Research Brief

NGN: Next-Generation Operations Support Systems

Abstract: Next-generation networks will need next-generation operation support systems, but getting responsive systems will be challenging.

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Recommendations

- Vendors should provide return on investment propositions and relate solutions to business driven objectives.

- Vendors should address the requirement for supporting a network infrastructure built with diverse technologies, supplied by multiple vendors and owned by diverse business entities.
Introduction

Telecommunications companies rely on a mix of legacy systems and packaged software to support their operations. Traditionally, they deploy their operation support systems (OSSs) in functional silos. Their infrastructure — from billing and customer care to network management — are neither flexible nor responsive enough to facilitate the rapid provisioning and management of services.

Carriers must introduce additional services to combat competition unleashed by deregulation and the Internet. At the same time, wireline, wireless and broadband services are converging to single networks, and data traffic has already overtaken voice traffic.

Carriers must give customers what they want and when they want it, while offering a range of value-added services that sidestep the margin pressures of the traditional business. They will have to invest in next-generation networking equipment, and as important, they will have to invest in next-generation operation support systems (NGOSSs).

Complex Legacy

In traditional support environments, each networking element comes with its own element management system that has to be mastered and integrated with other network and business management systems. The complexities mean that carriers often resort to manual data entry and inefficient paper trails to provision service, plan capacity, troubleshoot problems and so on. Carriers may have evolved well-structured infrastructure to support their legacy voice services over the public switched telephone network (PSTN). But these are difficult and expensive to change, and they will be inadequate for a next-generation network (NGN). NGNs will need NGOSSs. But getting there will be challenging.

Key Issues

The challenges and opportunities for NGOSSs are to reduce costs and increase service capabilities by reducing the procedural variance of the disparate pieces of technology involved in the NGN. The dynamic environment presents the following significant challenges:

- NGNs and the PSTN will coexist for years, making true interoperability essential.
- The PSTN has a well-structured support infrastructure while the structure for other network technology is immature.
- Consolidation of networks can help make the network diagram look simpler, but the true savings will lie in reducing the labor involved in supporting the network.
- The key will be to automate the networks to enable operational efficiency and thus justify the expenditure on the technology.
- The speed at which services can be introduced will be set by the support infrastructure.
Carriers' Objectives
In developing NGNs, carriers will have made immense investments and will be looking to extract maximum value from the investments. While OSSs are evolving, operators will be aiming to achieve the following:

- Increase revenue with a service-rich environment
- Assure revenue stability by increasing average revenue per access unit and reducing customer churn
- Compete for the most profitable customers
- Reduce costs of operations
- Improve workflow
- Achieve systems flexibility to respond to changes in scale, functionality and technical developments
- Take full advantage of NGN infrastructure
- Maintain network investment
- Achieve targets for return on investment

To meet these objectives, service providers must have NGOSSs that have intelligent, integrated and end-to-end solutions that can monitor, manage, test and measure network operations and be supported worldwide. For carriers, the drivers are cost-reduction, building market share and customer satisfaction. And flexible OSSs are key to achieving those objectives.

The TeleManagement Forum
These issues are being addressed by a collaborative group of industry stakeholders. In The TeleManagement Forum, carriers, equipment companies, independent software vendors, professional services organizations and standards bodies are developing next-generation models for business and operations support. The forum is a nonprofit global organization that aims to improve the operation and management of information and communications services. It has more than 340 member companies.

The forum has a program for NGOSSs. The aim of the program is to deliver a framework that will help produce NGOSS solutions as well as a repository of supporting documentation, models and code. The goal is to facilitate the rapid development of flexible support systems that have low cost of ownership and meet the business needs of the Internet-enabled economy.

The forum’s NGOSS program has projects addressing the following key areas:

- Definition of the next-generation business process framework and processes for the information and communications services industry
Definition of the systems framework and information/data models on which these business solutions may be built

Practical implementations and live demonstrations of these solutions in conjunction with the catalyst showcase program

Creation of a resource base of documentation, models, code and training materials to support forum members in their own development of NGOSS components

Development of an industry compliance program to certify solutions and products for compliance to the NGOSS specifications

It is anticipated that the generic artifacts produced in the NGOSS program will be used by the forum’s market centers, modeling and catalyst teams to help drive solutions for the industry. The forum will introduce a compliance program allowing organizations to gain and use an “NGOSS-Powered” mark.

