



shaping tomorrow with you



Fujitsu Femtocell Solutions

Supporting ideal in-building
communications environments

Fujitsu Femtocell Solutions

Increase Coverage and Capacity with a Superior End-user Experience

The Fujitsu in-building solution enhances residential and enterprise customer loyalty and retention by improving end-user service quality. Fujitsu Femtocell Solutions offer full 4G/LTE access, five-bar in-building coverage, and faster mobile data service, especially among high-end subscribers who operate multiple smart devices in their homes and offices.

The Fujitsu in-building solution (Figure 1) includes the femtocells, the Femtocell Gateway (HeNB-GW), and the Home eNodeB Management System (HeMS).

Femtocell Access Point [HeNB]

Fujitsu offers three femtocells for residential and enterprise use. Each femtocell delivers field-proven and interoperable 4G/LTE with unparalleled interference management and signal quality.

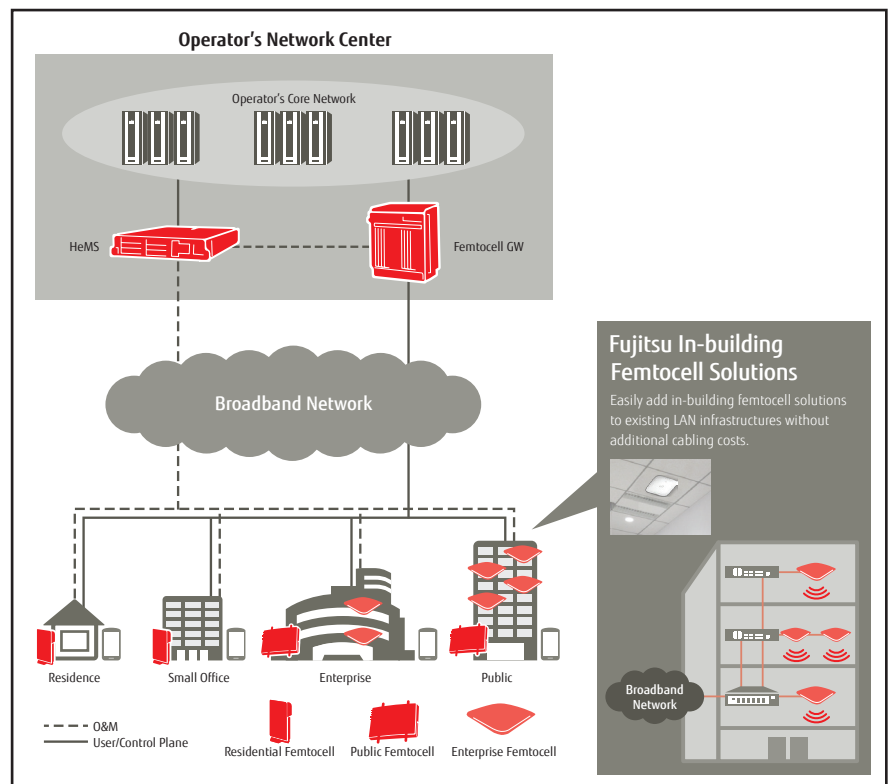


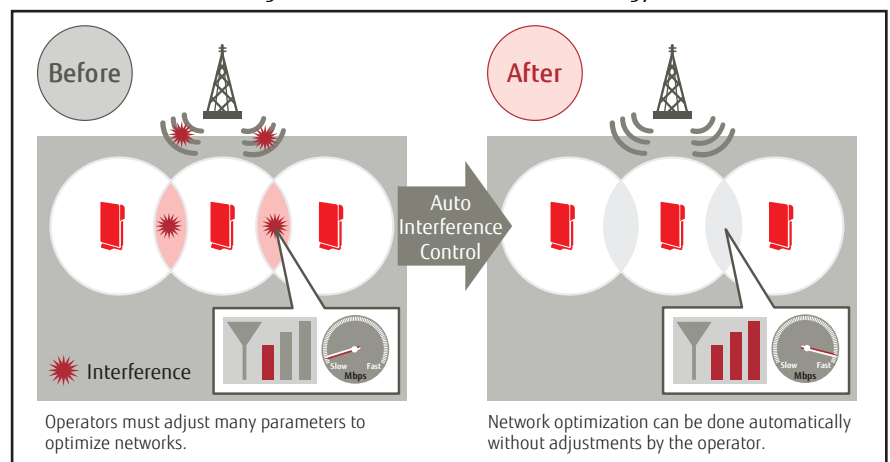
Figure 1: Fujitsu in-building solution

Interference-control Technology

The femtocell directly measures interference via user equipment (UE) feedback (Figure 2) and make decisions on radio-frequency (RF) resource allocation for optimization.

The interference-control algorithms require no assistance from macrocells or neighboring femtocells. The femtocell itself makes multiple measurements, including information from the UE, enabling the femtocell to learn the current interference situation on the downlink and uplink, in addition to the current locations of the UE. From these, RF resources are allocated to maximize capacity and minimize interference.

Figure 2: Interference-control technology



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Features and Benefits

Voice over LTE

The femtocell supports Voice over LTE (VoLTE). The femtocell utilizes a high-priority Quality of Service (QoS) channel for voice to ensure that the quality is sufficient to support the voice call over other best-effort services.

Multiband Support

The femtocell supports multifrequency bands and automatically selects the operating frequency depending on the actual network.

Example: When the femtocell is installed on the same floor as other devices, it can select a different frequency of a neighboring femtocell to minimize the interference.



