

# OSS/BSS Shopping List for 2007

## Part 1: Network Planning – An EMA Advisory Note



by Jeff Cotrupe

### Introduction

The last decade in the operations and business support systems (OSS/BSS) market has been a wild ride. IT and network professionals at today's communications service providers (CSPs) have come out the other end of what was at times a dark tunnel—smack into the blinding glare of a global communications revolution that is transforming everything we thought we knew about doing business. Throughout 2007 we will take the opportunity in selected EMA Advisory Notes to introduce some newer approaches and solutions that are “not your father's OSS”—which is the most important reason they should be on your shopping list as we hurtle forward together.

### OSS/BSS Market Back From Death's Door

First the deregulation of the telecom market in the 1990s, marked by the Telecom Act of 1996 in the U.S. and “liberalisation” of markets across Europe and Asia, created a boom market by lowering barriers to entry, creating waves of new “service providers”—some little more than a team of sharp businesspeople in expensive suits with a VC-approved business plan—who needed a ton of software and services to roll out and manage all of that shiny new network equipment the bulk of their VC money had bought. The former monopoly providers, regional Bell operating companies (RBOCs) in the U.S. and PTTs everywhere else, now found themselves in a competitive marketplace, suddenly having to care about customer care and roll out new services to avoid being rolled by the upstarts.

All of this led to unprecedented growth in the communications software market. Our little band of four that had been winning the lion's share of contracts in the carrier space—Bellcore (now Telcordia), AT&T Network Systems (now part of Alcatel-Lucent), Applied Computing Devices (now part of Acterna) and Objective Systems Integrators (OSI, now part of Agilent)—was suddenly joined by hundreds of software competitors seemingly overnight. The global communications software market, which was only beginning to be known as “the OSS market,” zoomed, by our best estimates, to \$14.6 billion.

Then came the trail of tears—the Telecom Downturn of the early 2000s: the death of nearly all CLECs and DLECs. Carrier-on-carrier M&A creating a short list of regional and global supercarriers. Cable companies who developed a reputation for being quick on the draw when it came to issuing software RFIs but slow on the pen when it came to actually signing software contracts. The telecom software market imploded, and casualties littered the battlefield.

Now that the Darwinian forces of the market have thinned and consolidated the herd, we find ourselves in the midst of a growth cycle in the OSS/BSS market. Cablecos, nearly all of whom are bidding to become full-service communications providers, and who unlike the CLECs and DLECs before them have their cable cash cow to keep the revenue engine whirring while they figure out how to profitably deliver a cornucopia of next generation services, are dealing body blows to the established national carriers and supercarriers. The heavyweights are fighting back, buttressing their voice and DSL offerings with satellite TV, wireline/wireless combos and now IPTV. Telefonica, based in Spain and the *de facto* service provider throughout much of Latin America, had at

- *This is the first of several IT Advisory Notes in 2007 introducing new OSS/BSS solution areas buyers should strongly consider for their network and business environments*
- *The OSS market boomed in the late 1990s, then collapsed in the early 2000s and is growing again today*
- *OSS market models have evolved from FCAPS to the TM Forum's TOM to the eTOM, tying network operations to business processes*
- *eTOM reflects 72 specific areas of need (and opportunity) inside a CSP*
- *Spotlight: Integrated Capacity and Network Planning*
- *Top CSPs are deploying it*
- *Top vendors providing it: VPIsystems, OPNET, WANDL, more*

least half a million IPTV subscribers by YE2006, and others, like BT with its 21CN and Verizon with FiOS, are moving fast to bring broadband communications and entertainment to every subscriber.

