

Overview of Operation and Maintenance of 1350 Optical Management System

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Abstract— As majority people in India uses mobile phones as their basic way of communication. But because of natural calamities and heavy use of mobile phones there is a large amount of data traffic loss during transmission and because of which exact amount of secured data cannot be retrieving back. Hence because of this company has to pay a huge amount of penalty to its customer in terms of heavy work hours. Therefore, to troubleshoot the problems which would occur during transmission of data and secure data with high security 1350 optical management is used. using 1350 Optical Management System (OMS) is advanced network management software, designed specifically to manage SDH, SONET, optical, ASTN/GMPLS-enabled, and Ethernet-capable transport networks. It can seamlessly evolve existing management systems, so one can benefit from the opportunities offered by next generation, service-oriented networks. 1350 Optical MS provides low-risk, standards-compliant development of existing network management solutions, enables to meet your evolving business needs.

I. INTRODUCTION

Automobiles were born to enhance human mobile performance. In early development stage, automotive engineers focused to strengthen automobile engine power. Afterwards, automobiles had enough function to drive faster than any animal, but they caused some social problems such as traffic accidents, environmental problems and traffic congestions.

Automotive electronic technologies have been developed to solve these social problems. Roles of electronic technologies on automobile functional developments for the solution to safely, environment and traffic problems, various functions are necessary which could not be completed only by mechanical systems.

Automotive Local Area Network Recently more and more automotive equipment's are controlled electronically and the number of ECU's is increasing.

The number of wire harnesses is also increasing and many problems such as the increase of weight, lack of installation space and difficulty of handling are experienced.

As the solution of these problems, multiplexing with automotive Local Area Network is important to secure high speed communication as well as to decrease the weight and volume of wire harnesses.

Using 1350 Optical Management System (OMS) is advanced network management software, designed specifically to manage SDH, SONET, optical, ASTN/GMPLS-enabled, and Ethernet-capable transport networks.

It can seamlessly evolve existing management systems, so one can benefit from the opportunities offered by next generation,

service-oriented networks. 1350 Optical MS provides low-risk, standards-compliant development of existing network management solutions, enables to meet your evolving business needs.

The 1350 OMS is a network management system that supports several management layers that can accommodate and grow with a customer's optical network.

Management layers that supported by 1350 OMS are:-

- The Element Management Layer or EML.
- The Network Management Layer or NML.
- The Service Management Layer or SML.

The Element Management Layer, or EML, provides the functionality that is needed to access any network elements (NEs) that are deployed in a customer network. The EML provides a single access point for communication with an NE.

The core product offers extended element management functionality. Optional value-added modules can enhance the basic core offer to extend core system functionality.

These additional modules give you the versatility to deploy and configure applications to suit your network management needs.

Optional modules include: -

- Service provisioning:-
Process automation helps reduce provisioning cost by reducing manual errors and provisioning time with layer 2 Ethernet provisioning intelligent routing.

- Service assurance:-
Rapid identification of services impacted by network outages helps reduce service downtime along with fault correlation and performance management.
- Interfaces :-
Additional interfaces for integrating into third party operating software systems. The system is scalable, enabling cost-effective deployment into either new or existing networks.

II. 1350 OPTICAL MANAGEMENT SYSTEM

The 1350 Optical MS product provides enhanced element management functionality with simple point and click provisioning. It can help reduce operations complexity through remote and centralized Network Element (NE) administration, thereby removing the need for local access to configure and activate NEs.

The Network Management Layer, or NML, provides the functionality that is needed to commission, provision, and supervise the network that is deployed in a customer premise.

The Service Management Layer, or SML, provides the functionality that is needed to commission, provision, and supervise a Virtual Private Network (VPN).

The Business Management Layer or BML provide to manage the overall sales activity such as return on investment, system decision support, market analysis and so on.

The 1350 OMS fulfills the EML and NML Level 1 with modular software architecture where each module is a specialized application.

Network technology-specific applications and generic application options can be independently installed in the 1350 OMS per a customer's need.

III. 1350 OMS AND TECHNOLOGY

The 1350 OMS provides comprehensive management capabilities across Level 1 TDM (SDH), Level 2 data (Ethernet and MPLS-TP), OTN and photonic technologies. In addition, the integrated features of the 1350 OMS and its applications are focused on the network management of GMPLS/control-plane based domains that are deployed in a number of TDM networks, which are now a key technology for the new Optical Transport Network (OTN) applications.

