

OS GROUP

OSS/BSS SOLUTIONS FOR
TELECOMMUNICATIONS & IT



OS GROUP

CONTENTS

Corporate Overview	2
Products & Services Portfolio	14
Equipment Manager	16
Sceptor - Advanced Correlation Engine	30
Billing	32
Knowledge Management, Business Intelligence: Flygis	36
Success stories / Cases	38
Partnership program (offer OEM solution)	56
Contacts	60

CORPORATE OVERVIEW

- Business challenges
- Value proposition & key reason to choose us
- About us – what we do
- Benefits
- Timeline
- OS group in numbers
- Services

CORPORATE OVERVIEW

Business challenges

Business Challenges are:

- Deep domain expertise and Real-time experience;
- The most innovative products on the market that solve the evolving challenges of Network Service Providers, enabling them to deploy next-generation models;
- Rapid delivery of custom services over a virtual and hybrid network and an IT infrastructure;
- Flexible and powerful software-centric solutions;
- Wide range of professional services, including consulting, turnkey delivery, operations and maintenance, managed services and end-to-end outsourcing;
- Customer-centric operations and the power of advanced analytics to drive intelligence decision-making and business value;
- Ability to create new business models;

- Minimization of time-to-market for new multi-party-services;
- Opening up new revenue streams.

Value proposition & key reason to choose us:

- OSS/BSS transformation approach helps Network Service Providers reach the real customer tasks, provide a map of current capabilities and provide a system process to transform and implement new capabilities in operations.
- Process automation. Through our deep understanding of the telecom industry and best practices in operations, we can provide simple business processes for targeting the key performance objectives.
- Network and service management. OS group



provides comprehensive and convenient resource management solutions. With over 50 network management and service solutions installed we can help you build business driven processes.

- Business Support System. Our convergent modular billing solution provides customer and services management.
- Enterprise Architecture. Our deep experience in both Telco and IT industry gives us opportunities to develop flexible, high-load and scalable solutions, based on our Platform.

Reasons to choose our company:

- More than 10 years on the market
- Constantly growing experience
- Open architecture
- Customization for specific customer needs
- IT-outsourcing (ITO) of vendor product operations on the customer side



About us

OS Group company was founded in 2004 in Saint Petersburg by the team of Telco and IT professionals.

OS group has a partnership with Network Services Providers, Data Centers and Enterprise Corporations with distributed network and IT infrastructure.

We are focused on the software development, solution delivery and flexible integration of own OSS/BSS solutions to cover up the most significant business-processes.

Our product portfolio includes Equipment Manager platform, Billing Solutions, Sceptor umbrella monitoring, FlyGIS geo-BI, SaaS solution and Mobile app.

For now, about 25 % of broadband Internet end-points in Russia are being operated and monitored through the Equipment Manager platform according to OS group's estimates.

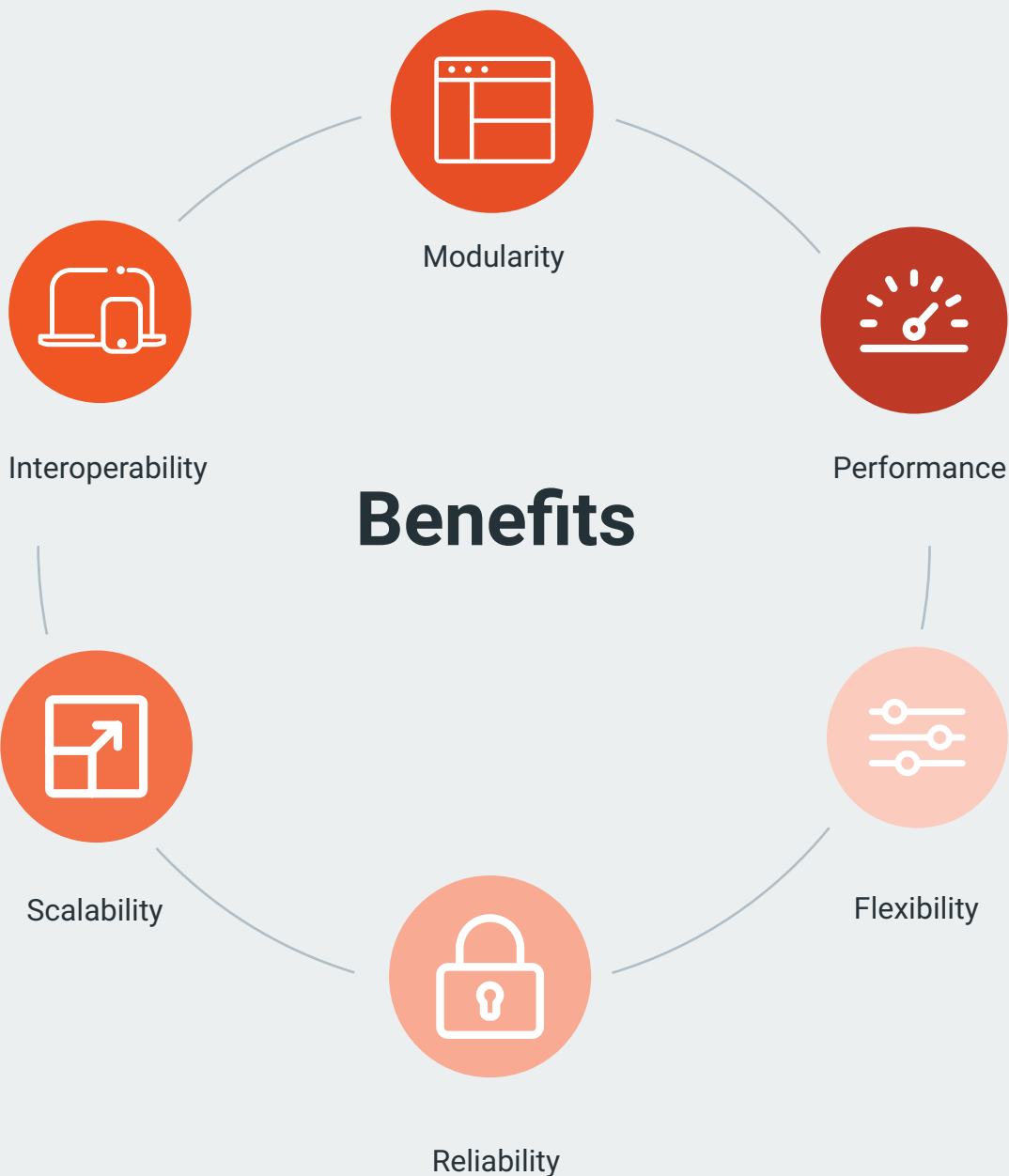
For the past 10 years OS group has been the leader in developing and implementing OSS/BSS solutions for the best players of Russian Telecommunication Market (more than 50 successful projects). OS group's platform brought our customers possibilities to reduce their operational and capital costs, improve the quality of their services.

Besides software development, OS group has a system integration division, which designs and implements communication systems and networks.

OS group owns all required licenses to perform software development, network construction and engineering activities.

OS group has been included in the register of Russian software companies, also the company has been a member of the TM Forum since 2012.



