

OSS for 2G/3G Network Rollout and Service Provisioning Management

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Applicable TM Forum Technical Areas:

Framework [NGOSS], 3G and 4G networks, Business Process Framework [eTOM]'s RM&O Support and Readiness, Information Framework [SID]'s resource and service layers

Applicable Industry Areas:

Viewpoint	
	Service provider perspective
X	Software vendor perspective
	Hardware vendor perspective
	System integrator perspective
Services	
	Cloud
	Video
X	Data
X	VoIP
	IPTV
X	Voice
	Other: 3G (HSPA), Business Leased Line

Business Areas Targeted	
X	Business Process Management
	Revenue Assurance
X	Streamlining of OSS
	Streamlining of BSS
	Fraud Management
	Service Lifecycle Management
X	Fulfillment
	Fault Management
	Performance Management
	Billing Transformation
	Network Management
	Service Modeling
X	Network Inventory Normalization
X	Network Infrastructure Management
X	Integration
	Other: Network Planning and Design, Network Configuration Management, Business Process Re-Engineering, Data Migration

Table of Contents

1.0 CASE STUDY SUMMARY	3
2.0 Business Problem To Be Solved.....	3
3.0 Organizational Division Affected (Marketing, IT, Operations, Network, etc.)	3
4.0 Partners Involved (Internal or External).....	4
5.0 Working Towards a Solution (What was the business / technical problem to solve?)	4
6.0 Solution (What were the technical/conceptual/business solutions employed).....	6
6.1 Solution Architecture	6
6.2 NetCracker Solution Comprises the Following Products	7
6.3 Process Flows.....	8
6.4 Object Model for Inventory	8
6.5 Integration and Data Migration.....	9
7.0 TM Forum Frameworks, Best Practices, or Guidelines Employed and How They Helped	9
7.1. Application Framework [TAM].....	9
7.2. Business Process Framework [eTOM]	9
7.3. Information Framework [SID].....	9
8.0 Results (Concrete or Expected)	10

1.0 CASE STUDY SUMMARY

This case study covers the NetCracker OSS solution for a leading mobile service provider in South Asia (hereafter referred to as “the MNO” (Mobile Network Operator). The solution is aimed at supporting the rollout of the CSP’s new 3G services and business leased lines.

To retain its leading market position, the MNO wanted to significantly increase its network size as well as improve service delivery and trouble management quality. One of the key challenges was to enhance efficiency of the network and service management processes. The network and service management transformation included cross-domain integration, optimization, flexibility, and configurability. The transformation applied to the entire network and service management areas, starting from business planning, network rollout implementation, and support in radio, transmission, fixed, and access networks. The transformation of the customer’s disparate and complex systems enabled us to speed up the 3G rollout as well as maintain operational excellence and foster interoperability.

To ensure the success of the transformational project, the MNO and NetCracker made a joint effort to thoroughly analyze current and future modes of operation and leverage NetCracker’s best practices in business process re-engineering and adherence to TM Forum standards. The solution for the MNO relies on various principles, including TM Forum Application Framework [TAM]-based functionality separation, operations execution and management separation, and cross-domain consolidated management.

As a result, a converged, end-to-end OSS solution was implemented. This case study focuses on NetCracker’s 3G rollout solution for the MNO.

2.0 Business Problem To Be Solved

The foremost business problem to be solved is to enable a holistic view of end-to-end, cross-domain system management. The issues of the 3G rollout process that fell within the solution scope are listed below:

- Lack of end-to-end process view. Different pieces of a single process are spread across multiple applications.
- Low visibility into network infrastructure usage quality
- Inaccurate resource inventory data (up to 50% data inaccuracy) causing extra work (e.g. unnecessary site visits)
- Lack of automation in the execution layer. This includes a lot of “swivel chair” interfaces, manual data collection/reporting
- Lack of individual KPIs
- Only one third of rollouts were completed within predefined KPIs.