Carriers’ Strategies

In looking for a different OSS, carriers must decide whether to use internal resources or external services. The decision will depend on access to critical IT skills, required quality of service, scalability, core competency and costs. Many carriers still build their own systems, despite the substantial job cuts throughout the industry during the past year. And major carriers still maintain customized, integrated legacy solutions despite many executives wanting off-the-shelf, integrated, prepackaged OSSs.

Legacy systems cannot be retrofitted with particular enhancements, and the market knows it. Vendors will have to either wait out the legacy life cycle (hoping cash reserves permit that wait) or surround and then absorb the legacy systems.

In this scenario come the best-of-breed offerings. Some vendors believe that best-of-breed systems are harder to sell in that they tend not to have a track record or lists of customers. This argument, however, may overemphasize one aspect of the competitive equation.

Addressing the requirement for integration is less of an issue because many vendors have already banded to form certification consortia. The pervasiveness of general contractors, system integrators and middleware developers will alleviate any incompatibilities among best-of-breed products from different providers. Furthermore, a major selling point of best-of-breed offerings is that the elements can be individually upgraded or replaced so that they can facilitate a phased implementation of an NGOSS. As long as vendors live up to these assurances and deliver the benefits, along with tightly coupled integration, their offerings may be more competitive than a monolith from a single-system vendor, as well as homegrown, spot upgrades.
Best-of-Breed or Complete Suites
When vendors that have adopted a best-of-breed strategy go head-to-head with those that offer a complete, vertical product package, buyers must weigh their options carefully. In favor of complete packages are the following factors:

- Products with native capabilities may operate more efficiently and have tightly integrated functionality. These features may save time for operators.
- Vendors providing complete solutions may be more flexible on pricing.
- Vendors fielding a vertical product set tend to be larger and more stable.

Full-line companies may lock a customer in, but they give the customer much more clout because the package price is substantial when compared with individual OSS elements. In favor of best-of-breed products are the following factors:

- Best-of-breed collections ensure that each element of the supporting system has an optimum feature set.
- Best-of-breed products allow for elements to be scalable, updated or replaced without updating the entire system.
- Best-of-breed product sets demand interoperability and lead the way toward open systems and standards that would benefit the buyer against the seller.
- Best-of-breed element providers can focus on leading-edge core competency and include capabilities to ensure that multimillion dollar vertical business support system (BSS)/OSS product solutions can be retrofitted. Partnerships tend to blur this distinction in that they can create a model ("virtual" best-of-suite) using best-of-breed components.

For vendors, the key to executing a successful strategy is understanding the buyers at the carriers. Decisions on buying operation support systems will be made by high-level business managers (CEOs, CFOs and chief marketing officers). For them, it’s less about technology and more about business: What are the returns? How quick are they? What is the impact on business and market strategy?

Interoperability Is Critical
Assuming vendor offerings are relatively homogenous, carriers face the following issues:

- Does the solution improve processes that involve disparate systems?
- Does the solution lend itself to future-proofing the OSS?
- Does the solution inhibit outsourcing for best-of-breed or best-of-suite offerings?

For the decision makers, process improvement and systems integration are important. Unfortunately, the benefits that carriers seek in cost of
ownership and productivity are achieved only by tackling problems of interoperability between business processes.

Most vendors know enough to drive down the costs of those elements that focus on productivity improvements and are critical to cost of ownership. However, few vendors or consortia are prepared to tackle the detailed and knotty challenges of a transition from legacy processes to a truly integrated and automated replacement technology.

Market leadership will go to those companies or consortia that have the knowledge, financial resources and commitment needed to tackle head-on the costs of IT and telecommunications operations. Specifically, leadership must address the requirement for supporting a network infrastructure built with diverse technology and owned by diverse business entities.

**Gartner Dataquest Perspective**

The architecture of BSS/OSSs is developing and evolving. By 2010, it will have matured to the point in which it will provide flexible options for carriers and service providers, allowing them to integrate additional levels of functionality and improved process flow.

Once end-to-end process flows are possible, carrier decision makers will be able to show the long-promoted but finally quantifiable benefits of being able to deliver timely upgrades and repairs, employee productivity, and equipment performance.

**Key Issue**

How will operation support systems facilitate the optimization of a public network infrastructure?