

WHITE PAPER

## **OSS Challenges?**

Now You Can Accelerate Next-generation IP Service  
Deployment Using Visionael Service Automation Suite

## I. The Power of Transformation

Communications service providers (CSPs) face monumental challenges as the market responds to today's cable, wireline, and wireless competition; rapid technological evolution; and increasing customer demand. Once static service-specific networks must now also deliver VoIP, wireless, cable television, video, game, music and other new and advanced services. Legacy communications providers face serious competitive threats from innovative and increasingly aggressive industry players, and new service providers are looking for better ways to maximize their investments.

Networks are evolving from disparate frame relay, ATM, voice, video and data to converged constructs with single, multi-service and IP-based technologies that can automatically deploy multiple new service offerings. Companies failing to successfully transition risk obsolescence, shrinking profit margins and faltering customer service. Savvy providers are demanding more powerful tools and solutions to effectively manage and automate new and advanced services across the same network systems. In time, this network and infrastructure transformation will intensify as leading-edge vendors recognize the need for and value of providing integrated product capabilities to bundle, manage and activate services—regardless of network topology, elements and service capabilities.

Spiraling demands on both legacy and upstart provider networks have prompted the need for New Generation Operations Support Systems (NGOSS). Transformations of this magnitude demand meticulous management, specialized intelligence, foolproof tools and ongoing support to ensure business continuity and risk mitigation—all while keeping mounting costs in check.

While far from a simple process requiring the elimination of redundant inventory and customer data stores, communications providers willing to pay the price and implement NGOSS are poised to gain a powerful competitive edge. Best-of-breed technological investments merged with seamless architecture and systems design represent the backbone of tomorrow. Providers can fulfill their customers' needs under one umbrella,

and customers benefit from lower overall bundled pricing, convenience and speed.

The challenge lies in efficiently and effectively managing these new, large-scale service deployments while still maintaining a lean and competitive business model. Many communications providers still rely on manual processes within their existing network—processes that typically require hundreds of administrators, managers and support personnel.

Both incumbent service providers and new entrants require scalability and simplicity. Systems must work independently and collaboratively without forcing undue dependence on any single function. Network managers must know and understand what elements an existing network contains, and how to use them to design the most effective networking infrastructure for new services deployment. CSPs seeking to migrate their networks to NGOSS are faced with two choices: 1) implement NGOSS in phases, working around inherited systems and architectures that spread full NGOSS adoption out over a period of several years, or 2) replace and make a fresh start.

“During the next five years and later, we believe many leading enterprises will exploit ‘IT greenfielding’ to develop a new infrastructure, rather than continuing to sustain aging and inefficient legacy environments,” stated Stephen Prentice in the 2005 Gartner report “Toward Next-Generation Infrastructure” (Oct. 11, 2005). “Such a trend will be exacerbated by competing startups that are not constrained by pre-existing technology or infrastructure and are thus able to be more effective.”

Future upgrades, routine maintenance and unforeseen complications must be rectified immediately with minimal to no impact on business operations. Complex, large-scale systems design, procurement and deployment require a well thought-out, end-to-end blueprint; fast and flawless implementation; and a clear understanding of each system and its components.

The drive to IP services is well underway, and each year brings growth in managed network services. CSPs are planning

aggressively for change. However, organizations are faced with several divergent strategies with which to approach this transformation and to ensure that their networks are managed in the most intelligent, profitable, cost-effective and expedient manner possible.

## II. Increased Competition Calls for Urgent Transformation

With fewer untapped markets to choose from, CSPs must now court their existing customer base with an evolving portfolio of new and innovative differentiated services. Number portability has increased the ease with which customers can switch from one provider to another, so shopping for the most attractive combination of services, favorable pricing and flexibility has only increased the consequences of CSP inaction.

Additionally, barriers to entry into the communications services sector have fallen away. CSPs now routinely report declining traditional voice revenues due to aggressive competition on multiple fronts, from price cutting to high-value bundled offerings. And those customers that do stay with their CSP are not staying quietly. They are demanding flexible, near real-time service creation and deployments with defined quality of service (QoS) levels enforced by service level agreements (SLA).

