



BROADBAND REVENUE ASSURANCE

How to gain financial
control of your assets
without becoming a
network expert

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Syndesis Spotlight



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How to Gain Financial Control of Your Assets without Becoming a Network Expert

The demand for revenue assurance solutions is growing. In fact, a recently published Technology Research Institute study, "Revenue Assurance, Mediation and Cost Management Solutions in Telecommunications" estimates the market for telecom revenue assurance software and consulting services will grow from \$394 million in 2002 to \$780 million in 2005.

The data services business has always played second fiddle to voice. And justifiably so.

For decades, wireline and wireless voice was the main engine of telecom growth. The data services market was merely a side show run by highly skilled engineers who lived in a world of impenetrable acronyms like "ATM", "ISDN", and "PVC". In short, delivering data services was a craftsman's art, not a production line business. Even the words used to describe it – "special services" and "dedicated access" – suggested something out of the mainstream.

Then the world changed.

Fueled by the Internet, a new mass market for high speed cable, DSL, and other data services emerged in the late 1990s. The term "broadband" suddenly took on a life of its own. Before long, newspaper editors, school kids, and grandmothers with black rotary phones were all speaking the broadband lingo.

Exciting as those early days were, the hype couldn't sustain itself. And sure enough, an economic recession eventually cooled the broadband fever . . . but not before a big market shift had taken hold.

Today, broadband is no longer a "special" service. It has grown into something significant. In fact, at SBC Communications, data services captured 19% of all revenues in 2002 – even

bigger than the company's wireless business (15%).¹

Yes, broadband has finally arrived . . . and it's a big business.

Assuring the Business of Broadband

Of course, big growth is not a measure of success unless big profits eventually follow. On that score, the broadband business has a long way to go. Until now, capital outlays have crowded out most of the profits.

So it's no wonder that service providers are eager to squeeze every dollar they can

¹SBC's 10K SEC Report for the year 2002, published March 2003

from their broadband operations. If it were only that easy. Competition and a global recession are forcing prices down even as operating costs remain high.

Clearly something has to give. Service providers must either wrestle and gain control of broadband or the beast will wreck havoc on their business.

Will Revenue Assurance Be Broadband's Savior?

The urgent need to wrap financial controls around broadband is forcing many telcos to turn to revenue assurance for help. The potential revenue recovery rewards are alluring.

Industry experts claim revenue leakage in voice networks is at a relatively low 2 to 3% level. On the broadband side, though, the payback may be considerably more considering the complexity and the helter-skelter way that those networks were built during the dotcom gold rush. Some industry research even suggests that broadband revenue fall-out at your average telco may be as high as 10% – a megabucks recovery opportunity, particularly for large carriers.

So, if broadband revenue assurance is a priority, exactly how are service providers tackling the problem?

“Switch-to-bill reconciliation” is a frequent starting point.

Switch-to-bill is a well-established technique that essentially compares the **switch's view** of what's provisioned in the network to the **billing system's view** – and other data sources like

mediation and SS7 usage are often thrown into the comparison hopper too. In any case, the switch-to-bill process reconciles those multiple views, finds inconsistencies, investigates them, and plugs any revenue leaks discovered.

Why Switch-to-Bill Reconciliation Is Challenged in Broadband

Unfortunately, while switch-to-bill reconciliation is a powerful tool in the voice world, in broadband it only takes you so far. That's because voice service reconciliation is simplified by the fact that you have a **common point of reference** – the telephone number – a handy identifier that enables you to match up billing, switch, and usage records.

Now ask yourself: what's the common point of reference in the data services world?

Answer: Instead of one, there are many, and therein lies the challenge.

You may have a circuit ID number in the billing system. But on the provisioning side, that circuit ID is merely a garden gate to the network briar patch. A data service doesn't end at the central office switch; the service is often a **string** of switches and routers looped across the country.

Even in DSL, a service deployed at the network's edge, the connection is complex. It starts at the central office, goes to the DSLAM box, then is siphoned off to an ATM or Frame Relay box where it's funneled into virtual paths ... L2TP

tunnels ... You get the drift. This is ugly stuff.

