MOSCAD IP Gateway

For MOSCAD Over IP

SPECIFICATIONS

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Order		F43xx-family (xx denotes radio frequency and power level)
CPU		68360; 25 MHz clock
Memory		4 Mb DRAM, 1 Mb Flash
Ports	**Port 1**	Ethernet 10-BaseT or Ethernet AUI @ 10 Mbps
	Port 2	RS-232 Async or RS-485 @ up to 19.2 kbps
	Port 3	RS-232 Async @ up to 19.2 kbps
	Port 4 (opt)	Radio Communications: FSK @ up to 2.4 kbps *or* DPSK @ 1.2 kbps *or* Wireline Communications: refer to separate Modem description sheet R3-11-93 *or* RS-232: Async @ up to 19.2 kbps
Terminal Server	**Ports**	Up to 32. May be distributed among 1-32 Terminal Server hardware (not included).
Indicators		22 LEDs: 3 per port plus 7 for Ethernet activity; Power, Reset, Fail
Physical	**Enclosure**	Steel: 15 x 15 x 8.25″ (38 x 38 x 21 cm); rated NEMA4
	Rack Mount	1 rack unit for CPU module, 2 rack units for AC power supply and battery
	Power Supply	Dual: 117 Vac or 230 Vac 50-60 Hz, provides power to both module and radio, charges battery; 12.6 Vdc @ 5A-h battery
Environmental	**Temperature**	0 to +60°C
	Humidity	0 to 90% @ +50°C

Specifications subject to change without notice.

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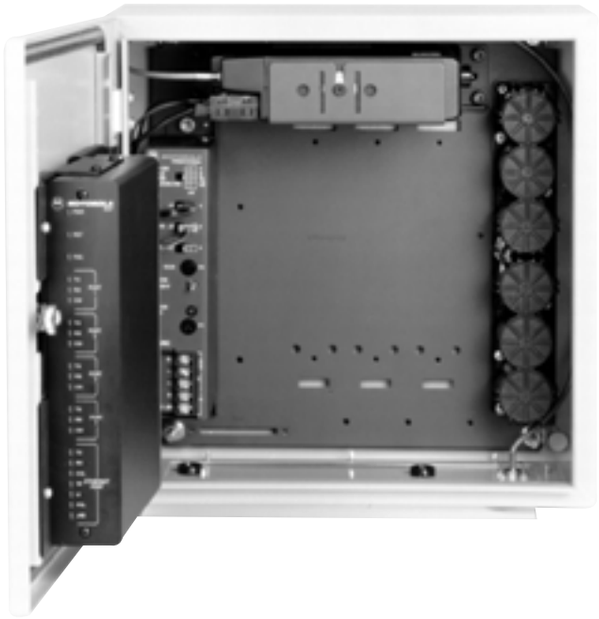
The IP Gateway is the bridge element between a MOSCAD radio-based Wide Area Network (WAN) and the computer system's Local Area Network (LAN).



IP Gateway with two-way radio in a NEMA enclosure.

FEATURES/BENEFITS

TCP/IP

Ethernet and TCP/IP is the communication medium and protocol commonly used in a computer Local Area Network (LAN). The LAN provides connectivity among multiple users performing simultaneously the many different tasks required by large computer system users. The IP Gateway provides an Ethernet and TCP/IP connection into the LAN for data from MOSCAD field RTUs.

► *The core computer system, with all features intact, may directly utilize field data in their SCADA applications, customer service, dispatch, Network Fault Monitoring and other operational activities.*

MDLC and SNMP Protocol

MDLC is the seven layer protocol used by MOSCAD that conforms to the ISO recommendation for Open System Interconnection (OSI). It is designed for on-radio use and allows multiple logical communication channels per communication medium, thereby making possible simultaneous Host-to-RTU, RTU-to-Host, and RTU-to-RTU data sessions. SNMP is the protocol often used in Network Fault Management systems.

► *A designed-for-radio protocol optimizes the data transfer between field RTUs, including communications with a central computer system. Maximum data throughput with minimum communication channel occupancy is provided.*

► *The availability of both protocols within the IP Gateway helps ensure that connectivity to the system's host computer will be available.*

Connectivity

One or two ports on the IP Gateway may be used for communications with MOSCAD field RTUs via different physical media and utilizing different data speeds. Connection into an ethernet may occur via the AUI or 10baseT port. The MOSCAD programming ToolBox software, running on a PC computer, may also be connected to the IP Gateway for over-the-air programming or diagnostics of the field RTUs.

