RECONCILABLE DIFFERENCES:

Restoring OSS Data Integrity and Improving the Bottom Line

With Syndesis NetDiscover as the foundation for OSS data reconciliation, service providers can:

Reduce OpEx

> Minimize fallout and related re-work

> Improve effectiveness of existing OSSs by restoring data integrity

Reduce Revenue Leakage

> Limit customer churn with improved due-date performance and accurate billing

> Correct incidents of under-billing

Reduce or Defer Capital Spending

> Reclaim stranded and under-utllized network assets

> Improve capacity and network planning with accurate data

Speed Revenue Recognition

> Improve provisioning accuracy and fulfillment capacity with up-to-date inventory

AT ONE INCUMBENT SERVICE PROVIDER, more than 80,000 DSLAM ports are 'lost' in the network. Some are simply not accounted for in any of the carrier's various inventory systems. Others are inventoried and provisioned but sit 'unemployed' and not associated with paying customers. At another provider, nearly 20% of high speed data subscribers are either being billed for an incorrect level of service or not being billed at all. Yet another telco is frustrated by 1,000 failed broadband service orders each and every day.

Welcome to Telco's very own twilight zone where Tier 1 and Tier 2 service providers regularly bear the financial burden of stranded network assets, under-billing and costly fulfillment re-work. The extent of these CapEx, OpEx and revenue drains varies from provider to provider, yet in one way or another all of these problems can be blamed on their inability to maintain OSS and BSS data integrity.

Fortunately, things don't have to be this way.

Out-of-Touch with Reality

According to a recent Yankee Group Report[1], OSS and BSS databases in a well-run operation "are at most 80% accurate", which means 20% of the records have at least one substantive error. In reality, more typical rates reflect only 40% to 60% accuracy. There are many contributing factors. First of all, service providers rely on numerous, often over-lapping and loosely integrated OSS and BSS systems. Some are tailored to specific services. Some are riddled with many years' worth of accumulated errors. Many are populated by manual data entry and linked solely by manual (or email)

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handoffs. Most have no means of synchronizing with the actual network. Industry consolidation, meanwhile, is pulling even more (and varied) systems and processes under one organizational roof, further complicating OSS integration.

The sheer number of systems alone does not explain the amount of 'dirty' data plaguing providers. The human factor plays a big part. Within busy Tier 1 environments technicians regularly by-pass inventory and provisioning systems altogether and go directly to network elements to troubleshoot service complaints, configure trial service offerings (which may not yet be supported by mainstream OSS), or rectify failed activation attempts. Also, services are frequently deleted from the network without corresponding updates being made to billing systems. Finally, the mere presence of inaccurate data records will help discrepancies multiply. The resulting stranded assets lead to order fallout, which leads to more stranded assets, which cause more fallout. The vicious cycle continues, while the integrity of the OSS data deteriorates.

Robust and reliable automation is a must!

Paying the Price

The discrepancy between the network 'as is' and the network 'as planned' or 'as billed' is a major obstacle to service provider profitability. Revenues suffer because of under-billing and high rates of customer churn (the result of ineffective customer care, poor due-date performance, and inaccurate subscriber invoices). At the same time, providers' inability to 'discover' the actual state of their network leaves valuable network resources either unused or under-used and routinely prompts them to over-engineer their networks – further straining their already limited CapEx budgets.

The most common expense complaint by service providers are from operational costs. The more errors that infect a provider's OSS data, the more fallout the provider experiences. The more fallout, the more manual intervention, truck rolls, and technicians required to deliver – let alone scale – a service. Inaccurate data also cripples the effectiveness of, and limits the potential returns from, even the most 'valuable' OSS. True flow-through automation becomes impossible, billing accuracy becomes a game of chance and network planning becomes marginally more reliable than fortune telling. As Gartner analyst Verne Anton wrote[2], "The measure of efficiency of what OSS brings to carriers must begin with integrity of data. Short of that, the true potential of any of the systems is compromised."