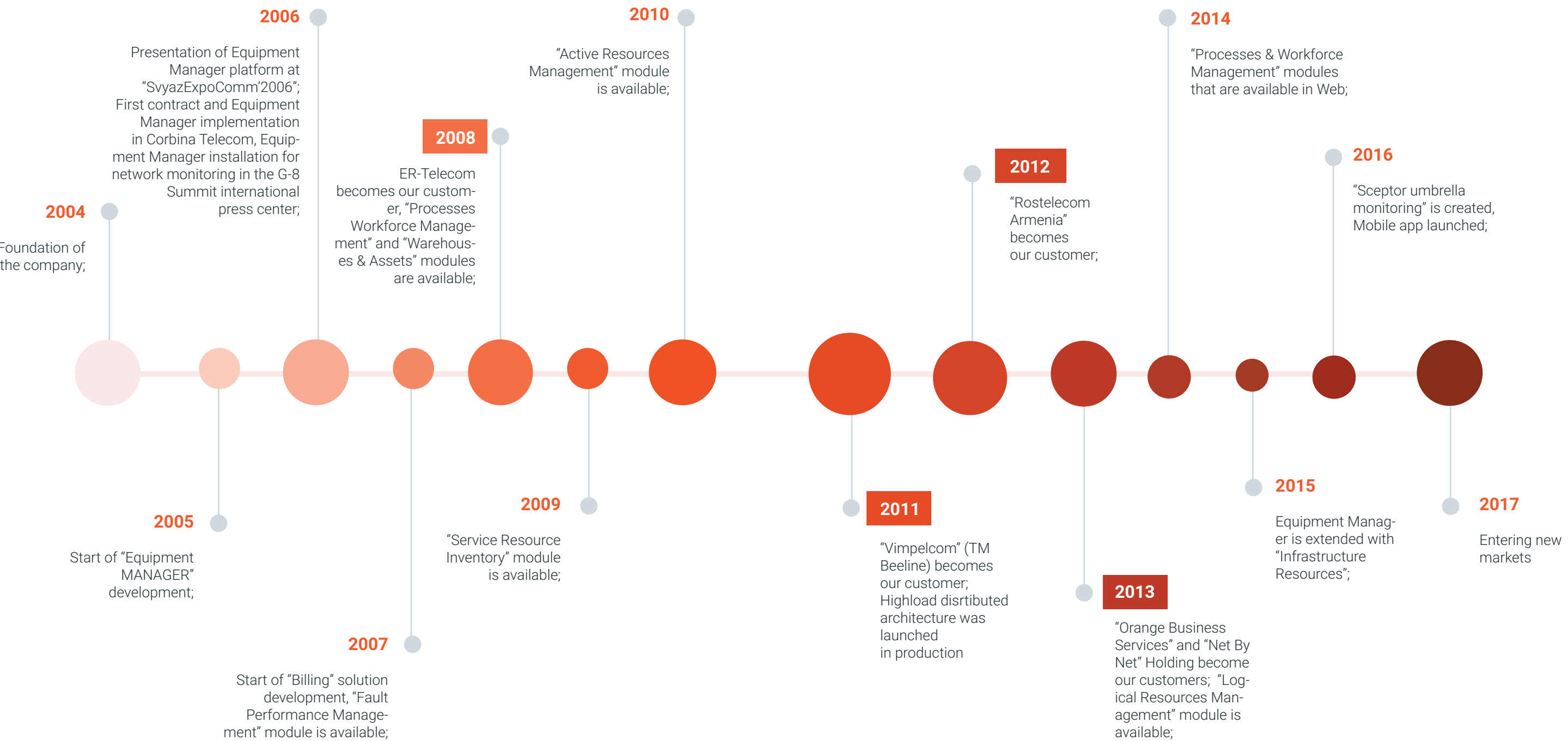


OS Group provides high quality & profitable IT solutions and services, helping customer to achieve business goals quickly with individual approach

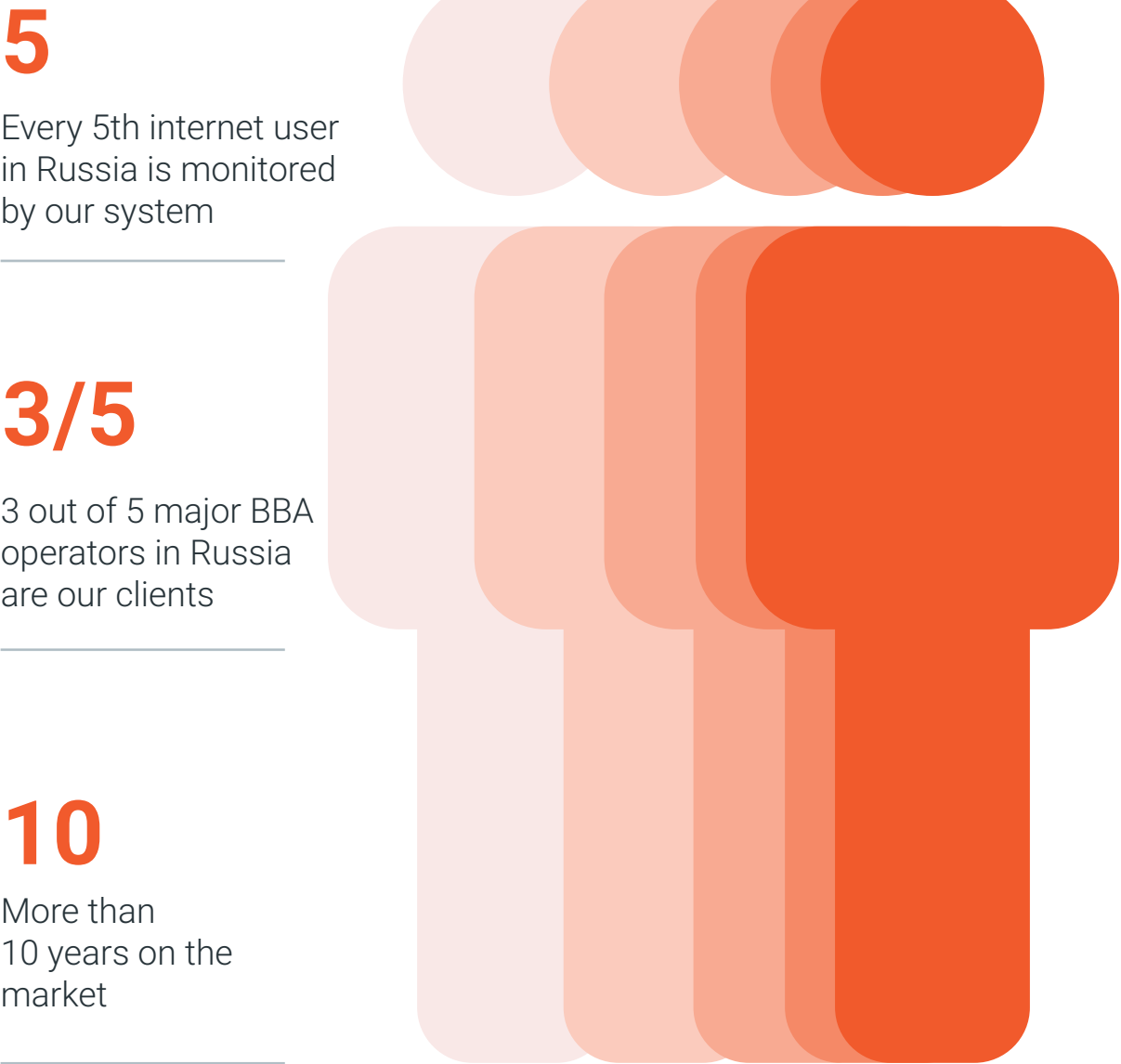
DETAILS:

- Improves performance and efficiency of telecommunication networks and information systems;
- Provides abilities to automate business processes of the telecommunication networks and delivering of network access services;
- Provides abilities for quick and convenient search, planning, reserving and use of available network resources;
- Reduces time, spent from order to bill to increase revenue generation speed;
- Provides a configurable user interface;
- Implements a rapid incidents detection and restoration on the telecommunication infrastructure to prevent outages;
- Visualizes events and incidents in different representations ;
- Stores the whole history of incidents;
- Implements powerful event correlation mechanism;
- Optimizes an efficiency of service developing and planning processes;
- Gives an ability to maintain a complete documentation for each resource at all stages of its lifecycle;
- Gives no restrictions on the types of network objects and number of objects that can be managed;
- Implements balanced, redundant client-server architecture with the ability to distribute and scale Platform modules vertically and horizontally;
- Provides a powerful Platform Framework to build apps and reports within the Platform;
- Provides cross-platform lightweight GUI-application;
- Provides powerful and flexible engine to manage users/groups and their permissions;
- Comes with documented API to provide easy integrations

Timeline



OS group in numbers



For each solution we provide following services:

- 01. Client Customization
- 02. Consulting and Training
- 03. System Integration
- 04. IT Service Management
- 05. Technical Support 24/7
- 06. Installation & Support Maintenance

PORTFOLIO

PRODUCTS & SERVICES

- Equipment Manager
- Sceptor –
Advanced Correlation Engine
- Billing
- FlyGIS

EQUIPMENT MANAGER

Equipment Manager (EqM) is a full-fledged vendor agnostic OSS/BSS Platform, which is designed to reduce both operational and capital expenses and increase revenue of Telecommunication and Enterprise networks through the convenient and efficient tools for Process & Workflow Automation, Asset Management, Service Management & Assurance, Fault & Performance Management and Data Visualization.