It's widely reported that bundling and packaging multiple services together on one access network and one bill have proven highly attractive to motivate customers to switch providers. CSPs have also discovered that this service bundling has substantially reduced customer churn rates.

Although the average revenue per service declines in this bundled services model, average revenue per customer or ARPU generally increases. The result: customers gain increased flexibility and satisfaction, while CSPs are provided with a path to reasonable profitability. Requisite to this model is a provider's ability to extract every drop of bandwidth from the network, lest thinning margins per service erode under the pressure of over-investing in the infrastructure.

At Visionael, we believe we have an answer. And, more importantly, we believe that now is a singularly unique time to stitch the network into one cohesive whole. The next few pages of this white paper encapsulate our vision. And the Visionael difference and advantage.

## IP Networks Support a Customer-centric View

Two things have changed since those earlier attempts at bringing networks together:

- 1) The importance of BSS/OSS integration has finally taken its rightful place at center stage. Ubiquitous broadband and easier-to-use, intuitive data services are now ready for primetime. Customers rather than core network demands are now driving expectations.
- 2) The advent of IP-MPLS convergence has brought uniformity to the underlying technology. For the first time, the applications layer is pushing from the top and the uniform underlying technology, joined around IP, is pushing from the bottom. The services view and the technology view are pushing toward the same solution.

These changes have opened up the possibilities for a single solution in one-stop service fulfillment for next-generation services.

## IP-MPLS Enables Transformation

The advent of IP-MPLS has made possible the building of end-to-end services management over multi-service, multi-vendor networks. Networks and network management are now scalable and interoperable with ensured reliability at the service level.

Tomorrow's networks using IP-MPLS or GMPLS at their core will be far more dynamic than traditional CSP networks. Gone are the days of long depreciation intervals and the entrenched barriers to evolution. Much like today's enterprise networks, the underlying hardware in the network of tomorrow will quickly evolve as faster, cheaper, more feature-rich designs become available. Continual price/performance improvement will spur the

move to IP-centric networks, driven by management systems that provide better control over this changing pool of deployed assets.

“Mixing voice and data on the same WAN requires a networking technology that has QoS, jitter, and latency guarantees for voice, and a range of cost-effective bandwidths, as well as a migration path for established networks *MPLS is the first to address all of these requirements.*”<sup>1</sup>

### III. So What's the Catch?

At Visionael, we see only one catch—legacy equipment.

Gateways to the traditional public switch telecom network (PSTN) and bridges to other service providers, whether they are IMS-based or traditional designs, are certainly an integral part of any network design. The issue isn't really the technical handoffs—it's the services management of the inherited equipment.

Visionael believes that the coming network services integration and optimization are only possible by aligning the stars of IP-MPLS and the elevated importance of OSS/BSS integration. However, if inherited equipment management is included as a requirement for coming network designs, the silos of old will return. These traditional devices, with their one wire/one service limitations, will again force the same least common denominator approach to service-level management. Older designs will percolate up to the applications layer, and the coming SOA-based view of the network will be lost.

But inherited systems can be managed effectively. Visionael routinely advises CSPs to leave existing management systems in place to support older portions of the network. At the same time, we tell customers that IP-based systems have greater capability, flexibility and utility to customers, and therein lies the incentive for customers and CSPs to migrate to newer, adaptable designs.

#### **Visionael is Committed to IP-centric Networks**

At Visionael, this idea of service management and automation of IP networks is nothing new. In fact, we've been helping

enterprise customers, managed service providers and visionary telecommunications firms manage and know their networks since 1997. Our offerings span automation and understanding of both LAN and WAN services.

Over the years, CSPs began seeking our expertise as one of the few companies with a proven track record in designing management systems to operate and perform efficiently and consistently on large, worldwide IP networks.

Visionael routinely counsels CSPs on how to automate services and flow-through provisioning to reduce operational expenditures and ensure a faster return on investment. We've helped them deploy our deep discovery capabilities in which the software discovers, catalogs and creates service-level profiles of the available capacity by studying the deployed network elements.