With both capital budgets and head-counts shrinking, and with Wall Street's renewed scrutiny on profitability, such compromise is no longer an option for most Tier 1 and Tier 2 service providers. Operational efficiency, cost management, and revenue assurance depend on accurate data. But the question remains, how do providers move from their current 40%-60% levels of accuracy to a level that significantly improves their return on invested capital and the bottom line?

The solution depends on efficient and effective data reconciliation.

Rewards of Data Reconciliation Reach Across the Provider Organization

Functional Area	Operational & Business Benefits	Financial Returns
Provisioning	Based on correct network and service model, accurately design services and assign network resources, significantly reducing order fallout and re-work, speeding time-to-service / time-to-bill. Ready access to accurate data also enables true flow-through provisioning, thus improving service scalability while reducing headcount requirements.	Reduces operational expenses and increases revenue.
Billing	Identify, correct, and prevent incidents of under-billing and over-billing, reducing revenue leakage and customer churn.	Increases revenue.
Network Buildout	Identify and reclaim stranded assets, returning them to billable use. Base buildout decisions on accurate network and service information, reducing over-built ratio.	Reduces or defers capital expenses (CapEx).
Capacity Planning & Forecasting	Based on up-to-date view of provisioned and available resources, perform accurate trending and resource requirements assessment.	Enables more efficient utilization of network resources (deferring CapEx) and more carefully targeted capital spending decisions.
Service Assurance	Enable real-time service impact assessment and better focus fault and performance management efforts, reducing customer churn.	Increases revenue and enables providers to avoid SLA penalties.

Cleaning House

Data reconciliation, in simple terms, is the process of comparing data from two or more sources in order to 'harmonize' related information. When applied to a service provider's operations and business support systems (OSS/BSS), this data 'cleansing' involves three primary steps:

- identify discrepancies between separate OSS/BSS or between OSS/BSS and the network (e.g. isolate a service that is in the billing system but not in the inventory system or network)
- determine which data source, if any, is accurate and correct the inaccurate sources – whether network or OSS (e.g. perform traffic studies to determine if an unbilled but provisioned service is in use, then delete the unused service or correct the billing system)
- perform root cause analysis on common error types and refine operational processes to prevent future data integrity issues (e.g. automate fulfillment functions and feedback loops)

The impact of such reconciliation efforts can be dramatic. According to the Yankee Group's Sanjay Mewada[1], "with reconciliation tools and proper operational procedures, database accuracies above 95% can be achieved. This can cut rework by 10-20%." But potential reductions in rework tell only part of the story. The benefits of reconciling OSS and BSS discrepancies reach across the service provider organization – affecting functional groups from provisioning to capacity planning, from network build-out to billing and collections.

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The NetDiscover Difference

- Dynamic upload of addressable inventory
- Automated end-to-end service discovery, spanning multi-vendor, multi-technology networks
- Mechanized OSS/BSS – Network Audits
- Detailed, customizable reconciliation and discrepancy reports
- Extensive off-the-shelf network equipment support
- Inherent domain intelligence covering broadest range of new network technologies and services (including DSL, ATM, Optical, GigE / Virtual LAN, IP-VPN, Frame Relay, Private Line, and Voice over Broadband)
- Extensible design to support evolving network, business, and operational requirements
- Full backing of Syndesis' highly skilled Global Services organization and leading SI partners
- Successful track record in Tier 1 deployments

It is not easy to achieve or maintain the levels of data integrity which will realize the associated operational and business benefits. Ultimately, an OSS reconciliation project relies on a combination of highly configurable and automated software tools, detailed problem and procedural analysis, process reform (often substantial) and strong executive sponsorship. Its cornerstone is rapid and repeatable access to actual network and service data – i.e. what is in fact provisioned in the network. While some level of data cleansing can be initiated by comparing multiple OSS/BSS data stores with each other (which is how providers have traditionally undertaken reconciliation projects), what really matters is how that information compares with the network itself. Only by correcting the OSS/BSS in light of the network can providers rectify under-billing situations. Only by correcting the network in light of the OSS/BSS can providers reclaim stranded assets and return them to billable use. And, by keeping the two in sync, providers can realize a dramatic reduction in costly fallout-related re-provisioning.

