

A Modular OSS Suite Designed for Convergence

In today's marketplace, Communications Service Providers (CSPs) must be able to provision and activate next-generation services rapidly and cost effectively. To do this, they need to make systematic changes to their OSS — at the same time that they generate revenue, contain costs, and maintain customer centrality. All OSS elements — legacy and new — must work together to deliver next-generation services.

NetCracker takes a holistic solution approach that combines software, services, and expertise. To protect each CSP's current investment and accelerate new revenue streams, NetCracker provides a comprehensive and modular suite of OSS applications built on an open, web-based framework. To ensure that each deployment is tailored to the customer's specific business needs, NetCracker offers an array of professional services and draws on deep expertise gained from worldwide deployments of complex transformational projects.

NetCracker: The Global Leader in OSS Transformations

NetCracker is the leading provider of OSS solutions for Mobile, Wireline, and Cable Service Providers — helping them achieve increased efficiencies and deliver innovative new services quickly. NetCracker differentiates itself by taking a business-centered view and a solutions-based approach that focuses on each customer's success.

NetCracker serves a diverse customer base, including CSPs, Fortune 1000 companies, and the U.S. government. The company has several dozen customers worldwide including du, France Telecom group, MGTS, MTS, Shaw Communications, Sprint, Swisscom, Telecom New Zealand, Telstra, TELUS, TW Telecom, UPC Broadband, the U.S. Army, and WIND Hellas.

NetCracker's Value Proposition

For NetCracker's customers, maintaining a competitive advantage and having the ability to grow means that they must be able to introduce and deliver services quickly and efficiently — with a quality that ensures a high level of customer satisfaction. NetCracker helps its customers meet these objectives by providing the most powerful OSS solutions in the industry focused on the effective management of resources, services, and customers.

NetCracker's OSS Solution Suite

With NetCracker products, CSPs can deliver and manage complex converged services that span Network and IT domains — all from a single platform. This, in turn, enables CSPs to speed service delivery, streamline operations, and improve customer satisfaction.

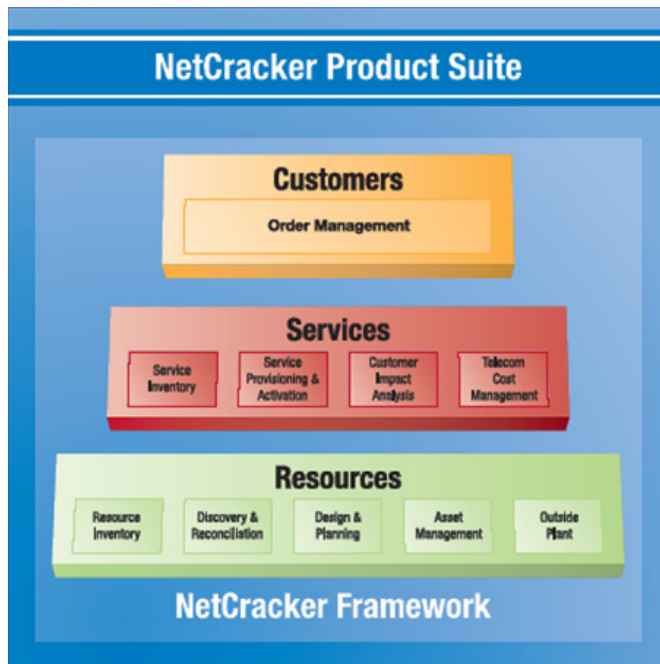
NetCracker's portfolio includes a comprehensive suite of OSS product modules that encompass all functionality from order entry to resource activation. All modules are pre-integrated, which minimizes integration effort and costs. Customers can purchase individual modules or any combination of modules to meet their requirements.

NetCracker's flexible and scalable solution suite enables customers to carry out projects ranging from complex business transformations to straightforward resource management. The solution suite interoperates with existing systems and allows CSPs to take a phased approach to replacing legacy systems and migrating customer data.

