The Situation

With advancements in long-haul & broadband technologies triggering an explosion in packet data traffic, Service providers are moving much of their data traffic onto more efficient packet networks. They are now looking towards Voice over IP (VoIP) as a means to derive revenue from voice, but also other multimedia services.

This customer, a leading Network Equipment Manufacturer (NEM) provides carriers with high performance communication (telephony, video, Internet, and wireless services) equipments to deliver triple-play services on IP networks. The NEM’s Voice over Packet solution is a heterogeneous network composed of Network elements, Element Managers, Management applications and platforms, developed not only by them but also from other established vendors and partners.

The NEM’s Carrier VoIP infrastructure uses a diverse set of management protocols including standards such as SNMP, CORBA as well as proprietary protocols. Enabling interoperability and unification into a single-point management & presenting it as an aggregated interface to the OSS in such networks is a daunting task.

The Business Challenge

The NEM was looking for a carrier-grade OAM&P application to effectively manage their VoIP solution comprising of multi-vendor/ multi-technology Network Elements (NE), Element Management Systems (EMS), Management applications and platforms. All these functionality were required not only managing their current network but also important from a long-term strategic means of managing their expanding solutions portfolio.

The management solution was required to provide an aggregated view of the network to the OSS as well as centralized browser & launch points from an integrated web-based GUI client. The requirement to manage diverse network components (NE,EMS) that uses a combination of proprietary and standard protocols added to the complexity.

The NEM had to choose a reliable, robust, open and cost-effective Network Management platform to build their management application. Given the short time-to-market and a tight budget, the NEM did not want to build everything on its own and was on the lookout for a proven Network Management framework, which could be customized with minimal efforts & quickly deployed in the carrier market.

The Solution

After evaluating several management solution vendors, the NEM selected WebNMS’s flagship product, WebNMS Framework as the management platform to build their next generation management application on.

WebNMS is a Network Management framework from ZOHO Corp. built on open, standards-based Network Management platform containing high-productivity technologies that can enable rapid application development. WebNMS Framework has been available to customers since 1998.

In order to leverage WebNMS’s expertise in the Network Management area and WebNMS, the Management Application was developed by WebNMS’s Professional Services in close collaboration with the NEM’s technical team, who understood the customer requirements well. This was the right combination of teams and provided the NEM with the thrust to enter the market rapidly.

Using WebNMS Framework as the underlying platform for their application enabled the NEM to leverage WebNMS’s investment of making WebNMS Framework, a highly stable & deployment ready platform. The NEM’s vision of their management application utilized WebNMS Framework in a very innovative way, using the flexible framework to act not only as a mediation layer but also a Manager-of-Managers (MoM) for some of the Network Elements.
WebNMS Framework provides simplified northbound interfaces for each FCAPS area using a standard set of open interface that integrates with almost any leading OSS/NMS for management at the NOC level. The solution includes a centralized console that can monitor network element status, launch configuration and maintenance tools from a single graphical interface. Finally, a common integrated security tools are included to simplify access to manage NEs and streamline administration of accounts and passwords.

One key challenge in building the solution was to interoperate & integrate with the several different types of devices in the network, some even built by organizations other than the NEM, and present it in a uniform way to the OSS. In such heterogeneous networks there are always device-specific idiosyncrasies, which WebNMS needs to process correctly. To add to the complexity, the devices themselves were evolving which made it necessary to not only maintain backwards compatibility with the device but also align with the new changes without affecting the existing Northbound OSS format. This protected the investment made by customers at the OSS-WebNMS layer.

In order to detect changes in interface specifications early in the development cycle, the WebNMS Framework project team was in constant touch with the NEM design team & the device development teams.

**The Methodology**

For the initial development testing, the SNMP simulator, which was part of the AdventNet Simulation Toolkit product, was used. This allowed functional testing of SNMP fault & performance collection. Using the simulators reduced the dependency on the device team for testing and ensured fast & reliable development. It greatly de-risked the solution development.

Sub-system Integration Testing of the WebNMS Framework application was done in the NEM’s test labs, which provided an environment very close to that of the customers where it would be deployed. This included not only functional testing of the features, but also traffic, stability, inter-operability & performance testing.

Support excellence has been one of WebNMS Framework’s key core competencies. WebNMS Framework has made substantial investments on this front to ensure the success of customer projects post deployment. With WebNMS Framework providing development support for field operations.
deployment, the NEM was able to successfully and confidently launch the WebNMS Framework based Management Solution. WebNMS Framework provided the technical support to the NEM’s customers-facing field teams. This included a 24x7 support for any customer critical issues that occur in the field, which was given highest level of responsiveness and service restored in real-time. This ensured that the NEM could meet their SLA commitments to their customers.

The WebNMS Framework application development involved very close interaction between WebNMS Framework and the NEM’s teams, not only for requirements and technical discussions, but also required aligning processes for customer documentation, test & validation, release management and customer support.

Today, the WebNMS Framework application has evolved into a comprehensive solution for the NEM’s VoIP network, solving many of today's network management challenges: reducing operational complexity and associated costs, leveraging existing operations infrastructure and processes, and enabling new services to increase revenue.

**Solution Highlights**

- Simplified management by consolidating inventory, fault alarm and performance management functions in centralized manner.

- Provide different northbound fault interfaces which can be integrated into existing OSS system.

- Network topology tools provide a good visibility into the network issues for maintainability and problem resolution.

- Alarm Filtering and correlation to avoid duplicate faults & identify root cause easily.

- Alarm resynchronization with NE & OSS to enable a reliable & robust fault capability

- All communication, both southbound, northbound and between the GUI client server is secure via SSL, thus providing greater data security.

- Centralized administration simplifies Authentication, Authorization, Administration and Logging. Password encryption hardens security to meet demanding requirements.

- Optional support for high availability platforms mitigate & minimize service outages or downtime thereby protective customer service level metrics & ensure service continuity.

**Key Benefits**

- Provides a **unified & holistic management solution**

  Consolidates fault, performance, topology views and centralizes key management functions and into single point, centralized console which simplifies the operations for managing the network.

- **Reduces Operational Cost & Complexity**

  WebNMS Framework simplifies element management operations by consolidating various Element Management Systems feeds into a single system and streamlined northbound interfaces to the OSS. In this context, it acts as a mediation layer to simplify integration and operations at the Network Management Layer.
• Protects existing investments & eases introduction of new services

WebNMS Framework protects investment in existing EMS by integrating with their FCAPS interface & launching EMS GUI screens from within itself. In addition, seamless integration of new services (via new Network Elements) at the Element Management layer enables rapid deployment with minimal impact to the customer's operations. This provides a quicker path to new service revenue opportunities for our customer’s customers and partners. It does this by providing a common set of standardized interfaces to northbound network management/OSS.