► *These connectivity capabilities permit the creation of communication topographies appropriate to the needs of the system.*

Configuration and Simulation

Each IP Gateway includes Windows™-based configuration software. This software eases the setting of communication parameters in the IP Gateway. Sample programs are included in C-language to assist the integrator in developing the proper interface between TCP/IP and the target SCADA, dispatch, billing, and other applications.

► *Building the custom software interface to the IP Gateway is made quite easy via the available examples plus the development and configuration tools.*

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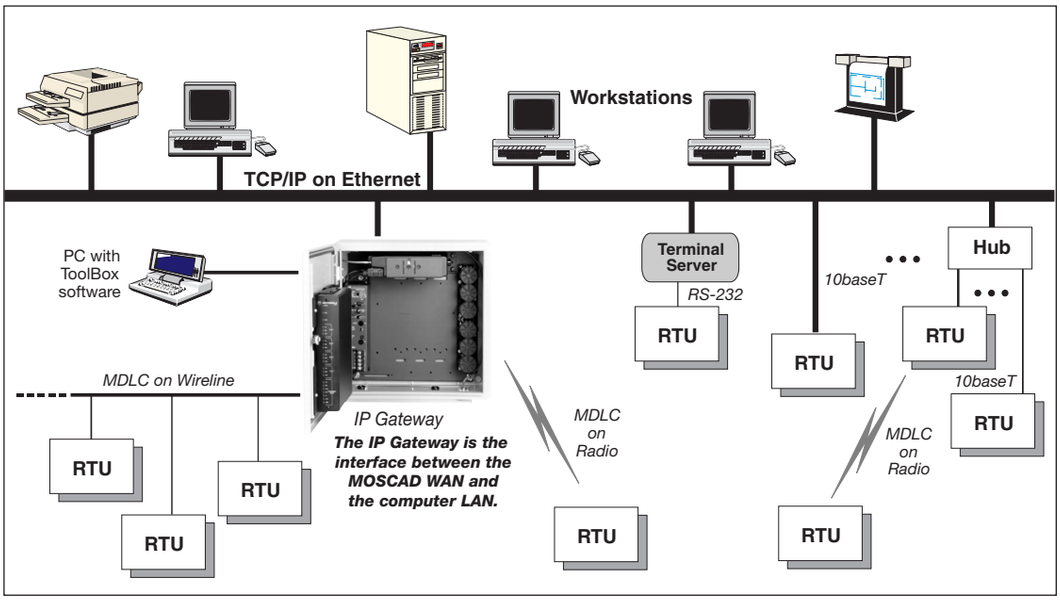
FEATURES/BENEFITS

