

Monitoring The Communication Network Environment

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The Challenge

Today's operators of communication systems are enlarging their capacity at a rapid pace. They are challenged, however, by the management of the network itself to reduce operating costs and improve quality of service to their customers. System operators are now demanding tools that will allow efficient management of the network from one central location. They need applications and tools that report on network performance in real time to allow quick response to alarms. Additionally, they need access to database information to review performance and anticipate future problems.

In today's competitive telecommunications environment, a company's success is measured by its responsiveness to market opportunities. This requirement demands the prompt introduction of the latest technology and enhanced integrated services to satisfy communications systems requirements. An emerging answer for the owner/operator is to employ a unified network communication monitoring and control solution that can integrate directly to an Industry Standard TMN (Telecommunication Management Network) system for Network Management.

The Solution

Various industries have attempted to define the ideal Network Management solution. Although details may differ, some common architectural and functional requirements are clear. The System Network Manager should be based on worldwide industry standards for TMN systems and use basic network management platforms (e.g. Sun Solstice, HP OpenView, etc.).

Configuration of network elements should employ an open system architecture based on standard protocols (SNMP or CMIP) and Agents. Monitoring of all equipment should be available through gateway devices or intermediate element managers. The benefits of this TMN design include: an end to overlapping management information, easy communication between applications, seamless integration of new applications, and increased productivity. This solution requires communications between diverse elements from different manufacturers.

Satisfying an important part of these requirements is a remote terminal unit (RTU) that can monitor environmental conditions of communication sites and interface to all variety of network devices. This allows third party equipment such as microwave radios, multiplexers, etc. to report their status to the Network Manager. (see figure) The Fixed Data Group of the Communications Sector has taken the challenge to provide an RTU that will fit all requirements for monitoring communication sites of different Motorola systems. The program to design and provide the RTU and the connectivity between Network Managers and communication infrastructure elements is already well under way.

The MOSCAD Network Monitoring RTU

The MOSCAD RTU has the following features:

- Modular, so it can fit any size of monitoring site from small to large.
- Variety of input and output connections to external equipment to monitor items such as: discrete status and alarm points, analog measurements, and serial ports of the monitored equipment.
- It is communications flexible, so that it can emulate serial protocols of the monitored equipment.

- It is intelligent, so that it may be programmed to execute sophisticated fault corrective action.
- Its communication features enable the RTU to communicate to the Manager via most media available at the sites, i.e. RS-232, VHF/UHF conventional and trunking radios, analog and digital microwave channels, phone lines, fiber cable and more.
- It is extremely reliable; its “6-Sigma” design and manufacture ensure that once this equipment is put into operation, it requires no maintenance. It has built-in remote diagnostics and program up/download features. One can handle any issue with the RTU remotely, from the control center or other designated site.

The RTU and software packages available from the Fixed Data Group are the key elements that can become an integral part of every communication system. They offer the ability to develop a standard network monitoring and management solution.

The Fixed Data Group Network Monitoring equipment has impressive performance. MOSCAD equipment can interface directly with a wide variety of environmental and security elements through standard physical (digital or analog) connections. A special library of application programs allows MOSCAD to connect serially to third party devices such as microwave radios or Motorola two-way radios and base stations (QUANTAR, ASTRO, etc.). These MOSCAD systems, described in the following articles, present an excellent solution for many applications that are available today.

Uniform Communication Management

The Fixed Data Group will add standard (SNMP) connectivity to the MOSCAD monitoring system for easy communication to whatever software package chosen for the system’s Network Manager.

To summarize, the following are the components that are and will be offered:

- RTU: A Remote Terminal Unit designed to perform data collection from all the environmental sensors at the controlled sites, as well as from various Motorola manufactured or supplied equipment. This includes base stations, microwave equipment, comparators, multiplexers, etc.
- Gateway: This unit converts the proprietary protocol of the RTU (MDLC) to the protocol of the central control computer, e.g. TCP/IP and Modbus at present, and standard NM protocols (SNMP and CMIP) in the future.
- Control Central Software Packages with friendly MMI: The Fixed Data Product Group can recommend and provide a variety of graphical packages for central control computers that function as Element Managers.
- Application Packages for Sun Solstice and HP OpenView. This option will be offered in the future for the NM Managers required by end user specifications. These packages will deal with the connectivity of the MOSCAD Network Monitoring application to the standard offering of the Network Manager’s application.

This MOSCAD solution gives Motorola a monitoring solution for all types of communication systems from “single-site analog conventional” to “state-wide ASTRO digital” and from “Analog Cellular” to GSM systems. The use of a common MOSCAD platform eliminates the effort of designing new applications for every system. It provides a standard solution for any type of network, with the ability to monitor and control diverse elements from a single, consistent user interface. The MOSCAD solution, based on an Open Systems Interconnection (OSI) standard architecture, gives us an advantage over our competitors.

MOSCAD network monitoring – an exciting Motorola innovation that reduces costs while increasing service quality.