ROC® Data Integrity Management

Data Integrity Solution for Mobile Operators

- Improve operational efficiency, resulting in much more being done with the same staff
- Recover stranded assets resulting in a reduction in future capital spending
- Identify process gaps that can improve future operations
- Drive more of their operations through the existing inventory with the level of confidence needed to make it the system of record for network information

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The Data Integrity Problem for Mobile Operators

Mobile operators, who derive their income from high volume low margin services, will face their biggest challenges during the current economic downturn. Market saturation (leading to increased churn and larger marketing budgets), increasing customer service costs due to smart phones, technology upgrades such as further 3G rollouts for mobile broadband, and reduced new customer additions will put a strain on mobile operator revenues as well as profit margins. In such times, two things that mobile operators must focus on are customer retention (through an improved service experience) and cost containment.

As companies move toward real-time (or near real-time) provisioning of services to improve the customer experience, data integrity problems in the inventory are a significant roadblock for effective service delivery. Inaccurate and incomplete data about the state of the network requires the provisioning staff to conduct time consuming resource verification and reconciliation with the DBoR before services can be designed, provisioned and activated.

At the same time, improving data integrity between inventory systems and the network represents a gold mine to those wanting to identify stranded assets, lower operational costs and deal with cost containment and budget restrictions.

Capacity planning, network design and service design are also dependent on accurate knowledge of the network and service riding on that network. Effective network design and capacity planning requires one know where over-utilization threatens quality of service. With changes to today’s complex networks occurring frequently and provisioning problems leading to stranded network resources, capacity planners and network designers are often flying blind.

The mobile operator’s data integrity problem is related to the prolific amount of complex, legacy and often “silod” systems that support network-facing and customer-facing operations. The challenge lies in keeping the data in these varied systems accurate, synchronized, and up-to-date. Without automated and proactive data integrity management, your OSS/BSS systems rapidly grow out of sync with one another and with the actual telecom network. Industry analysts estimate that the typical inventory system is 15 - 20 % out of sync with network equipment and 25 – 40 % out of sync with the logical layer details of the service infrastructure.

Types of Discrepancies

Data integrity errors associated with wireless infrastructure are common, from the transport edge out to the cell sites. These errors include:

- Physical Card and Port discrepancies within each device
- Port configuration discrepancies
- Areas of under-utilized leased lines between the Base Station Controller (BSC) and Mobile Switching Center (MSC) or leased lines between various network MSCs
- Data integrity errors introduced by the execution of wireless processes like network grooming and network coverage expansion

Many data integrity issues for mobile operators stem from the transport backbone infrastructure and include:

- Physical network to inventory discrepancies
- Functional cross-connects (logical) discrepancies
- Stranded network assets

The Effect on Operations

These discrepancies between separate BSS & OSS components – and more importantly, between BSS/OSS and the network – can dramatically affect a mobile operator’s bottom line through inaccurate billing and under-utilization of network resources. Common symptoms of a data integrity problem include:
• Inability to perform capacity planning or groom leased lines
  Capacity planning, network design and service design are dependent on accurate knowledge of the network and service riding on that network. However, analysts estimate that the typical service provider has 10-15% stranded assets that are not visible to the planners and other operations personnel. This leads to unnecessary deployment of additional capital and equipment.

• High Repair Costs
  Incorrect inventory information negatively impacts MTTR due to the additional time required to investigate and validate inventory data, thus jeopardizing customer satisfaction and increasing churn. This can be caused by:
  - Incorrect DCS or BSC information in the circuit paths
  - Incomplete circuit paths with missing equipment and segment information
  - Paths completely missing in the inventory, resulting in the NOC having to call the market to get the information
  - Continued existence of old circuit paths which should have been deleted when a site was re-homed, T1 harvested or old equipment was removed
  - Inability to locate the NIU when microwave backhaul technologies are being used
  - Missing Node-B information in UMTS paths

• Backhaul network provisioning errors which require costly manual rework
  Up to 70% of provisioning failures are attributed to inaccurate data, leading to a need for time-consuming, error-prone, manual population and updates.

