL: ieee80211_crypto_setkey failed	DEBUG
%s: mac_undefined %02X:%02X:%02X:%02X:%02X: dev->name, addr[0], addr[1], addr[2], addr[3], addr[4], addr[5]	DEBUG	FAIL: unable to allocate skbuff	DEBUG
%s: set_float %d;%d, IRQ 32 is triggered	DEBUG	FAIL: ccmp encap failed	DEBUG
ip_finish_output2: No header cache and no neighbour!	DEBUG	FAIL: encapsulation data length mismatch	DEBUG
a guy asks for address mask. Who is it? icmp v4 hw csum failure)	DEBUG	FAIL: encrypt data does not compare	DEBUG
expire>> %u %d %d %d, expire, expire++ %u %d %d %d, expire,	DEBUG	FAIL: decap botch; length mismatch	DEBUG
rt_cache @%02x: %u.%u.%u.%u, hash, rt_bind_peer(0) @%p, NET_CALLER(iph)	DEBUG	FAIL: decap botch; data does not compare	DEBUG
ip_rt_advice: redirect to	DEBUG	PASS	DEBUG
ip_rt_bug: %u.%u.%u.%u -> %u.%u.%u.%u, %s, udp cork app bug 2)	DEBUG	%u of %u 802.11i AES-CCMP test vectors passed, pass, total	DEBUG
udp cork app bug 3)	DEBUG	FAIL: 0x%p len %u, tag, p, len	DEBUG
udp v4 hw csum failure.)	DEBUG	%03d:, i	DEBUG
UDP: short packet: From %u.%u.%u.%u:%u %d/%d to %u.%u.%u.%u:%u, UDP: bad checksum. From %d.%d.%d.%d:%d to %d.%d.%d.%d: ulen %d,	DEBUG	FAIL: encrypt data does not compare	DEBUG
%s: lookup policy [list] found=%s, %s: called: [output START], __FUNCTION__	DEBUG	FAIL: decap botch; length mismatch	DEBUG
%s: flow dst=%s, __FUNCTION__, XFRMSTRADDR(fl->fl4_dst, family)	DEBUG	FAIL: decap botch	DEBUG
%s: flow src=%s, __FUNCTION__, XFRMSTRADDR(fl->fl4_src, family)	DEBUG	FAIL: tkip enmic failed	DEBUG
	DEBUG	FAIL: enmic botch	DEBUG
	DEBUG	FAIL: tkip encap failed	DEBUG
	DEBUG	FAIL: encrypt phase1 botch	DEBUG

%s: flow dst=%s, __FUNCTION__, XFRMSTRADDR(fl->fl6_dst, family)	DEBUG	encrypt data length mismatch	DEBUG
%s: flow src=%s, __FUNCTION__, XFRMSTRADDR(fl->fl6_src, family)	DEBUG	encrypt data does not compare	DEBUG
a guy asks for address mask. Who is it?	DEBUG	tkip decap failed	DEBUG
icmp v4 hw csum failure)	DEBUG	decrypt phase1 botch	DEBUG
expire>> %u %d %d %d, expire,	DEBUG	decrypt data does not compare	DEBUG
expire++ %u %d %d %d, expire,	DEBUG	decap botch; length mismatch	DEBUG
rt_cache @%02x: %u.%u.%u.%u, hash,	DEBUG	decap botch; data does not compare	DEBUG
rt_bind_peer(0) @%p, NET_CALLER(iph)	DEBUG	tkip demic failed	DEBUG
ip_rt_advice: redirect to	DEBUG	802.11i TKIP test vectors passed	DEBUG
ip_rt_bug: %u.%u.%u.%u -> %u.%u.%u.%u, %s,	DEBUG	%s, buf	DEBUG
UDP: short packet: From %u.%u.%u.%u: %u %d/%d to %u.%u.%u.%u: %u,	DEBUG	Atheros HAL assertion failure: %s: line %u: %s,	DEBUG
UDP: bad checksum. From %d.%d.%d.%d:%d to %d.%d.%d.%d: ulen %d,	DEBUG	ath_hal: logging to %s %s, ath_hal_logfile,	DEBUG
a guy asks for address mask. Who is it?	DEBUG	ath_hal: logging disabled	DEBUG
fib_add_ifaddr: bug: prim == NULL	DEBUG	%s%s, sep, ath_hal_buildopts[i]	DEBUG
fib_del_ifaddr: bug: prim == NULL	DEBUG	ath_pci: No devices found, driver not installed.	DEBUG
expire>> %u %d %d %d, expire,	DEBUG	_fmt, __VA_ARGS__	DEBUG
expire++ %u %d %d %d, expire,	DEBUG	%s: Warning, using only %u entries in %u key cache,	DEBUG
rt_cache @%02x: %u.%u.%u.%u, hash,	DEBUG	%s: TX99 support enabled, dev->name	DEBUG
rt_bind_peer(0) @%p,	DEBUG	%s:grppoll Buf allocation failed ,_func_	DEBUG
ip_rt_advice: redirect to	DEBUG	%s: %s: unable to start recv logic,	DEBUG
ip_rt_bug: %u.%u.%u.%u -> %u.%u.%u.%u, %s,	DEBUG	%s: %s: unable to start recv logic,	DEBUG
%s: lookup policy [list] found=%s,	DEBUG	%s: no skbuff, _func_	DEBUG
%s: called: [output START], __FUNCTION__	DEBUG	%s: hardware error; resetting, dev- >name	DEBUG
%s: flow dst=%s, __FUNCTION__, XFRMSTRADDR(fl->fl4_dst, family)	DEBUG	%s: rx FIFO overrun; resetting, dev- >name	DEBUG
%s: flow src=%s, __FUNCTION__, XFRMSTRADDR(fl->fl4_src, family)	DEBUG	%s: unable to reset hardware: '%s' (HAL status %u)	DEBUG
%s: flow dst=%s, __FUNCTION__, XFRMSTRADDR(fl->fl6_dst, family)	DEBUG	%s: unable to start recv logic, dev- >name	DEBUG
%s: flow src=%s, __FUNCTION__, XFRMSTRADDR(fl->fl6_src, family)	DEBUG	%s: %s: unable to reset hardware: '%s' (HAL status %u),	DEBUG
a guy asks for address mask. Who is it?	DEBUG	%s: %s: unable to start recv logic,	DEBUG
icmp v4 hw csum failure)	DEBUG	ath_mgtstart: discard, no xmit buf	DEBUG
expire>> %u %d %d %d, expire,	DEBUG	%s: [%02u] %-7s , tag, ix, ciphers[hk- >kv_type]	DEBUG
expire++ %u %d %d %d, expire,	DEBUG	%02x, hk->kv_val[i]	DEBUG
rt_cache @%02x: %u.%u.%u.%u, hash,	DEBUG	mac %s, ether_sprintf(mac)	DEBUG
rt_bind_peer(0) @%p, NET_CALLER(iph)	DEBUG	%s , sc->sc_splitmic ? mic : rxmic	DEBUG
ip_rt_advice: redirect to	DEBUG	%02x, hk->kv_mic[i]	DEBUG

ip_rt_bug: %u.%u.%u.%u -> %u.%u.%u.%u, %s,	DEBUG	txmic	DEBUG
UDP: short packet: From %u.%u.%u.%u:%u %d/%d to %u.%u.%u.%u:%u,	DEBUG	%02x, hk->kv_txmic[i]	DEBUG
UDP: bad checksum. From %d.%d.%d.%d:%d to %d.%d.%d.%d: %d ulen %d,	DEBUG	%s: unable to update h/w beacon queue parameters,	DEBUG
REJECT: ECHOREPLY no longer supported.	DEBUG	%s: stuck beacon; resetting (bmiss count %u),	DEBUG
ipt_rpc: only valid for PRE_ROUTING, FORWARD, POST_ROUTING, LOCAL_IN and/or LOCAL_OUT targets.	DEBUG	move data from NORMAL to XR moved %d buffers from NORMAL to XR, index	DEBUG
ip_nat_init: can't setup rules.	DEBUG	move buffers from XR to NORMAL moved %d buffers from XR to NORMAL, count	DEBUG
ip_nat_init: can't register in hook.	DEBUG	%s:%d %s, __FILE__, __LINE__, __func__	DEBUG
ip_nat_init: can't register out hook.	DEBUG	%s:%d %s, __FILE__, __LINE__, __func__	DEBUG
ip_nat_init: can't register adjust in hook.	DEBUG	%s: no buffer (%s), dev->name, __func__	DEBUG
ip_nat_init: can't register adjust out hook.	DEBUG	%s: HAL qnum %u out of range, max %u!, grppoll_start: grppoll Buf allocation failed	DEBUG
ip_nat_init: can't register local out hook.	DEBUG	%s: HAL qnum %u out of range, max %u!,	DEBUG
ip_nat_init: can't register local in hook.	DEBUG	%s: AC %u out of range, max %u!,	DEBUG
ipt_hook: happy cracking.	DEBUG	%s: unable to update hardware queue	DEBUG
ip_conntrack: can't register pre-routing defrag hook.	DEBUG	%s: bogus frame type 0x%x (%s), dev->name,	DEBUG
ip_conntrack: can't register local_out defrag hook.	DEBUG	ath_stoprecv: rx queue 0x%x, link %p, %s: %s: unable to restart recv logic, %s: unable to allocate channel table, dev->name	DEBUG
ip_conntrack: can't register pre-routing hook.	DEBUG	ip_conntrack: can't register local_out hook.	DEBUG
ip_conntrack: can't register local_out hook.	DEBUG	ip_conntrack: can't register post-routing helper hook.	DEBUG
ip_conntrack: can't register post-routing helper hook.	DEBUG	ip_conntrack: can't register local_in hook.	DEBUG
ip_conntrack: can't register to sysctl.	DEBUG	ip_conntrack_rtsp v IP_NF_RTSP_VERSION loading	DEBUG
ip_conntrack_rtsp: max_outstanding must be a positive integer	DEBUG	ip_conntrack_rtsp: setup_timeout must be a positive integer	DEBUG
ip_conntrack_rtsp: ERROR registering port %d, ports[i]	DEBUG	T (%p %llx) %08x %08x %08x %08x %08x %08x %08x %c,	DEBUG
ip_nat_rtsp v IP_NF_RTSP_VERSION loading	DEBUG	%s: no memory for sysctl table!, __func__	DEBUG
%s: Sorry! Cannot find this match option., __FILE__	DEBUG	%s: no memory for device name storage!, __func__	DEBUG
ipt_time loading	DEBUG	%s: failed to register sysctls!, sc-	DEBUG