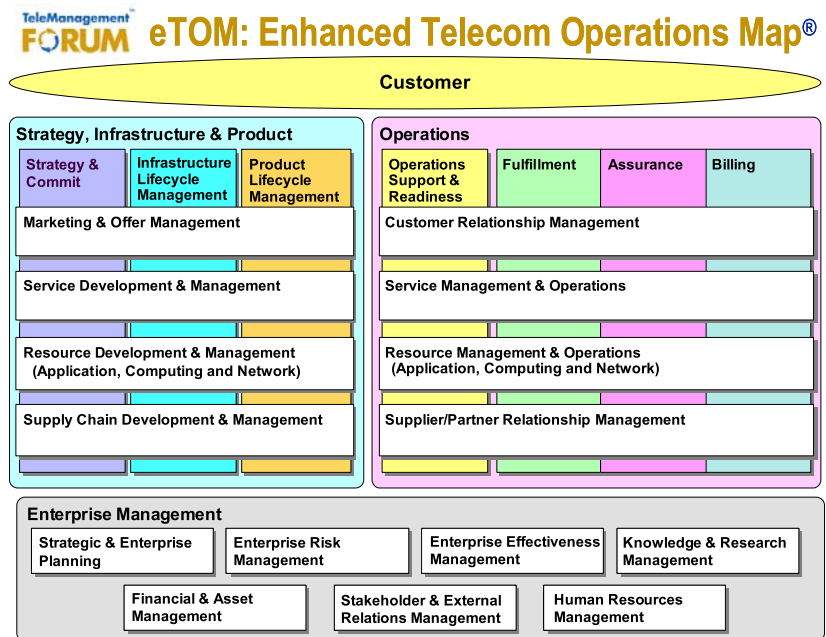
## Changing Requirements Create New Opportunities for OSS/BSS Buyers and Sellers

While the twists and turns of the market can be both maddening and exhilarating to track and make sense of, something more important has been stirring below the surface: a fundamental change in how communications service providers (CSPs) view their businesses and thus their networks. At the dawn of the OSS market it was all about “the five SMFAs (systems management functional areas): fault, configuration, accounting, performance and security management,” or FCAPS. When people spoke of “end-to-end network management” for carriers, what they really meant was a fault management system, often integrated with a performance manager [think: Digital’s TeMIP + Metrica’s NPR managing networks across EMEA]: a “manager of managers” centralized console that managed all of the network element management systems, which in turn controlled the network elements (devices).

The Network Management Forum became the TeleManagement Forum, which continues to be the global epicenter for service provider management standards and industrywide collaboration. The Forum led the next OSS wave away from piece-part solutions that managed a single function or class of devices to take a more holistic view of not only end-to-end management processes, but also how those processes should mesh together across service provider organizations. Thus was born the Telecom Operations Map (TOM) and a new conceptual model for managing service provider networks: FAB, or fulfillment, assurance and billing, with a total of 15 sub-categories. These broad labels addressed the three most important day-to-day operational processes at a service provider:

- Fulfilling (ordering, provisioning and activating) services, as well as managing the network inventory over which those services are delivered
- Assuring service delivery and quality through various fault, performance and testing functions
- Billing subscribers for services, as well as billing and paying other carriers for network usage

This nice, neat model worked fine for describing carrier operations, and in truth, both FAB and FCAPS provide valid ways of understanding what goes on in carrier environments. Yet no conceptual model had yet tied together day-to-day operational processes with fast-emerging service provider requirements around their business processes and objectives. Enter the TM Forum’s Next Generation OSS (NGOSS) and its Enhanced Telecom Operations Map (eTOM), as shown in Exhibit NOSS-1, the most sophisticated conceptual framework to date in terms of mapping the totality of a service provider’s business and operations processes and understanding the synergies and linkages between the two.



*Exhibit NOSS-1: The TeleManagement Forum’s Enhanced Telecom Operations Map (eTOM)*

The eTOM Business Process Framework establishes three major process areas:

- Strategy, Infrastructure & Product, which covers planning and lifecycle management
- Operations, which describes core operational management
- Enterprise Management, which covers corporate or business support management inside the service provider’s organization

The eTOM packs a punch in terms of complexity: although not shown here in the interest of not turning this into a technical treatise, the Forum has established 16 separate Level 2 Processes (sub-categories) under Strategy, Infrastructure & Product, 25 under Operations and 31 under Enterprise Management. That’s 72 sub-classifications describing a service provider’s network

and business environment, but one simple message: the cozy old labels analysts have used to pigeonhole vendors, in some cases for decades, do not begin to tell the whole story. I have never heard it expressed in quite this way, but when I compare the old FCAPS and FAB models with the eTOM it feels conceptually like “opex versus capex,” or to those who craft software every day for a living, “runtime versus development.” In the old days we were running as fast as we could to simply get a handle on runtime and opex. Today’s communications environment demands that you as an IT or network professional at a CSP conceptually manage development and capex, too.

