



# Wireline Central Office Remote Management

## One Issue Facing Wireline Carriers Today

Wireline carriers are under substantial pressure to reduce operating costs as well as to reduce MTTR. The level of complexity of the equipment in a central office has grown dramatically over the last few years as the level of service being provided from these central offices has increased from basic POTS to high speed data, and now, even video service. In addition many central offices feed Broadband Loop Carriers (BLC) to distribute service to population areas.

Managing these central offices, many of them unmanned, and BLC remote cabinets is a major challenge to any wireline carrier. When trouble occurs, a technician is dispatched to the site to diagnose and repair the problem. In metropolitan areas where distances may not be a factor, it still can take considerable time to navigate urban traffic congestion and reach a central office or remote cabinet. In rural areas, the distance that a technician needs to drive can be a major factor. In any case, the round trip time it takes to reach a site and return is costly and lengthens the time it takes to repair an outage. Since the problem area may be unknown until the technician reaches the site, a trip to the parts depot may be required, further increasing the time it takes to repair an outage. In addition, the problem may not even be at the site generating the alarm, but may be a failure in another central office which has caused an alarm condition to be generated at the wrong central office, resulting in further delays and a wasted trip to the wrong site. Substantial savings in operating costs could be achieved if the true cause of the failure could have been identified before the technician left his work station or home (if the alarm condition occurred after hours.)

## The Solution to the Problem

TelStrat's PUMA (Platform for Unified Management Access) offers a solution to this problem. By deploying PUMA at a central office, technicians can access critical components to assess the exact cause of an outage or alarm *without driving to the site*. The PUMA product provides remote access to both traditional serial and Ethernet TCP/IP based network elements as well as contact closures, voltage and current generating network elements.

PUMA allows wireline network operators to quickly analyze the problem area, identify the component at fault, determine which central office actually has the problem, and dramatically reduce the cost associated with an outage while reducing MTTR. In fact, PUMA has been proven to substantially reduce the number of trips required to correct a failure and can often be shown to pay for itself in less than one year.

TelStrat's PUMA platform is the most powerful and flexible product on the market today, providing a secure, browser-based, vendor agnostic, **single point of access and management** of all remote network elements in a wireline carrier's network.

The PUMA platform allows up to 512 simultaneous users to perform Operations, Administration, Maintenance, and Provisioning (OAM&P) of remote network elements all by accessing a single IP address.

PUMA unifies the management of access network elements. The PUMA platform allows real-time access, information, and control of every network element, whether local or at the most remote deployment. Using a secure IP, serial, or aircard connection, the PUMA platform lets central office technicians, maintenance engineers, and NOC personnel configure, troubleshoot, and manage all of the network elements located at every central office and remote cabinet, all from a single IP address.

With the PUMA, wireline service providers can centrally manage and provision services dynamically at every central office and remote cabinet. With PUMA, technicians can now remotely test, diagnose, and troubleshoot equipment before dispatching field personnel. This resolves network issues faster, reduces expensive truck rolls, and helps service providers anticipate events and prevent service disruptions.

The TelStrat PUMA system consists of two elements:

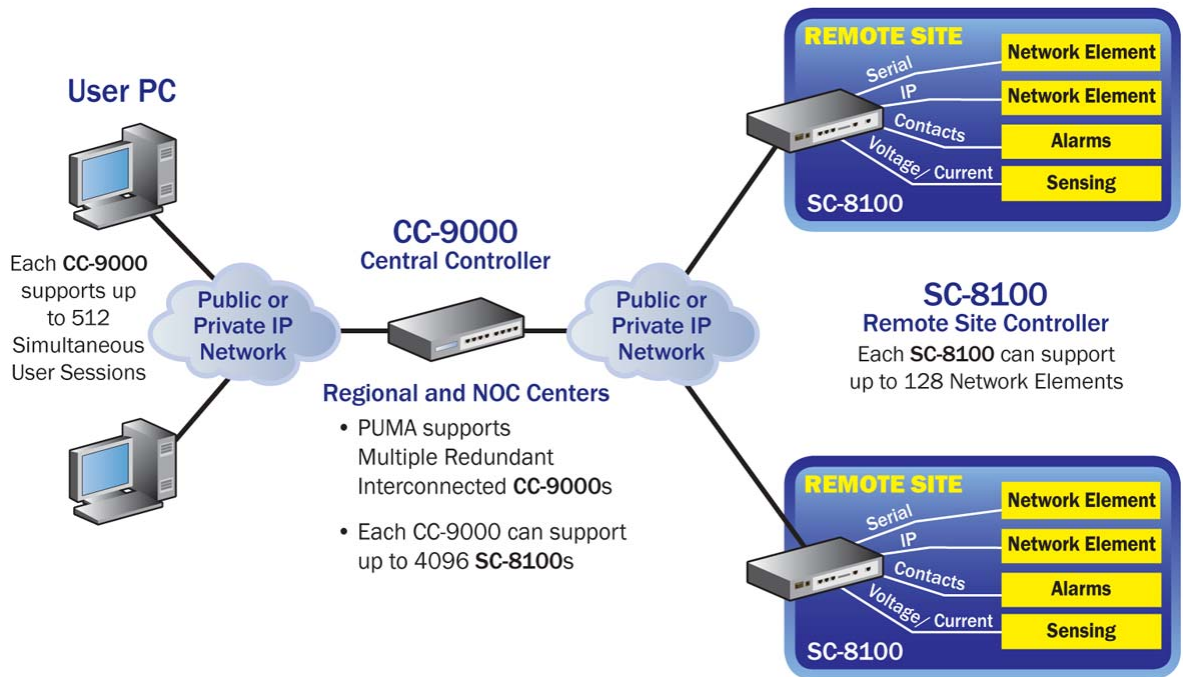
- One or more Central Controllers (CC-9000)
- A Site Controller (SC-8100) at each central office.