		>sc_dev->name	
ipt_time unloaded	DEBUG	%s: mac %d.%d phy %d.%d, dev->name,	DEBUG
ip_conntrack_irc: max_dcc_channels must be a positive integer	DEBUG	5 GHz radio %d.%d 2 GHz radio %d.%d,	DEBUG
ip_conntrack_irc: ERROR registering port %d,	DEBUG	radio %d.%d, ah->ah_analog5GhzRev >> 4,	DEBUG
ip_nat_h323: ip_nat_mangle_tcp_packet	DEBUG	radio %d.%d, ah->ah_analog5GhzRev >> 4,	DEBUG
ip_nat_h323:			
ip_nat_mangle_udp_packet	DEBUG	%s: Use hw queue %u for %s traffic, %s: Use hw queue %u for CAB traffic, dev->name,	DEBUG
ip_nat_h323: out of expectations	DEBUG	%s: Use hw queue %u for beacons, dev->name,	DEBUG
ip_nat_h323: out of RTP ports	DEBUG	Could not find Board Configuration Data	DEBUG
ip_nat_h323: out of TCP ports	DEBUG	Could not find Radio Configuration data	DEBUG
ip_nat_q931: out of TCP ports	DEBUG	ath_ahb: No devices found, driver not installed.	DEBUG
ip_nat_ras: out of TCP ports	DEBUG	_fmt, __VA_ARGS__	DEBUG
ip_nat_q931: out of TCP ports	DEBUG	_fmt, __VA_ARGS__	DEBUG
ip_conntrack_core: Frag of proto %u.,	DEBUG	xlr8NatIpFinishOutput: Err.. skb2 == NULL !	DEBUG
Broadcast packet!	DEBUG		
Should bcast: %u.%u.%u.%u->%u.%u.%u.%u (sk=%p, ptype=%u),	DEBUG	xlr8NatSoftCtxEnqueue: Calling xlr8NatIpFinishOutput () .., status	DEBUG
ip_conntrack version %s (%u buckets, %d max)	DEBUG	xlr8NatSoftCtxEnqueue: xlr8NatIpFinishOutput () returned [%d], status	DEBUG
ERROR registering port %d,	DEBUG	icmpExceptionHandler: Exception!	DEBUG
netfilter PSD loaded - (c) astaro AG	DEBUG	fragExceptionHandler: Exception!	DEBUG
netfilter PSD unloaded - (c) astaro AG	DEBUG	algExceptionHandler: Exception!	DEBUG
%s , SELF	DEBUG	dnsExceptionHandler: Exception!	DEBUG
%s , LAN	DEBUG	ipsecExceptionHandler: Exception!	DEBUG
%s , WAN	DEBUG	ESP Packet Src:%x Dest:%x Sport:%d dport:%d secure:%d spi:%d isr:%p,	DEBUG
TRUNCATED	DEBUG	xlr8NatConntrackPreHook: We found the valid context,	DEBUG
SRC=%u.%u.%u.%u	DEBUG	xlr8NatConntrackPreHook: Not a secured packet.	DEBUG
DST=%u.%u.%u.%u ,	DEBUG	xlr8NatConntrackPreHook: isr=[%p], plsr	DEBUG
LEN=%u TOS=0x%02X PREC=0x%02X	DEBUG	xlr8NatConntrackPreHook: secure=[%d], secure	DEBUG
TTL=%u ID=%u ,	DEBUG	Context found for ESP %p,pFlowEntry->post.plsr[0]	DEBUG
FRAG:%u , ntohs(ih->frag_off) & IP_OFFSET	DEBUG	xlr8NatConntrackPreHook: New connection.	DEBUG
PROTO=TCP	DEBUG	xlr8NatConntrackPostHook: postSecure=[%d] postLsr=[%p %p],	DEBUG
INCOMPLETE [%u bytes] ,	DEBUG	proto %d spi %d <-----> proto %d spi %d,pPktInfo->proto,pPktInfo->spi,	DEBUG
SPT=%u DPT=%u ,	DEBUG	IPSEC_INF Clock skew detected	DEBUG
SEQ=%u ACK=%u ,	DEBUG	IPSEC_ERR [%s:%d]: Max (%d) No of SA Limit reached,	DEBUG
WINDOW=%u , ntohs(th->window)	DEBUG		

RES=0x%02x , (u8)(ntohl(tcp_flag_word(th) & TCP_RESERVED_BITS) >> 22)	DEBUG	IPSEC_ERR [%s:%d]: Max (%d) No of SA Limit reached,	DEBUG
URGP=%u , ntohs(th->urg_ptr)	DEBUG	IPSEC_ERR [%s:%d]: time(secs): %u	DEBUG
TRUNCATED	DEBUG	ERROR: Failed to add entry to ipsec sa table	DEBUG
%02X, op[i]	DEBUG	ERROR: Failed to add entry to ipsec sa table	DEBUG
PROTO=UDP	DEBUG	ERROR: Failed to add entry to ipsec sa table	DEBUG
INCOMPLETE [%u bytes] ,	DEBUG	ERROR: Failed to add entry to ipsec sa table	DEBUG
SPT=%u DPT=%u LEN=%u ,	DEBUG	ERROR: Failed to add entry to ipsec sa table	DEBUG
SPT=%u DPT=%u LEN=%u ,	DEBUG	ERROR: Failed to add entry to ipsec sa table	DEBUG
PROTO=ICMP	DEBUG	unknown oid '%s', varName could not find oid pointer for '%s', varName	DEBUG
INCOMPLETE [%u bytes] , TYPE=%u CODE=%u , ich->type, ich->code	DEBUG	unRegistering ipsecMib .....	DEBUG
INCOMPLETE [%u bytes] ,	DEBUG	ERROR: Failed to add entry to ipsec sa table	DEBUG
ID=%u SEQ=%u ,	DEBUG	ERROR: Failed to add entry to ipsec sa table	DEBUG
PARAMETER=%u ,	DEBUG	ERROR: Failed to add entry to ipsec sa table	DEBUG
GATEWAY=%u.%u.%u.%u ,	DEBUG	ERROR: Failed to add entry to ipsec sa table	DEBUG
MTU=%u , ntohs(ich->un.frag.mtu)	DEBUG	ERROR: Failed to add entry to ipsec sa table	DEBUG
PROTO=AH	DEBUG	ERROR: Failed to add entry to ipsec sa table	DEBUG
INCOMPLETE [%u bytes] ,	DEBUG	unknown oid '%s', varName could not find oid pointer for '%s', varName	DEBUG
SPI=0x%x , ntohs(ah->spi)	DEBUG	unRegistering ipsecMib .....	DEBUG
PROTO=ESP	DEBUG	. %u.%u.%u.%u, NIPQUAD(trt->rt_dst)	DEBUG
INCOMPLETE [%u bytes] ,	DEBUG	%02x, *p	DEBUG
SPI=0x%x , ntohs(eh->spi)	DEBUG	. %u.%u.%u.%u, NIPQUAD(trt->rt_dst)	DEBUG
PROTO=%u , ih->protocol	DEBUG	level_string	DEBUG
UID=%u , skb->sk->sk_socket->file->f_uid	DEBUG	<%d>%sIN=%s OUT=%s , loginfo->u.log.level,	DEBUG
level_string	DEBUG	DEBUG	DEBUG
%sIN=%s OUT=%s ,	DEBUG	%. %u.%u.%u.%u, NIPQUAD(trt->rt_dst)	DEBUG
%s , prefix == NULL ? loginfo->prefix : prefix	DEBUG	%. %u.%u.%u.%u, NIPQUAD(trt->rt_dst)	DEBUG
IN=	DEBUG	%02x, *p unable to register ipsec kernel comp to UMI	DEBUG
OUT=	DEBUG	unregistering VIPSECK from UMI .....	DEBUG
PHYSIN=%s , physindev->name	DEBUG	in ipsecKloctlHandler cmd - %d, cmd %s: Error. DST Refcount value less	DEBUG
PHYSOUT=%s , physoutdev->name	DEBUG	than 1 (%d), for %s DEVICE refcnt: %d ,pDst->dev->name,	DEBUG
MAC=	DEBUG		DEBUG

