

IPNetwork Controller



The Internet Protocol Network Controller (IPNC) is the central controller for the *IPSeries* Mobile Data and Voice Communication System. The IPNC manages the distributed intelligence of the *IPSeries* system, including base stations, mobile radios, and voice interface units.

The IPNC is a scalable controller that can be configured for single or multiple sites, single or multiple channels, voice, data, or voice and data communications. It interfaces seamlessly with Ethernet or serial connections to remotely located towers. The IPNC also serves as the gateway between mobile data computer users and LAN's (local area networks), WAN's (wide area networks) or any network server, such as CAD, RMS, messages switches, etc.

IPNC FUNCTIONS

The three (3) major functions of the IPNC are as follows:

Controller

The IPNC uses sophisticated software developed by *IPMobileNet* to manage the *IPSeries* system. This includes routing and scheduling data transmissions, Time Division Multiplexing, simultaneous uplink and downlink traffic, roaming, hands-off, and more. The IPNC also manages IP addresses and security ensuring that only properly logged-in users have access to the system.

Connection to Remote Base Stations

Often, base stations are located at a distance from the Communications Center. Typically, remotely located base stations are connected back to the Communications Center via microwave, T1 lines, wireless routers, or other "backhauls". The IPNC offers Ethernet or serial connectivity to the backhaul. The IPNC also provides IP tunneling for remote base station interconnection.

Gateway to the LAN

The *IPSeries* Mobile Data and Voice Communication System is essentially a wide area network (WAN) extension of any LAN. From a LAN administration perspective, the IPNC appears like any other LAN-connected server. Essentially, the IPNC is the host of the wireless subnet, which is the *IPSeries* Mobile Data and Voice Communication Network.

Interfacing the IPNC to a LAN is simple. An Ethernet port on the IPNC is simply connected to a hub or switch on the LAN. Interfacing the IPNC to CAD, Messages Switches, and other mobile data communication servers is just as simple. Any CAD or switch that operates over a LAN connects easily to the IPNC either via an Ethernet port, a hub, or LAN.

Features

- Tower or rack-mountable configuration
- Automatic serial line and Ethernet base station discovery
- Dynamic Host Configuration Protocol (DHCP) Configuration Utility
- User-friendly configuration utility for simplified configuration process
- 56K Modem for remote login and support
- Supports the following Internet and Intranet Protocols:
 - ✓ ARP (Address Resolution Protocol)
 - ✓ FTP (File Transfer Protocol)
 - ✓ ICMP (Internet-Control Message Protocol)
 - ✓ IP (Internet Protocol)
 - ✓ RARP (Reverse Address Resolution Protocol)
 - ✓ SMTP (Simple Mail Transfer Protocol)
 - ✓ SNMP (Single Network Management Protocol)
 - ✓ TCP (Transmission Control Protocol)
 - ✓ UDP (User Datagram Protocol)



Corporate Offices

16842 Von Karman Avenue, Suite 200
Irvine, California 92606
Voice: (949) 417-4590 Fax: (949) 417-4591

Web Site

www.ipmn.com

IPNetwork Controller

Physical Specifications

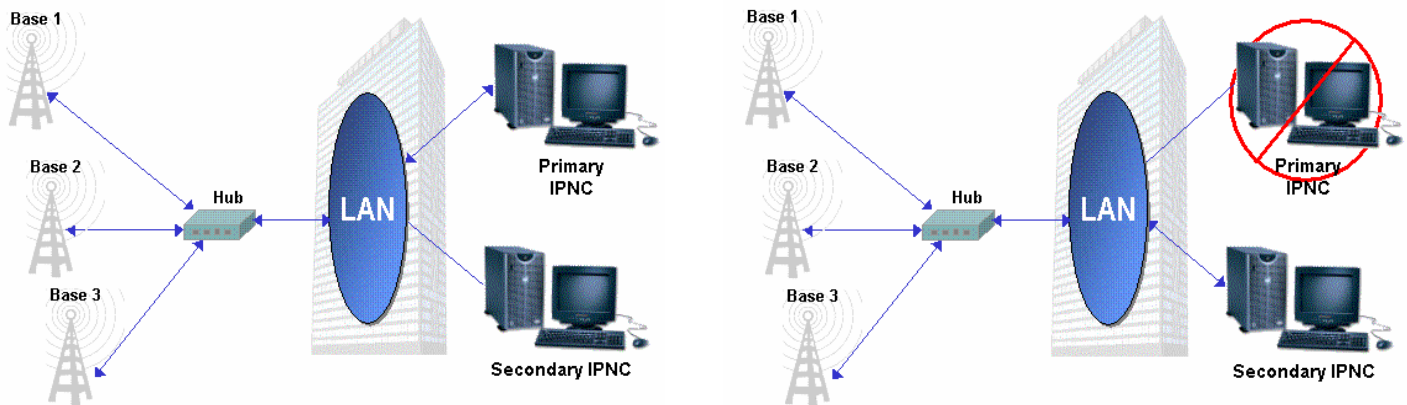
The standard hardware configuration for the IPNC is a robust network server. It includes serial inputs or an Ethernet connection to the data backhaul and base stations. Connectivity to the LAN or other servers is achieved via the Ethernet. The IPNC may reside on a desk at a Communications Center, or, as an option, configured for rack installation. The IPNC is highly scalable, using essentially the same hardware footprint for single or multiple base stations or channels.