So we're faced with a thorny problem.

Switch-to-bill techniques are limited in the data world. Data networks are defined in the network sphere not at the switch, so there's no universal identifier like a telephone number to latch onto. What's more, a finance person can't get a handle on this complexity unless he/she becomes a network expert.

Something's needed to demystify the network hocus-pocus – a probe, perhaps, that hunts down unsolved switch-to-bill discrepancies in the network cloud, then reports back results in a language that finance can understand.

Luckily a broadband revenue assurance probe like this actually exists. And we're going to tell you about it and how that probe is being used at a major carrier.

But before we do that, we'd like to briefly explain – in layman's terms – the problem the probe solves and the benefits derived.

Why You Should Never Be Ashamed About Your Lack of Network Knowledge

If the network seems like a dark, impenetrable mystery to you, you should know that you're not alone. Sometimes, even network operations experts are befuddled by broadband's complexities. Let me explain what we mean. . .

First, whenever a data service is provisioned, it's configured across a complex "multi" environment, i.e. multiple equipment vendors (Cisco, Juniper, Lucent, Marconi, Nokia, Siemens, etc.), multiple network technologies (ATM, IP), and multiple layers (network, physical).

And each of these "multi's" is its own silo – there's no GUI screen you can go to for a real-time end-to-end view of the service. Instead, so-called "swivel-chair engineers" provision and monitor services moving from an Alcatel screen here. . . a Nortel screen there, and so forth.

Not only is the data network staked out in multiple garden plots, it's much more dynamic than the voice network. New data ports are deployed all the time. Capacity is shifted from one set of equipment to another. And every time a change is made, errors are introduced because so many of those changes are manual.

Sometimes you need to alter the network in a hurry. When a major customer's service is down, engineers are so busy patching circuits that they may forget to record the changes they are making. Other errors are the result of poor

planning. Network circuits are leased from other carriers, then someone omits to build a provisioning process to tear down those circuits when customers churn.

Add all these things up and you've created a vicious cycle. As your manual errors and unrecorded changes multiply, network accuracy steadily deteriorates.

In short, network accuracy – like security – is a goal you constantly work for but never completely achieve.

The Solution: "Service"-to-Bill Reconciliation

Luckily there's a path out of this network accuracy quagmire. It's called **service-to-bill reconciliation**, and as its name implies, it picks up where the switch-to-bill process drops off.

It's accomplished by first uploading the physical and logical attributes of network equipment across multiple sub-networks – a process called **network discovery**.

Then, after collecting information on the devices, the next step is **service discovery** – stringing together all the network pieces to **reverse-engineer** the end-to-end services.

Remember, from the outside looking in, a data network is merely a maze of connections – Sonet/SDH core, ATM and Frame Relay overlays, Ethernet services,

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DSL, IP VPNs, you name it. Service discovery's job is to scan this maze and make some sense out of it. What end-to-end services exist? Where do they originate and terminate? What networks do they traverse?

The intricacy of this problem is enough to give mere mortals a headache. Perhaps the best way to describe it is by analogy. Imagine the data network is a massive 10,000-piece Lego™ model. And each time you provision a new data service, it's as if you're adding a new 20-Lego section to that model. But then, as circuits get modified and errors are introduced, pieces get broken off. And if 20% of your network is inaccurate, it's as if you've got 2,000 Lego pieces sitting in a pile somewhere with no clue where those pieces came from.

Service discovery is finding a home for those 2,000 Lego pieces – like doing provisioning in reverse.

But hard as service-to-bill reconciliation is to accomplish, when you're finished, you gain three major benefits:

- **Billing reconciliation** – The service discovery process has converted all the complex network technologies, multi-vendor equipment, and inter-connections into valid end-to-end service descriptions. So you now have a useful identifier to bounce off the billing system and ensure the services you've provisioned are being billed for.
- **Quality of Service (QoS) reconciliation** – Not only have we

discovered valid services, but we can match the complex network definition of QoS/CoS parameters to a service level defined in the billing system. This means we can now pinpoint the places where customers are getting better service quality (Gold Service) than they've paid for (Economy Service).