%02x%c, *p,	DEBUG	%s: Got Null m:%p *m:%p sa:%p *sa:%p, __func__, ppBufMgr,	DEBUG
NAT: no longer support implicit source local NAT	DEBUG	%s Got Deleted SA:%p state:%d, __func__, plpsecInfo, plpsecInfo->state	DEBUG
NAT: packet src %u.%u.%u.%u -> dst %u.%u.%u.%u,	DEBUG	%s: %s: fmt, __FILE__, __FUNCTION__, ## args)	INFO
SNAT: multiple ranges no longer supported	DEBUG	%s: %s: fmt, __FILE__, __FUNCTION__, ## args)	INFO
format,##args)	DEBUG	ipt_TIME: format, ## args)	INFO
version	DEBUG	IPT_ACCOUNT_NAME : checkentry() wrong parameters (not equals existing table parameters).	INFO
offset_before=%d, offset_after=%d, correction_pos=%u, x->offset_before, x->offset_after, x->correction_pos	DEBUG	IPT_ACCOUNT_NAME : checkentry() too big netmask.	INFO
ip_ct_h323:	DEBUG	IPT_ACCOUNT_NAME : checkentry() failed to allocate %zu for new table %s., sizeof(struct t_ipt_account_table), info->name	INFO
ip_ct_h323: incomplete TPKT (fragmented?)	DEBUG	IPT_ACCOUNT_NAME : checkentry() wrong network/netmask.	INFO
ip_ct_h245: decoding error: %s,	DEBUG	account: Wrong netmask given by netmask parameter (%i). Valid is 32 to 0., netmask	INFO
ip_ct_h245: packet dropped	DEBUG	IPT_ACCOUNT_NAME : checkentry() failed to create procfs entry.	INFO
ip_ct_q931: decoding error: %s,	DEBUG	IPT_ACCOUNT_NAME : checkentry() failed to register match.	INFO
ip_ct_q931: packet dropped	DEBUG	failed to create procfs entry .	INFO
ip_ct_ras: decoding error: %s,	DEBUG	MPPE/MPPC encryption/compression module registered	INFO
ip_ct_ras: packet dropped	DEBUG	MPPE/MPPC encryption/compression module unregistered	INFO
ERROR registering port %d,	DEBUG	PPP generic driver version PPP_VERSION	INFO
ERROR registering port %d, ipt_connlimit [%d]: src=%u.%u.%u.%u:%d dst=%u.%u.%u.%u:%d %s,	DEBUG	MPPE/MPPC encryption/compression module registered	INFO
ipt_connlimit [%d]: src=%u.%u.%u.%u:%d dst=%u.%u.%u.%u:%d new,	DEBUG	MPPE/MPPC encryption/compression module unregistered	INFO
ipt_connlimit: Oops: invalid ct state ?	DEBUG	PPP generic driver version PPP_VERSION	INFO
ipt_connlimit: Hmm, kmalloc failed :-( ipt_connlimit: src=%u.%u.%u.%u mask=%u.%u.%u.%u	DEBUG	PPPoL2TP kernel driver, %s,	INFO
_lvi PPPOL2TP: _fmt, ##args	DEBUG	PPPoL2TP kernel driver, %s,	INFO
%02X, ptr[length]	DEBUG	failed to create procfs entry .	INFO
%02X, ((unsigned char *) m->msg iov[i].iov_base)[j]	DEBUG	proc dir not created ..	INFO
%02X, skb->data[i]	DEBUG	Initialzing Product Data modules	INFO
_lvi PPPOL2TP: _fmt, ##args	DEBUG	De initializing by \	INFO
%02X, ptr[length]	DEBUG	kernel UMI module loaded	INFO
	DEBUG	kernel UMI module unloaded	INFO

%02X, ((unsigned char *) m->msg iov[i].iov_base)[j]	DEBUG	Loading bridge module	INFO
%02X, skb->data[i]	DEBUG	Unloading bridge module	INFO
_lvl PPPOL2TP: _fmt, ##args	DEBUG	unsupported command %d, cmd	INFO
%02X, ptr[length]	DEBUG	Loading ifDev module	INFO
%02X, ((unsigned char *) m->msg iov[i].iov_base)[j]	DEBUG	Unloading ifDev module	INFO
%02X, skb->data[i]	DEBUG	ERROR#%d in alloc_chrdev_region, result	INFO
KERN_EMERG THE value read is %d,value*/	DEBUG	ERROR#%d in cdev_add, result	INFO
KERN_EMERG Factory Reset button is pressed	DEBUG	using bcm switch %s, bcmswitch	INFO
KERN_EMERG Returing error in INTR registration	DEBUG	privilegedID %d wanportNo: %d, privilegedID,wanportNo	INFO
KERN_EMERG Initialzing Factory defaults modules	DEBUG	Loading mii	INFO
Failed to allocate memory for pSipListNode	DEBUG	Unloading mii	INFO
SIPALG: Memeory allocation failed for pSipNodeEntryTbl	DEBUG	%s: Version 0.1	INFO
pkt-err %s, pktInfo.error	DEBUG	%s: driver unloaded, dev_info wlan: %s backend registered, be->iab_name	INFO
pkt-err %s, pktInfo.error	DEBUG	wlan: %s backend unregistered, wlan: %s acl policy registered, iac->iac_name	INFO
pkt-err %s, pktInfo.error	DEBUG	wlan: %s acl policy unregistered, iac->iac_name	INFO
%s Len=%d, msg, len	DEBUG	wlan: %s acl policy unregistered, iac->iac_name	INFO
%02x , ((uint8_t *) ptr)[i]	DEBUG	%s: %s: driver unloaded, dev_info	INFO
End	DEBUG	%s, tmpbuf	INFO
CVM_MOD_EXP_BASE MISMATCH	DEBUG	VLAN2	INFO
cmd=%x base=%x, cmd,	DEBUG	VLAN3	INFO
op->sizeofptr = %ld, op->sizeofptr	DEBUG	VLAN4 <%d %d>,	INFO
opcode cmd = %x, cmd	DEBUG	%s: %s, dev_info, version	INFO
modexp opcode received	DEBUG	%s: driver unloaded, dev_info	INFO
Memory Allocation failed	DEBUG	%s: buf	INFO
modepcrt opcode received	DEBUG	%s: %s (, dev_info, ath_hal_version	INFO
kmalloc failed	DEBUG	%s: driver unloaded, dev_info	INFO
kmalloc failed	DEBUG	%s: %s: mem=0x%lx, irq=%d	INFO
kmalloc failed	DEBUG	hw_base=0x%p,	INFO
kmalloc failed	DEBUG	%s: %s, dev_info, version	INFO
kmalloc Failed	DEBUG	%s: driver unloaded, dev_info	INFO
kmalloc failed	DEBUG	%s: %s: mem=0x%lx, irq=%d,	INFO
unknown crypto ioctl cmd received %x, cmd	DEBUG	%s: %s: mem=0x%lx, irq=%d,	INFO
register_chrdev returned ZERO	DEBUG	%s: %s, dev_info, version	INFO
const char *descr, krb5_keyblock *k) {	DEBUG	%s: driver unloaded, dev_info	INFO
F password, &pdata	DEBUG	%s, buf	INFO
test key, key	DEBUG	%s: %s (, dev_info, ath_hal_version	INFO
pre-hashed key, key	DEBUG	%s: driver unloaded, dev_info	INFO
const char *descr, krb5_keyblock *k) {	DEBUG	%s: driver unloaded, dev_info	INFO
AES 128-bit key, &key	DEBUG	%s: Version 2.0.0	INFO

const char *descr, krb5_keyblock *k) {	DEBUG	%s: driver unloaded, dev_info	INFO
test key, key	DEBUG	%s: driver unloaded, dev_info	INFO
pre-hashed key, key	DEBUG	wlan: %s backend registered, be->iab_name	INFO
const char *descr, krb5_keyblock *k) {	DEBUG	wlan: %s backend unregistered,	INFO
128-bit AES key,&dk	DEBUG	wlan: %s acl policy registered, iac->iac_name	INFO
256-bit AES key, &dk	DEBUG	wlan: %s acl policy unregistered, iac->iac_name	INFO
WARNING:	DEBUG	%s: %s, dev_info, version	INFO
bwMonMultipathNxtHopSelect:: checking rates	DEBUG	%s: driver unloaded, dev_info	INFO
hop :%d dev:%s usableBwLimit = %d currBwShare = %d lastHopSelected = %d weightedHopPrefer = %d ,	DEBUG	%s: %s (, dev_info, ath_hal_version	INFO
1. selecting hop: %d lastHopSelected = %d , selHop, lastHopSelected	DEBUG	%s: driver unloaded, dev_info	INFO
4. hop :%d dev:%s usableBwLimit = %d currBwShare = %d lastHopSelected = %d weightedHopPrefer = %d ,	DEBUG	%s: %s: mem=0x%lx, irq=%d,	INFO
2. selecting hop: %d lastHopSelected = %d , selHop, lastHopSelected	DEBUG	%s: %s, dev_info, version	INFO
3. selecting hop: %d lastHopSelected = %d , selHop, lastHopSelected	DEBUG	%s: driver unloaded, dev_info	INFO
bwMonitor multipath selection enabled	DEBUG	ath_pci: switching rfkill capability %s,	INFO
bwMonitor multipath selection disabled	DEBUG	Unknown autocreate mode: %s,	INFO
weightedHopPrefer set to %d ,weightedHopPrefer	DEBUG	%s: %s: mem=0x%lx, irq=%d,	INFO
bwMonitor sysctl registration failed	DEBUG	%s: %s, dev_info, version	INFO
bwMonitor sysctl registered	DEBUG	%s: driver unloaded, dev_info	INFO
bwMonitor sysctl not registered	DEBUG	%s: %s, dev_info, version	INFO
Unregistered bwMonitor sysctl	DEBUG	%s: unloaded, dev_info	INFO
CONFIG_SYSCTL enabled ...	DEBUG	%s: %s, dev_info, version	INFO
Initialized bandwidth monitor ...	DEBUG	%s: unloaded, dev_info	INFO
Removed bandwidth monitor ...	DEBUG	%s: %s, dev_info, version	INFO
Oops.. AES_GCM_encrypt failed (keylen:%u),key->cvm_keylen	DEBUG	%s: unloaded, dev_info	INFO
Oops.. AES_GCM_decrypt failed (keylen:%u),key->cvm_keylen	DEBUG	failed to create procfs entry .	INFO
%s, msg	DEBUG	ICMP: %u.%u.%u.%u:	INFO
%02x%s, data[i],	DEBUG	ICMP: %u.%u.%u.%u: Source	INFO
Failed to set AES encrypt key	DEBUG	Wrong address mask %u.%u.%u.%u from	INFO
Failed to set AES encrypt key	DEBUG	Redirect from %u.%u.%u.%u on %s about	INFO
AES %s Encrypt Test Duration: %d:%d, hard ? Hard : Soft,	DEBUG	IP: routing cache hash table of %u buckets, %ldKbytes,	INFO
Failed to set AES encrypt key	DEBUG	source route option %u.%u.%u.%u ->	INFO
Failed to set AES encrypt key	DEBUG	%u.%u.%u.%u,	INFO
AES %s Decrypt Test Duration: %d:%d, hard ? Hard : Soft,	DEBUG	ICMP: %u.%u.%u.%u:	INFO
Failed to set AES encrypt key	DEBUG	ICMP: %u.%u.%u.%u: Source	INFO
Failed to set AES encrypt key	DEBUG	Wrong address mask %u.%u.%u.%u from	INFO