3.0 Organizational Division Affected (Marketing, IT, Operations, Network, etc.)

Network rollout is a collaborative process involving many departments within the service provider. OSS solutions typically address business transformation and thus seamlessly provide visibility into and integration of network resources and business processes and their functions. The departments affected by the NetCracker OSS are listed below:

- 3G cell site planning, installation, and maintenance
- Back-haul planning, design, and provisioning/installation
- Project Management Group (rollout management)
- Financial and asset management
- Government reporting and licensing
- Procurement

4.0 Partners Involved (Internal or External)

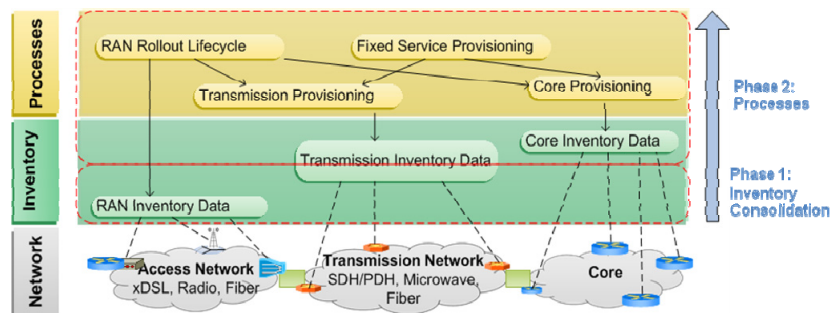
- IBM as a Service Integrator
- SAP for asset management and budgeting
- Performance and Fault Management applications (i.e. Metrica, NetExpert, Clarify)
- Activation platforms
- Network planning systems (ACTIX EPS)
- MapInfo
- Various vendors of EMS/NMS applications (RAN, Core, VAS, Broadband, etc.)

5.0 Working Towards a Solution (What was the business / technical problem to solve?)

The technical problems to be solved were as follows:

- Establish a single, centralized, integrated inventory database to provide all the engineering departments with quick and accurate information and to support the MNO's multiple businesses
- Provide an end-to-end and convergent view of the entire network to streamline the order rollout, service fulfillment, and service assurance processes, and thus improve customer satisfaction and business efficiency
- Re-engineer business processes and replace existing home-built inventory and work flow systems
- Provide planning, operations, and business departments with visibility into inventory and capacity management processes of the current and prospective multi-vendor, multi-technology, and multi-service network

The transition to a converged OSS was divided into phases. The staged transition to a converged OSS suggested partial re-use of data and functionality from existing legacy solutions and their integration with other legacy systems like project management and network configuration under the umbrella of NetCracker process orchestration and federated inventory. The solution included the following phases to gradually replace legacy functionality:



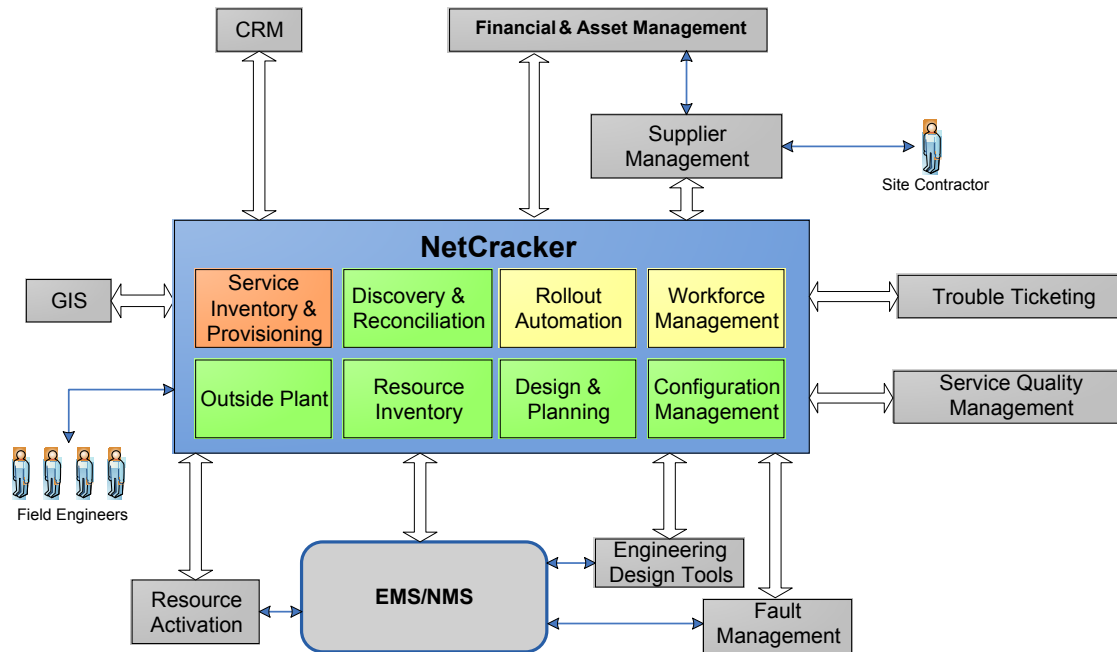
- **Phase 1:** Consolidation of high quality inventory data required for process implementation and for Planning Tools (EPS)
- **Phase 2:** Implementation of To-Be Processes. Detailed Transmission & Fixed Services inventory.