This is where service providers will rely most extensively on data reconciliation tools – to assemble the accurate view of the network upon which effective reconciliation is based and automatically identify discrepancies between this view and the provider's OSS or BSS. The value of a reconciliation tool depends in large part on its ability to auto-load configuration information from the network, easily resynchronize with the network, and dynamically understand how specific uploaded configuration information (e.g. ports, cross connects, QoS parameters) relates to both customers and individual end-to-end services. Only with this kind of centralized and up-to-date view of the network and the services provisioned across its various equipment and technology domains can service providers succeed in the larger task of reconciling (i.e. identifying, correcting, ***and*** preventing) OSS data discrepancies.

Syndesis NetDiscover™

Syndesis NetDiscover provides precisely this foundation for effective OSS reconciliation. A key component of Tier 1 providers' revenue assurance and data reconciliation projects, Syndesis NetDiscover dynamically builds accurate network models and identifies inconsistencies between providers' BSS/OSS and the actual services and networks they manage. Based on NetDiscover's detailed discrepancy reports, providers can correct inventory, billing and other OSS or network errors. This frees unused provisioned resources for future production and ensures that customers are billed for the services, and levels of service, they receive.

It All Starts with the Network

NetDiscover provides carriers with the network mediation and discovery capabilities essential for OSS data reconciliation. Taking advantage of Syndesis' extensive library of vendor-specific Equipment Modules, NetDiscover automatically retrieves addressable physical inventory and logical service element data – such as nodes, physical ports, IP interfaces, Layer 2 cross connects, QoS attributes – directly from network devices or their element management systems and stores this information in the Syndesis database.

Based on these uploaded inventory data and 'discovered' network connections, NetDiscover can analyze providers' existing inventory systems, quickly identifying:

> assets that exist in the network but are not recorded in inventory (and vice versa), and
> a variety of other OSS/network anomalies that obstruct accurate service fulfillment (e.g. connection identifier discrepancies, administratively locked connections, etc.).

By correcting an inventory system's view of the network based on NetDiscover's network reconciliation reports, service providers can dramatically reduce order fallout and reclaim valuable unused or under-utilized resources (nodes, cards, ports, PVCs).

NetDiscover's dynamic upload capability and its open APIs also allow it to load its accurate network image into new inventory databases or other OSS systems. This type of automated data-loading, according to a recent Yankee Group Report[1], can save providers as much as 25% of the operational cost of each target OSS.

Leveraging End-to-End Service Intelligence

To enable even greater returns for service providers, NetDiscover extends automated discovery beyond the upload of individual network and service components, facilitating true **service-level** data reconciliation with inventory, billing, order management, and other OSSs. To do this, NetDiscover leverages technology-specific domain intelligence and higher-level service intelligence to interpret the individual network and service elements uploaded from the network. Whether based solely on bottom-up service modeling capabilities or on a combined bottom-up/top-down approach, NetDiscover "pieces together" individual uploaded elements into end-to-end services (recognizing, for example, that an ATM PVC is actually part of a larger DSL or IP-VPN service instance). The result is a single repository of end-to-end service data, physical and logical topology data, and the relationships between the two.

NetDiscover can then analyze its discovered 'service candidates' and leftover (or stranded) assets against service data from a billing system or other OSS, or against customized service-match criteria, to generate a variety of service reconciliation reports. These highly configurable reports can identify:

> services that exist in both the OSS source and the network
> services that are captured in the OSS source but do not exist in the network
> service candidates found in the network but not in the OSS
> service candidates discovered in the network that are a near, but not exact, match of a service in the OSS (e.g. service level discrepancies)
> provisioned service elements that are not part of a recognized or discovered service (i.e. stranded assets)

Based on this information, service providers are able to investigate and correct OSS-network inconsistencies and begin the root cause analysis and process reform required to prevent future data integrity issues.

