



Universal Service Activation is Key to Competing Effectively

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Incognito Provides Service Providers Single Touch Point for Fast, Low-Cost Implementation of New Services, Service Offers and Network Systems

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Introduction

Among all of the strategic challenges competing for network service providers' (SPs) attention, nothing is more crucial to success in the day-to-day battle for market supremacy than finding a way to accelerate activation of new services and promotions.

Big, resource-consuming initiatives – OSS consolidation, network migration, fixed/mobile convergence, advanced advertising, etc. – are essential. But what operations, marketing, customer service and management personnel responsible for sustaining growth need most is a service activation solution that eliminates the speed bumps impeding execution on vital money-making strategies. Indeed, without a better mode of service activation, operators risk leaving the dollars on the table that are essential to underwriting their big-ticket growth initiatives.

Fortunately, with the availability of Incognito's Service Activation Center, SPs now have a solution they can turn to that allows them to centrally manage activation of all services and service offers from a single interface. This applies to:

- Provisioning of high-speed data, digital voice, digital TV, video on demand, wireless and any other conceivable service;
- Implementation of new services and variations on existing services;
- Activation over new types of networks, such as FTTx and mobile;
- Setting up multiple post- and pre-paid billing models suited to each type of service;
- CSR access to information confirming that services are activated as ordered;
- Marketing department flexibility to quickly implement and terminate special trial offers, usage incentives for one service tied to free sampling of another service, and any other incentive promotions the marketing department conceives;

- Accommodating new business models tied to consumer purchases of pre-provisioned devices;
- Support for service activation, content management and troubleshooting through end user self-service modules.

By tying into and orchestrating tasks performed by all the network and operation support components that are essential to implementing every service or offer, Service Activation Center (SAC) eliminates the arduous manual procedures that are required today to implement every new service and marketing strategy. And because it is built on a highly modular architectural foundation, SAC can accommodate whatever new types of services and attendant business models operators may choose to introduce over time, allowing them to avoid time-consuming and costly revamping of existing back-office and other operational components.

This versatility is in wide evidence as SPs across the globe continually extend the SAC single-platform activation capabilities to a broad range of new programs that vary greatly from one operator to the next. By leveraging the system's open APIs and Incognito's extensive knowledge of the supplier ecosystem, these operators are able to quickly design and add the modular adapters that allow marketing and operations personnel to implement new offerings as expeditiously as they have been accustomed to doing with existing services through SAC.

The Urgent Need for a Universal Service Activation Platform

Network operators face unprecedented competitive challenges from a combination of traditional suppliers, such as DBS and telcos, and an ever-expanding array of consumer electronics entities and content aggregators who are leveraging broadband connections to deliver bundled and a-la-carte Web-based content to the home. Compounding the challenge is the fact that a growing number of users, especially young people, are choosing to use PCs, laptops, iPads, netbooks and other devices to get their entertainment directly from the Internet.

Individually and collectively, Service Providers (SPs) are taking action on many fronts to address these challenges, but invariably, big technology-based initiatives take a lot of time, often years, to complete. Meanwhile, every SP has a set of immediate challenges that can be met aggressively by imaginative use of the resources at hand.

New Service Activation

First and foremost, SPs need to be able to launch new services quickly, without adding layers of operational complexity to the workloads of back-office system managers, customer service representatives, network operations managers and marketing personnel.

Operators are responding to their competitive challenges with major service innovations that promise to differentiate their offerings and increase their appeal to subscribers. Most prominently, these initiatives include the rollout of DOCSIS 3.0 broadband, TV Everywhere, value-enhanced digital voice services, interactive applications of every description and a wide range of time-shifted programming options complementing an expanding portfolio of VOD movies and programs.

Operators must be able to launch and promote all these services quickly and smoothly with a level of automation that prevents manual labor costs from undermining the bottom-line potential. They must be able to define

services without worrying about all the different details of implementation at every level of network and back-office component integration. And they must be able to bundle services together and define what actions need to be taken as subscribers react to new offers.

Moreover, operators should be able to adjust to changing market conditions by allowing consumers who purchase operator-compliant set-tops, modems and other devices from retail outlets to sign up for services automatically through network recognition of those pre-provisioned devices. This means the service activation platform will have to recognize that device connectivity has been established and ensure that all the back-office and network components react not only to the service choices consumers make, but also to other choices, such as bandwidth desired, post- or pre-payment, duration of usage, etc.

These capabilities will become especially important as operators enter the wireless services domain. And, of course, to the extent retail purchases become the dominant mode of equipping subscribers with service access devices, the ability to activate services on pre-provisioned devices will produce substantial savings in device storage and inventory management costs.