Benefits of the phased approach:

- **For the business process and employees:**
 - Minimizes the need for multiple interim or “throw away” business processes
 - To-be processes do not have to rely on existing systems
 - No need to copy existing processes and implement workarounds for data quality issues
 - The MNO’s employee involvement remains constant with minimal highs and lows
- **For data, information, and system management:**
 - Decreases the number of concurrent environments being managed
 - Serializes the data migration processes
 - Cleaned RAN data is available for planning tools from the very beginning of NCR rollout
 - Early and continuous retirement of legacy applications
 - Minimizes the risk and impact of longer data migration cycles
- **For managing the OSS project scope and schedule**
 - Minimizes the risk of cascading change requests
 - Increases testing efficiency
 - Allows adequate time between production deployments for stability checks
 - Minimizes the risk that a single point of failure (resource, environment, changing business drivers) may have on other projects

6.0 Solution (What were the technical / conceptual / business solutions employed?)

6.1 Solution Architecture



Description of the integration interfaces:

- **With CRM:** to ensure provisioning of customer orders for fixed services
- **With Financial, Asset, and Procurement Management:** as part of the site rollout process (transport protocol: csv file):
 - Provide Financial Management with estimate of rollout project budget to be allocated
 - Provide Asset Management with list of equipment, materials, and services to be reserved, purchased, ordered, and shipped
 - Provide Asset Management with list of installed equipment that needs to be treated as assets
- **With Supplier Management System:** exchange information on rollout tasks that are owned by contractors (e.g. construction activities, equipment installation, acceptance, etc.)
- **With Trouble Ticketing:** NetCracker receives a trouble ticket and allocates a resource to work on it (using Workforce Management)
- **With Fault Management:** NetCracker reconciles with FM to synchronize the lifecycle status of equipment and other facilities
- **With Engineering Design Tools:** NetCracker provides timely engineering data on network resources
- **With EMS/NMS, NetCracker:**
 - Receives live data from the network to reconcile it with inventory data
 - Receives configuration data from the network to validate it
 - Applies necessary changes to fix errors found in configuration data

- **With Resource Activation:** NetCracker provides activation information as a part of fixed services provisioning
- **With GIS:** NetCracker receives geospatial information to visualize/display network objects on maps

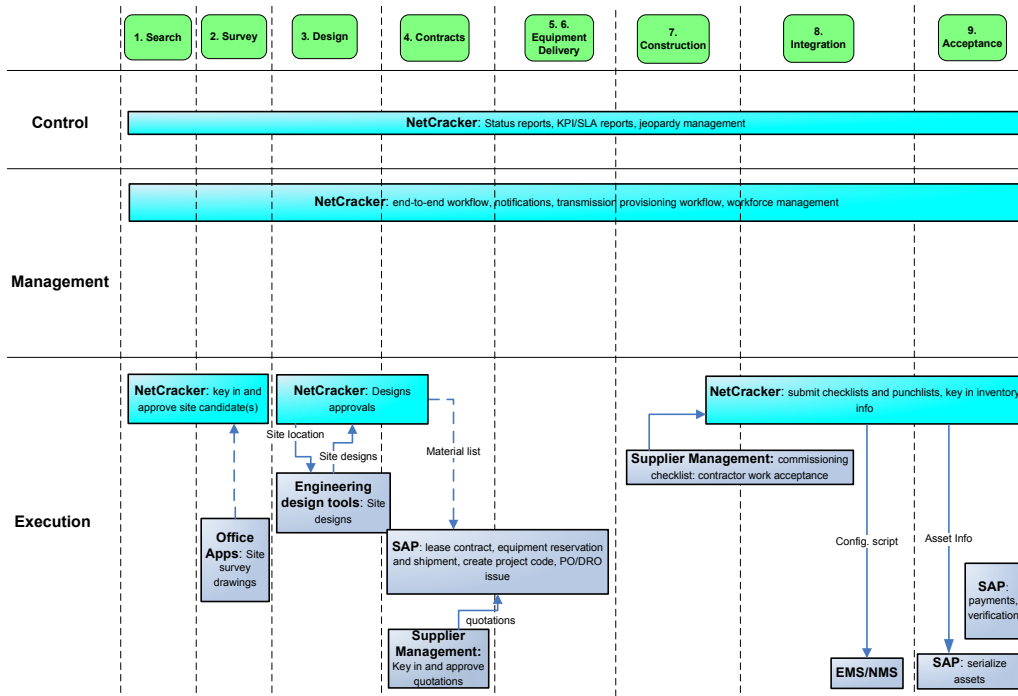
6.2 NetCracker Solution Comprises the Following Products