## Integrated Capacity & Network Planning

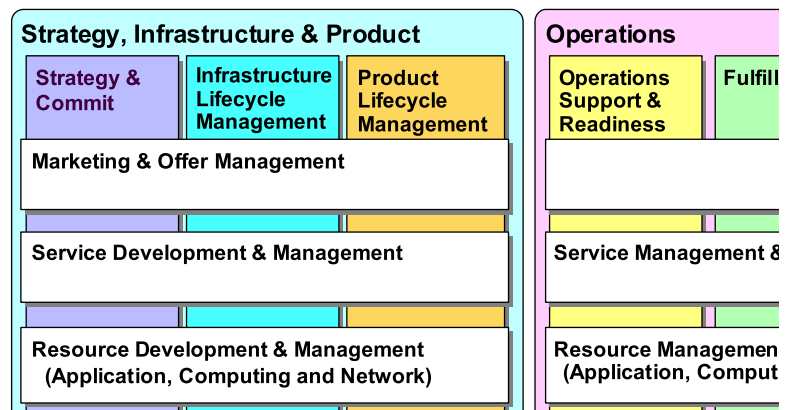
Our earlier development vs. runtime scenario is a good segue into the new solution area featured in this Advisory Note: integrated capacity and network planning, which can be viewed as the “development” corollary to the “runtime” inventory and fulfillment operations that provision and activate services.

Pure telephony revenues are declining 10-15% per year now and there is a clear imperative for established CSPs to move to new IP-based services. That’s why supercarriers like AT&T, BT, France Telecom, Telefonica, Telstra and Verizon are spending billions on next generation networks—while at the same time attempting to bypass those billions in buildouts by creating an automated global IP services marketplace to leverage each other’s IP capacity under the auspices of the IPsphere Forum. The explosive growth of the Internet coupled with bandwidth-gobbling, time-sensitive, mission-critical network applications like triple play, voice on demand (VoD), xG wireless, IPTV, interactive gaming and global favorite content downloading sites like YouTube are hammering the world’s CSPs in their survival quest to provide reliable bandwidth while meeting SLAs in a capital-constrained environment. As one of the mega-players above put it during the course of a recent board meeting, CSPs need to carefully and precisely build the proper capacity on a writhing foundation of uncertain demand.

All of these factors point to the critical role today of integrated capacity and network planning: the process of designing, modeling, extending and/or reconfiguring the network based on market needs and forecasts. Planning (shortened for brevity) is not “design and assign” as most network and OSS experts are familiar with as the core of the service provisioning process, whereby engineers create network designs and assign resources to support new services and subscribers based on available inventory. Instead, integrated capacity and network planning is about deciding what inventory to purchase (or not), in effect making the “big picture” decisions about what inventory will

be made available to those engineers to design against. It seeks to focus and optimize capex to eliminate service fulfillment delays and outright failures due to inadequate capacity—yet also avoid the dreaded financial sin of over-engineering the network by achieving efficient resource usage and optimized opex—to deliver optimized QoS and total customer experience (TCE).

Under an earlier OSS model developed by this analyst in the 1990s, this functionality fit neatly into the Planning & Engineering process area. In today’s eTOM, as shown in Exhibit NOSS-2, it encompasses the entirety of the Service and Resource development & management areas as well as Marketing & Offer Management; a portion of both Service and Resource management & operations—specifically where those areas cut across Operations & Support Readiness; and since it also integrates with the inventory and provisioning systems, it bleeds slightly into Fulfillment.



*Exhibit NOSS-2: Where Integrated Capacity and Network Planning fits into the eTOM*

The three steps in network planning are:

- Technology strategy, selecting technologies and architecture, or “selecting the pieces.” Which new technologies and which network equipment should we plan to use in the network, partly based on our own long-range objectives, but importantly in order to implement new services being planned by our CSP’s marketing team? How should we design our next generation network? What is the appropriate strategy for technology and equipment retirement?
- Strategic planning, creating deployment rules and projects: “what we may do.” Which circumstances call for which technologies? When planning the network of the future (from one to 24 months), what sort of capital budget do we need? How should we configure our network for optimal resource usage, and where should we allocate extra/“spare” inventory in the network to ensure the most reliable, high-quality service?

- Tactical planning, creating detailed plans, or specifically “what we will do.” Where and when should we relieve current and projected performance bottlenecks? Do we need to add new capacity fast to provision a needed service? Which strategic plans should we implement now, and how should we allocate and configure the equipment for each project?