Platform core

Includes all necessary engines and tools to build high-efficiency, convenient solutions for business support and automation.

Platform Framework

A development kit that can be used to interact with 3rd party systems, customize solution for the business needs, build add-ons, write management scripts and tune the Platform

Permission Management Engine

Powerful and flexible engine with the domain specific language to set up complex rights enforcement and permissions assignment, object filtering

Flexible Class-Based Accounting Model

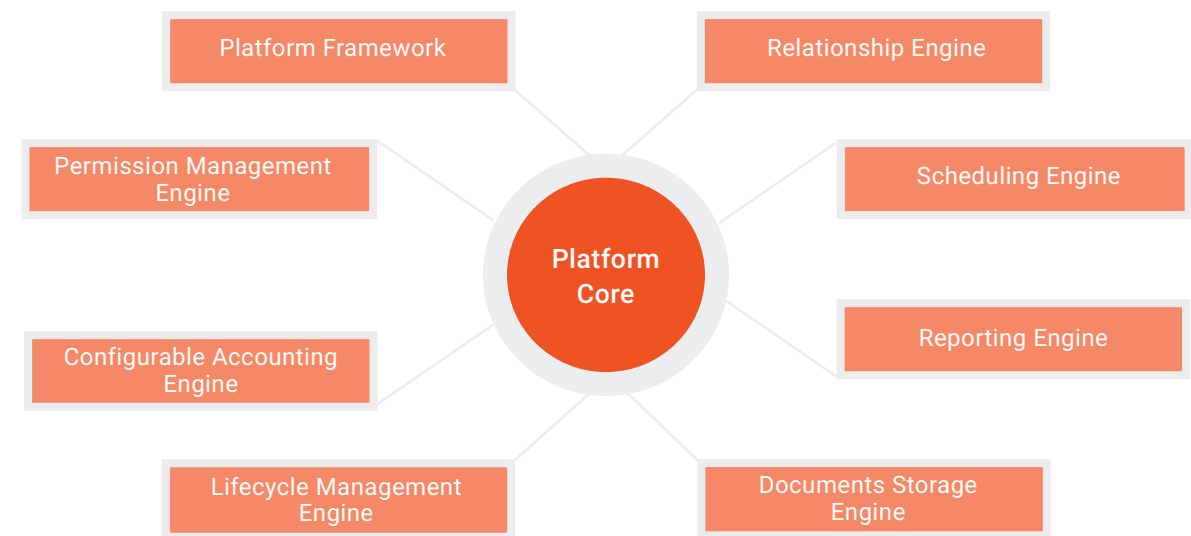
- Widgets for each type of Attribute
- Default Values
- Templates
- Attributes Type Validation

- >10 built-in Attributes types
- Configurable Value Validation
- Uniqueness
- Tables as Attributes
- Visibility Conditions
- Optional history for each attribute
- Enumerators
- Reference Books

Regex-based validation for the values

Lifecycles Engine

Lifecycle types support both preconfigured and full-mesh flow



Documents Storage Engine

Scalable distributed engine, which allows keeping any type of digital or physical document (file) linked to a class or type, or resource exemplar to keep it on the fingertips every time you need to reach it from a single unified window. Supports size and type restrictions, file analyzing, searching.

Reporting Engine

Powerful engine, which provides tools to configure, execute and export reports. Can use different sources to retrieve data. Supports different types of report representation. Reports can have a global execution context or/and a local one (from object) or both in the same time.

Scheduling Engine

Powerful engine, which performs scheduled jobs on the Platform's distributed environment

Relationship Engine

Powerful engine to model and extend existing ontologies.

Modules

Equipment Manager Platform comprises a variety of functional modules, which support each step of a continuous lifecycle of Telecom or Enterprise networks on both technical and business levels

- Network Resource Inventory
- Fault Management
- Performance Management
- Service Resource Inventory
- Processes & Workforce Management
- HR Management
- Warehouses



Next Generation Resource Management (NGRI)

Known as well as the **Asset Management System**, **Change Management Database** and plenty of other names in different standards, NGRI is created to design, manage and operate resources, their lifecycles, attributes, structures, connections, dependencies and other relations between each other, to automate data-gathering and processing, reduce destructive influence of human-factor and significantly increase data validity for each type of physical, logical and infrastructural telecommunication or IT resources and easily implements and support processes and solutions such as **Fulfilment**, **Fixed Assets Management**, **Site Management**, **Tower Management**, **Lifecycle Management**, **Location Management** and many others.

NGRI is natively integrated with the other Platform modules and drills down into the following modules, which encapsulate specific tools and processes for each type of inventory besides the common NGRI functionality

COMMON FEATURES

Natively integrated with other Platform modules.

Say goodbye mistyping!

Optional fixed naming conventions, based on attributes' values gives opportunities to define naming convention on the data-model level and forget about human errors in this case forever.

Related info is everywhere!

All information, related to the selected object (Attributes, Files, Linked objects, Services, Structure and Connections, Workflow documents, Warehouses and other) is available at your fingertips at any moment in the unified "object info" window, despite the module you are using now .

Innovative encapsulation model

A flexible and convenient approach providing abilities to store each resource in different configurable hierarchies and representations simultaneously.

For example, the most popular encapsulations object types in our NGRI:

Geo/physical POV:

- Country
- State
- City
- District
- Street
- Building/Facility
- Site/Point of present
- Tower
- Rack
- Box

Project-based/Logical POVs

- Network Type
- Service Type
- Cost Center
- Warranty Center

Each view is a report!

Useful and convenient approach where every view can be filtered and exported as an image, PDF or Libre/MS Office documents.

Commutation Tools

Set of GUI-tools, which helps easily commute interfaces of Active, Passive and Infrastructural resources in a bulk and single mode.

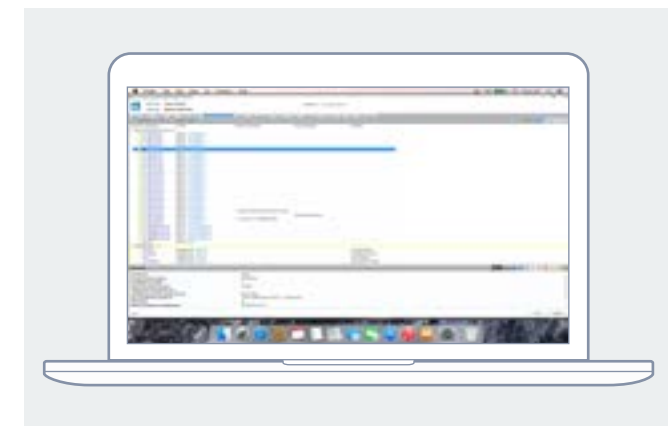
OTDR support

Support of saving and analyzing ".SOR" files

NGRI: ACTIVE RESOURCES MANAGEMENT

Includes:

- AutoDiscovery module
- Configuration Management module



Accounting models of:

- Logical Links
- Physical Links
- Active devices (Chassis)
- Modules/Cards
- Interfaces/Slots

Autodiscovery with Proactive Inventory and Topology builder mechanisms

Comprehensive vendor agnostic Discovery module performs automated and manual scan over the network ranges and EMS/NMS in a most easy-to-use and convenient way via different protocols. It defines and verifies active resource type through comprehensive configurable, fills its consistency and attributes, then creates or updates logical links between resources' interfaces (L2+) and automatically react with providing alarms and notifications to the Fault Management module. Supports assigning network ranges or EMS/NMS to the specific resource groups.