The CC-9000 serves as PUMA's central command center, communicating directly with each SC-8100 Site Controller, and focusing the power of remote SC-8100 units into a single, unified point of network status information and network element management. Multiple CC-9000's can be located in regional centers or management offices, as well as at NOC centers.

The SC-8100's are located at each central office. The SC-8100 provides physical connections to all remote network elements, whether by serial or IP (Ethernet) connections, normally open or normally closed alarm monitoring inputs, form C relay outputs, or analog inputs (0-10V or 4-20 ma).

Each SC-8100 can support up to 128 individual network elements, and each CC-9000 can support up to 4,096 SC-8100's, and up to 512 simultaneous users.

## Wireline Remote Management



## Benefits of Deploying PUMA Remote Management Products

### Transport Management

There are several applications where the PUMA products have provided substantial benefit to Wireline carriers. First, a major source of outages comes from transport related issues. When a transport issue occurs, the challenge is to identify where the faulty equipment lies. With SONET and IP rings, this can be a difficult challenge, resulting in a technician having to drive to several central offices until he finally identifies the true cause of the alarm condition.

This scenario changes radically with the introduction of the PUMA platform. Armed with a connection into each central office, the technician can diagnose the transport equipment at each central office until the true cause of the alarm is identified, reducing the amount of time it takes to get the transport equipment back up and fully operational.

## **Microwave Management**

A second scenario occurs in diagnosing problems that come up in microwave transport. Wireline carriers will deploy microwave in areas where fiber access is difficult or expensive. Most microwave radios offer excellent diagnostic capabilities. The trick is providing a technician with access to this diagnostic capability. When trouble occurs, the technician must drive to the nearest site where access to the microwave network is available, plug into the microwave radio, and run diagnostics. Further, the source of the problem is not always apparent. Is the problem associated with the transmission at site A or the signal reception at site B? It may take more than one trip to find out.

In some cases, the problem may originate in one of the microwave site's ancillary pieces of equipment, such as a multiplexer. If so, the source of the problem may not be visible from the microwave's internal diagnostics. The technician would have to plug his laptop into the multiplexer to check out any problems that may originate within the MUX.

Installing PUMA SC-8100 into a microwave network will enable cell techs to diagnose the exact cause and location of the problem without having to travel to the affected site. And when a trip to repair the problem is necessary, the cell tech will be dispatched to the correct site with foreknowledge of how to repair the problem. Again, this significantly reduces the time it takes to diagnose and repair an outage.

## **Multiple Trips**

When an outage occurs, a technician must be dispatched to a site to diagnose the reason for the problem. Once the reason for the problem is found, it is not unusual for the tech to not have the right spares on hand to make the repairs. This means he has to make a trip back to the repair depot to get the needed parts, and then drive back to the site to fix the problem.

With PUMA, the technician can remotely diagnose the problem and make one trip to the site with the correct parts in hand. This eliminates the need for a diagnostic trip and reduces the outage by several hours.

## **Value Proposition**

The PUMA platform provides a wireline carrier with two substantial benefits: a substantial reduction in the number of truck rolls needed to operate the network and a reduction in the length of an outage when one occurs. Any operator that is under pressure to reduce costs and improve network availability will find the PUMA platform to be a welcome addition to his OAM&P capabilities.

## **In Summary, the PUMA Platform provides the following functions:**

- Network element monitoring, configuration, and maintenance, resulting in a significant reduction of site visits
- Fault Identification and “smarter” truck rolls
- Remote network element provisioning
- Network element inventory management
- PUMA Network Address Translation (NAT) provides better use of Ports and IP addresses
- Network element configuration backup and restoration
- Network element operating software upgrades and downloads
- Vendor software application hosting
- Security features to prevent unauthorized access to network elements
- Activity logs by user, network element, and time of day, assisting in problem identification and corrective action
- Network element polling and alarm generation
- Management reports
- Alarm aggregation, contact closures, voltage and current sensing
- Handling of TL-1 and SNMP messages
- Video camera site monitoring
- On site storage of events on the SC-8100 in the event of communication failure with the CC-9000

All implemented in a single 1RU rack mounted package

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