Today most operators are ill-equipped to meet all these requirements. Even after a service is set up, typically the activation system built up around that service is largely dependent on pre-existing activation systems, which themselves operate independently of each other, resulting in yet another interface and set of procedures a Customer Service Representative (CSR) must go through to get the service to a customer. Frequently, the CSR has no way to verify a customer is actually getting the service at the intended performance levels, leaving open the possibility that, if the service is not properly provisioned, more costs will be incurred with follow-up calls from the complaining customer and truck rolls to track down what is wrong.

Clearly, service activation processes where operators have to manually touch four or five operations and back-office systems must give way to the ability to put all of the processes essential to service activation in play through one point of contact. There may not be enough time or resources to replace all the silos with the consolidated OSS that Service Providers (SPs) have long dreamed of, but operators can take immediate steps to put in place a billing-to-provisioning-to-customer service mediation layer that comprehensively addresses all the service activation points for all services through one interface.

Facilitating Marketing Initiatives

Beyond the need to streamline activation of new services, SPs also need to free their marketing departments to take full advantage of the functionalities built into existing network and back-office components and tap the data resources that are available to track the performance of new pricing models and incentive offers. Marketing departments must be able to activate new tiers, usage-based pricing and packaging models, free trial and reduced-price incentives and value-add applications that are essential to building ARPU and to retaining and adding subscribers.

If, for example, a marketing department wants to offer a free week of 50 megabit-per-second high-speed data service to anyone who buys 3 VOD movies in one week, the complexities tied to coordinating all the moving parts on such an offer should not get in the way. And if that offer turns out

not to produce the results they are looking for, they need to be able to see those results and to take immediate steps to adjust or take down the offer.

Or, to take another example, operators may want to set up pre-paid options which, for subscribers, include the added usage on the next bill and, for non-subscribers, bill directly through credit card or smart card payment gateways. Regardless of what examples one might choose, the bottom line is there should be no limit on marketers' flexibility to create incentive offers and set payment options.

Today, owing to the multitude of touch points that must be manually configured to support any new steps along these lines, marketing departments are highly restricted in their ability to act aggressively to keep competitors off balance and users focused on service options with a steady flow of new promotions. If they could implement such offers through their own interface to the service activation system without having to engage and coordinate labor-intensive actions across other departments, marketing personnel would be able to put the full power of their knowhow behind their company's growth objectives.

Streamlining Customer Service

Another major impediment to maximizing revenues, cutting costs and improving customer experience, which can be addressed through a universal service activation platform, is the manually intensive customer service workload that keeps growing with every new service, pricing or special offer initiative. When it comes to taking new service orders, Customer Service Representatives (CSRs) must not only have a single-interface access to all the provisioning and billing triggers associated with all services and special offers, he or she must also be able to confirm the service is activated as required once the order is taken. And when it comes to fielding service complaints, CSRs must have a full-service view of the subscriber's package together with visibility into all service and special offer options to facilitate up selling. And, of course, the CSR must be able to view status and performance metrics on that subscriber's service

Today, many customer service departments are a long way from having these automated capabilities at their finger tips. Even at the basic level of activating multiple services, CSRs frequently have to touch multiple provisioning and billing systems to get a two-service order such as high-speed data and digital voice up and running. And it gets worse when other services are added to the new order. Not only are such conditions adding costs to the ordering and activation process, but the complexities of the multi-step activation process lead to provisioning errors that drive costs even higher.

For example, a 2% order activation error rate, recorded recently by one MSO that had added VoIP service to its offerings. This error led to more calls and truck rolls, cutting significantly into ROI on the new orders. This MSO's ability to achieve error-free service activation through implementation of the Incognito SAC has led to much higher cash flow margins on the service rollout.

The extent to which universal service activation technology can be employed to facilitate customer self service is another important contributor to MSO cost savings and improved responsiveness to customer needs and market dynamics. Along with supporting online ordering without the intervention of CSRs, SPs should be able to reduce the drain on maintenance and repair resources by allowing subscribers to participate in

diagnostic tests while on the phone with CSRs before technicians are dispatched.

Accommodating SP Growth and Operations Consolidation

Cutting across all these factors as another driver behind the need for universal service activation are operational requirements attending Service Provider (SP) growth and consolidation. Consolidation of operations at regional and national levels has created a pressing need for an integrated multi-service activation capability that allows marketing departments to launch new services and offers on a pan-system basis but with the flexibility to tailor everything to the requirements of each local market.

At the same time, many operators find themselves having to change out their operations support systems to keep up with subscriber growth, new service billing and provisioning requirements. Smaller SPs are outgrowing outsourced approaches to service activation, and larger SPs are outgrowing the functional capabilities of home-grown OSS platforms.

