



Merging the Power of Network and IT™

U.S. Army Case Study

The need to accelerate the creation and delivery of services, squeeze costs out of operations, and build closer customer relationships is causing Communications Service Providers (CSPs), large enterprises, and entities like the U.S. Army to rethink their OSS strategies.

Accelerating service creation and delivery enables the quick monetization of high-bandwidth infrastructure being deployed for converging voice, data, video, and content services. Streamlining operations by consolidating multiple, siloed OSS reduces costs and improves efficiency. The resulting end-to-end service views increase awareness of the customer experience and this, in turn, produces closer customer relationships.

Until recently, the fundamental barrier to the fulfillment and provisioning of converged services has been the inability of OSS to manage across Network and IT domains. This is no longer the case.

Managing Network and IT From a Single Platform

Only a few years ago, using OSS to manage IT would have been unnecessary because enterprise-oriented applications were adequate. The extensive deployment of content-based services today makes OSS essential for managing IT.

This change has come about because CSPs now have to invoke IT infrastructure as much as the traditional Telecom Network to create and deliver a service. In the past, communications services used connection-oriented network elements, but today's services include elements such as servers and applications in addition to a multitude of end-user devices, all of which reside within the IT domain. Mobile operators rely on an increasing number of voice mail, email, video, and content servers to create differentiated, value-added services.

The new converged services world is very different from the one in which OSS managed connection-oriented services. These two worlds can be visualized through the 7-Layer OSI model shown in Figure 1. While traditional services use Layers 1–3, next generation services use all 7 Layers.

Provisioning and fulfilling next generation converged services across Network and IT domains requires a next generation OSS combined with organizational transformation. Organizational transformation requires

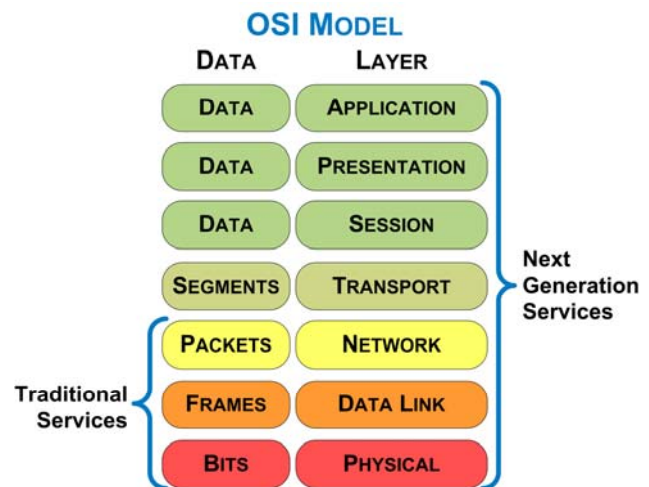


Figure 1: Traditional vs Next Generation Services

inspiring leadership, high-performance teams, and effective processes. OSS transformation requires the strategic management of Network and IT from a single platform — Merging the Power of Network and IT™.

With multiple layers and a variety of Network and IT components involved in any given service, management using siloed systems is costly and inefficient and does not provide an end-to-end view of the customer experience. The next generation OSS must manage all 7 Layers from a single platform, as shown in Figure 2.

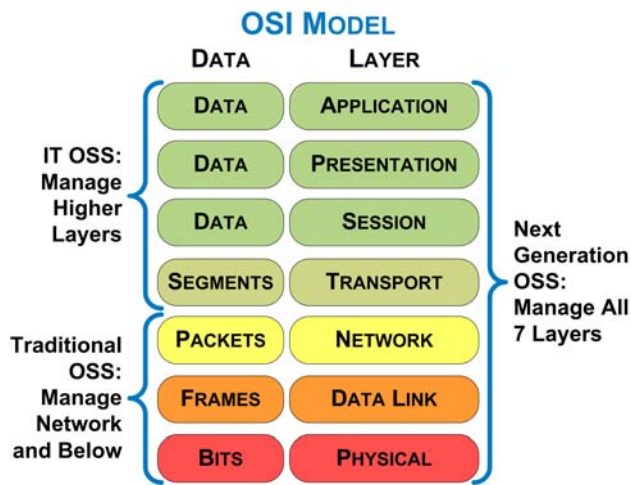


Figure 2: Next Generation OSS

Managing Network and IT from a single platform streamlines service provisioning and activation through reuse of standard service, network, and device software modules. This enables the OSS to invoke relationships among databases, network elements, work orders, and billing and activation systems independent of domain. The result is rapid service deployment and increased customer satisfaction.