CONFIGURATION MANAGEMENT

Powerful vendor agnostic module, which provides tools to retrieve, store, push and compare configurations from different sources in automated and manual ways. Configuration management provides abilities to define and control configuration policies and react with providing alarms to the Fault Management module, when defined policies are being violated or just notify if it's ok.

An active resource. What is it?:

- It is a single-board or a modular object, representing physical or a virtual resources like switches, routers, servers, VMs, SBC and Baseband Units and so on.
- Have at least 1 remote ID (IP, CORBA, GUID, etc.) to

reach them remotely via some protocol

- Have physical or logical interfaces (L1+) to connect with other resources and, may be, connections on these interfaces.
- Can send messages to the Fault & being polled by Performance Management modules



NGRI: PASSIVE RESOURCES MANAGEMENT

Implements an accounting model and toolset to account passive points distribution and termination.

A passive resource. What is it?:

- It is a single-board or a modular nested object, representing only physical resource like: optical/electrical distribution and commutation frames, splitters, closures, physical sockets, etc. and their elements like splice-cassettes, pairs, fusions
- Resource and its elements can't Doesn't have remote model-based remote ID to reach it via some protocol
- Can contain only physical interfaces (L1) to connect with other resources and, may be, connections on these interfaces.
- Can't send messages to the Fault & being polled by Performance

NGRI: INFRASTRUCTURAL RESOURCES MANAGEMENT

Module, which operates with infrastructure resources and brings an accounting models and toolsets for planning and operate infrastructures.

Inspection points

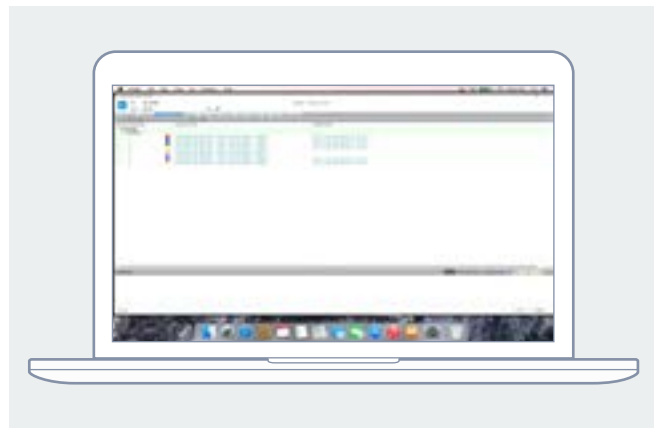
is an object with coordinates (GEO or scheme-related), which represents a small point/container, which can contain some physical resources inside. The best example would be a manhole, which contains cables and their savings, FOCs or a pillar, which contains the same.

Transmission Mediums

is an object, which represents low-level nested physical medium, like a fiber optical cable, which can be drilled down to primitives (lambdas), for example.

Can have:

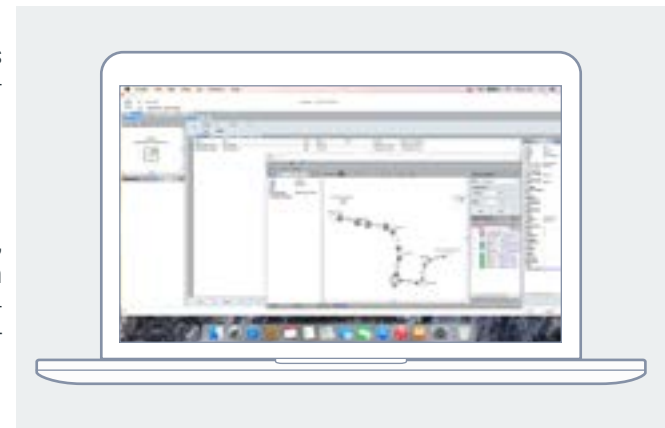
- A structure
- Connections with physical active and passive resources
- Various attributes



Ducts

is a structured object with 2-level nesting: pack and then channels. This special type of infrastructure objects is designed to encapsulate and structure low-level medium

objects like cables.



Restrictions and specifics:

Can be built only between 2 inspection points

NGRI: LOGICAL RESOURCES MANAGEMENT

A range-based resource, like phone numbers, frequency-ranges, vlans, MPLS tags, VRFs, IP-spaces objects are assumed to be a logical resource.

Logical Inventory is natively integrated with other modules and can be easily used in Service Management & Assurance, Autodiscovery, Provisioning, Inventory Management, IPAM and Fulfillment processes.

Includes:

- IPv4 accounting & Management
- IPv6 accounting & Management
- VRF accounting & Management
- MPLS tags accounting & Management
- Phone Numbers accounting & Management
- Frequency Ranges accounting and Management
- VLAN accounting and Management

NGRI: WAREHOUSES MANAGEMENT

Implements Warehousing and Fulfillment processes:

- Managing Stocks/Warehouses
- Links between Inventory groups with Stocks/WH
- Spare Parts Management
- Supporting pieces, metric and scattered positions (e.g. screws)
- Possible Integration with Financial and Asset Management Systems
- Barcode/RFID support

Features:

- Multiple warehouses and their types
- Linking Inventory groups with warehouses to reconcile with Autodiscovery
- Matching the inventory list with object's inventory models
- Registering equipment category, name, internal code, vendor code, etc.
- Storing data on suppliers, vendors, accounting documents (bills, way-bills, invoices), equipment warranty terms
- Registering equipment transactions between warehouses as documents
- History of transactions from the perspective of the device, active device, distribution frame, cable
- Spare parts
- Reporting

Fault Management

Fault Management module is a powerful, vendor agnostic distributed event-based handler, processor and graphical interface, which handles, processes and visualizes events from different sources.

Features that are supported, but not limited to:

- Pattern matching
- Source matching
- Topology correlation
- Noise protection
- Event & Alarm Console with user-defined filtering, grouping, and exporting
- Events, located on GIS and CAD representations
- Acknowledgement & Trouble Ticketing
- Jeopardy (Severity) levels and Conditions
- Root Cause Analysis
- Events nesting and inheritance
- Events Autoreplacing rules
- Autoremediation & Autorestitution procedures
- TTLs
- Configurable Notifications
- Reporting
- Housekeeping
- Maintenance Windows

Performance Management

Performance Management is a powerful, scalable toolset, which provides a convenient way to:

- Collect
- Store
- Aggregate
- Analyze
- Visualize

And react on time-series data.

Features:

- Has an API
- Can be scaled horizontally
- Can collect and process millions of metrics

- Supports visualization on a single graph and dashboards
- Supports Multi Thresholds
- Supports Hysteresis

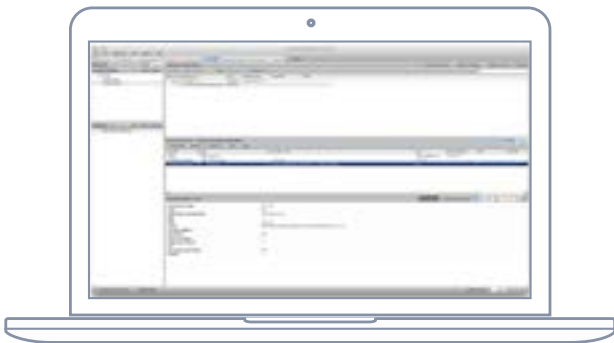
PM module can operate on single or distributed environments and can retrieve data via different protocols, like:

- SNMP v1-3
- Telnet
- SSHv2
- HTTP
- CORBA (3GPP, TMF814)
- StartD
- ODBC, and others



Service Resource Inventory

Service Resource Inventory (SRI) is a powerful and convenient set of tools, accounting models and GUI representations, especially designed as a rendezvous point to meet business and technical information in the most efficient way.



Service Inventory resources are contractors, contracts and services, which usually come from business appliances like Billing systems, or Financial Accounting systems and enrich through the native connections with the NRI resources, building passed-through detailed resource-service model.