And it isn't just this upstream discovery capability with which they need help. Visionael solutions also provide downstream discovery, which can compare the service, analyze available network resources, and find methods to provision requests. This has allowed customers to delay or preclude purchasing additional equipment.

And with the arrival of regulatory compliance requirements such as Sarbanes-Oxley, Basel and others that require tighter controls on asset management, customers are finding even more utility in our asset-based approach to services management.

Our system even catalogs newly installed equipment automatically. As soon as the new equipment is given IP connectivity to the existing network, the Visionael software discovers each element and its interconnections.

Now, as CSPs extend IP services to the “last mile,” they're pleased to know that Visionael has already been there providing management solutions.

<sup>1</sup> Bob Hafner (Gartner Group); “Positions 2005: Voice and Data Will Converge Onto a Single Network via IP Telephony and Voice Over IP,” 17 February 2005.

#### IV. The Converged Network Meets NGOSS

The Visionael solution flexibly links the three dimensions of next-generation services: customers, networks and services.

Because the system possesses real-time knowledge of the relevant network elements, whether native or outsourced, it easily supports the ability to rapidly deploy new services via flow-through provisioning of multiple services being requested by customers.

This total end-to-end management philosophy enables self-provisioning of services through a variety of integrated order management processes. Since the Visionael system has a comprehensive view of all available assets, order-takers have transparent access and can immediately communicate whether that particular cluster of services is available and, if yes, quickly, efficiently and economically deliver them.

And because the system takes a layered view to activation of next-generation services (database tier, services tier and client tier), end customers can request network services without having to understand the underlying transport design of the network. In other words, since the users don't need to understand the complexities of the network, they are free to focus on their needed services and the Visionael system will take care of the rest, thereby reducing complexity and integration costs. Understanding the network automatically makes economical and speedy provisioning possible.

##### Why the Bottom-up Approach?

Many network management companies continue to promote a top-down approach to service delivery. According to this school of thought, defining a services-oriented architecture unencumbered by existing network elements and tools is the only way that rapid service deployments can be achieved. But we believe that when they ignore the existing ecosystem, they further restrict the utility of the network and the services it can offer.

Large IP networks are complex. It's difficult to even understand all the deployed components, let alone deduce the available

services from the available ports and pipes. And when it comes to adding services, the complexity of the underlying network often befuddles even the most experienced network engineer. That's why the Visionael solution promotes a bottom-up, layered and abstracted view of the network. By starting with a robust foundation of IP-centric network inventory, a customer's requested service and its inherent complexities can be resolved automatically by the software, resulting in what we believe is a better cared for customer, better network utilization, and less chance of disrupting service—the oft felt and most common side effect of not starting from the network design when delivering services.

##### IMS — A Top-down Approach That Works

While we encourage customers to consider a bottom-up implementation, we architect our products using practical top-down standards like IMS.

The original definition of IMS was centered on 3GPP, the next-generation standard for mobile networks. However, it has quickly evolved into more. The industry soon began to realize the power of the services-centric IP network with flexible building blocks at the heart of the IMS network. They began to apply this concept to any all-IP network, and began benefiting from the flexibility to provide a service-oriented architecture over a multi-vendor network.

At Visionael, we've embraced this philosophy for many years now, and we believe the only way to truly evolve toward the next-generation network is through the adoption of these IMS best practices.

#### V. Visionael: One-Stop NGOSS Fulfillment

As monumental IT changes drive the future of telecommunications with VoIP, datacenter virtualization and "software as services," CSPs are scrambling to evolve their networks and keep pace. Visionael's technology and service solutions automate and improve this migration. Visionael helps CSPs manage complex, enterprise-wide NGOSS transitions and

service deployments in a much more expedient, reliable and cost-effective manner.

The company works synergistically within existing operations, offering both the technology and specialized industry experience necessary to automate network discovery and understanding. Visionael takes your system where you need it to go, managing each change and automating specs in the process, using an advanced network resource management platform. Visionael further helps large network operators implement changes on a massive scale.