- **Resource Inventory** manages the following objects, among others:
 - Sites, locations, contact modeling
 - UMTS technology/network modeling and support for UMTS and GSM
 - Transmission and core
 - IP/MPLS and Metro Ethernet networks
 - Resource capacity management
- **Discovery and Reconciliation:**
 - Reconciliation functionality through integration with the most important EMS/NMS applications (transmission and radio)
- **Design and Planning** manages the new network rollout and change processes (RAN, transmission, and OSP):
 - Strategic Planning
 - Evaluate capacity and sizing of access and transmission networks in accordance with market requirements
 - Tactical Planning
 - Create annual operation plans
 - Implementation Planning
 - Radio infrastructure design and rollout processes
 - Site rollout process covering UMTS radio network (Node B, RNC)
 - GSM radio network as well as transmission and core mobile infrastructure (SDH, PDH, GSM (e.g. MSC rollout), UMTS, etc.)
 - Implementation work order management
 - Create bills of materials/quantity
- **Outside Plant:**
 - Outside Plant functionality and corresponding integrations (MapInfo, etc.)
- **Asset Management:**
 - Track asset lifecycle from purchasing to decommissioning
 - Track asset movements
- **Service Inventory and Provisioning:**
 - Automated design/assign of data and voice services
 - Automated provisioning of transmission circuits for internal use
- **Configuration Management:**
 - Cross-platform validation of configuration data in 2G/3G RAN networks
- **Rollout Automation:**
 - Control and management of all rollout processes
 - KPI tracking
- **Workforce Management**
- **Government Reporting:**
 - Automation of license application process
 - Utilization of accurate resource inventory data

6.3 Process Flows

All operations are handled as a process and are initiated with a Network Change Request (NCR). NetCracker WorkFlow Engine and Process Management is flexible and rich with built-in controls, business rules and operations, and integration capabilities to model and manage very complex processes like the one shown below.

Example: New cell site rollout process:



6.4 Object Model for Inventory

Using and expanding TM Forum Information Framework [SID], NetCracker Resource Inventory is able to model a wide range of logical and physical resources such as:

- Radio BSS domain: Cell, sites, BTS, BSC, Backhaul (BTS-BSC-MS-C circuits), GIS data
- Mobile Core domain: MSC, trunk groups, etc.
- IT domain: Servers, applications, IP ranges
- Documents: Site survey requests and results, landlord agreements, partner access circuit orders and responses

The following diagram is an example of a managed resource model:

8.0 Results (Concrete or Expected)

The implementation of the new OSS solution has been successfully reaching the following goals:

- Increased asset accuracy and consistency:
 - A single data source for applications
 - Better support for discovery and re-allocation of unused network assets as well as capacity management
 - Clearer responsibility for data (i.e., operator can identify who is responsible for a piece of data)
- Faster cell-site rollout process. Automated control and management functions, as well as the creation of a single data source, have enabled the reduction of management delays. The execution is separated from control and management, which adds flexibility to execution mechanisms. Re-positioning of applications for technical operations, and their integration with control and management, provide higher effectiveness of specialized applications.
- Cost savings due to a reduction in the number of maintained OSS applications
- Reduced fault detection time through converged, cross-domain, multiple-technology inventory management
- Workforce Management pre-integration with the service fulfillment domain facilitating end-to-end service delivery and providing for:
 - Complete process and resource visibility
 - Enhanced work order orchestration
- The mature NetCracker Product Platform that includes NetCracker Framework, Business Activity Monitoring, Trending and Optimization Mechanisms, Unified Security Management, and an extended GUI provides:
 - Future-proof and implementation-tested functionality
 - Minimized integration costs
 - Shorter implementation cycles

The NetCracker solution for the MNO has delivered the following ROIs:

- Rollout acceptance processes:
 - Greater visibility: ability to control and track process KPIs
 - Elimination of 60% of manual tasks
 - Significantly reduced time to build a process for new equipment: 1 day of configuration vs. 3 weeks of development
 - Increased efficiency through the removal of redundant steps and checklists (around 30%)
- OSP rollout processes:
 - Number of manual tasks reduced by 50%
 - Data quality and efficiency improved by 80%
- 2G/3G RAN configuration management:
 - Data consistency and efficiency improved by 30%
 - Fully automated error detection and correction for NMS configuration issues (100% of manual tasks eliminated)

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Yes