SRI has native integrations with:

- Fault & Performance Management
- Network Resource Management
- Process & Workforce Management
- Warehouse & Assets Management

Use of these modules provides a painless and cost-efficient implementation of cross-integrated fully detailed business and technological processes with the top-grade modeling, controlling and operating like:

- CRM

- Service Desk
- Service Assurance & Quality Management
- Site/Facility Management
- Tenant Management

Processes & Workforce Management (P & WFM)

Besides Core’s functionality, provides a convenient and efficient toolset and GUI representations to configure, manage and operate business processes like:

- Trouble Ticketing
- Service Ordering
- Planning Maintenance
- Site Audition



And build solutions like:

- Customer Relation Management
- Service Desk
- Task Management
- Document Flow Management

P & WFM module is designed to:

- Design processes

- Build process chains across different business units and technological systems
- Automate processes
- Control and escalate processes
- Facilitate approvals and communications within and between processes
- Optimize processes
- Reduce influence of human-factor
- Report

Features:

- Workflow & Process Designer
- Comprehensive Notifications
- Configurable Processes
- Process Chaining
- Built-in Approval Mechanism
- Export
- Watchers
- Transitions
- States

HR Management

A module, that extends Core user/groups management. Brings new tools and accounting models for:

- Employees
- Departments
- Global and personal calendars
- Skills
- Timeslots
- Deputies

Features:

- Extends Workforce Management with Skills and Timeslots
- Provides Integration w/ MS Active Directory
- Global & Personal Calendars
- Deputies Management Tools
- Departments
- Roles

SYSTEM ARCHITECTURE

Equipment Manager supports three types of architecture:

01.

Standard Edition

All in one, is suitable for small environments (up to 50 000 of active and passive equipment)



03.

Multi Database Edition

Is suitable for high-load environments, where amount of equipment is over 300 000. In this case, Inventory, Monitoring and Archive Databases are spreading over 3 instances. Polling modules are distributed too, like in the previous case.

02.

Multi Server Edition

Distributed installation for environments around 50 000 – 300 000 of active and passive equipment. In this case we have one instance of all-in-one DB and distributed, scalable polling instances.

Platform and Workplace requirements

Server Side:

- Centos 6+
- Oracle 11G SE for Standard/Multi-Server (each DB server)
- Oracle 11G EE for MultiDB (each DB server)
- Other HW requirements depends on expected load

Wokrplace:

- Windows 2000/.../10 or Linux/OSX with WINE
- 512 Mb of free RAM



SCEPTOR – Advanced Correlation Engine

Sceptor. An umbrella monitoring solution

A solution for registering and correlating of any events, collected from various sources.

This solution serves as an information bus, which receives, then processes and visualizes incidents. The system allows receiving and processing of the events that are coming from any monitoring system, multi-vendor network and IT-infrastructure with the wide set of supported interfaces and protocol adapters (ASCII, SNMP, SYSLOG, JDBC, HTTP, JMS, MQTT, STOMP). Events receiving, processing and visualization is being performed in real time. Moreover, events can be automatically enriched by data from network objects, inventory systems and other sources. Event receiving, processing and visualization branches are organized into a hierarchical structure.

Configurable correlation between events from different systems

Sceptor is capable of providing a way to fine-tune the

correlations between events from different systems. The analysis is based on the rate of events occurrences and pauses between them, number of the same-type events, their sequence and attributes, and defined time-frame.

Manual and automatic definition of events’ quarantine

During setup, both manual and automatic definition of events’ quarantine can be specified. Settings specify the sequence of operations execution to enable execution of diagnostic scenarios with saving their outputs within the event context.

Incidents management, notifications, escalation, monitoring and reporting

The system uses horizontal scaling model for the event management, which enables load balancing and load distribution between several instances.

FEATURES

- Incident subscription mechanism supporting user-defined filters
- Incident classification based on configurable reference table with hierarchical structure
- Automated event priority definition
- Expandable “floating” attribute model for the events
- Notifications with escalation, based on escalation matrix, built in accordance to network-areas and severity of services’ fault
- Notification transporting (e-mail, sms, call, push), based on the time of day, day of the week and date/time.
- SLA exceeding threshold indication
- Storing files in an event context
- Double-ended synchronization with Trouble
- Ticket system

Unified registration and reporting database for different incidents

Unified registration and reporting database is also a universal report builder. It supports table and static representations of data, stored in the database. This tool allows to build charts and reports of any complexity, as well as to perform the detailed root cause analysis for the events received by the system.

Logging of user and system daemons’ actions with activity separation

Logging allows making immediate and detailed registration of actions, performed within the system. Processing of the received information allows getting consolidated figures, analyzing trends and making required checks. Activity separation enables instant search and access to the necessary information.

Permissions Management engine for key system objects and scenarios

Permissions engine enables flexible, precise and detailed tuning of interactions with the system using the defined set of rules. In common, a setup can be performed for specific system objects and for system scenarios.

BENEFITS

- Single point for decision-making, based on actual network status.
- Events with different origins are processed in a single interface.
- Correlation of events with different origins.
- Simple and convenient setup of new correlation rules.
- System scalability and hierarchical structure support event processing on different levels.
- Processing capabilities is over 3,000 incidents/sec. on a single instance.
- Domain specific language to setup correlation rules. It provides simple methods to implement comprehensive rules for complex event processing



BILLING

Billing is a convergent modular billing system providing customer and service management. The system operates with Internet access services, telephone communication, IPTV and OTT, as well as additional operator services. The Billing System allows to serve communication networks up to 800,000 subscribers.

Features:

- Convergence
- Modularity
- Online / Offline Charging
- Interconnect
- Customer Self Care
- Document Flow Module
- Notification Module
- Integrability w/ Financial Apps
- Up to 800.000 subscribers
- Open API

- Rollover of unused resources
- Reports and Invoices
- Billing periods

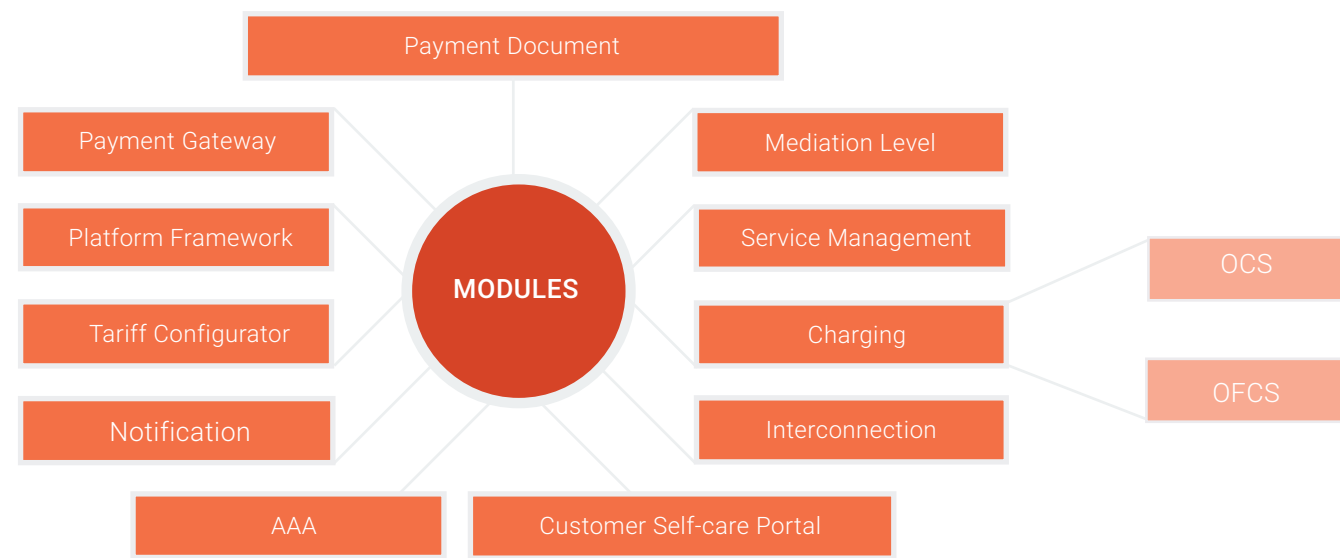
Features:

- Modular structure allows the system administrator to customize an interface for individual needs of an operator, upgrade applications and create new pages. Custom reports add flexibility and expand functionality.
- Open API allows to integrate Billing into applications and services.
- Access rights categories along with user groups provide flexible access control system enabling only the features system users need. Logging allows to track all user activities.
- Billing plans allow changing service cost depending on service type and amount of content consumed. Tree structure of tariffs generates billing schemes without creating new tariff rates.
- Billing structure provides features to set service cost for the tariff globally or drill down to setting the cost for a single service resource and specify the cost for a given time of day.
- API provides customers the abilities to manage their services through CPE's interface.
- Natively integrated with Equipment Manager platform modules: SRI, P&WFM, NRI.