• Inability to automate testing due to data inaccuracies
  - Information available in the inventory system is not available or so inaccurate as to cause a high rate of automated test fallout.
  - Circuit paths built with incorrect or missing BSC information can cause the wrong backhaul circuit to be taken down for testing, impacting live customer traffic.

• Negative impact on performance management
  Errors on ports that are not built correctly in the inventory can result in an inability to accurately track network performance metrics. For leased circuits this would result in the inability to enforce SLA performance metrics against the leased line provider.

• Leased Line Cost Recovery
  For many mobile operators the cost of leased lines and off-network transport is a significant operational expenditure. Industry experts estimate that inaccurate billing for leased circuits can equate to as much as 8% to 10% of total leased line costs, amounting to millions of overspend annually. Reconciling these costs against actual service status would represent a significant cost recovery but is usually extremely difficult due to inventory inaccuracies.

Management for Mobile Operators
Unfortunately, the errors outlined above are a common occurrence, and they represent the main reason so many service providers are ineffective in leveraging the large investment in inventory to drive operations and planning. ROC Data Integrity Management from Subex is the industry’s first system to provide an operations-wide approach to solving the data integrity problems of mobile operators. By helping service providers to not just identify these errors, but also prioritize and correct them, ROC Data Integrity Management acts as a complete data integrity management solution, helping to restore confidence in the inventory system. By cleaning up physical and logical information in the inventory and other OSS/BSS, service providers can begin to:
• Improve operational efficiency, resulting in much more being done with the same staff
• Recover stranded assets resulting in a reduction in future capital spending
• Decrease MTTR and test times resulting in cost savings and increased customer satisfaction
• Automate repetitive operational functions
• Reduce the number of alarms that are not being suppressed due to lack of fault correlation
• Identify Leased Line Cost Recovery opportunities
• Identify process gaps that can improve future operations
• Drive more of their operations through the existing inventory with the level of confidence needed to make it the system of record for network information

ROC Data Integrity Management is the first system that utilizes network discovered data from multiple networks and devices as a key source in reconciling the OSS/BSS on a continuous, controlled basis. This powerful capability enables inventory and other systems to be continuously current and relevant, creating a solid foundation for automating key operational processes. ROC Data Integrity Management combines three powerful data integrity functions: Multi-layer Discovery, Reconciliation and Discrepancy Management.
Multi-layer discovery of physical and logical network attributes

ROC Data Integrity Management boasts the most powerful discovery capabilities of any data integrity management solution in the industry. This enables ROC Data Integrity Management to provide sufficient data to support critical processes such as provisioning and activation, fault and performance monitoring, customer trouble management and others. ROC Data Integrity Management offers carrier class discovery of network elements including port, processor function cards, chassis structure, power supplies, memory, software and firmware versions.

- Logical component discovery includes connection segments (virtual circuits, etc.) and service components (cross-connects, bridging points, etc.)
  Discovery is non-intrusive and dynamically throttled to prevent management traffic and device overload

The combined details of multi-layer physical components, logical connections and their attributes and interdependencies enable ROC Data Integrity Management to use the discovered network data and service definitions to construct end-to-end service views and identify discrepancies with the “as intended” representation of the network.

Figure 2  Broad and deep functional and core-to-edge discovery • Discrepancy Management
• **Reconciliation**
  The identification of discrepancies needs to be accompanied by the ability to correct the data inaccuracies that cause provisioning fallout, undermine capacity planning efforts, and increase MTTR. ROC Data Integrity Management permits operators to rapidly and easily update databases, or define automated, flow-through reconciliation that permits certain discrepancies to be handled without operator intervention. Reconciliation provides validated, categorized and prioritized data that can be used across operations to support fulfillment, assurance and billing tasks.

