OSS:
The Brain of the IMS Central Nervous System

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Introduction

With the adoption of IMS, communication service providers (CSPs) will have the network building blocks necessary to deliver compelling, real-time, content-rich services to their customers quickly and more cost-effectively.

We believe that OSS solutions need the depth of functionality and extreme flexibility to fully utilize this new technology and for CSPs to be successful.

An IMS network from 35,000 feet

IMS (IP Multimedia System) is a new networking technology standard intended to provide a platform for the delivery of multimedia content, including voice, video and other services, over an IP network to customers regardless of the network terminal involved. IMS promises to provide a generic platform for the delivery of both existing service types (eg. cellular wireless, IPTV, push-to-talk), and new and innovative content-rich services as they are developed. The IMS platform enables CSPs to reduce implementation and operational costs as network systems are rationalized and vendors start to provide modules for services that seamlessly interoperate. IMS allows CSPs to offer the same service over fixed lines and wireless infrastructure. It can even support scenarios where a service is interrupted and resumed, or when the actual access technology changes during the service delivery.

To achieve this functionality, the IMS architecture is divided into three core layers Transport, Control and Service. Transport is all about the transmission of the content (data) and, in its pure form, requires an IP only transmission network. Control manages the user interaction with the service and acts to coordinate dynamic service changes. The Service layer focuses on the actual application functionality and uses the Control and Transport layers as building blocks in both a standard and consistent manner. The service layer will be constructed of Service Delivery Platforms (SDPs) that drive the actual content, whether it be video, voice or gaming.

However, very few CSPs have IP-only networks. To accommodate existing network technology, a transition approach is available. Existing non-IP technology can be integrated into a hybrid IMS environment through the use of gateway mediation devices. These gateways achieve protocol conversions that map the Old Generation Network (OGN) into IMS compatible data and signaling. The hybrid approach enables CSPs to start an IMS deployment without having to wait for an all IP network.

The IMS architecture is very flexible and provides for the deployment of new service types in ways not yet conceived. It also gives customers the ability to directly manage the way their services are delivered to them. Through standard user interfaces, customers will be able to order new services, expand existing offerings or discontinue the services they currently receive. While previous network technology allowed customers certain control over their services, IMS provides customers with the tools for full self-service.

IT Deployment scenarios for IMS

IMS network technology is not only new, but quite different in its approach to previous equipment deployments. A key element of the new approach is the intrinsic flexibility of the system to quickly support new service types, and to also allow for the rapid creation, modification or termination of customer service instances.

A big challenge to current OSS systems is a lack of flexibility. Until now the deployment process of a new customer service type was well controlled and defined in the OSS/BSS tools used in the CSP back office. A carrier may decide to stay within these bounds and treat the IMS technology as just another new, but basically traditional, network technology. Alternatively, a carrier may recognize that the introduction of IMS into their network is an opportunity to update, streamline and use the competitive advantage that IMS is capable of providing. To do this, they will need to upgrade their OSS/BSS systems to match the level of flexibility and configurability that the IMS network architecture provides.

Consumers today demand unlimited self-service whether it is subscribing to a new IPTV channel or upgrading network bandwidth. To meet this demand, CSPs will need systems that enable new service offerings to be introduced quickly, perhaps even trialed and discarded or varied. Agile OSS systems are necessary for agile IMS network technology.

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Challenges for an agile IMS-aware OSS

Most current OSS environments consist of large systems with long change lead times. Traditionally OSS has been the super tanker laden with oil slowly traversing our oceans, with a monstrous turning circle. CRM, order management, workflow, billing, activation, inventory and workforce systems have remained pretty much the same for many years. While some improvements have been made and the level of integration between systems is constantly improving, many CSPs don have a single CRM system, or a single workflow system, and so on. As new technology has been deployed into the network, new silos of IT technology have been deployed into the OSS backplane to successfully integrate these numerous, heterogenous environments CSPs often need complex workflow and similarly complex interface contracts between these systems.

Some CSPs are making advancements and are looking at OSS system rationalization to become more agile. For the implementation of a new service type, the entire OSS/BSS needs to be flexible, integrated and automated. The result will be a single service definition that defines the service for all downstream systems and a series of smart OSS systems that understand this service definition and make it real. As each new service is requested by a customer, these definition rules will be engaged and the OSS will quickly and automatically configure the IMS network and enable the service.

The reality of today

To fully utilize the IMS network technology, some general rules apply: Rapid service introduction and delivery means smarter, faster, more flexible and fully automated OSS. Manual steps in the process need to be eliminated, and importantly, exception management needs to be uncommon and manual intervention rare.

Within the OSS system the service and network design and assign process is probably the most manual. Fortunately many automation implementations exist within the OSS silos. However, the design of a multiple technology service employing multiple inventory systems involves extremely complex workflow interactions. To avoid this, an inventory cross domain manager needs to be able to provide cross domain service and network design automation too. This will abstract the service design complexity from the workflow and provide a clearly articulated path towards OSS agility.

These abstracting solutions that have the ability to operate over multiple inventory systems and provide a single, consolidated view of the entire network infrastructure must not require a software development cycle to encode information into workflow processes. The time-consuming code maintenance per new service needs to be removed and replaced by a separate engine that encapsulates the complexities of the service to network design process into easily configurable and extremely flexible design rules. This engine and design rules would handle the many permutations involved in managing and provisioning a customer order independently from the workflow process. Once defined, these rules will automate the service to network design and assign process and prioritize the most efficient use of the network infrastructure for all network domains and across multiple inventory systems.

IMS and OSS a partnership

IMS network technology when combined with an agile IMS-aware OSS represents the potential for a very rosy future for CSPs and for customers. Never before have customers had such a broad range of current and future services offered and available on-demand. The key to this solution, however, is to ensure that the flexibility and agility of the IMS network architecture is similarly reflected in the OSS architecture. Without OSS working in partnership with the IMS architecture, the potential of the IMS network will be short-changed.