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Rapid Returns

Sample Reductions in Revenue Leakage:

> **Assumptions:**
  - ✓$1 Billion in revenue per year for selected service
  - ✓1% of suscribers not billed due to network/BSS discrepancies
  - ✓Half of those subscribers choose to continue the service once billed
> **Calculation:**
  - ✓($1,000,000,000 * 0.01) * 0.5 =
> **Benefit: $5.0 Million in one year for one service**

Sample Benefits from Asset Reclamation:

> **Assumptions:**
  - ✓$1,000 average capital cost / year / port (i.e. subscriber)
  - ✓$250 average leased asset cost / year / port (i.e. subscriber)
  - ✓10,000 ports reclaimed through service reconciliation with billing system (i.e. identified as stranded)
  - ✓1,000 ports recovered through network reconciliation with inventory (i.e. discovered in network, not inventory)
> **Calculation:**
  - ✓($1,000 + $250) * (10,000 + 1,000) =
> **Benefit: $13.75 Million in recovered capital assets in one year** (deferred spending potential)

Reaping the Rewards

By identifying discrepancies between service providers' OSS or BSS and their actual networks and services, NetDiscover plays a primary role in data reconciliation and revenue assurance. By reconciling OSS data based on NetDiscover's unique service discovery capabilities and detailed discrepancy reports, providers are able to:

> reduce operational expenses by minimizing fallout and its related truck rolls, manual intervention, and rework

> limit revenue leakage by improving billing accuracy and reducing customer churn

> reduce or defer capital expenditures by reclaiming stranded assets and improving the effectiveness of capacity and network planning

> increase revenues by speeding time-to-service, reducing backlog, and improving service scalability

For large carriers, any one of these benefits translates into millions of dollars annually.

A Holistic Approach

Providing dynamic access to actual network and service data and automating OSS/BSS audits against these data sources is critical to an overall reconciliation program. But they alone cannot restore and maintain data integrity. Rectifying OSS discrepancies can require lengthy traffic studies or direct customer contact before unused services can be deleted or erroneous billing records corrected. Long-term solutions also involve redefining, and ideally automating, operational processes – which potentially affect multiple groups within service provider organizations.

Recognizing the complexity of the larger data reconciliation task, Syndesis has teamed with leading systems integrators, to ensure that service providers not only get the most out of their NetDiscover solution, but also efficiently correct data inconsistencies and their root causes.

To address providers' fulfillment automation needs, Syndesis also offers NetProvision™, its automated service provisioning and activation solution. With bi-directional network communication, full flow-through capabilities, and advanced transaction management, NetProvision not only speeds service delivery, it radically improves the efficiency and accuracy of the fulfillment process. NetProvision's ability to maintain a real-time representation of the network and services enables accurate service design, resource assignment, and activation which significantly reduces fallout rates and minimizes time – to - service.

Conclusions – The NetDiscover Imperative

The concept of data reconciliation is not new to large telecom carriers. With service providers regularly maintaining dozens of billing and inventory systems (as well as numerous other databases housing customer, network, service, and/or interconnection information), reconciling information across these systems is a recognized necessity for revenue assurance, even if it is not always a routine practice. Given their complexity, however, major data reconciliation projects have traditionally been reserved for telephony services, where the potential return on investment is perceived to be the greatest and most critical.

This perception is steadily shifting. Traditional telephony services, previously the 'cash cow' for incumbent providers, are expected to fall to just 60% of wireline services worldwide by 2005 and just 36% of the overall U.S. telecom services market (i.e. fixed and wireless)[3]. Increasingly providers are turning their attention to newer broadband, IP and wireless services as key sources of revenue expansion and improved profitability. But for providers to realize the potential of newer services, they need to vastly improve their processes and support systems to deliver and scale these services for the mass market. Such endeavors depend on OSS data integrity. And data integrity depends on dynamic access to "as is" network configuration information and the end-to-end service-level intelligence that makes this information valuable.

Syndesis NetDiscover provides both.

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Footnotes:

1 Yankee Group, February 2002: "Service Resource Management Systems, Part 1: Next Step in the Evolution of Inventory OSS"

2 Gartner Group, October 2001: "At the Heart of OSS: Data Integrity"

3 Gartner Group, November 2001: Hahn, William L. and John Lilly, "Steady Demand Will Sustain Global Telecommunications Services Market", and JPMorgan, November 2001: "Telecom Services 2001: A Comprehensive Long-Term Forecast of the US Telecom Services Industry"

SYNDESIS