Failed to set AES encrypt key	DEBUG	Redirect from %u.%u.%u.%u on %s about	INFO
Failed to set AES encrypt key	DEBUG	IP: routing cache hash table of %u buckets, %ldKbytes, source route option %u.%u.%u.%u -> %u.%u.%u.%u,	INFO
Failed to set AES encrypt key	DEBUG	Wrong address mask %u.%u.%u.%u from	INFO
Failed to set DES encrypt key[%d], i	DEBUG	Redirect from %u.%u.%u.%u on %s about	INFO
Failed to set DES decrypt key[%d], i	DEBUG	source route option	INFO
Failed to set DES decrypt key[%d], i	DEBUG	ICMP: %u.%u.%u.%u:	INFO
Failed to set DES encrypt key	DEBUG	ICMP: %u.%u.%u.%u: Source	INFO
Failed to set DES decrypt key	DEBUG	Wrong address mask %u.%u.%u.%u from	INFO
Failed to set DES encrypt key	DEBUG	Redirect from %u.%u.%u.%u on %s about	INFO
Failed to set DES decrypt key	DEBUG	IP: routing cache hash table of %u buckets, %ldKbytes, source route option %u.%u.%u.%u -> %u.%u.%u.%u,	INFO
AES Software Test:	DEBUG		INFO
AES Software Test %s, aesSoftTest(0) ? Failed : Passed	DEBUG	IPsec: device unregistering: %s, dev->name	INFO
AES Hardware Test:	DEBUG	IPsec: device down: %s, dev->name	INFO
AES Hardware Test %s, aesHardTest(0) ? Failed : Passed	DEBUG	mark: only supports 32bit mark	WARNING
3DES Software Test:	DEBUG	ipt_time: invalid argument	WARNING
3DES Software Test %s, des3SoftTest(0) ? Failed : Passed	DEBUG	ipt_time: IPT_DAY didn't matched	WARNING
3DES Hardware Test:	DEBUG	./Logs_kernel.txt:45:KERN_WARNING	WARNING
3DES Hardware Test %s, des3HardTest(0) ? Failed : Passed	DEBUG	./Logs_kernel.txt:59:KERN_WARNING	WARNING
DES Software Test:	DEBUG	ipt_LOG: not logging via system console	WARNING
DES Software Test %s, desSoftTest(0) ? Failed : Passed	DEBUG	%s: wrong options length: %u, fname, opt_len	WARNING
DES Hardware Test:	DEBUG	%s: options rejected: o[0]=%02x, o[1]=%02x,	WARNING
DES Hardware Test %s, desHardTest(0) ? Failed : Passed	DEBUG	%s: wrong options length: %u, %s: options rejected: o[0]=%02x, o[1]=%02x,	WARNING
SHA Software Test:	DEBUG		WARNING
SHA Software Test %s, shaSoftTest(0) ? Failed : Passed	DEBUG	%s: don't know what to do: o[5]=%02x, %s: wrong options length: %u, fname, opt_len	WARNING
SHA Hardware Test:	DEBUG		WARNING
SHA Hardware Test %s, shaHardTest(0) ? Failed : Passed	DEBUG	%s: options rejected: o[0]=%02x, o[1]=%02x,	WARNING
MD5 Software Test:	DEBUG	%s: wrong options length: %u,	WARNING
MD5 Software Test %s, md5SoftTest(0) ? Failed : Passed	DEBUG	%s: options rejected: o[0]=%02x, o[1]=%02x,	WARNING
MD5 Hardware Test:	DEBUG	%s: don't know what to do: o[5]=%02x,	WARNING
MD5 Hardware Test %s,	DEBUG	*** New port %d ***, ntohs(expinfo-	WARNING

md5HardTest(0) ? Failed : Passed		>natport)	G
AES Software Test: %d iterations, iter	DEBUG	** skb len %d, dlen %d,(*pskb)->len,	WARNIN G
AES Software Test Duration: %d:%d,	DEBUG	***** Non linear skb	WARNIN G
AES Hardware Test: %d iterations, iter	DEBUG	End of sdp %p, nexthdr	WARNIN G
AES Hardware Test Duration: %d:%d,	DEBUG	%s: unknown pairwise cipher %d,	WARNIN G
3DES Software Test: %d iterations, iter	DEBUG	%s: unknown group cipher %d,	WARNIN G
3DES Software Test Duration: %d:%d,	DEBUG	%s: unknown SIOCSIWAUTH flag %d,	WARNIN G
3DES Hardware Test: %d iterations, iter	DEBUG	%s: unknown SIOCGIWAUTH flag %d,	WARNIN G
3DES Hardware Test Duration: %d:%d,	DEBUG	%s: unknown algorithm %d,	WARNIN G
DES Software Test: %d iterations, iter	DEBUG	%s: key size %d is too large,	WARNIN G
DES Software Test Duration: %d:%d,	DEBUG	try_module_get failed \	WARNIN G
DES Hardware Test: %d iterations, iter	DEBUG	%s: request_irq failed, dev->name	WARNIN G
DES Hardware Test Duration: %d:%d,	DEBUG	try_module_get failed	WARNIN G
SHA Software Test: %d iterations, iter	DEBUG	try_module_get failed \	WARNIN G
SHA Software Test Duration: %d:%d,	DEBUG	%s: unknown pairwise cipher %d,	WARNIN G
SHA Hardware Test: %d iterations, iter	DEBUG	%s: unknown group cipher %d,	WARNIN G
SHA Hardware Test Duration: %d:%d,	DEBUG	%s: unknown SIOCSIWAUTH flag %d,	WARNIN G
MD5 Software Test: %d iterations, iter	DEBUG	%s: unknown SIOCGIWAUTH flag %d,	WARNIN G
MD5 Software Test Duration: %d:%d,	DEBUG	%s: unknown algorithm %d,	WARNIN G
MD5 Hardware Test: %d iterations, iter	DEBUG	%s: key size %d is too large,	WARNIN G
MD5 Hardware Test Duration: %d:%d,	DEBUG	unable to load %s, scan_modnames[mode]	WARNIN G
./pnac/src/pnac/linux/kernel/xcalibur.c:209:#define DEBUG_PRINTK printk	DEBUG	Failed to mkdir /proc/net/madwifi	WARNIN G
bcmDeviceInit: registration failed	DEBUG	try_module_get failed	WARNIN G
bcmDeviceInit: pCdev Add failed	DEBUG	%s: request_irq failed, dev->name	WARNIN G
REG Size == 8 Bit	DEBUG	too many virtual ap's (already got %d), sc->sc_nvaps	WARNIN G
Value = %x :: At Page = %x : Addr = %x	DEBUG	%s: request_irq failed, dev->name	WARNIN G
REG Size == 16 Bit	DEBUG	rix %u (%u) bad ratekbps %u mode %u,	WARNIN G
Value = %x :: At Page = %x : Addr = %x	DEBUG	cix %u (%u) bad ratekbps %u mode %u,	WARNIN G
REG Size == 32 Bit	DEBUG	%s: no rates for %s?,	WARNIN G
Value = %x :: At Page = %x : Addr =	DEBUG	no rates yet! mode %u, sc-	WARNIN G