• **Discrepancy Management**
  Analyzing discrepancies and aggregating them, recognizing dependencies and identifying resolutions is an extremely time-consuming and challenging task for the operations staff. ROC Data Integrity Management's discrepancy management capabilities include intelligent analytics and decision support that enables operators to quickly "see the forest from the trees" and take appropriate action.

  • **De-duplication of Discrepancies**
    ROC Data Integrity Management is the only solution that uses intelligent matching to reduce the number of reported discrepancies. If a Network Element is missing in the inventory system, ROC Data Integrity Management will not generate hundreds of discrepancies showing missing cards and ports associated with that missing Network Element. This ensures that only the relevant discrepancies are generated. This allows operators to focus on the real problems.

  • **Prioritization**
    If the OSS is significantly out of sync with the “as is” network, the identified discrepancies could number in thousands, if not millions, and would overwhelm any manual data integrity management process. To prevent this, ROC Data Integrity Management provides capabilities to expedite discrepancy resolution by classifying and prioritizing discrepancies based on rules and enabling drill-down investigation.

  • **Discrepancy Analysis**
    Discrepancy Analytics automatically investigates and analyzes discrepancies to help operators identify the most significant and costly discrepancies and rapidly resolve them. ROC Data Integrity Management couples Discrepancy Analytics with discrepancy management workflow that captures the best practices for discrepancy detection, analysis and resolution, providing a foundation for highly efficient methods and procedures.

Together, these data integrity management functions permit service providers to better understand how data inaccuracies are affecting operations and correct errors that drive up operations and capital costs. However, ROC Data Integrity Management goes far beyond the simple identification and reconciliation of errors found. With its powerful discrepancy management capabilities, ROC Data Integrity Management enables mobile operators to maximize their benefits by establishing a thorough approach to data integrity management.

**Work with the Experts**

Undertaking a complex project to clean up mission critical data means that service providers can only depend on the experts in the field. Subex is the pioneer of data integrity management, with over a decade of experience in data integrity transformations with the world’s leading service providers. This has enabled Subex to use industry best practices to formulate a proven methodology to not just find, but prioritize and correct the data integrity issues that threaten to derail service provider operations.

Being a software product company with experience of an offshore environment, Subex offers a unique combination of repeatable, product-based solutions backed by deep domain knowledge; and a nimble, solution-oriented approach that takes care of the end-to-end solution. Subex also offers unmatched flexibility in delivery options, to suit the size, budget and engagement needs of your organization, including managed services; network auditing; and working with service provider staff and/or partners to solve data integrity problems.
Subex Limited is a leading global provider of Business Support Systems (BSS) that empowers communications service providers (CSPs) to achieve competitive advantage through Business Optimisation - thereby enabling them to improve their operational efficiency to deliver enhanced service experiences to subscribers.

The company pioneered the concept of a Revenue Operations Centre (ROC®) – a centralized approach that sustains profitable growth and financial health through coordinated operational control. Subex’s product portfolio powers the ROC and its best-in-class solutions such as revenue assurance, fraud management, asset assurance, capacity management, data integrity management, credit risk management, cost management, route optimization and partner settlement.

Subex also offers a scalable Managed Services program and has been the market leader in Revenue Assurance and Fraud Management for 2 years in a row according to Gartner (2010 & 2011). Subex has also been enjoying market leadership in Business Optimisation for five consecutive years according to Analysys Mason (2007, 2008, 2009, 2010 & 2011). Business Optimisation includes fraud, revenue assurance, analytics, cost management and credit risk management. Subex has been awarded the Global Telecoms Business Innovation Award for 2012 along with Idea Cellular and 2011 along with Swisscom for fraud management. Subex has also been awarded the Global Market Share Leader in Financial Assurance 2012 by Frost & Sullivan.

Subex’s customers include 29 of top 50 operators* and 33 of the world’s 50 biggest telecommunications service providers worldwide. The company has more than 300 installations across 70 countries.

*Total Telecom Top 500 Telecom Brands, 2013
*Forbes’ Global 2000 list, 2013