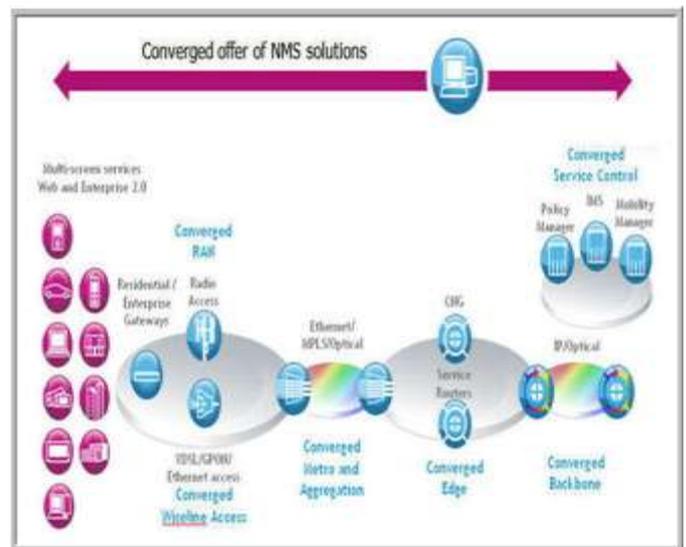


Figure 1: 1350 OMS — End to end service oriented capability.

The 1350 OMS user interface is browser-based, which means that it supports standard web features such as bookmarks, back, forward, reload, and print.

Through the login window user can access to the system. Once the authentication has been succeed, user can access the WebUI which is the Web User Interface WebUI is a Web base interface dedicated for the management of the OTN application this mean for the 1830 PSS NEs.

The management of the PKT and SDH applications is made by the MS-GUI, a Java based interface. User can access to the MS-GUI through the WebUI, from which 1850 TSS equipment's can be managed.

Applications, on the MS-GUI tool bar menu, are referred to by their short name. The Element Manager Layer (EML), that is the basic and mandatory application of the suite, is referred to as Platform.

IV. 1350 OMS AND ITS SOFTWARE PLATFORM.

The 1350 OMS is a single platform of macro software components, which are referred to as either its applications or SW components.

These applications can evolve independently and are integrated through the user-interface. The platform on which these applications are built is the Red Hat Enterprise Linux operating system.

The Red Hat Enterprise Linux operating system provides a Multi-hosting, as opposed to the legacy Unix Co-hosting, software architecture for the 1350 OMS applications.

Besides, the 1350 OMS platform supports the concept of virtualization or hypervisor which increases the flexibility and independence of the whole system, allowing, for instance, maintenance to be performed on an application without impacting the other already installed on the same hardware.

Multi-hosting and virtualization enable users to download and to keep segregated different applications on a single server

where each one needs a certain amount of dedicated core to operate.

Servers need therefore to be dimensioned considering the total number of NEs and SW components.

A hypervisor is a piece of computer software, firmware or hardware that creates and runs virtual machines.

1350 OMS gives customers continuity in the network supervision and control along the network transformation processes, which today develop along different coordinates.

The 1350 OMS management capability extends from customer premises to backbone so to provide customers with an end-to-end service oriented to have full control of the network technology.

An element management system (EMS) comprises of frameworks and applications for overseeing Network elements (NE) on the network element-management layer (NEL) of the Telecommunications Management Network (TMN) demonstrate.

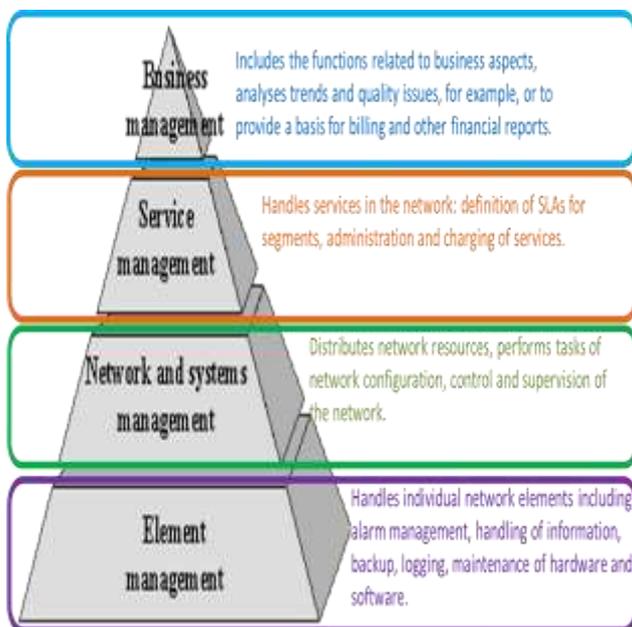


Figure 2 :- Architecture of 1350 optical management system

A component administration framework oversees at least one of a particular sort of broadcast communications arrange component. Regularly, the EMS deals with the capacities and abilities inside every NE except does not deal with the activity between various NEs in the system.