%x		>sc_curmode	G
REG Size == 64 Bit	DEBUG	%u.%u.%u.%u sent an invalid ICMP	WARNIN G
REG Size is not in 8/16/32/64	DEBUG	dst cache overflow	WARNIN G
Written Value = %x :: At Page = %x : Addr = %x	DEBUG	Neighbour table overflow.	WARNIN G
bcm_ioctl :Unknown ioctl Case :	DEBUG	host %u.%u.%u.%u/if%d ignores	WARNIN G
=====Register Dump for Port Number # %d=====,port	DEBUG	martian destination %u.%u.%u.%u from	WARNIN G
%s : Read Status=%s data=%#x,regName[j],	DEBUG	martian source %u.%u.%u.%u from	WARNIN G
%s : Read Status=%s data=%#x,regName[j],	DEBUG	II header:	WARNIN G
powerDeviceInit: device registration failed	DEBUG	%u.%u.%u.%u sent an invalid ICMP	WARNIN G
powerDeviceInit: adding device failed	DEBUG	dst cache overflow	WARNIN G
%s: Error: Big jump in pn number. TID=%d, from %x %x to %x %x.	DEBUG	Neighbour table overflow.	WARNIN G
%s: The MIC is corrupted. Drop this frame., __func__	DEBUG	host %u.%u.%u.%u/if%d ignores	WARNIN G
%s: The MIC is OK. Still use this frame and update PN., __func__	DEBUG	martian destination %u.%u.%u.%u from	WARNIN G
ADDBA send failed: recipient is not a 11n node	DEBUG	martian source %u.%u.%u.%u from	WARNIN G
Cannot Set Rate: %x, value	DEBUG	II header:	WARNIN G
Getting Rate Series: %x,vap->iv_fixed_rate.series	DEBUG	%u.%u.%u.%u sent an invalid ICMP	WARNIN G
Getting Retry Series: %x,vap->iv_fixed_rate.retries	DEBUG	dst cache overflow	WARNIN G
IC Name: %s,ic->ic_dev->name	DEBUG	Neighbour table overflow.	WARNIN G
usage: rtparms rt_idx <0 1> per <0..100> probe_intval <0..100>	DEBUG	host %u.%u.%u.%u/if%d ignores	WARNIN G
usage: acparams ac <0 3> RTS <0 1> aggr scaling <0..4> min mbps <0..250>	DEBUG	martian source %u.%u.%u.%u from	WARNIN G
usage: hbrparams ac <2> enable <0 1> per_low <0..50>	DEBUG	II header:	WARNIN G
%s(): ADDBA mode is AUTO, __func__	DEBUG	martian destination %u.%u.%u.%u from	WARNIN G
%s(): Invalid TID value, __func__	DEBUG	%u.%u.%u.%u sent an invalid ICMP	WARNIN G
%s(): ADDBA mode is AUTO, __func__	DEBUG	dst cache overflow	WARNIN G
%s(): Invalid TID value, __func__	DEBUG	Neighbour table overflow.	WARNIN G
%s(): Invalid TID value, __func__	DEBUG	host %u.%u.%u.%u/if%d ignores	WARNIN G
Addba status IDLE	DEBUG	martian destination %u.%u.%u.%u from	WARNIN G
%s(): ADDBA mode is AUTO, __func__	DEBUG	martian source %u.%u.%u.%u from	WARNIN G
%s(): Invalid TID value, __func__	DEBUG	II header:	WARNIN G

Error in ADD- no node available	DEBUG	Unable to create ip_set_list	ERROR
%s(): Channel capabilities do not match, chan flags 0x%x,	DEBUG	Unable to create ip_set_hash	ERROR
%s: cannot map channel to mode; freq %u flags 0x%x,	DEBUG	ip_conntrack_in: Frag of proto %u (hook=%u),	ERROR
ic_get_currentCountry not initialized yet	DEBUG	Unable to register netfilter socket option	ERROR
Country ie is %c%c%c,	DEBUG	Unable to create ip_conntrack_hash	ERROR
%s: wrong state transition from %d to %d,	DEBUG	Unable to create ip_conntrack slab cache	ERROR
%s: wrong state transition from %d to %d,	DEBUG	Unable to create ip_expect slab cache	ERROR
%s: wrong state transition from %d to %d,	DEBUG	Unable to create ip_set_iptreeb slab cache	ERROR
%s: wrong state transition from %d to %d,	DEBUG	Unable to create ip_set_iptreed slab cache	ERROR
%s: wrong state transition from %d to %d,	DEBUG	%s: cannot allocate space for %scompressor, fname,	ERROR
%s: wrong state transition from %d to %d,	DEBUG	%s: cannot allocate space for MPPC history,	ERROR
ieee80211_deliver_l2uf: no buf available	DEBUG	%s: cannot allocate space for MPPC history,	ERROR
%s: %s, vap->iv_dev->name, buf /* NB: no */	DEBUG	%s: cannot load ARC4 module, fname	ERROR
%s: [%s] %s, vap->iv_dev->name,	DEBUG	%s: cannot load SHA1 module, fname	ERROR
%s: [%s] %s, vap->iv_dev->name,	DEBUG	%s: CryptoAPI SHA1 digest size too small, fname	ERROR
ether_sprintf(mac), buf	DEBUG	%s: cannot allocate space for SHA1 digest, fname	ERROR
[%s:%s] discard %s frame, %s, vap->iv_dev->name,	DEBUG	%s%d: trying to write outside history	ERROR
[%s:%s] discard frame, %s, vap->iv_dev->name,	DEBUG	%s%d: trying to write outside history	ERROR
[%s:%s] discard %s information element, %s,	DEBUG	%s%d: trying to write outside history	ERROR
[%s:%s] discard information element, %s,	DEBUG	%s%d: trying to write outside history	ERROR
[%s:%s] discard %s frame, %s, vap->iv_dev->name,	DEBUG	%s%d: too big uncompressed packet: %d,	ERROR
[%s:%s] discard frame, %s, vap->iv_dev->name,	DEBUG	%s%d: encryption negotiated but not an	ERROR
HBR list			
dumpNode\Address\State\Trigger\B lock	DEBUG	%s%d: error - not an MPPC or MPPE frame	ERROR
Nodes			
informationAddress\Block\Droped VI frames	DEBUG	Kernel doesn't provide ARC4 and/or SHA1 algorithms	ERROR
%d\t			
%2.2x:%2.2x:%2.2x:%2.2x:%2.2x:%2.2x			
\t%s\t%s\t%s,	DEBUG	PPP: not interface or channel??	ERROR
%2.2x:%2.2x:%2.2x:%2.2x:%2.2x:%2.2x	DEBUG	PPP: no memory (VJ compressor)	ERROR
\t%s\t%d,			
[%d]\Function\t%s, j, ni->node_trace[i].funcp	DEBUG	failed to register PPP device (%d), err	ERROR
[%d]\MacAddr\t%s, j,	DEBUG	PPP: no memory (VJ comp pkt)	ERROR
[%d]\Descp\t%s, j, ni->node_trace[i].descp	DEBUG	PPP: no memory (comp pkt)	ERROR
[%d]\Value\tllu(0x%llx), j, ni->node_trace[i].value,	DEBUG	ppp: compressor dropped pkt	ERROR
ifmedia_add: null ifm	DEBUG	PPP: no memory (fragment)	ERROR

Adding entry for	DEBUG	PPP: VJ uncompressed error	ERROR
ifmedia_set: no match for 0x%lx/0x%lx,	DEBUG	ppp_decompress_frame: no memory	ERROR
ifmedia_set: target	DEBUG	ppp_mp_reconstruct bad seq %u < %u,	ERROR
ifmedia_set: setting to	DEBUG	PPP: couldn't register device %s (%d),	ERROR
ifmedia_ioctl: switching %s to , dev->name	DEBUG	ppp: destroying ppp struct %p but dead=%d	ERROR
ifmedia_match: multiple match for	DEBUG	ppp: destroying undead channel %p !,	ERROR
<unknown type>	DEBUG	PPP: removing module but units remain!	ERROR
desc->ifmt_string	DEBUG	PPP: failed to unregister PPP device	ERROR
mode %s, desc->ifmt_string	DEBUG	%s: cannot allocate space for %scompressor, fname,	ERROR
<unknown subtype>	DEBUG	%s: cannot allocate space for MPPC history,	ERROR
%s, desc->ifmt_string	DEBUG	%s: cannot allocate space for MPPC history,	ERROR
%s%s, seen_option++ ? , : ,	DEBUG	%s: cannot load ARC4 module, fname	ERROR
%s%s, seen_option++ ? , : ,	DEBUG	%s: cannot load SHA1 module, fname	ERROR
%s, seen_option ? > :	DEBUG	%s: CryptoAPI SHA1 digest size too small, fname	ERROR
%s: %s, dev->name, buf	DEBUG	%s: cannot allocate space for SHA1 digest, fname	ERROR
%s: no memory for sysctl table!, __func__	DEBUG	%s%d: trying to write outside history	ERROR
%s: failed to register sysctls!, vap->iv_dev->name	DEBUG	%s%d: trying to write outside history	ERROR
Atheros HAL assertion failure: %s: line %u: %s,	DEBUG	%s%d: trying to write outside history	ERROR
ath_hal: logging to %s %s, ath_hal_logfile,	DEBUG	%s%d: too big uncompressed packet: %d,	ERROR
ath_hal: logging disabled	DEBUG	%s%d: encryption negotiated but not an	ERROR
%s%s, sep, ath_hal_buildopts[i]	DEBUG	%s%d: error - not an MPPC or MPPE frame	ERROR
ath_pci: No devices found, driver not installed.	DEBUG	Kernel doesn't provide ARC4 and/or SHA1 algorithms	ERROR
---%d pri:%d qd:%u ad:%u sd:%u tot:%u amp:%d %02x:%02x:%02x,	DEBUG	PPP: not interface or channel??	ERROR
SC Pushbutton Notify on %s::%s,dev->name,vap->iv_dev->name	DEBUG	PPP: no memory (VJ compressor)	ERROR
Could not find Board Configuration Data	DEBUG	failed to register PPP device (%d), err	ERROR
Could not find Radio Configuration data	DEBUG	PPP: no memory (comp pkt)	ERROR
%s: No device, __func__	DEBUG	ppp: compressor dropped pkt	ERROR
ath_ahb: No devices found, driver not installed.	DEBUG	PPP: no memory (VJ comp pkt)	ERROR
PKTLOG_TAG %s:proc_dointvec failed, __FUNCTION__	DEBUG	PPP: no memory (comp pkt)	ERROR
PKTLOG_TAG %s:proc_dointvec failed, __FUNCTION__	DEBUG	PPP: no memory (fragment)	ERROR
%s: failed to register sysctls!, proc_name	DEBUG	PPP: VJ uncompressed error	ERROR
PKTLOG_TAG %s: proc_mkdir failed, __FUNCTION__	DEBUG	ppp_decompress_frame: no memory	ERROR
PKTLOG_TAG %s: pktlog_attach failed for %s,	DEBUG	ppp_mp_reconstruct bad seq %u < %u,	ERROR