- **Asset reconciliation** – Finally, we can pick up all the network pieces left on the floor – the assets and broken fragments of services that are no longer associated with a valid end-to-end service or customer. These stranded assets can now be recovered, put back into inventory, and reused. In this way you reclaim valuable network resources and avoid costly capital investments in new network equipment.

How Bell Canada Is Building a Broadband Revenue Assurance Capability

Bell Canada is using a tool like the one we just described for you.

By way of background, Bell Canada is Canada's largest telecommunications company and maintains about 25 million data connections to residential and business customers.

Though it carries the Bell namesake, Bell Canada is actually more diversified than its U.S. Bell cousins. Bell Canada provides long distance, wireless, ISP, cable, and satellite TV service from St. Johns to Vancouver, coast-to-coast.

Two years ago, Bell's data services business was growing fast. Its network had mushroomed to over 400 core switches, thousands of routers, and over 100,000 access lines. As a result, Bell figured it was high time to strengthen its revenue assurance program for data services.

So Bell's corporate Revenue Assurance team, with the help of an outside consulting firm, CGI, developed a series of reconciliation tools to identify and plug revenue leaks. The program was a big success. In a short time, the savings generated by the tools more than paid for the cost to develop them.

But there was a problem. While many errors could be reconciled by bumping the switch data against billing, there were too many loose ends left to investigate. And the costs to dig deeper were getting high. Sometimes, an auditor would spend hours tracking down a suspect ATM or Frame Relay circuit only to find out that the service no longer existed – it was disconnected three years ago.

Yes, you could reconcile billing with provisioning, but if both of those sources were inaccurate, your only hope of resolving the issue was to reconcile with the network itself. And Bell lacked a tool to accomplish that goal.

It was at this point that Bell called on Syndesis to assist.

The first task Bell gave Syndesis was pretty straightforward: "Translate service information into something finance can understand." In this case, translation meant converting service components like

path IDs into circuit numbers that finance could map back into billing.

After playing the role of interpreter, Syndesis settled down to its true task: sifting through Bell's big list of flagged problems and producing "hit lists" of suspected circuits that warranted further investigation.

Working hand in glove, the Bell Revenue Assurance/Syndesis team was able to quickly zero in on assurance problems and deliver handsome savings to Bell's bottom line.

Syndesis – Interpreting Network Knowledge for Finance

As you can imagine, service-to-bill reconciliation is a specialized skill. In fact, very few companies are qualified to query the network, pinpoint the physical equipment, understand the logical connections, and then discover the services on top of it all.

First and foremost, you need a deep knowledge of the switches and routers so you can interrogate them and check their status.

Secondly, you need a broad knowledge of all the OSS pieces that touch the network. Remember, mapping the network is only part of the reconciliation process. You also need to pull data from billing and a host of inventory databases in all formats: TIRKS, FoxPro – even Excel spreadsheets.

Syndesis is a company uniquely qualified to deliver service-to-bill reconciliation. In fact, our experience provisioning,

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discovering, and reconciling data networks goes back 16 years.

In addition to Bell Canada, who we've served for four years, we also have several other large service provider customers, including Telecom Italia, Swisscom, SBC and Qwest. Major switch manufacturers also OEM our provisioning solutions.

Let's face it. Broadband revenue reconciliation is a HUGE project that draws on experts from finance, billing, network and several other fields. Syndesis delivers a small, albeit vital, piece of the puzzle. Namely, we allow carriers to perform service-to-bill reconciliation.

Our key value proposition is this: we take away the network complexity. Rather than get bogged down trying to piece together network glitches, our solution allows finance and revenue assurance people to narrow their focus – to tackle only those problems with a high probability of recovering revenue or finding stranded assets.

A key ingredient of this approach is Syndesis® NetDiscover™, which rapidly maps network data to billing and other OSS systems. By the way, NetDiscover is a high leverage solution – no data migration or disruption of your current OSS infrastructure is required to implement it.