Platform core

The core of the solution. Implements unified storage and mechanisms to model, manage and operate:

- Users, Contracts, Services
- Tariffs (policies)
- Discount policies to choose appropriate rates for each subscriber's service
- Billing information
- Financial Documents and Forms (Invoices, etc.)
- Validity period



Modules

- Mediation Level
- AAA
- Service Management
- OCS
- OFCS
- Tariff configurator module
- Payment Gateway
- Payment Document Export
- Printable Forms
- Self-care customer Web-portal
- Interconnect
- Notifications

- Allows to prepare data for processing in “OCS” and “OFCS” modules.
- Aggregates traffic data received from equipment over SNMP and other open protocols

AAA

Implements Authentication, Authorization and Accounting via Radius/Diameter protocol to interact with other components.

Features:

- User identifying and access providing
- Authorization for any type of access or activity
- Recording and tracking of user activities

Mediation Level

Provides polling or receiving, processing and normalizing of CDR, Netflow and RADIUS data.

Service Management

Manages service access policies, based on account balance data, thresholds reached, etc.

Features:

- Service status change control
- Provisioning
- Telecommunications equipment provisioning
- Sending commands to the equipment, which are created dynamically based on the results of previous requests

Charging

OCS (Online charging system)

Provides real time (pre-paid) service charging.

- Features:
- Service parameters changing according to the session duration, traffic volume and user thresholds.
 - Quota control
 - Making updates, management actions (CoA) such as authorization or denying access to services, or enforcing termination of the currently active services in case of events occurred (quota exceeded, etc.)

OFCS (Offline charging system):

Performs post-paid billing.

- Features:
- Different charging periods for each type of service or tariff.
 - Manual or scheduled reconciliation of unbilled data

Tariff Configurator

Supports different models of charging and tariff options:

- Pre-paid, post-paid, Hybrid
 - Multi-service bundles
 - Time –based
 - QoS based
 - Duration based
 - Volume and limit based
 - Group based (Family, for example)
 - Tiers based
 - Device based
 - Mixed

Payment Gateway

Performs financial data (payments) exchange with external platforms.

- Features:
- Loading payment data received from various payment systems
 - Loading bank-processed payment data
 - Loading Manual deposited payment data
 - Payments pre-processing and normalization

Customer Self-care Portal

Provides subscribers a capability to individually manage the set of services and tariffs in the billing system, as well as to get all the necessary real time data (account status, traffic, etc.)

- Features:
- Account balance check
 - “Pay later” option
 - Viewing statistics and balance change history
 - Contact information changing
 - Tariff changing
 - Helpdesk service

Printable Forms

Provides a capability to generate template-based forms, reports and financial documents

- Features:
- Setup of printing forms based on xml document templates
 - Batch print with sorting and grouping of documents
 - Generation of document packages
 - Issuing documents on behalf of multiple operators
 - Manual generation and correction of billing documents
 - Generation of printing forms for export in PDF format
 - Setup of items in the document

Payment Documents Export

Generates and exports documents (invoices, receipts).

- Features:
- Integration with financial accounting systems (*.CSV export, double-ended synchronization)
 - Control and tracking of transferred information

Interconnect

- Provides inter-operator settlement functionality

- Features:
- Mutual settlement of received and provided services cost between partners
 - Calculation of aggregated value of incoming and outgoing traffic
 - Interconnect accounting

Notifications

Enables management of customer notifications.

- Features:
- Distribution list management
 - Customers notifications setup
 - System messages distribution

FlyGIS

FlyGis is an application for visual data analysis on the GIS.

FEATURES:

- The application allows to locate and display tens of thousands of objects on the map simultaneously, specifying values of the defined Key Performance Indicators (KPI)
- Viewing more than one KPI for an object or a group of objects
- Representing each KPI with individual color showing its numerical value (or range of values)
- Uploading structured data for metrics visualization from files
- Application API allows receiving any data for visualization
- Layers/filter setup against various criteria

Web interface

Application can be launched in any browsers supporting javascript.

WHY US?

- Simultaneous KPI visualization with geo-reference for tens of thousands of objects on the map
- Drill down
- API to transfer of any data
- Data filtering.
- Detailed object information.
- Intuitive Web interface.
- Easy to use



SUCCESS STORIES / CASES

- Beeline
- Net By Net Holding
- ER-Telecom
- Rostelecom-Armenia

BEELINE

Resource Provisioning / Fault Management / Performance Management

CASE #1

PROJECT SCOPE

A major federal telecommunication services provider:

- Holds more than 9% of the broadband internet access market in more than 150 cities in Russia.
- About 500 thousand of units of active equipment.
- More than 200 types of equipment from different manufacturers.

THE CHALLENGE

When expanding the company by acquisition of another BBA operator a need for infrastructure unification into a unified accounting system with a following monitoring of active equipment has appeared.

To provide control over company's assets and for operative gathering of the telecom network material base and it's infrastructure data it is necessary to provide a correct data input, automated data gathering and TMC transfer control.

- Perform a network inventory and add newly gathered data to the unified accounting system with the following monitoring of active network equipment.
- Provide operative control over the TMC transfer on any stage of equipment's lifecycle.

SOLUTION

Using Network Auto-discovery a search, definition and polling of the installed network equipment parameters was performed. This provided a possibility to get a detailed picture of active equipment installed on the network and use this data for comparison with the information in the WMS.

Here are the automated processes: installation of the network equipment, modernization of the access equipment, subscribing a new client.

As the digital document progresses on the WMS route EQM gets and updates equipment data.

Establishing control over every stage of device's verification after it's actual installation (comparison of polled MAC-address parameters and the serial number with the same parameters that were acquired through WMS) provided a possibility to get reliable information about the results of modernization and installation.

A flexible report system with a scheduled reports generation and reporting to the assigned staff, and an ability to use different KPI metrics was implemented

System modules in use:

- Network Resource Inventory (Active Resource/Autodiscovery)
- Monitoring

- Processes & Workforce Management
- Warehouse & Assets
- Reporting Engine
- Network Auto-discovery – a module of network equipment autodetection that is used to get information about the equipment and it's parameters.
- WMS—Warehouse management system; any specialized warehouse management system.

After the organization of a full equipment accounting cycle with the use of inventory, monitoring, document flow and warehouse accounting modules administrative expenses of the company were significantly decreased. The reliability of actually installed equipment with the data from warehouse accounting system of the BBA department reached 95%.

- EQM—equipment manager; Full-fledged OSS/BSS platform.
- KPI—key performance indicators

RESULTS

- Initial inventory provides a possibility to get complete and reliable information about equipment availability.
- High level of automation of data gathering and accounting processes allows minimizing misrepresentations caused by incorrect information input.
- 100% actual data on each stage of the process.
- Full logging and documentation of the process – you can always determine the financially-responsible person for a specific unit and track the whole TMC route.
- Considerable decreasing of operator's expenses brought by the inventory for company's assets verification.
- Thanks to a flexible report system – a timely provision of actual information on assets' state.
- Prevention of theft inside the company.

NET BY NET HOLDING

CASE #2

Platform. SQM. NGRI/SRI/FM/PM/WFM =>
Process & Service Quality Management

PROJECT SCOPE

- Country-wide ISP with multiple physical, logical and infrastructure assets, with Points of Presence in almost each city of Russia
- Over 800 000 network elements are under Network Resource Inventory and Configuration management (>6mln of active ports)
- Over 1mln customers are under Service Inventory and Quality Management
- Over 1mln of events are being processed through Fault Management per day
- Over 1,5mln of metrics are being collected per 5min interval via Performance Management
- Over 20 processes are designed and ready to be performed
- Over 300 business-processes are running simultaneously
- About 100 reports for different departments

THE CHALLENGE

Network Service Providers meet and try to solve the heavy challenges: how not to become just a traffic pipe and more than that – how to increase and extend their influence on the Global Market, extend and increase revenue streams.