PKTLOG_TAG %s: allocation failed for pl_info, __FUNCTION__	DEBUG	PPP: couldn't register device %s (%d), ppp: destroying ppp struct %p but dead=%d	ERROR
PKTLOG_TAG %s: allocation failed for pl_info, __FUNCTION__	DEBUG	ppp: destroying undead channel %p !, PPP: removing module but units remain!	ERROR
PKTLOG_TAG %s: create_proc_entry failed for %s,	DEBUG	ppp: destroying undead channel %p !, PPP: removing module but units remain!	ERROR
PKTLOG_TAG %s: sysctl register failed for %s,	DEBUG	PPP: failed to unregister PPP device	ERROR
PKTLOG_TAG %s: page fault out of range, __FUNCTION__	DEBUG	JBD: bad block at offset %u,	ERROR
PKTLOG_TAG %s: page fault out of range, __FUNCTION__	DEBUG	JBD: corrupted journal superblock	ERROR
PKTLOG_TAG %s: Log buffer unavailable, __FUNCTION__	DEBUG	JBD: bad block at offset %u,	ERROR
PKTLOG_TAG Logging should be disabled before changing bufer size	DEBUG	JBD: Failed to read block at offset %u,	ERROR
%s:allocation failed for pl_info, __func__	DEBUG	JBD: error %d scanning journal, err	ERROR
%s: Unable to allocate buffer, __func__	DEBUG	JBD: IO error %d recovering block	ERROR
%s:allocation failed for pl_info, __func__	DEBUG	./Logs_kernel.txt:303:KERN_ERR	ERROR
%s: Unable to allocate buffer, __func__	DEBUG	./Logs_kernel.txt:304:KERN_ERR	ERROR
Atheros HAL assertion failure: %s: line %u: %s,	DEBUG	JBD: recovery pass %d ended at	ERROR
ath_hal: logging to %s %s,	DEBUG	%s: %s:%d: BAD SESSION MAGIC \	ERROR
ath_hal_logfile,	DEBUG	%s: %s:%d: BAD TUNNEL MAGIC \	ERROR
ath_hal: logging disabled	DEBUG	msg->msg_namelen wrong, %d, msg->msg_namelen	ERROR
%s%s, sep, ath_hal_buildopts[i]	DEBUG	addr family wrong: %d, usin->sin_family	ERROR
failed to allocate rx descriptors: %d, error	DEBUG	udp addr=%x/%hu, usin->sin_addr.s_addr, usin->sin_port	ERROR
ath_stoprecv: rx queue %p, link %p,	DEBUG	%s: %s:%d: BAD TUNNEL MAGIC	ERROR
no mpdu (%s), __func__	DEBUG	Reset rx chain mask. Do internal reset. (%s), __func__	ERROR
OS_CANCEL_TIMER failed!!	DEBUG	%s: %s:%d: BAD TUNNEL MAGIC	ERROR
%s: unable to allocate channel table, __func__	DEBUG	socki_lookup: socket file changed!	ERROR
%s: unable to collect channel list from hal;	DEBUG	%s: %s:%d: BAD TUNNEL MAGIC	ERROR
%s: cannot map channel to mode; freq %u flags 0x%x,	DEBUG	%s: %s:%d: BAD SESSION MAGIC \	ERROR
%s: unable to reset channel %u (%uMhz)	DEBUG	%s: %s:%d: BAD TUNNEL MAGIC \	ERROR
%s: unable to restart recv logic,	DEBUG	msg->msg_namelen wrong, %d, msg->msg_namelen	ERROR
%s: start DFS WAIT period on channel %d, __func__, sc->sc_curchan.channel	DEBUG	addr family wrong: %d, usin->sin_family	ERROR
%s: cancel DFS WAIT period on channel %d, __func__, sc->sc_curchan.channel	DEBUG	udp addr=%x/%hu, usin->sin_addr.s_addr, usin->sin_port	ERROR
Non-DFS channel, cancelling previous DFS wait timer channel %d, sc->sc_curchan.channel	DEBUG	%s: %s:%d: BAD TUNNEL MAGIC	ERROR
%s: unable to reset hardware; hal status %u	DEBUG	socki_lookup: socket file changed!	ERROR

%s: unable to start recv logic, __func__	DEBUG	%s: %s:%d: BAD TUNNEL MAGIC	ERROR
%s: unable to start recv logic, __func__	DEBUG	%s: %s:%d: BAD SESSION MAGIC \	ERROR
%s: unable to reset hardware; hal status %u,	DEBUG	%s: %s:%d: BAD TUNNEL MAGIC \	ERROR
hardware error; resetting	DEBUG	msg->msg_namelen wrong, %d, msg->msg_namelen	ERROR
rx FIFO overrun; resetting	DEBUG	addr family wrong: %d, usin->sin_family	ERROR
%s: During Wow Sleep and got BMISS, __func__	DEBUG	udp addr=%x/%hu, usin->sin_addr.s_addr, usin->sin_port	ERROR
AC\rtRTS \tAggr Scaling\tMin Rate(Kbps)\tHBR \tPER LOW THRESHOLD	DEBUG	%s: %s:%d: BAD TUNNEL MAGIC	ERROR
BE\t%s\t\t%d\t\t%6d\t\t%s\t%d,	DEBUG	%s: %s:%d: BAD TUNNEL MAGIC	ERROR
BK\t%s\t\t%d\t\t%6d\t\t%s\t%d,	DEBUG	socki_lookup: socket file changed!	ERROR
VI\t%s\t\t%d\t\t%6d\t\t%s\t%d,	DEBUG	%s: %s:%d: BAD TUNNEL MAGIC	ERROR
VO\t%s\t\t%d\t\t%6d\t\t%s\t%d,	DEBUG	rebootHook: null function pointer	ERROR
--%d,%p,%lu:0x%0x 0x%0x 0x%p 0x%0x 0x%0x 0x%0x,	DEBUG	Bad ioctl command	ERROR
bb state: 0x%08x 0x%08x, bbstate(sc, 4ul), bbstate(sc, 5ul)	DEBUG	fResetMod: Failed to configure gpio pin	ERROR
%08x %08x %08x %08x %08x %08x	DEBUG	fResetMod: Failed to register interrupt handler	ERROR
%08x %08x %08x %08x %08x %08x, noise floor: (%d, %d) (%d, %d) (%d, %d),	DEBUG	registering char device failed	ERROR
%p: %08x %08x,	DEBUG	unregistering char device failed	ERROR
--%d,%p,%lu:0x%0x 0x%0x 0x%p 0x%0x 0x%0x 0x%0x,	DEBUG	proc entry delete failed	ERROR
%08x %08x,	DEBUG	proc entry initialization failed	ERROR
%s: unable to allocate device object., __func__	DEBUG	testCompHandler: received %s from %d, (char *)pInBuf,	ERROR
%s: unable to attach hardware; HAL status %u,	DEBUG	UMI proto registration failed %d,ret	ERROR
%s: HAL ABI mismatch;	DEBUG	AF_UMI registration failed %d,ret	ERROR
%s: Warning, using only %u entries in %u key cache,	DEBUG	umi initialization failed %d,ret	ERROR
unable to setup a beacon xmit queue!	DEBUG	kernel UMI registration failed!	ERROR
unable to setup CAB xmit queue!	DEBUG	./Logs_kernel.txt:447:KERN_ERR	ERROR
unable to setup xmit queue for BE traffic!	DEBUG	ERROR msm not found properly %d, len %d, msm,	ERROR
%s DFS attach failed, __func__	DEBUG	ModExp returned Error	ERROR
%s: Invalid interface id = %u, __func__, if_id	DEBUG	ModExp returned Error	ERROR
%s:grppoll Buf allocation failed , __func__	DEBUG	%s: 0x%p len %u, tag, p, (unsigned int)len	ERROR
%s: unable to start recv logic,	DEBUG	%03d:, i	ERROR
%s: Invalid interface id = %u, __func__, if_id	DEBUG	%02x, ((unsigned char *)p)[i]	ERROR
%s: unable to allocate channel table, __func__	DEBUG	mic check failed	ERROR
%s: Tx Antenna Switch. Do internal reset., __func__	DEBUG	%s: 0x%p len %u, tag, p, (unsigned int)len	ERROR