The NetCracker product suite is built entirely in Java using an n-tier J2EE architecture. All components are designed with a clear architectural separation between the Client, Presentation, Business, and Data tiers with an additional Workflow tier that enables high configurability and process automation. All modules are pre-integrated with NetCracker Framework.

Leveraging a unified data model and process automation tools, Framework facilitates seamless interoperability among the modules. It also provides security and administration management as well as search, reporting, and data visualization capabilities.

NetCracker's modules map to the eTOM Customer, Service, and Resource Layers as shown in the following illustration.



Solution Suite Attributes

All NetCracker modules share the following attributes which make the solution suite scalable, flexible, agile, and future proof:

- Full support for SOA environments
- Metadata-driven approach to data modeling
- Separation between Client, Presentation, Business, and Data Tiers
- Workflow Engine for process automation
- Unified, flexible data model with template libraries
- Fully open internal and external APIs
- Fully configurable, 100% web-based user interface
- Solution configuration and inter-system integration that can be carried out by an SI, the customer, NetCracker, or a combination thereof

Industry Standards

NetCracker modules are easy to implement and use because their standards-based approach includes:

- Full support for SOA environments
- SID and CIM, eTOM and ITIL compliance
- OSS/J and MTOSI standards
- Open and documented APIs exposed through technologies including Java RMI, SOAP/Web Services, JMS, CORBA, and COM
- CMMI Maturity Level 3 solutions delivery

Benefits

NetCracker's innovative, industry-leading solution suite gives CSPs:

- **Agility:** Services can be provisioned and activated more rapidly.
- **High Quality of Service:** Network faults can be correlated to specific services and customers to ensure outstanding QoS.
- **Excellent Customer Experience:** Customer experience can be monitored and managed to promote loyalty and increase average revenue per user.
- **Profitability:** Costs and service revenues can be aligned to maximize the bottom line.
- **Efficiency:** CSPs can use the most appropriate Network and IT resources to deliver services, improve operations, and reduce costs.

Customer Layer Module

Order Management

At the Customer Layer, NetCracker's **Order Management** module brings efficiency, accuracy, and automation to order management processes — speeding time to revenue and increasing customer satisfaction.

The module provides end-to-end management of the service order lifecycle: it automates order entry, prequalification, customer and order validation, order decomposition, sub-order management, process monitoring, task management, as well as escalation and jeopardy management.

Order Management interacts seamlessly with NetCracker's Service Inventory and Service Provisioning & Activation modules to maximize automation and flow-through provisioning.

Service Layer Modules

NetCracker provides four modules to manage the Service Layer: Service Inventory, Service Provisioning & Activation, Customer Impact Analysis, and Telecom Cost Management. These enable services to be introduced, deployed, and delivered rapidly with a high QoS.

Service Inventory

Service Inventory enables new services to be designed and modeled, using service components as building blocks. Service components are taken from a catalog of pre-configured components or are created using service templates. This approach enables services to be modeled, tested, and offered with minimal development effort and time — and leads to rapid return on investment.

A service repository provides information about which customer account is associated with a service, which network or IT resources are assigned to a service, and what parameters are associated with a service (for example, SLA, QoS). The repository also contains operational information such as orders or trouble tickets associated with a service. This correlation of network, service, and customer information is critical to assuring the quality of customer service.

The Service Inventory module has open and documented integration interfaces and is seamlessly pre-integrated with other NetCracker OSS modules including Resource Inventory, Design & Planning, Order Management, and Customer Impact Analysis.

Service Provisioning & Activation

Service Provisioning & Activation enables the automated processing of service orders received from NetCracker Order Management or third-party order management systems. It automates the fulfillment process from receipt of the initial order, to order decomposition, service instance design, resource assignment, service record decomposition, service turn-on, and finally, upstream notification.

NetCracker's flexible template- and rules-based approach automates the design and assignment of circuits for existing and future services. User-definable route-finding algorithms identify optimal network paths and protection paths, if required. The workflow-engine enables processes to be created, introduced,

and modified easily and rapidly. Roll-back support is available to minimize time and effort required to reverse, suspend, or reschedule provisioning and activation steps. Activation adaptors provide unified access to network and IT equipment using a variety of network management protocols.