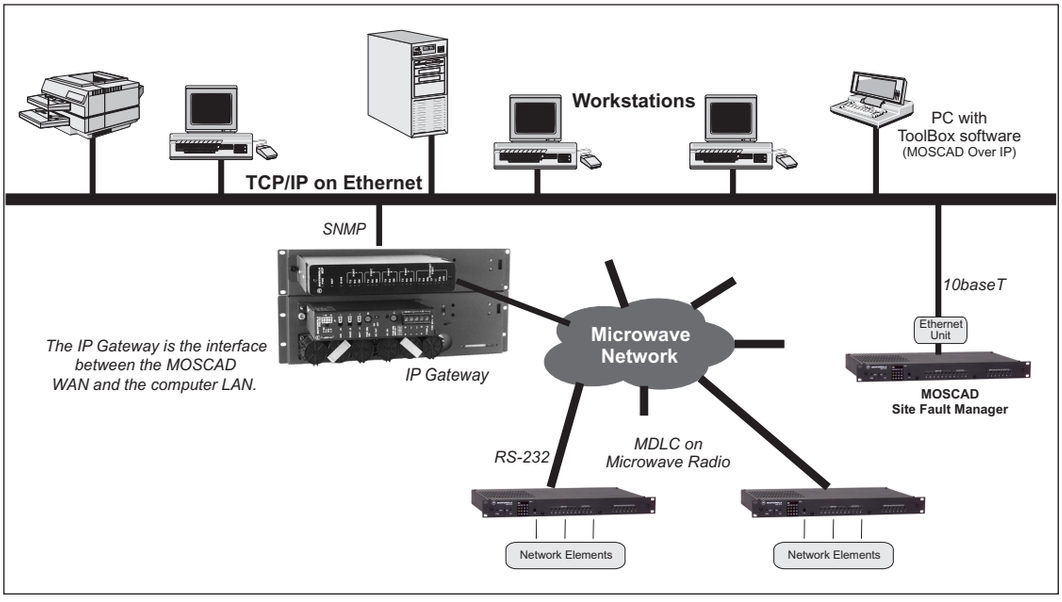
IP Gateway in a SCADA System



In a SCADA system (see drawing above), the RTUs may communicate with the central site by any combination of (1) a direct connection to the Ethernet, (2) a connection via Terminal Server hardware (Terminal Server support is included in the IP Gateway), (3) two-way radio from off-Ethernet RTUs to an on-Ethernet RTU or directly to a radio-equipped IP Gateway, or (4) a wire connection directly to the IP Gateway.

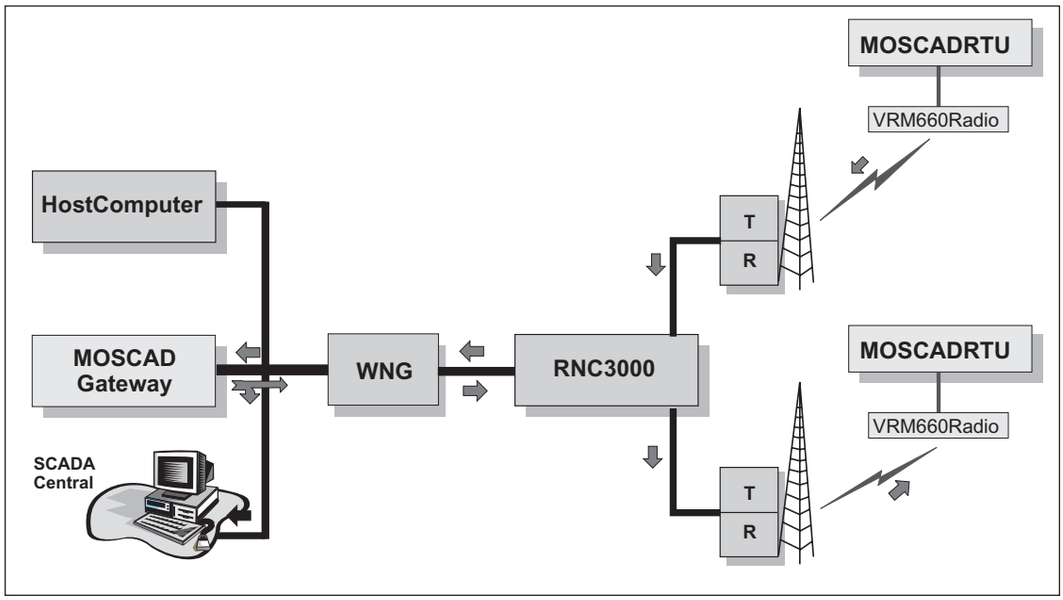
In a Network Fault Management system (see drawing below), the MOSCAD Site Fault Managers (aka, RTUs) communicate with the central site typically via digital microwave radio although a direct connection to the central-site Ethernet is also possible. The IP Gateway at the central site converts the data format to SNMP (the required MIB is contained within the IP Gateway) for connection to the SNMP-aware host computer via a 10baseT Ethernet. The MOSCAD Programming ToolBox may be connected directly to the Ethernet or may be plugged into any RTU for connectivity with any RTU in the system.

IP Gateway in an NFM System



FEATURES/BENEFITS

IP Gateway in a Private DataTAC system



In a Private DataTAC system (see drawing above), the MOSCAD RTU's MDLC protocol is wrapped (and unwrapped) within the protocols native to the Private DataTAC system. Each MOSCAD RTU communicates with one or more DBS (Data Base Station). The RNC (Radio Network Controller) selects the signal from one DBS and forwards it either through the WNG (Wireless Network Gateway) to the MOSCAD IP Gateway or, if no WNG is present, directly to the IP Gateway as shown in the drawing. The IP Gateway analyzes the destination address embedded within the MDLC message and initiates a second communication session to forward the message to either the co-located SCADA central computer or to a second MOSCAD RTU that is located elsewhere and possibly serviced by a different DBS.

The IP Gateway may be contained within a NEMA (see front page) or may be placed on 19˝ rack mount panels as shown below. The power supply and backup battery may be deleted when required by the needs of the particular installation. The two-way radio capability of the IP Gateway normally requires the NEMA configuration be used.

IP Gateway in rack mount configuration