

CORNET Radio Test Bed at Virginia Tech

Experiment Purpose and Project Description

CORNET is an open cognitive radio network testbed which provides the infrastructure for researchers at Virginia Tech and partner institutions to evaluate independently developed cognitive radio engines, sensing techniques, applications, protocols, performance metrics, and algorithms in a real world wireless environment, in contrast to a computer simulation or single node-to-single node environment.

The main testbed consists of multiple software defined radio nodes mounted on the ceiling and distributed between 4 floors of Kelly Hall. Additional facilities include similar nodes in the main radio laboratories in Durham Hall. Operation of the network is confined to the interior of the Virginia Tech Kelly Hall and Durham Hall at the Blacksburg campus.

Each system node consists of an Ettus Labs USRP or similar device with standard or custom RFIC based daughter-boards which may be tuned to any licensed operating frequency. Wide bandwidth antennas are provided at each node. The system nodes are each connected to a host computer by way of a wired network in order to facilitate programming and control. Recent upgrades provide for a virtual computing environment and 10 Gb interfaces to wide band transceivers. "Mobile" units within the building are used to evaluate handoff and interference characteristics of the network. All radio nodes are SDR based so that operating modes and protocols may be set under software control.