Without a single platform, provisioning can be complex because of the need to coordinate across multiple, siloed systems. In a siloed environment, even the simplest converged services can take a long time to provision and may result in stranded network elements, alarms, and provisioning failures.

Industry has recognized the need to manage across IT and Network domains, and this is driving the integration of eTOM® and ITIL®. At the core of the NGOSS philosophy, eTOM describes a standard approach to business processes. ITIL (Information Technology Infrastructure Library) describes IT processes and is part of a series of IT Service Management framework documents.

Since the management of converged services will rely increasingly on the mapping of data, applications, and processes across Network and IT domains, next generation OSS must embrace both eTOM and ITIL and manage both domains from a single platform.

Innovative Service Providers such as France Telecom, Sprint, and the U.S. Army have recognized the value of aligning the two domains — and the benefits have been significant.

U.S. Army – Merging the Power of Network and IT

The U.S. Army and U.S. Army National Guard are at the leading edge of managing across both Network and IT infrastructures. While some CSPs plan to manage across IT and Network domains, few have done so on the scale of the U.S. Army and Army National Guard, which own one of the largest communications infrastructures in the world.

An Army initiative called the Enterprise Infrastructure Management (EIM) Project sought to create, automate, and manage an end-to-end view of its IT and Telecom software and hardware resources. Its goal was to make any service available on any device over any network. It would give military personnel required communications capabilities whenever and wherever needed.

The EIM Project would enable applications to work as soldiers migrated from satellite, to cellular, to landline networks. Achieving this goal would require flexible inventory models, network adapters, reconciliation processes, and workflows.

Previously, the Army's inventory and configuration processes had been manual, with inventory information being gathered by "data calls" requesting manual counts. This approach lacked real-time visibility into actual hardware and software inventory and utilization.

The Army wanted a solution centered on inventory data — something it considered invaluable for business process automation — and revamped their inventory reporting process so that minimal human intervention would be required.

The Army selected NetCracker's software and hardware Inventory Management Solution to manage services across its formidable Network and IT infrastructure. It sought a provider whose solutions and strategies had been proven in Tier 1 commercial deployments and provided flexibility and scalability.

The Army and Army National Guard have used NetCracker's inventory, reconciliation, workflow, and fulfillment capabilities to increase automation, improve the management of IT and Network assets, and provide deconflicted, end-to-end resource views.

NetCracker's platform links to systems management servers to gather information about software usage on PCs and servers, manages software licenses, and

coordinates that information with network information such as WAN capacity, thus merging the power of both IT and Telecom Networks. This capability creates a unique OSS that enables Service Providers to operate across Network and IT domains.

The NetCracker EIM solution enables deployment assistance and IT and Telecom equipment allocation assurance for military personnel, ensuring the right equipment for the right mission. When services are needed in the field, they can now be configured completely before being deployed. Services include installing appropriate software on PCs, managing software licenses, and providing WAN connectivity.

NetCracker's solution enables real-time IT and Telecom network management, reporting, and automated, network-aware processes. It communicates with multiple systems management servers that use agents to query software in the IT network to identify installed software and usage data. It also gathers resource inventory data about Telecom network elements and services. These data are then modeled and reconciled. This provides rapid and accurate deployments as well as automatically generated, end-to-end views of the actual IT and Telecom resources.

Mapping Network and IT Data, Applications, and Processes

To provide the flexibility the Army required, NetCracker employed an arsenal of standards-based principles so its solution could accommodate new technologies and trends.

NetCracker, an active member of the TMForum's eTOM and ITIL committees, incorporated the following NGOSS principles: Shared Information/Data Model (SID) for data modeling, eTOM for processes, and the TAM (Telecom Applications Map) for correlating applications, as shown in Figure 3. In Layers 5–7, NetCracker used ITSM (IT Service Management) frameworks such as ITIL and CIM (Common Information Model). NetCracker created complementary alignment between NGOSS (eTOM, TAM, and SID) and ITSM (ITIL and CIM), supporting interoperability across the two domains.

Using eTOM and ITIL, NetCracker outlined attributes and processes representing relationships among services, applications, platforms, and infrastructure.

NetCracker also incorporated IT elements into Telecom workflows to reflect an accurate inventory of assets across both domains.