Radar found on channel %d (%d MHz),	DEBUG	%03d; i	ERROR
End of DFS wait period	DEBUG	%02x, ((unsigned char *)p)[i]	ERROR
%s error allocating beacon, __func__	DEBUG	mic check failed	ERROR
failed to allocate UAPSD QoS NULL tx descriptors: %d, error	DEBUG	[%s] Wrong parameters, __func__	ERROR
failed to allocate UAPSD QoS NULL wbuf	DEBUG	[%s] Wrong Key length, __func__	ERROR
%s: unable to allocate channel table, __func__	DEBUG	[%s] Wrong parameters, __func__	ERROR
%s: unable to update h/w beacon queue parameters,	DEBUG	[%s] Wrong Key length, __func__	ERROR
ALREADY ACTIVATED	DEBUG	[%s] Wrong parameters, __func__	ERROR
%s: missed %u consecutive beacons,	DEBUG	[%s] Wrong Key length, __func__	ERROR
%s: busy times: rx_clear=%d, rx_frame=%d, tx_frame=%d, __func__, rx_clear, rx_frame, tx_frame	DEBUG	[%s] Wrong parameters, __func__	ERROR
%s: unable to obtain busy times, __func__	DEBUG	[%s] Wrong Key length, __func__	ERROR
%s: beacon is officially stuck,	DEBUG	[%s]: Wrong parameters, __func__	ERROR
Busy environment detected	DEBUG	[%s] Wrong Key Length %d, __func__, des_key_len	ERROR
Inteference detected	DEBUG	[%s] Wrong parameters %d, __func__, des_key_len	ERROR
rx_clear=%d, rx_frame=%d, tx_frame=%d,	DEBUG	[%s] Wrong Key Length %d, __func__, des_key_len	ERROR
%s: resume beacon xmit after %u misses,	DEBUG	[%s] Wrong parameters, __func__	ERROR
%s: stuck beacon; resetting (bmiss count %u),	DEBUG	[%s] Wrong Key Length, __func__	ERROR
EMPTY QUEUE	DEBUG	[%s] Wrong parameters, __func__	ERROR
SWRInfo: seqno %d isswRetry %d retryCnt %d, wh ? (*( <u>int16_t</u> *)&wh->i_seq[0]) >> 4 : 0, bf->bf_isswretry, bf->bf_swretries	DEBUG	[%s] Wrong Key Length, __func__	ERROR
Buffer %#08X --> Next %#08X Prev %#08X Last %#08X, bf, TAILQ_NEXT(bf, bf_list),	DEBUG	[%s] Wrong parameters, __func__	ERROR
Stas %#08X flag %#08X Node %#08X, bf->bf_status, bf->bf_flags, bf->bf_node	DEBUG	[%s] Wrong parameters, __func__	ERROR
Descr %#08X --> Next %#08X Data %#08X Ctl0 %#08X Ctl1 %#08X, bf->bf_daddr, ds->ds_link, ds->ds_data, ds->ds_ctl0, ds->ds_ctl1	DEBUG	[%s] Wrong parameters, __func__	ERROR
Ctl2 %#08X Ctl3 %#08X Sta0 %#08X Sta1 %#08X, ds->ds_hw[0], ds->ds_hw[1], lastds->ds_hw[2], lastds->ds_hw[3]	DEBUG	[%s] Wrong parameters, __func__	ERROR
Error entering wow mode	DEBUG	device name=%s not found, pReq->ifName	ERROR
Wakingup due to wow signal	DEBUG	unable to register KIFDEV to UMI	ERROR
%s, wowStatus = 0x%x, __func__, wowStatus	DEBUG	ERROR: %s: Timeout at page %#0x addr %#0x	ERROR
Pattern added already	DEBUG	ERROR: %s: Timeout at page %#0x addr %#0x	ERROR
Error : All the %d pattern are in use. Cannot add a new pattern ,	DEBUG	Invalid IOCTL %#08x, cmd	ERROR

MAX_NUM_PATTERN			
Pattern added to entry %d ,i	DEBUG	%s: unable to register device, dev->name	ERROR
Remove wake up pattern	DEBUG	ath_pci: 32-bit DMA not available	ERROR
mask = %p pat = %p ,maskBytes,patternBytes	DEBUG	ath_pci: cannot reserve PCI memory region	ERROR
mask = %x pat = %x ,(u_int32_t)maskBytes, (u_int32_t)patternBytes	DEBUG	ath_pci: cannot remap PCI memory region);	ERROR
Pattern Removed from entry %d ,i	DEBUG	ath_pci: no memory for device state %s: unable to register device, dev->name	ERROR
Error : Pattern not found	DEBUG		ERROR
PPM STATE ILLEGAL %x %x, forcePpmStateCur, afp->forceState	DEBUG	ath_dev_probe: no memory for device state	ERROR
FORCE_PPM %4d %6.6x %8.8x %8.8x %8.8x %3.3x %4.4x,	DEBUG	%s: no memory for device state, __func__	ERROR
failed to allocate tx descriptors: %d, error	DEBUG	kernel MIBCTL registration failed!	ERROR
failed to allocate beacon descripotrs: %d, error	DEBUG	Bad ioctl command	ERROR
failed to allocate UAPSD descripotrs: %d, error	DEBUG	WpsMod: Failed to configure gpio pin	ERROR
hal qnum %u out of range, max %u!, HAL AC %u out of range, max %zu!, HAL AC %u out of range, max %zu!, %s: unable to update hardware queue %u!,	DEBUG	WpsMod: Failed to register interrupt handler	ERROR
Multicast Q: %p , buf	DEBUG	registering char device failed	ERROR
buf flags - 0x%08x ----- , buf->bf_flags	DEBUG	unregistering char device failed	ERROR
buf status - 0x%08x, buf->bf_status	DEBUG	%s:%d - ERROR: non-NULL node pointer in %p, %p<%s>!	ERROR
# frames in aggr - %d, length of aggregate - %d, length of frame - %d, sequence number - %d, tidno - %d, isdata: %d isaggr: %d isampdu: %d ht: %d isretried: %d isxretried: %d shpreamble: %d isbar: %d ispspoll: %d aggrburst: %d calcairtime: %d qosnulleosp: %d,	DEBUG	%s:%d - ERROR: non-NULL node pointer in %p, %p<%s>!	ERROR
%p: 0x%08x 0x%08x 0x%08x 0x%08x 0x%08x 0x%08x 0x%08x 0x%08x 0x%08x 0x%08x,	DEBUG	can't alloc name %s, name %s: unable to register device, dev->name	ERROR
0x%08x 0x%08x 0x%08x 0x%08x 0x%08x 0x%08x 0x%08x 0x%08x 0x%08x 0x%08x,	DEBUG	failed to automatically load module: %s; \	ERROR
0x%08x 0x%08x 0x%08x 0x%08x,	DEBUG	Unable to load needed module: %s; no support for \	ERROR
sc_txq[%d] : , i	DEBUG	Module \'%s\' is not known, buf	ERROR
tid %p pause %d : , tid, tid->paused	DEBUG	Error loading module \'%s\', buf	ERROR
%d: %p , j, tid->tx_buf[j]	DEBUG	Module \'%s\' failed to initialize, buf	ERROR
	DEBUG	ath_pci: 32-bit DMA not available	ERROR
	DEBUG	ath_pci: cannot reserve PCI memory region	ERROR
	DEBUG	ath_pci: cannot remap PCI memory region);	ERROR
	DEBUG	ath_pci: no memory for device state	ERROR

%p , buf	DEBUG	%s: unable to attach hardware: '%s' (HAL status %u),	ERROR
axq_q:	DEBUG	%s: HAL ABI mismatch;	ERROR
%s: unable to reset hardware; hal status %u, __func__, status	DEBUG	%s: failed to allocate descriptors: %d, %s: unable to setup a beacon xmit queue!,	ERROR
****ASSERTION HIT****	DEBUG	%s: unable to setup CAB xmit queue!, %s: unable to setup xmit queue for %s traffic!,	ERROR
MacAddr=%s,	DEBUG	%s: unable to setup CAB xmit queue!, %s: unable to setup xmit queue for %s traffic!,	ERROR
TxBufldx=%d, i	DEBUG	%s: unable to register device, dev->name	ERROR
Tid=%d, tidno	DEBUG	%s: autocreation of VAP failed: %d, ath_dev_probe: no memory for device state	ERROR
AthBuf=%p, tid->tx_buf[i]	DEBUG	kdot11RogueAPEnable called with NULL argument.	ERROR
%s: unable to reset hardware; hal status %u,	DEBUG	kdot11RogueAPEnable: can not add more interfaces	ERROR
%s: unable to start recv logic,	DEBUG	kdot11RogueAPGetState called with NULL argument.	ERROR
_fmt, __VA_ARGS__ \ sample_pri=%d is a multiple of refpri=%d, sample_pri, refpri	DEBUG	kdot11RogueAPDisable called with NULL argument.	ERROR
=====ft->ft_numfilters=%u=====, ft->ft_numfilters	DEBUG	%s: SKB does not exist., __FUNCTION__	ERROR
filter[%d] filterID = %d rf_numpulses=%u; rf->rf_minpri=%u; rf->rf_maxpri=%u; rf->rf_threshold=%u; rf->rf_filterlen=%u; rf->rf_mindur=%u; rf->rf_maxdur=%u,j, rf->rf_pulseid,	DEBUG	%s: recv invalid skb	ERROR
NOL	DEBUG	unable to register KIFDEV to UMI	ERROR
WARNING!!! 10 minute CAC period as channel is a weather radar channel	DEBUG	The system is going to factory defaults.....!!!	CRITICAL
%s disable detects, __func__	DEBUG	%s, msg	CRITICAL
%s enable detects, __func__	DEBUG	%02x, *(data + i)	CRITICAL
%s disable FFT val=0x%x, __func__, val	DEBUG	Inside crypt_open in driver #####	CRITICAL
%s enable FFT val=0x%x, __func__, val	DEBUG	Inside crypt_release in driver #####	CRITICAL
%s debug level now = 0x%x, __func__, dfa_debug_level	DEBUG	Inside crypt_init module in driver @@@@@@@	CRITICAL
RateTable:%d, maxvalidate:%d, ratemax:%d, pRc->rateTableSize,k,pRc->rateMaxPhy	DEBUG	Inside crypt_cleanup module in driver @@@@@@@	CRITICAL
%s: txRate value of 0x%x is bad., __FUNCTION__, txRate	DEBUG	SKB is null : %p ,skb	CRITICAL
Valid Rate Table:-	DEBUG	DST is null : %p ,dst	CRITICAL
Index:%d, value:%d, code:%x, rate:%d, flag:%x, i, (int)validRateIndex[i],	DEBUG	DEV is null %p %p ,dev,dst	CRITICAL
RateTable:%d, maxvalidate:%d, ratemax:%d, pRc->rateTableSize,k,pRc->rateMaxPhy	DEBUG	Packet is Fragmented %d,pBufMgr->len	CRITICAL