Integrated capacity and network planning is useful and interesting, to be sure, but what makes it an essential consideration for you as a networking professional and a viable point of revenue entry for software vendors is the success that CSPs across world regions are starting to experience through deployment of planning systems:

- Telstra recently began using a planning system to drive its OSS Transformation initiative, DSL and fiber optic network buildouts in support of its upcoming branded Next Generation Network offerings. The incumbent Australian CSP is pulling data off its inventory management systems (or in some cases directly off the network elements) and populating this information into a staging server it terms its Market Planning Server.
- Verizon, which reacted to the explosion of video downloading across its networks by roughly quadrupling its backhaul bandwidth—yet gained only a minuscule sliver of incremental market share as a result—was a good candidate for a planning solution. Its new planning system has been enabling it to complete certain planning cycles in five hours that used to take four to six months, saving 30% in the bargain. More importantly, Verizon is now able to leverage a fuller array of relevant data points to ensure that future network buildouts have a high probability of being richly revenue-rewarded.
- BT is deploying a planning solution to craft its point-to-point Ethernet aggregation strategy as it continues to roll out its 21CN.
- Bell Canada is working with its incumbent inventory management vendor and a new planning solution to ensure intelligent network expenditures in support of its new service deployments.
- AT&T and Deutsche Telekom have deployed planning systems as DT rolls out new services and AT&T assimilates the chess pieces (SBC, Cingular, BellSouth and beyond) of its bid to join Telefonica and Telmex at the pinnacle of the communications market in the Americas.

## Top Planning Providers

Integrated capacity and network planning is an emerging market, and a key provider in the space is VPIsystems. The company’s

OnePlan is an integrated capacity and network planning system that helps CSPs prepare for the onslaught of new IP services. OnePlan is a cross-technology, cross-domain network planning system with a central repository, planning the evolution of a CSP’s current network to a next generation IP-enabled network and solving specific planning problems across diverse technologies through various OnePlan modules. OnePlan offers an integrated suite of end-to-end planning applications on a common server platform for cross-domain planning:

- Access, metro, core and optical transport
- DSL/analog, ATM/frame relay/Ethernet and optical networking/MPLS
- Marketing, planning and engineering
- Transitioning from TDM to next generation network

VPIsystems has launched a “Next Generation Network Transformation Best Current Practices” services offering with a major engagement in progress. EMA believes this is a good logical next step for the company, first because it will better enable CSPs to map out the processes they need to effectively plan their next generation networks, but also because it will tend to elevate VPIsystems above pure technology providers into that rarified ISV nirvana transcending the role of “supplier” to become more of a business partner to its CSP customers.

VPIsystems is targeting the top 200 CSPs worldwide, the top 25 network equipment manufacturers (who are also potential VPI resellers) and leading independent software vendor (ISV) and systems integrator (SI) partners. It already counts 25 CSPs as customers—including multimillion-dollar engagements with three of the six mentioned in the previous section—and has partnerships with a half-dozen network equipment manufacturers, four major SIs/outsourcers and a handful of ISVs. The company has another crucial advantage in its corner: people power. In addition to the other PhDs and great minds of science in its executive suite, VPIsystems is now home to Dr. Mark Mortensen, who was an important figure at AT&T Network Systems back in those “band of four” days at the dawn of the OSS market, became one of the market’s marquee names (and faces) at Granite Systems, and helped guide Granite through its acquisition by Telcordia. Mortensen is equally at home in the spotlight and in the murky corners of this market, and his native, knows-it-like-the-back-of-his-hand comfort level should help VPIsystems deliver the kind of real-world solutions the market needs.

Some of VPIsystems’ customer experiences to date have been both unexpected and instructive. First, some CSPs have discovered that shortening the planning cycle is turning out to be a major benefit of an integrated, cross-domain planning system.

The planning they were doing on an annual basis just a few years ago is now being done quarterly. Their new goal? Monthly—or faster. No manual system, even with great spreadsheets, can do it that fast. Second, while implementing a planning system after getting the inventory system in place might seem logical, some CSPs are choosing to put in the planning system first. One of its big international customers was originally going to wait to install OnePlan until after it installed its Amdocs (Cramer) inventory system, but instead launched what it termed an “Early Breakaway” project to implement OnePlan first, saying it could not forego the benefits of a better planning system for the several years it usually takes to get an inventory system in place and the data scrubbed. That CSP in effect decided that since it had to find a way to plan its new network anyway, before the network could be placed into inventory, why not do the planning in an optimal way?