Femtocell Gateway (HeNB-GW)

The Femtocell Gateway (Figure 3) provides high scalability by expanding processing capacity during increased traffic. The device is installed between the femtocell and the mobile operator's core network to aggregate and terminate the user/control-plane data. Typically, a femtocell detects the gateway as part of a core network, and, on the other hand, an operator's core network can detect the gateway as a macro cell network element. So, if the number of femtocells increases drastically, mobile operators can optimize the capital expenditure for the core network and minimize the load on it, as well.

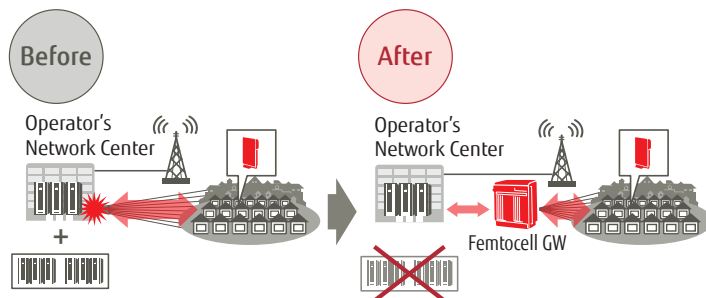


Figure 3: Femtocell Gateway

Home eNodeB Management System (HeMS)

- Network element management system for femtocell and Femtocell Gateway access
- Flexible GUI design
- Supports northbound interface and OSS/BSS

The HeMS system (Figure 4) consists of a server and client. The server has database information, and the client manages the femtocell and Femtocell Gateway via a GUI interface. The HeMS can monitor a maximum of 200,000 femtocells simultaneously. In addition, users can remotely manage the status of the femtocells and the Femtocell Gateway.

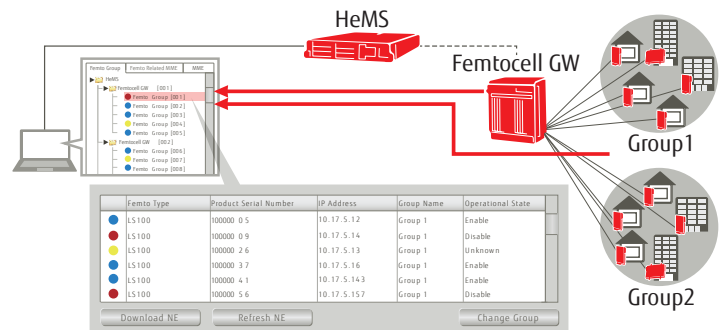


Figure 4: Element Management System

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Specifications



LS100 Series	LS150 Series	LS200 Series
Residential type	Enterprise, public type	Enterprise, public type
LTE FDD/TDD	LTE FDD/TDD	LTE FDD/TDD WLAN 802.11 a,b,g,n,ac (optional)
16 users	16 users; 32 users on the roadmap	32 users/band; 64 users/band on the roadmap 64 users/2 bands for CA user
5, 10, and 15 MHz bandwidth	5, 10, and 15 MHz bandwidth	5, 10, 15, and 20 MHz bandwidth
Up to 37 Mbps @ 5 MHz, Up to 75 Mbps @ 10 MHz and Up to 112 Mbps @ 15 MHz (DL) FDD LTE throughput	Up to 37 Mbps @ 5 MHz, Up to 75 Mbps @ 10 MHz and Up to 112 Mbps @ 15 MHz (DL) FDD LTE throughput	Up to 37 Mbps @ 5 MHz, Up to 75 Mbps @ 10 MHz and Up to 112 Mbps @ 15 MHz Up to 150 Mbps @ 20 MHz (DL) FDD LTE throughput
Single-band with two bands selectable	Single-band with two bands selectable	Dual-band Carrier aggregation
Voice over LTE		
Plug & play		
Interference control (power/timing/bandwidth/switching) and interference management		
Available Interface		
• Backhaul 100Base-T/1000Base-T interface • AC/DC power connector • External GPS antenna	• Backhaul 100Base-T/1000Base-T interface • AC/DC power connector, Power over Ethernet • External RF antenna	• Backhaul 100Base-T/1000Base-T interface • AC/DC power connector, Power over Ethernet • External RF and GPS antennas
Dimensions (H × W × D)		
8.7 × 5.7 × 1.3" (220 × 143 × 32 mm)	9.9 × 9.9 × 1.6" (250 × 250 × 40 mm)	7.9 × 10.7 × 2.0" (200 × 270 × 50 mm)
Weight		
0.93 lb (0.42 kg)	2.87 lb (1.3 kg)	4.41 lb (2 kg)

Fujitsu Femtocell Solutions

Fujitsu Supplies a Complete In-building Solution

Femtocell Gateway (HeNB-GW) – LS700 Series

- Supports minimum 50,000 access points (APs) per unit
- S1 control plane termination (SCTP/S1-AP)
- Paging optimization
- Advanced TCA standard (PCIMG3.0) compliant
- 13U chassis with 14 slots (12 packet blades + 2 switch blades)
- Geographic redundancy support



Home eNodeB Management System (HeMS) – LS800 Series

- Remote control (reboot/reset/shut down)
- Performance management/maintenance
- Alarm & fault management
- Security management
- Supports up to 200,000 APs per unit
- HTTP/TLS/SOAP/TR-069/SNMP support
- System event records
- Software download
- Inventory information management
- System scheduling management
- Supervisory control management
- Subscriber management
- Northbound interface support



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