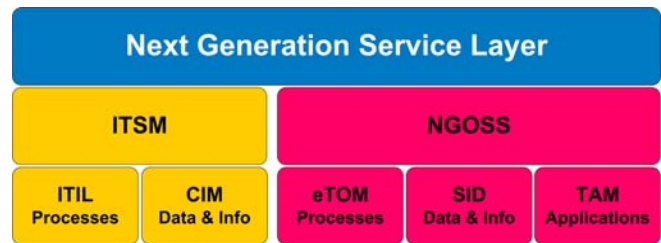


Figure 3: Next Generation Service Layer

Inventory accuracy was improved by synchronizing the database of record (the inventory) with what was truly active and inactive in the Network and IT infrastructures. In addition, integrated workflows and processes were created by leveraging eTOM and ITIL. Within workflows, common processes were harmonized to eliminate duplication, and unique processes were added.

NetCracker defined infrastructure-agnostic models that abstracted the actual inventory, and created enhanced device models, representational models, and attribute-capturing mechanisms. These enabled the capture of any service or any IT or Network attribute — whether port, line card, chassis, server, or PC — as well as the applications running on them.

To understand the relationships between elements and services, NetCracker modeled the correlation between the hardware, services, and network using standards-based interfaces that acted as building blocks within the representational model. Drag-and-drop functionality via a graphical representation allowed IT elements to be incorporated easily into traditional Network models and vice versa. NetCracker's platform modeled and presented any content — pictures, videos, or text — in any combination.

In addition, NetCracker managed available capacity by **allocating** capacity, not just by monitoring in use or available capacity. This provided accurate management of remaining capacity.

NetCracker's use of eTOM and ITIL, as well as other industry standards, and its flexible, network-agnostic approaches created a future-proof solution for the U.S. Army as well as for today's rapidly changing communications world.

U.S. Army Software Inventory Management

In addition to configuring Network and IT services for military personnel, the Army has used NetCracker's solution to manage automatically — from a central location — hundreds of software licenses. NetCracker's automated processes led to the adoption of Lean Six Sigma® practices within the Army, which reduced variances and managed usage among installed COTS products and software licenses.

A Lean Six Sigma workflow application of NetCracker's EIM solution manages the Army's software license utilization. A NetCracker repository stores software deployment, utilization, and license data. Through an automated workflow process, unused software is removed from the device, and the license is placed in the repository for reuse or elimination. This solution allows the Army to manage tightly its vast numbers of software licenses and reduce new license acquisition costs.

EIM links to numerous systems management servers so the Army can integrate information about software usage on PCs and servers to network information about WAN capacity. That has enabled the Army to deploy equipment and capacity to soldiers on the fly, as opposed to evaluating manually the variance between installed, used, and licensed software and the enterprise license agreements negotiated for each application.

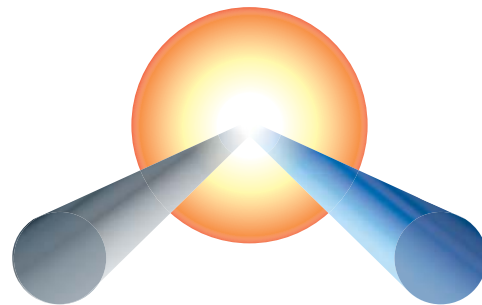
The Army can now negotiate better terms for its various software applications since it can track the number of available licenses and actual installed licenses. It also obtains improved visibility into what applications have been used and how often.

NetCracker's solution enables the Army to:

- Track and manage IT and Telecom assets and integrate the resulting data into an EIM repository
- Apply workflows to a wide range of IT management functions from software utilization to service management
- Ensure accurate, on-time service delivery to military personnel
- Lower and optimize service delivery costs
- Streamline and automate operations

The Army deployments demonstrate the value and benefits of managing Network and IT software and hardware from a single platform. NetCracker has deployed similar solutions with Tier 1 CSPs in Europe and North America.

NetCracker's Integrated Approach Merges the Power of Network and IT



Content-Rich Services and Technology Advances Drive Next Generation OSS

The growth of content-rich services and key technology advances — all IP networks, the merging of Network and IT, ubiquitous broadband and wireless, and a continuous stream of innovative end-user devices — are profoundly changing the way CSPs fulfill and deliver services. If OSS are to remain strategic, they must evolve to serve this changing environment.

NetCracker's U.S. Army projects and its Tier 1 implementations in Europe and North America are unsurpassed examples of strategically designed and successfully deployed next generation OSS.

Based on the article "Merging the Power of Network & IT," by Sanjay Mewada, published in *Billing & OSS World*, January/February 2008.