Another important player in this space is OPNET Technologies, whose solutions span four major areas: application performance management, network operations, network R&D and capacity planning and design. OPNET’s network planning and simulation product line includes:

- SP Guru Network Planner, which enables service providers to manage large-scale, multi-technology, multi-vendor networks, from strategic processes such as architecture and planning to operational network management including troubleshooting, configuration validation and traffic engineering.
- SP Guru Transport Planner, which enables service providers and network equipment manufacturers to design resilient, cost-effective optical and SONET networks.
- IT Guru Network Planner, which provides the ability to model the behavior of corporate enterprise networks end-to-end, including routers, switches, servers and the individual applications they support. Users are better able to plan the deployment of new applications and technologies such as VoIP and VPNs, right-size capacity to support projected traffic growth, achieve service level compliance through QOS and traffic engineering, and ensure network survivability and security.
- IT Guru Systems Planner, which provides multivendor modeling of server systems and components.

OPNET has customers in the CSP market but also does substantial business in the enterprise and government sectors. It also has the world’s 2nd-largest network equipment manufacturer as a partner: Cisco Systems resells OPNET’s IT Guru Network Planner as the Cisco Network Planning Solution (NPS) and OPNET’s SP Guru Network Planner as the Cisco Network

Planning Solution-SP. EMA believes OPNET’s ability to deliver planning solutions across multiple markets gives it a diversified revenue base and will enable it to continue to deliver innovative solutions by cross-pollinating best practices from one market to another. Having Cisco as a partner creates a potentially large and lucrative channel for OPNET in and of itself that can help OPNET in terms of distribution and market awareness.

A third competitor is WANDL (Wide Area Network Design Laboratory), founded in 1986 by a team of experts who were the prime contributors to the network design and analysis efforts in what was then Bell Laboratories. Since then, WANDL has been assisting CSPs, governments and enterprises across world regions in their quest for operational efficiency and cost savings. WANDL offers two core products for network design, optimization and capacity planning:

- [NPAT \(Network Planning & Analysis Tools\)](#) comprise WANDL’s signature product for ATM, frame relay, TDM, voice and optical networks. It features data collection, planning, resiliency and path analysis, real-time traffic load analysis, time synchronization and the generation of PVC paths that can be loaded back to the network.
- [IP/MPLSView](#) is WANDL’s multi-vendor and multi-layer traffic management and engineering solution for IP/MPLS networks.

In addition to VPIsystems, OPNET and WANDL, other current and near-future providers of solutions in this area include:

- Netsure Telecom, whose Active Network Optimization product line includes Netsure Forecaster, which helps CSPs predict and minimize network investment requirements by closely coupling future demand forecast requirements against existing and planned network capacity; and Netsure Visualizer, which provides rich graphical reporting to enable users to visualize all elements in the network, including the customers and services being supported.
- Network Planning Systems, whose NetMate product line is a suite of end-to-end tools to help plan, design, optimize and deploy wireline and wireless communications networks through network and equipment modeling, visual and financial analysis, presentation and reporting.
- Inventory/resource management and provisioning players such as Amdocs (Cramer), Atreus, Axiom, NetCracker and Visionael, for whom a network planning module could be a relatively simple product line extension.

- Cisco's Network Planning Service (NPS) product line
- Marconi's Wireless Network Planning service, and various offerings from a host of other wireless network planning providers including CommWyse, CTS, ECE, Infoterra and LCC International

## Devil's Advocate: Do You Need This?

One of the advantages the vendors in this space enjoy is the opportunity to shine in a previously un- or under-addressed, almost greenfield market sector. The primary challenge or threat they likewise face is the question of whether anyone really needs what they're offering. After all, many companies are just getting a grip on their inventory and service delivery processes and may look upon capacity and network planning as "nice (not need) to have." The truth is that network planning is about strategy while inventory and provisioning are about tactics. Without a sound strategy, any business can run itself into the ground; the road to ruin is paved with well-meaning yet ill-founded tactics. Or to put it another way, "by failing to implement network planning, you are planning to fail."

If you need any more convincing, sneak a quick look back in this document to see how leading CSPs are benefiting from their planning systems. Yet as companies like OPNET make abundantly clear, planning solutions can benefit IT professionals in the enterprise market and government as well.

If you have or are beginning to get a handle on inventory/resource management, congratulations. Now it's time to get cracking on integrated capacity and network planning to make the overarching decisions about which technologies and equipment you should be entering into inventory in the first place. Throughout 2007 we'll present other solutions that should find their way onto your OSS/BSS shopping list, but this is a good place to start.

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