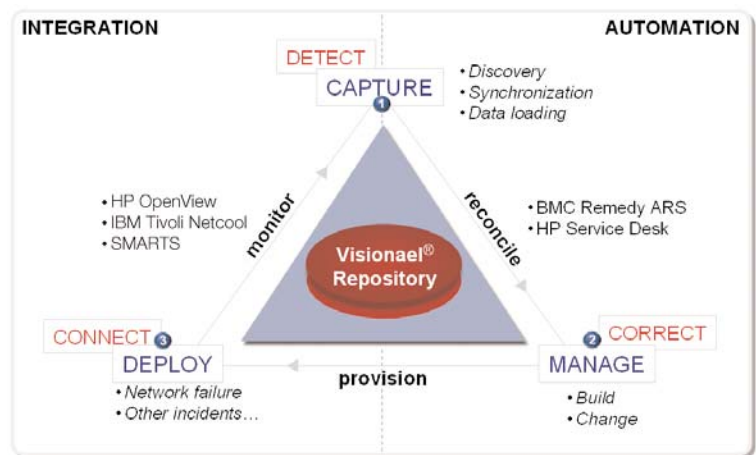
### The Visionael Solution Suite

The Visionael Service Automation Suite enables communication service providers to accelerate time to revenue through the automation of service rollouts over IP networks. Using the Visionael suite, telecom providers can more quickly design, deploy, provision and activate new services—including next-generation voice, data, mobile and video offerings such as IP television (IPTV), IP telephony (IPT) and voice-over IP (VoIP). The suite also allows CSPs to roll out digital subscriber line access multiplexers (DSLAM), allowing CSPs to provide broadband IP services to multiple customers over one line.

The suite provides an integrated, best-of-breed repository-based inventory solution that automates services at each entity and enables end-to-end IP service management. Instead of requiring weeks or even months to complete an order, flow-through provisioning applications, integrated seamlessly with Visionael components, can now process an order in just a few hours. Providers can further offer a wholesale platform, allowing customers to request services on their own, automatically. The service is sold, paid for and deployed without human intervention, and the system supporting it is up and running in no time. By eliminating tedious and repetitive tasks, Visionael helps companies roll out new services quickly and manage change more rapidly, helping providers stay highly competitive and service-oriented.

The Visionael solution, via a fully J2EE-compliant integration gateway, neatly integrates with existing systems to detect and capture information, connect and deploy new services, and correct and manage services over time, adding functionality where necessary.

With the customer order in focus, easy and flexible management of the entire back-office fulfillment process is possible. Visionael allows downstream translation and administration of service orders to the appropriate network element for quick and accurate service activation. The status of each order is forwarded to the appropriate upstream system to manage the customer relationship.

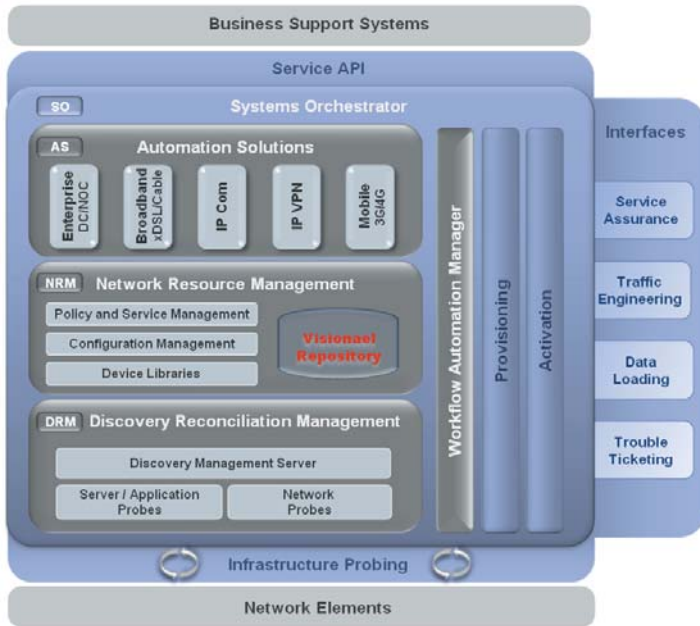


The future lies in the Visionael IP services meta-foundation, enabling meta-communication and automation between BSS and NCOSS. You can now speed up integrations with CRM systems.