They should keep their Product Range as wide as possible,

Service Ordering & Delivery as fast & easy as it's possible and as a result – Customers loyalty and revenue as high as it's possible.

Our goal here is to build a point of integration between Business, Planning & Operations to reduce delays by providing a single window to automatically encapsulate planning and acquiring necessary resources, reporting, troubleshooting and at any stage of our Company's Lifecycle, which in turn is leading us to increase our Customers loyalty and revenue stream.



~800

released
objects



~6 mln

of active ports



> 1,5mln

of metrics/
5min



Processes:

Trouble Ticketing, Order
Management, Planned
Maintenance and others



Integration:

Microsoft Dynam-
ics xRM, Onyma
Billing, Zabbix

SOLUTION

To achieve the goals, which are described above, we have

- designed a flexible architecture and accounting model, which includes closest interaction between different Platform modules and 3rd party systems (Like billing and CRM),
- built detailed resource-service model with different points of view, cross-integrated processes over the entire Company.
- It helped them to automate most important or routine parts of the processes across the Company to avoid human factor where it's possible and to improve efficiency, increase speed of Decision making.

RESULTS

Using this model they got opportunities and efficient tools:

- To measure and analyze health status/KPI/SLA metrics of services with ability of drill down to the low-level physical, logical resources, related alarms, PM metrics, documents, requests, which form these KPI/SLA metrics, which represent a service since it's been born and vice versa;
- To build and calculate dependencies, relations between services, prevent SLA violations and DoS on business-critical areas,
- To automatically plan urgent maintenance/restoration and remediation procedures after some service-side defined metrics have crossed a line
- To provide all this info via API or messaging services to another systems (Like CRM, IVR)
- Drastically increase troubleshooting speed and quality of service overall.



Telecommunication Market is being continuously evolving. Today we mostly fight for the improvement of service quality and assurance, instead of increasing subscribers base and area coverage. Each customer is weight in gold and NETBYNET understands that. Being a “Country-Wide Network Service Provider” we meet heavy challenges to our business: how to prevent revenue leaks on providing basic services and products, how to enhance our influence in current Markets and conquer new to increase revenue of business.

To be on the cutting edge in our business, we must continuously extend and support our Product Catalog, speed up and simplify Service Delivery for end-user and as a result - have loyal and satisfied customers, which bring us a profit.

It can't be accomplished without reliable partners.

OS group plays an important role in supporting and developing our operational and business-processes by providing us with their services, solutions and expertise to achieve goals.

Solutions, developed on their platform Equipment Manager brought us to increased networks stability, acceleration and automation of routine processes and RCA, increased speed and quality of restoration and maintenance procedures, cross-integration of business processes.

We reduced our operational and capital expenses, freed-up our precious time resources and became faster and more flexible than competitors. So we can evolve without unnecessary interruptions, develop our business products efficiently and can be assured that our customers always will be satisfied with a quality and a variety of services.

Based on the long-time productive partnership, we would like to recommend OS Group as a strategic partner to increase quality of your operation processes and achieve your business goals.

Andrew Batanov

CEO,
NetByNet Holding



ER-TELECOM

CASE #3

Resource Provisioning / Fault & Performance Management

Project Scope

Major federal telecom service provider:

- Holds more than 11% of the market of broadband internet access in more than 560 cities in Russia.
- Nearly 3 mln. of active equipment
- More than a thousand of equipment types from different manufacturers.

Challenge

Modern network infrastructure is usually multivendor. Unauthorized or incorrect actions towards any of its components can affect whole network infrastructure, which in turn can seriously affect business processes of the company, the quality of provided services or even create an emergency situation. The lack of equipment configuration policies management possibility is a serious problem for the telecom operator. It creates real risks for successful service provision. The effects of such faults are significant, and their complexity has a tendency to progress non-linearly. Because of that a process of incorrect network equipment settings analysis and elimination has been created.

Configuration parameter normalization allows:

- To use other abilities of Equipment Manager system, for example, the realization of reliable network topology and its correlation with the use of LLDP settings;

- To decrease the risk of multicast storm;
- To eliminate unnecessary administration tools;
- To implement a «correct» snmp traps addressing and increase the reliability of accident events.

In complex with this solution we developed a toolkit that allows to view the current configuration of the device, save device's configuration, view all saved configuration files for this type of devices, compare two configuration files and restore the configuration file from CVS using the program's interface.

Key possibilities of Configuration Management module:

- Gathering of config information from network devices in a manual and automatic mode;
- Storing the history of configuration changes for every managed device;
- Visualization of configuration changes;
- Comparison of initial and configuration in performance;
- Given policies configuration accordance control
- Generation of equipment configuration file;
- Loading of the chosen configuration file to the device on the operator's request;
- Running the network device's configuration tasks in automatic and manual mode;
- Displaying of device list for which the tasks were successfully or unsuccessfully finished;
- Use of additionally developed scenarios for gathering and distribution of the configuration files of the



The configuration management solution allowed our access network engineers to spend less time analyzing the problem caused by incorrect device settings – now this process is mostly automated, and if an accident occurs, its effects are minimized, and it can be solved in a few minutes time.

Isaev Victor,

Leading Engineer of the monitoring center
JSC“ER-Telecom Holding”

network equipment, nominal support of which is nonexistent in the management tools;

- Support of equipment from different suppliers: Cisco, Juniper, D-Link, Zyxel, Hauwei, AddPac, Revolution, Microtic, Ubiquiti, Audiocodes.

Active equipment monitoring:

- Observation of the active equipment's state with the use of flexibly tuned monitoring parameters by any open protocol of information access (SNMP, SysLog, Telnet, ICMP, text etc.);
- Flexible tuning of event processing in the system;
- Visualization of equipment state on the network scheme;
- Registration and analytics of events that occur on the active equipment;
- Operative notification of the staff members about the network events according to their area of responsibility;
- Long-term storage of the events that allows operating unlimited amounts of monitoring data.

RESULTS

- Errors related to unauthorized changes or incorrect settings of device configuration are terminated.
- A possibility of automatic setting of standard configuration on the equipment was implemented. These processes can be performed by the staff members that do not have a high level of qualification.
- A high level of network device access security is created by storing all the passwords in the Equip-

ment Manager system. There is no need of telling the passwords to staff now. Access to the devices through the system is registered in the configuration management module.

- Any attempts of changing of the configuration of network devices are being registered by the system and notified to the staff on duty.
- Automatic recovery of standard configuration in case of failures or errors allows to solve the problem in short time.
- Reducing the time needed for an accident termination improves the SLA indicators of the network provider.

SOLUTION

To solve this problem a network configuration management module was created along with the mechanisms that allow gathering and storing of current configurations. This module allowed our client to work with standard configurations for different types of equipment and network segments. During the periodical polling of the network devices device's configuration is compared to the standard one, and if there are any faults, the system automatically notifies the duty personnel by generating an event in the Fault Management module.

A configuration validation process has been created: comparison of standard and current values on the equipment, for example: the version of firmware, configuration command and other. If any faults are detected, then an event is created in the Fault Management module. All the faults detected are being fixated by the event's attributes.



In 2006 our company's subsidiaries were opened in 15 cities at once. We've been built hundreds of kilometers of optic fiber cable, installing hundreds of units of network equipment, subscribing thousands of customers. And we needed a solution that can provide us with efficient network infrastructure management and timely prevention and elimination of any failures.

In 2008 considering the results of our tests we chose OSS/BSS platform Equipment Manager provided by OS Group and implemented it in every subsidiary of our holding by 2011. And in 2016 an "umbrella" monitoring system called Sceptor was launched.

We've achieved great results: lots of processes got automated, staff productivity increased significantly, time needed for detecting and eliminating failures on the network decreased. We've also implemented an intellectual network infrastructure and service management solution and decreased operational and financial expenses.