NetDiscover employs parallel processing, allowing us to upload and reconcile your network in a matter of hours. Typically, our customers run network discovery once a day and do a complete service-to-bill reconciliation every week. Sometimes

our customers achieve dramatic results. In one case, our solution helped a service provider bring fall-out rates of 26.5% down to only 4.3%.

While our technology greatly simplifies broadband revenue assurance, our level of business and technical expertise is anything but simple to acquire and sustain. To do extensive service provisioning and discovery like we do requires a deep and on-going knowledge of the "blueprints" or feature /functionality sets of the switches and routers that live in data networks.

To give you an idea, roughly 30% of the Syndesis engineering workforce at any time is building adapters, renewing equipment modules, and performing other tasks to keep our solutions current with equipment vendors' latest software releases.

And today, our library of equipment interface modules support 30 major equipment families and hundreds of devices within those families – the broadest range of provisioning support of any company we know.

Do we cover every switch type in the world? Not yet. We work closely with our customers and partners and we align our development roadmap to support the functionality they need to meet their deadlines.

So what does this mean to you? It means in most cases that we can deliver an out-of-the-box reconciliation solution for you in weeks, not months.

Conclusion

As we said at the outset, the data services is no longer a “special service” – it’s a large and growing component of the telecom enterprise.

And the time to address broadband revenue assurance has never been more critical. Indeed, industry experts estimate that hundreds of millions of dollars in lost broadband revenues and stranded assets are sitting out there just waiting to be recovered. . .

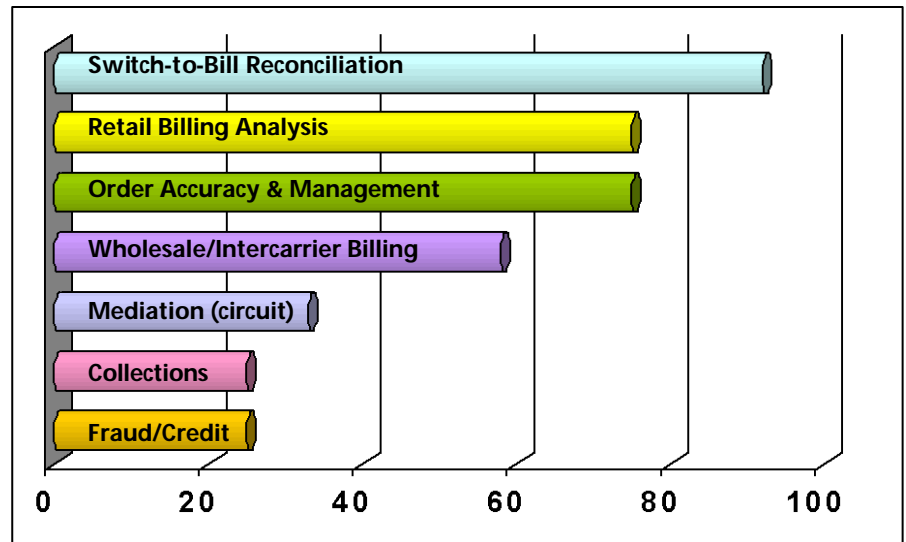
But there’s a catch. Traditional revenue assurance techniques like switch-to-bill reconciliation can’t do the job alone. Yes, they can reconcile services up to the first switch or router, but they’re hopelessly blind to the complex connectivity and service definitions that live in the network itself.

The answer is a new type of reconciliation – service-to-bill reconciliation – a technique that translates network complexity so that financial and revenue assurance specialists can take quick, decisive action and not waste time deciphering the network labyrinth.

Through a process of network and service discovery, service-to-bill reconciliation delivers the knowledge you need to identify revenue leaks, recover lost revenue, find stranded network assets, and deploy services more cost effectively.

Finally, there’s a clear path out of the maze.

R.A. Priorities in the Pipeline



Percent of respondents who say function is a top priority TRI 2003

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