The Automation Solutions leverage the Systems Orchestrator engine and the Visionael Repository to understand and activate services across the network.

Patented network inventory repository technology (figure below) lies at the core of the Visionael Suite, coupled with powerful workflow design and automation to allow unprecedented collaboration and control over design, provisioning and activation of value-based services.

The Visionael Automation Solutions, Network Resource Manager (NRM), and Discovery Reconciliation Manager (DRM) offer expert support services to design and deploy next-generation services rapidly.



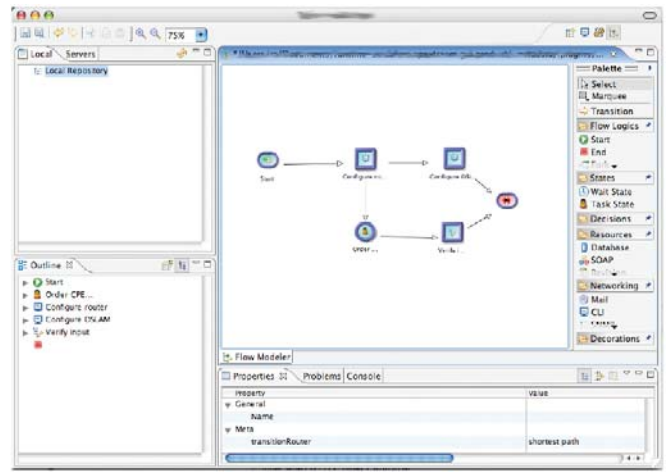
The company's NRM and DRM solutions leverage a more than 10-year commitment to IP network component identification, management and control, delivering the ultimate network design and documentation solution with "as-built," "rollback" and "future" views of the network design.

NRM and DRM play a key role in the discovery, design, deployment, provisioning and operation of each network lifecycle. This solution helps communications providers automate infrastructure and data collection; model physical and logical networks; create custom menus, property pages and objects; and generally serve as the foundation for service deployment automation.

Our automation capabilities bring flow-through provisioning and IP service activation to reality, with seamless BSS and NGOSS integration.

The Systems Orchestrator (SO) engine, included with each of the

Automation Solutions, has the ability to set up and automate any defined flow of data between systems with standards-supported interfaces. This allows network engineers to easily connect network hardware to business support systems and main business processes. SO has an intuitive, graphical flow editor to support flow definition.



Service deployment and activation

SO can configure, retrieve or push information from or to any network hardware, network inventory database or other related application equipped with one or more standards-based interfaces, regardless of the technology used as the foundation for the service offering. SO can also handle so-called "multi-operator network" environments and local services occurring in some networks.

The SO engine contains function libraries for the most common vendors to maximize ease of service definition.

Quality assurance

SO will enhance the quality of the processes in the environment in which it is deployed because the automation of administrative flows and provisioning of services will eliminate human error. All events are logged, and any information that has been retrieved, pushed or manipulated can be backtracked and monitored.

SO is transaction-safe, ensuring integrity if a flow is interrupted by some reason and cannot be fulfilled.

Autonomy

SO provides the freedom to implement the platform technology of choice as soon as it exists on the market, not when an OSS supplier supports it.

Independence

SO allows implementation of a network based on hardware from any manufacturer on the market today and in the future, providing an ideal position for negotiations with equipment vendors.

Comprehensive approach

The generic nature of SO encompasses all aspects of business processes, not only the traditionally operator-specific ones. This ranges from data retrieval from Web pages; order handling through CRM systems, financial systems and interaction with external organizations for credit risk assessment; reservation of resources in network inventory databases; media acquisition, service definition and activation through configuration of the appropriate network hardware; activation of billing through automated notification of billing system; and activation of network surveillance and SLA management activities after service fulfillment is completed.

In summary, SO and the Automation Solutions provide flexible and easy deployment and activation of next-generation services. Coupled with the robust capabilities of NRM and DRM, the total

combination provides deep discovery capabilities and control of physical and logical network elements. Flow-through provisioning is simplified.