Can't allocate memory for ath_vap.	DEBUG	Marked the packet proto:%d sip:%x dip:%x sport:%d dport:%d spi:%d,isr:%p.%p %p SAV CHECK FAILED IN DECRYPTION	CRITICA L
Unable to add an interface for ath_dev. %s: [%02u] %-7s , tag, ix, ciphers[hk->kv_type]	DEBUG	FAST PATH Breaks on BUF CHECK	CRITICA L
%02x, hk->kv_val[i] mac %02x-%02x-%02x-%02x-%02x-%02x, mac[0], mac[1], mac[2], mac[3], mac[4], mac[5]	DEBUG	FAST PATH Breaks on DST CHECK FAST PATH Breaks on MTU %d %d %d,bufMgrLen(pBufMgr),mtu,dst_mtu(pDst->path)	CRITICA L
mac 00-00-00-00-00-00	DEBUG	FAST PATH Breaks on MAX PACKET %d %d %d,bufMgrLen(pBufMgr),IP_MAX_PACKET	CRITICA L
%02x, hk->kv_mic[i]	DEBUG	SAV CHECK FAILED IN ENCRYPTION	CRITICA L
txmic	DEBUG	Match Found proto %d spi %d,pPktInfo->proto,pFlowEntry->pre.spi	CRITICA L
%02x, hk->kv_txmic[i]	DEBUG	PRE: proto: %u srcip:%u.%u.%u.%u sport :%u dstip: %u.%u.%u.%u dport: %u,	CRITICA L
Cannot support setting tx and rx keys individually	DEBUG	POST: proto: %u srcip:%u.%u.%u.%u sport :%u dstip: %u.%u.%u.%u dport: %u,	CRITICA L
bogus frame type 0x%x (%s),	DEBUG	Clearing the ISR %p,p PROTO:%d %u.%u.%u.%u--->%u.%u.%u.%u,	CRITICA L
ERROR: ieee80211_encap ret NULL	DEBUG		CRITICA L
ERROR: ath_amsdu_attach not called %s: no memory for cwm attach, __func__	DEBUG	ESP-DONE: %p %p,sav,m	CRITICA L
%s: error - acw NULL. Possible attach failure, __func__	DEBUG	ESP-BAD: %p %p,sav,m	CRITICA L
%s: unable to abort tx dma, __func__	DEBUG	Bug in ip_route_input_slow().	CRITICA L
%s: no memory for ff attach, __func__ Failed to initiate PBC based enrolle association	DEBUG	Bug in ip_route_input \	CRITICA L
KERN_EMERG Returing error in INTR registration	DEBUG	Bug in ip_route_input_slow().	CRITICA L
KERN_EMERG Initialzing Wps module	DEBUG	AH: Assigning the secure flags for sav :%p,sav	CRITICA L
%s:%d %s, __FILE__, __LINE__, __func__	DEBUG	ESP: Assigning the secure flags for sav :%p skb:%p src:%x dst:%x,sav,skb,ip->ip_src.s_addr,ip->ip_dst.s_addr %s Buffer %d mtu %d path mtu %d header %d trailer %d,__func__,bufMgrLen(pBufMgr),mtu,dst_mtu(pDst->path),pDst->header_len,pDst->trailer_len	CRITICA L

## **Federal Communications Commission (FCC) Compliance Notice: Radio Frequency Notice**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

## **FCC Radiation Exposure Statement**

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- 1) This device may not cause harmful interference, and
- 2) This device must accept any interference received, including interference that may cause undesired operation.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The antennas used for this transmitter must be installed to provide a spectrum distance of at least 20cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

## **Non-modification Statement**

Use only the integral antenna supplied by the manufacturer when operating this device. Unauthorized antennas, modifications, or attachments could damage the TI Navigator access point and violate FCC regulations. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

## **Canadian Department of Communications Industry Canada (IC) Notice**

This Class B digital apparatus complies with Canadian ICES-003 and RSS-210. Cet appareil numérique de la classe B est conforme à la norme NMB-003 et CNR-210 du Canada.

## **Industry Canada Statement**

This device complies with RSS-210 of the Industry Canada Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

## **IMPORTANT NOTE: Radiation Exposure Statement**

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. To maintain compliance with IC RF exposure compliance requirements, please follow operation instruction as documented in this manual.

Europe – EU Declaration of Conformity

This device complies with the essential requirements of the R&TTE Directive 1999/5/EC. The following test methods have been applied in order to prove presumption of conformity with the essential requirements of the R&TTE Directive 1999/5/EC:

- EN 60950-1: 2006+A11:2009

Safety of information technology equipment

- EN 300 328 V1.7.1 (2006-10)

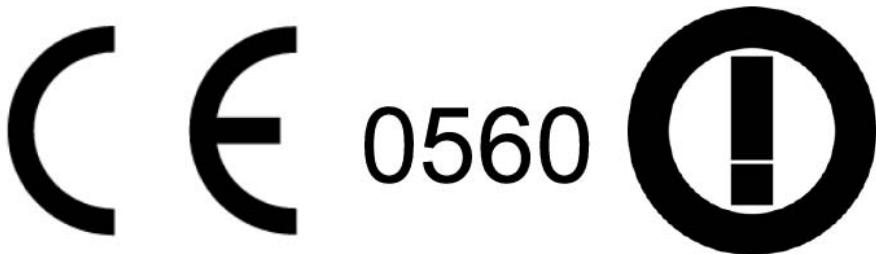
Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using wide band modulation techniques; Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive

- EN 301 489-17 V1.3.2 (2008-04) and EN 301 489-1 V1.8.1 (2008-04)

Electromagnetic compatibility and Radio spectrum Matters (ERM); Electro Magnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for 2,4 GHz wideband transmission systems and 5 GHz high performance RLAN equipment

This device is a 2.4 GHz wideband transmission system (transceiver), intended for use in all EU member states and EFTA countries under the following conditions and/or with the following restrictions:

- In Italy the end-user should apply for a license at the national spectrum authorities in order to obtain authorization to use the device for setting up outdoor radio links and/or for supplying public access to telecommunications and/or network services.
- This device may not be used for setting up outdoor radio links in France and in some areas the RF output power may be limited to 10 mW EIRP in the frequency range of 2454 – 2483.5 MHz. For detailed information the enduser should contact the national spectrum authority in France.



Česky [Czech]	[D-Link Corporation] tímto prohlašuje, že tento [DSR-500N] je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.
Dansk [Danish]	Undertegnede [D-Link Corporation] erklærer herved, at følgende udstyr [DSR-500N] overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EU.
Deutsch [German]	Hiermit erklärt [D-Link Corporation], dass sich das Gerät [DSR-500N] in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet.
Eesti [Estonian]	Käesolevaga kinnitab [D-Link Corporation] seadme [DSR-500N] vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
English	Hereby, [D-Link Corporation], declares that this [DSR-500N] is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Español [Spanish]	Por medio de la presente [D-Link Corporation] declara que el [DSR-500N] cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
Ελληνική [Greek]	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ [D-Link Corporation] ΔΗΛΩΝΕΙ ΟΤΙ [DSR-500N] ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/EK.
Français [French]	Par la présente [D-Link Corporation] déclare que l'appareil [DSR-500N] est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
Italiano [Italian]	Con la presente [D-Link Corporation] dichiara che questo [DSR-500N] è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latviski [Latvian]	Ar šo [D-Link Corporation] deklarē, ka [DSR-500N] atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.
Lietuvių [Lithuanian]	Šiuo [D-Link Corporation] deklaruojama, kad šis [DSR-500N] atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
Nederlands [Dutch]	Hierbij verklaart [D-Link Corporation] dat het toestel [DSR-500N] in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
Malti [Maltese]	Hawnhekk, [D-Link Corporation], jiddikjara li dan [DSR-500N] jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Direttiva 1999/5/EC.
Magyar [Hungarian]	Alulírott, [D-Link Corporation] nyilatkozom, hogy a [DSR-500N] megfelel a vonatkozó alapvető követelményeknek és az 1999/5/EC irányelv egyéb előírásainak.
Polski [Polish]	Niniejszym [D-Link Corporation] oświadcza, że [DSR-500N] jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.

Português [Portuguese]	[D-Link Corporation] declara que este [DSR-500N] está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
Slovensko [Slovenian]	[D-Link Corporation] izjavlja, da je ta [DSR-500N] v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.
Slovensky [Slovak]	[D-Link Corporation] týmto vyhlasuje, že [DSR-500N] spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
Suomi [Finnish]	[D-Link Corporation] vakuuttaa täten että [DSR-500N] tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Svenska [Swedish]	Härmed intygar [D-Link Corporation] att denna [DSR-500N] står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.