Service Provisioning & Activation integrates seamlessly with other NetCracker modules including Resource Inventory, Service Inventory, and Design & Planning.

Combining service provisioning and activation in one module enables zero-touch provisioning and increases provisioning success rates.

Customer Impact Analysis

Customer Impact Analysis provides functionality that is central to Service Quality Management. It enables the rapid identification of a problem's root cause — as well as its impact on individual services and customers.

The module collects service assurance information such as internal and external network faults, performance data, and alarms. In addition, it collects customer- and network-initiated trouble tickets. A correlation engine automatically associates problem information with affected services and customers.

Customer Impact Analysis substantially improves a CSP's ability to manage service problems and improve service quality. Through proactive SLA management, CSPs can reduce problem resolution time, deal with problems before they affect the customer — and ultimately improve the customer experience.

Telecom Cost Management

Telecom Cost Management enables CSPs to analyze the real cost of delivering and maintaining customer services. Integration with the Resource Inventory, Service Inventory, and Order Management modules ensures that complete and accurate information is available for analysis.

By providing Invoice Data Management, Invoice Reconciliation, Dispute Management, Service Cost Management, Infrastructure Cost Management, and Chargeback functionality, the module improves business processes and enables end-to-end cost management, including the timely identification of leased infrastructure invoicing errors. Automated audit processes keep operations lean and improve the bottom line.

Resource Layer Modules

NetCracker provides five modules to manage legacy and next-generation network resources: Resource Inventory, Discovery & Reconciliation, Design & Planning, Asset Management, and Outside Plant.

Resource Inventory

Resource Inventory provides a picture of the entire network and serves as a solid foundation for multiple resource and service

management activities, including fulfillment, assurance, and billing. It provides a central repository for a CSP's entire physical and logical network infrastructure and provides extended capabilities for capacity, location, and number management.

The module uses a metadata approach to manage logical and physical resources and locations (e.g. cities and buildings), a constantly updated Device Library containing more than 45,000 entries, and templates for configuring sites and equipment.

Number Planners are available for IP Addresses, Telephone Numbers, VPNs, and VPI/VCI. An Address Repository can be integrated with external street guides. Extensive visualization functionality makes it easy to work with topology, circuit, floor plan, rack, shelf, and card views.

Resource Inventory's ability to provide an up-to-date view of the entire network greatly improves the efficiency of fulfillment and assurance processes and thereby improves customer satisfaction. As a central repository of network information used by all back-office systems, it enables a high level of automation which results in lower operational costs. Comprehensive visualization and reporting capabilities provide insight into the network and enable the optimization of capital and operational expenses.

Discovery & Reconciliation

Discovery & Reconciliation automatically audits inventory information, generates discrepancy reports, and enforces resolution

procedures. It improves data integrity by interfacing with both network systems and back-office databases. It compares collected network data with data stored in the Service Inventory and Resource Inventory modules and generates exception reports. It then reconciles the two sets of data and, as necessary, automatically

updates inventory information or issues a change notification for manual reconciliation.

Discovery & Reconciliation collects configuration information from network elements, element management systems, network management systems, Excel and XML files, etc. In addition, it collects service, customer, and trouble-ticket information from appropriate systems.

The module keeps data compliance high via an automated data audit process and reduces data accuracy problems by analyzing comprehensive discrepancy reports. Conflicts are resolved by automatic data updates or by issuing work orders. An intermediate database that collects and aggregates data from multiple sources eliminates duplicate information and incremental reconciliations.

Design & Planning

Design & Planning provides a comprehensive set of capabilities that enable CSPs to plan, design, and develop network changes and upgrades. The module enables CSPs to increase business profitability by analyzing network usage, predicting capacity requirements, and proactively expanding their networks.