The scale of OS Group's OSS-solution usage can be judged by these numbers: more than 15 mln of units of equipment in the NRI, more than 90 000 networks events daily, more than 150 000 documents in work and more than 2 000 users.

Now the "ER-Telecom" network with a total length of 40 000 km covers millions of apartments all over the country. We have the second largest number of internet users served in Russia. Flexibility, scalability and multifunctionality of the OS Group's solutions helps us to provide our clients with the highest quality of service.

Pischalnikov Kirill,

network management director
of JSC "ER-Telecom Holding"
(TM "Dom.ru")

ER-TELECOM

CASE #4

Project Scope

A major federal telecommunication service provider that holds more than 11% of the broadband internet access market in more than 560 cities in Russia. About 3 mln. units of active equipment and about 60 units of equipment in one city is being installed/ changed every day. Hundreds of warehouse operations per day.

Challenge

Telecom industry implies serious investments into infrastructural assets, and the speed of assets’ updating is considerably higher than in other branches, and the geography – wider. Considering possible constant changes and massive capital investments (CAPEX), supporting a high level of AM is starting to become a problem for the telecom operator.

Here are the main problems that appear because of ineffective active management:

- Not optimal CAPEX solutions that lead to a cash outflow;
 - Audit questions and incompatibility with the requirements;
- Unreasonably high OPEX

SOLUTION

Optimal management of assets during their lifecycle allows to execute strategic plans of the company.

For efficient assets management there are some special software products that are able to cover all or most of management processes.

Equipment Manager software allows to have coordinated control over such processes as:

- Technical support and repairs;
- Material and technical supply;



>15 mln
objects



>3 mln
events
processed per day



>2 mln
metrics/ 5 min



Integration:
Billing, IVR System, Internal
IT-Systems, Financial As-
sets Management System



>31 mln
of active ports



>200 k
of services



Processes:
Trouble Ticketing, Planned Maintenance, Per-
formance Management, Resource Lifecycle
Management, Usage Management and others

- Warehouse stock management.
- Installation of a new network equipment in order to subscribe new customers is one of the objectives that is regularly performed by the operator. Let’s look at this process more closely:
- It starts with a feasibility study that goes through several stages of approval.

Then a job ticket is being formed for the executor (technician) that has already been assigned the necessary materials by the warehouse staff member.

The technician performs his work in the “turnkey” mode.». The equipment and the materials are being transferred from the warehouse to the fixed asset.

The switch connected to the network is already automatically defined and assigned to monitoring (automatic comparison of the device type, MAC-address, installation address and the device’s serial number).

Inspection and approval by the head manager.

Synchronization with accounting and billing systems.

RESULTS

- Reliability of the information on the network – 95%
- Human factor influence on the data input errors is minimized
- Full logging and documentation of the process – you can always determine the financially-responsible

person for a specific nomenclature unit.

- Considerable decreasing of operator’s expenses brought by the inventory for company’s assets verification.
- Prevention of theft inside the company and warehouse overstock.
- Decreasing of labor compensation fund because of the high level of automation
- Decreasing modernization expenses
- Gathering statistics for operative and strategic planning.



After the organization of a full cycle of equipment inventory with the use of modules of inventory, monitoring, document flow and warehouse accounting company assets management became significantly easier and faster, which in turn decreased the OPEX. And on the whole Holding level – this economy is comparable with a small BBA operator budget.

Yugov Daniil, Leading business-technologist
for the automation of the technical unit of the
telecommunications operator.

ROSTELECOM – ARMENIA

CASE #5

«BSS Solution»

PROJECT SCOPE

The Operator’s network, which covers more than 80% of the territory of Republic of Armenia and spreading for over 3000 km. As one of the leading telecommunications companies, it provides Internet access, Fixed telephony and new generation IP TV and OTT services to both physical and corporate clients.

THE CHALLENGE

A Need for a solution, which enables a telecom company to manage billing, charging and invoicing processes of a rich basket of services while improving customer-service standards and enhancing customer experience.

RESULTS

- Overall business process efficiency improvement
- Easy creation of individual and custom pricing schemes, fast and efficient launch of new convergent services, tariff optimization and as a result time-to-market reducing
- Less time needed to solve problems thanks to the simplification of the system operators’ working environment, and as a result better efficiency in customer service and Customer Experience improvement

SOLUTION

OSG Billing flexible Customer management solution allows to effectively manage key business processes, beginning from the customer’s first request, following him through the Order and Payment, Service Activation, Request and Change, Problem and Solution steps, providing him an excellent support.

In order to improve the level of Customer support, the OSG Billing Solution comes with a built-in messaging functionality as well as a self-care portal for users, that enables subscribers to acquire new offers and upgrades, access their accounts, change tariff plans, view recharge details, recharge accounts, view and pay invoices. In conditions of strong competition on the telecom service market, provider’s Sales and Marketing come up with new product offerings, which should be implemented and launched immediately.

As a result, flexible pricing algorithms have become the core of **OSG Billing Tariffs Configurator module**.

Creating new product offers and specifications through the product catalog, it handles almost all tariff types:

- pre-paid and post-paid,
- multi-service bundles or one-service,
- one-time and time-based,
- event and volume based, etc.

This has led to implementation of special offers, which were recently presented to the market, such as:

«Double forsaage» offer

getting Wi-Fi activation and double high-speed Internet throughout 1 year in case of subscribing to one of the tariff packages.

«New Year» option

for existing customers offers

- 55 additional
- TV-channels;
- 2,5 x internet speed;
- Gold and silver phone numbers and
- 100 newest movies if you subscribe between 31 december and 31 january

«Student» offer

during the first academic month each student gets high-speed internet together with the best TV-Channels and 100 movies in the package, and also stays in touch with friends by superb landline phone service.

And in combination with the special offer «**Champion**» the student gets Internet with doubled speed (50 Mb/s) for a whole year.

«Invite a friend» offer

Just invite a friend by simply giving invitation cards to your friends or relatives. In case of their subscription not only you, but also your friends will receive TRIPLE speed of the Internet service for 1 year.



Using the flexible mechanism of OSG Billing we achieved very impressive results in quite a short time, such as:

- implementation of support business solutions in all major directions: dealing with a potential client, customer assurance, customer management services, connectivity and disabling and related processes;
- Implementating and introducing to the market a great number of tariffs, options and promotions;

During the time of cooperation, we reached the effective format of a dialog between the customer company and the company-developer, which allowed us to implement the tasks in the current timeline.

The right partner is the key to success in any endeavor!

Hayk Faramazyan

General Director
Rostelecom Armenia

BECOME A PARTNER

We have developed programs for different categories of partners, starting from simple resale of our products and up to the ability to provide first line support and professional training to customers.

SALES PARTNER

Accredited Partners, which have rights to resell the product licenses and make a profit on a margin between GPL and given discount.

SERVICE PARTNER

Accredited Partner, which has proved skills to provide product delivery and technical support services for solutions, including Platform modules.

OEM PARTNER

Extend the value of your platform or solutions by embedding OS group's software modules.

Benefits in becoming an OS group's Partner include:

- 

Flexible discount-based licensing model
- 

Diversify your revenue stream
- 

Improve user insights with flexible operational and analytical reporting embedded in applications

If you are interested in becoming the OS group's partner, read about the benefits, different partnership options in "Become a Partner" on our website: www.orangesystem.ru/en/partners

Our clients:



1. Beeline



2. Orange Business Services LLC



3. GNC-ALFA CJSC
(Rostelecom-Armenia)



4.JSC ER-Telecom Holding



5. NET BY NET LLC



6. Russian Railways JSC



7. Megafon PJSC



8. Zvezda Telecom LLC



9. PROSTOR telecom



10. Enforta LLC



11. Synterra Media CJSC



12. SumTel LLC



13. Westcall
Telecommunications CJSC



14. City Connect LLC



15. Mosnet LLC



16. Petersburg – Channel 5 PJSC



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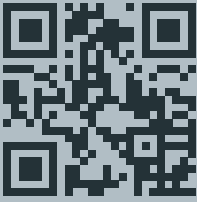
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SCAN THE URL