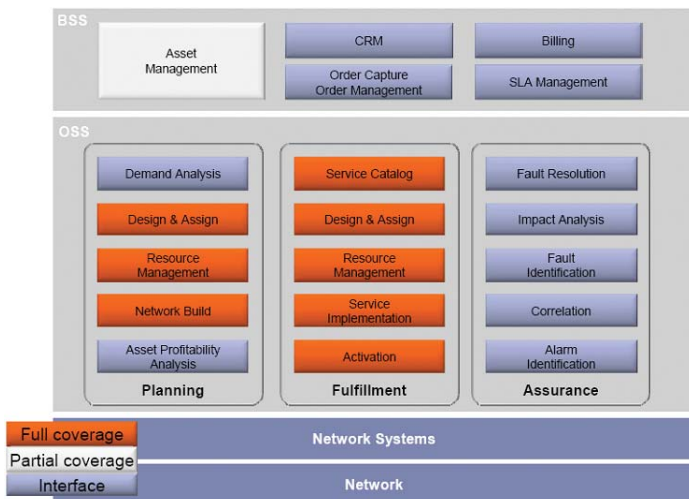
Visionael is an expert at offering communications providers the speed and agility to deploy and manage new value-based services over converged IP-MPLS and GMPLS networks in NGOSS environments. The company automates services over IP networks—optimizing and speeding delivery over the critical physical last mile. As the company moves forward, it will migrate from basic management of this infrastructure to its optimization. Moving forward, Visionael will continually expand its service options and modules to address the growth needs of its clients. Guaranteeing rapid implementation with low capital expenditures, Visionael is a clear market leader for NGOSS transformation services and solutions.

IV. Summary

Communications providers face monumental challenges as the cable, wireline and wireless infrastructures adapt to today’s rapid technological evolution and increasing customer demand. Once static, service-specific networks must now deliver VoIP, wireless, television, IPTV, games and more. CSPs unwilling to or unable to change will fail.

Mounting demands on both incumbent and upstart networks have increased the need for NGOSS. But transformations of this magnitude demand meticulous management, specialized intelligence, foolproof tools and ongoing support to ensure business continuity and risk mitigation while maintaining cost. To proactively manage complications, ensure stability, maintain profitability and control overall technical and personnel expense, providers trust their network transformations to experienced vendors who understand IP networks.

Enter Visionael: A market leader since 1997. Visionael helps communications providers manage complex, enterprise-wide NGOSS transitions and service deployments over IP-based networks in a much more expedient, reliable and cost-effective manner.



The company works synergistically with existing operations, offering both the technology and specialized industry experience necessary to understand, transform and automate network discovery. Visionael's comprehensive suite of solutions and services help providers handle service deployment transitions.

Visionael offers:

- A repository and infrastructure-independent product solution suite, providing upstream and downstream automation intelligence
- A convergence of OSS and BSS applications with the capacity to link customer demands, service features and network elements
- Complete automation of network services and service management, whether native or outsourced
- The ability to offer services in a flexible manner to the market without dependence on third-party providers
- The ability to rapidly deploy new customer services and self-provisioning
- The freedom from an all-embracing solution with the capability for incremental change
- Standards-based integration capabilities to make the most of existing software ecosystems

Guaranteeing rapid implementation at low capital expenditures, Visionael is the obvious choice for NGOSS transformation services and solutions.

### About Visionael

Visionael Corporation provides best-of-breed software and services that allow telecommunications service providers, network outsourcers, enterprises and government organizations to automate the rollout of network services over IP networks and to accelerate time-to-revenue or productivity. With Visionael software, network operators can more quickly design, provision, and activate next-generation services—including voice, data, mobile and video offerings—all while reducing the complexities of managing large, advanced networks.

The company has an extensive worldwide customer base, including Alpheus Communications, Comcast, EDS, Kaiser Permanente, IBM Global Services, Sprint and Vodafone. Channel, system integrators and partners include Dimension Data, EDS, IBM Global Services, Logica and Pride. Visionael is a privately held company, headquartered in Mountain View, California, with major development facilities in Tulsa, Oklahoma and Bangalore, India and Sweden. Sales offices are located throughout North America and Europe.

For more information, please visit [www.visionael.com](http://www.visionael.com), or call +1 650-963-0960.