Sophisticated graphical design tools enable network designers to display comprehensive representations of the network and detailed renderings of network elements. Access to Resource Inventory data allows them to make effective decisions and improve design quality.

The module analyzes trends in network usage to recognize and remedy imminent capacity shortages to prevent SLA violations. It coordinates planning, design, and buildout activities in one system to increase design and planning efficiency. Alternative implementations of new services can be designed using comprehensive network models, which enable the most strategic and financially suitable network to be created. Finally, the module forecasts and optimizes OpEx and CapEx spending and improves profitability.

Asset Management

Asset Management extends the Resource Inventory and Outside Plant module capabilities by providing management functionality and a central repository to track and store network-related assets throughout their lifecycles. It tracks the "what," "where," and "who" related to each asset.

Manual and routine tasks are minimized and asset management is optimized through the Warehouse, Spare Parts, IMACD, and CPE Lifecycle Management components. For example, the Spare Parts Management component organizes data hierarchically and defines relationships between asset items and asset item groups. It incorporates attributes, such as version number, for hardware and software items.

The module supports asset requisition from a warehouse or supplier, automatic replenishment procedures that keep assets at optimal levels, configurable asset search and reporting, and CapEx balancing over time.

Asset Management provides a critical link between the customer, their services, and the network resources assigned to fulfill these services.

Outside Plant

Outside Plant provides a central, dynamic repository of outside plant (OSP) assets and is pre-integrated with the Resource Inventory and

Service Inventory modules. All logical and physical connectivity and topology information is contained in this repository. The module provides detailed, web-based views of the physical and logical OSP assets. It extends the Resource Inventory module by providing integrated views of the service and network infrastructure in a geo-spatial environment.

NetCracker's Outside Plant models the actual structure of the outside plant network and does not just add custom information to geo-spatial items. It provides an OSP-specific resource model that stores and tracks OSP objects and seamlessly integrates with the Resource Inventory data model. This allows OSP resource assignment for a service or logical connection in the same way that Inside Plant (ISP) resource assignment enables planning and capacity management. It displays both ISP and OSP resources in an integrated view by, for example, associating outside plant pairs and strands with inside plant connectors. The module aggregates multiple physical items, like cable segments, into higher-level logical items like routes, loops, and rings. The GIS component integrates with external GIS systems and maps service and network infrastructure onto GIS objects. Reports provide comprehensive information for capacity management, assurance, planning, and other processes.

Tight integration between outside and inside plant data models streamlines provisioning and assurance processes. Operational efficiency is increased through network asset lifecycle management. In addition, Outside Plant reduces capital expenses by tracking all assets (including CPE, installed equipment, and spares) in a single system.

NetCracker Framework

Framework provides a common platform for all NetCracker solutions and enables the modules to work together and integrate easily with third-party applications. Its main attributes are openness, flexibility, modularity, and compliance with industry standards. These attributes allow seamless integration with legacy systems and form a solid platform for next-generation services and technologies. Framework enables CSPs to upgrade their back office in a logical, sequenced manner.

Framework includes flexible data models with template libraries, a process automation and workflow engine, a unified security system, a fully configurable, web-based user interface with extensive visualization capabilities, and reporting, administration, and management tools. In addition, the Business Activity Monitoring component provides a configurable tool to monitor and analyze business process execution, extract real-time data, calculate Key Performance Indicators, and provide business metrics for further analysis. The Task Assignment Rule component assigns tasks to suitable users. Its capabilities include rule configuration, automatic filtering of suitable users, and support for load balancing algorithms, user skill sets, and user availability.

NetCracker Framework reduces system management effort and Total Cost of Ownership (TCO). Its advanced integration capabilities provide a cost-effective way of streamlining the back-office without high, upfront costs. Framework's flexibility and configurability allow for quick and non-disruptive support for new technologies, services, and business processes. Support for well-established industry standards and template libraries further cuts the time and costs needed for implementation and integration. The high level of business process automation and the productivity that results from Framework's extensive data visualization capabilities increase the efficiency of CSP employees.