To help administration of the activity amongst itself and different NEs, the EMS conveys upward to more elevated amount arranges administration frameworks.

NMS applications there are likewise independent devices that are devoted to particular management works and give propelled management highlights, for instance, NMS Audit Trail for security management, and NMS Advanced Configurator for arrangement management. These independent

instruments require a committed equipment stage and are sold independently.

V. 1350 OMS APPLICATIONS

Applications, either as new options added onto the system or as SW upgrades, can be installed without stopping the already established functions, having a high confidence that the newly installed at no time is disrupting the customer operation workflow depending from system functions that have not been touched.

The applications interworking is based on a client-server model, with a strong backward compatibility, the server is the owner of the managed technology layer while the client is the user of the infrastructure provided by the technology layer.

Each application fully owns its own database and each application database is referred to without being duplicated in the overall 1350 OMS system.

To avoid any functional duplication within the architecture when the applications co-exist, the 1350 OMS envisages common and generic functions that are bundled into centralized SW components.

Which include, but is not limited to, Fault Management, Performance Management, Element Management, and security.

The 1350 OMS applications set, can be divided in two groups:

- Core applications are those licensed software components that are used to fulfill the routine management activity of the NEs. These are the ones needed to manage all the management layers, their technologies and protocols. They are referred to as the following:
 - i. Network Element Management (1350 OMS EML).
 - ii. SDH services management (1350 OMS SDH)
 - iii. Ethernet services including MPLS-TP management (1350 OMS PKT)
 - iv. Optical services management (1350 OMS OTN).
- Additional applications are those applications that are supplied initially or are integrated later into the customer's network management system based on customer's specific requirements.

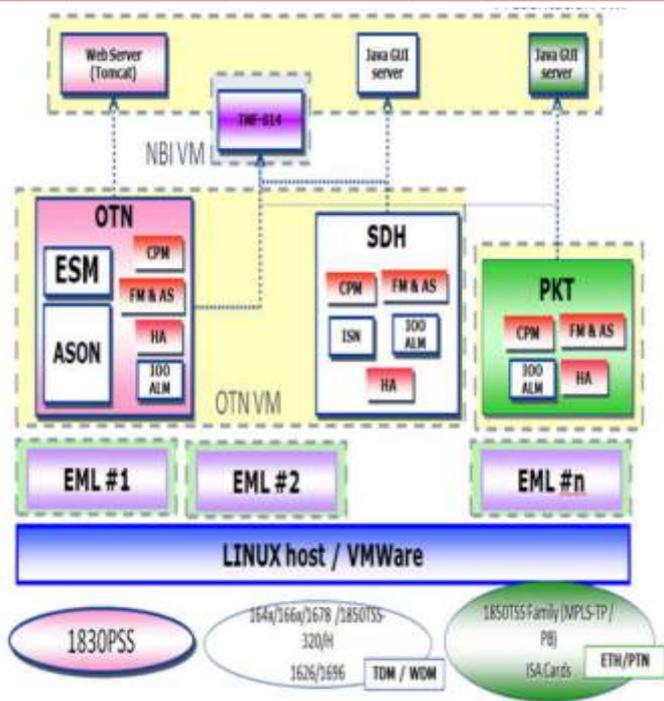


Figure 3: - 1350 OMS Management Layers, Technologies, and Applications

The additional applications provide the customers with extra facilities that can be integrated in the management system lifecycle either at the beginning or at a time later without affecting the applications already installed.

They are referred to as the following:

- i. High Availability capability (1350 OMS HA).
- ii. Open Interface application (1350 OMS OI).

Each application fully owns its own database and each application database is referred to without being duplicated in the overall 1350 OMS system.

VI. CONCLUSION

As discussed in this paper The 1350 OMS is a network management system that supports several management layers that can accommodate and provides an integrated and end-to-end element, network, service, and business management solution for network elements (NEs). The 1350 OMS is a single platform of macro software components, which are referred to as either its applications or SW components. These applications can evolve independently and are integrated through the user-interface.

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