Fault Tolerant IPNC

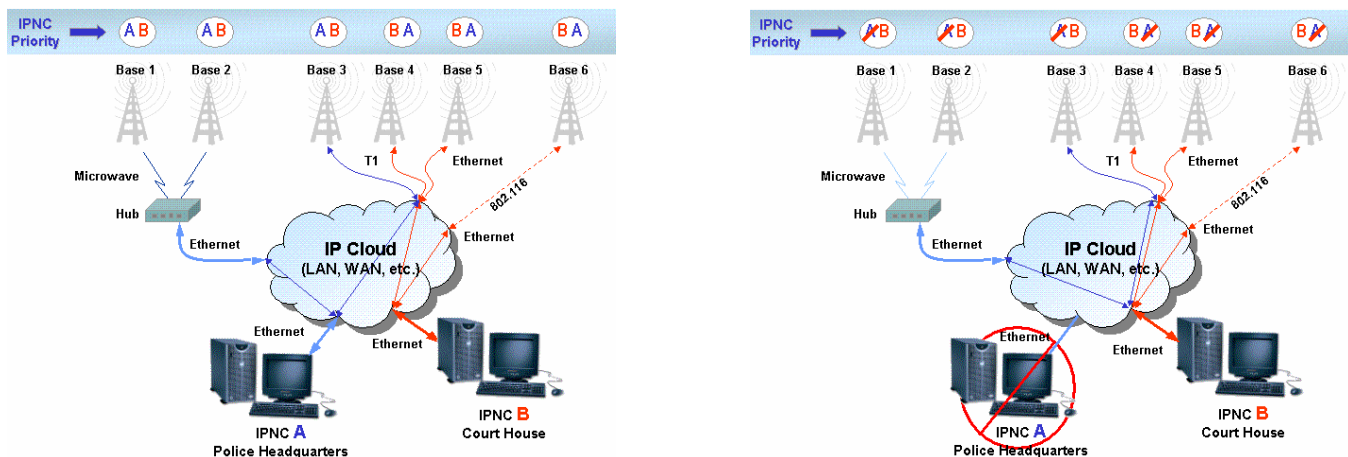
Data and voice communications must be reliable, especially for first responders. Fault tolerance is the ability of a network to respond to an unexpected hardware or software failure. The fault tolerant IPNC uses the flexibility of IP-based networks and the distributed intelligence of the IPSeries system to achieve this reliability.

Each base station queries, at a determined interval, the health status of every IPNC. This querying occurs over the backhaul and does not interfere with or slow down the wireless IPSeries network. In the event that the IPNC does not respond to the query or the response indicates a malfunction, the base station reroutes all traffic to the secondary IPNC.

In the simplest configuration, fault tolerance is achieved with two IPNC's located in the same building and sharing a LAN, as demonstrated below.



In a more sophisticated configuration, multiple IPNC's may share the management responsibilities of a multiple site, multiple channel system. In the event of hardware or software failure in the IPNC, the base stations redirect the mobile data traffic to the other functioning IPNC, as demonstrated below.



Contact IPMobileNet to receive more information on the IPNC and fault tolerance.

*IPMobileNet reserves the right to substitute the pictured and described server hardware with server hardware of equal or greater specifications, as defined by its functionality as an IPNC.