Typically, the steps taken to address these needs fall short of what is needed to meet all the new service and marketing requirements discussed here. New OSS solutions deployed to address these situations largely preserve the silo-based framework, especially on the service activation side, owing to the heavy fork lifting that would be required to support a fully integrated operating environment across all network elements.

A Comprehensive Service Activation Solution

Incognito has designed the Service Activation Center (SAC) to accommodate all the requirements laid out in the preceding section. SAC achieves this operational cohesion through consistent application of business logic to define service activation processes, resulting in the end-to-end integration of access network technologies, back-office support systems and end-user devices.

Specifically, the solution manages the subscriber service activation flow through:

- CSR interfaces;
- Billing integration and mediation;
- Integration with device provisioning mechanisms;
- Video headend integration;
- Voice softswitch integration;
- Email and Web space integration.

The SAC Architecture

Service Activation Center (SAC) is built on a modular architecture supporting virtually unlimited extensibility and scalability. See Figure 1 for an illustration of how SAC fits into the operator's network.

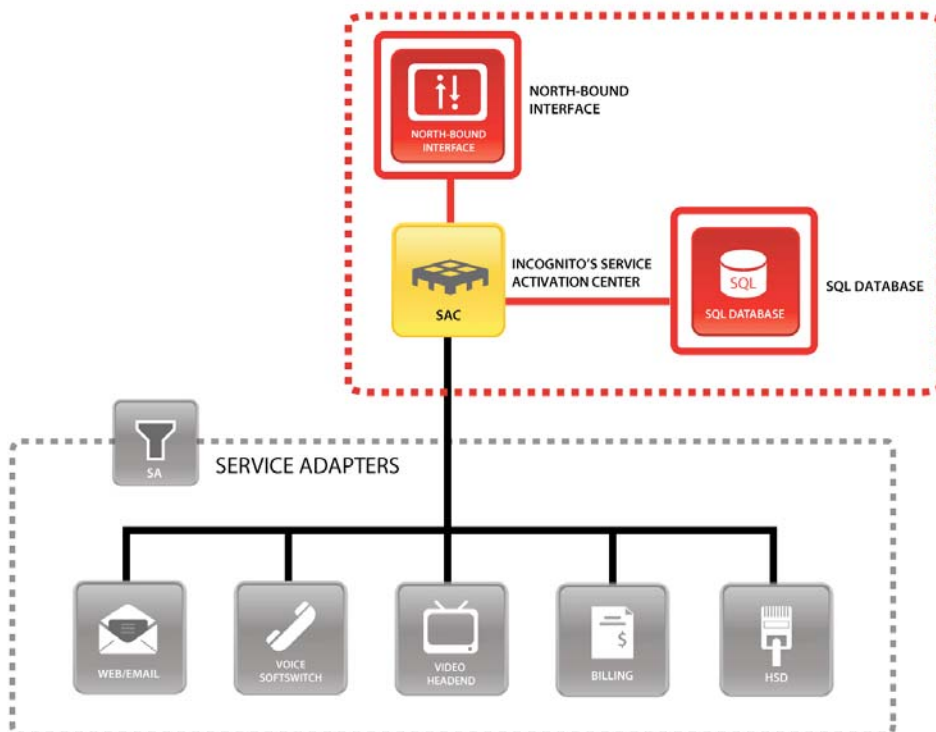


Figure 1: The SAC Modular Architecture

The distributed-component Message Bus Architecture consists of four layers, including:

- **Platform:** consisting of the management modules that provide systems services to other layers
- **Applications:** encapsulate business processes, rules, transactions and workflow
- **Services:** expose the generic attributes and behavior of each entity in the application
- **Adapters:** support integration of services with external hardware and software systems

Out of the box, SAC comes with many service adapters and management modules designed by Incognito to serve many service activation functions that are common to most Service Providers' (SPs) needs. These adapters have already been integrated with leading network and back-office system components from multiple vendors, ensuring that operators implementing SAC can quickly put it to work as a central point of activation interface for all departments.

At the same time, operators can request or, with Incognito's help, design through simple coding instructions custom-made service adapters and management modules that can be integrated with specific vendor system components to support new types of services. This ongoing expandability and scalability rest on the fact that any service adapter connecting with the SAC core provisioning engine can interact with relevant management modules via messages delivered over the message bus.

This communications flexibility is enabled by the Northbound Interface (NBI), a simplified single Applications Program Interface (API) designed by

Incognito to accommodate all service-related applications. As a well-defined interface with generic definitions for services and devices, the NBI transforms requests from external systems into SAC-compliant messages and forwards them to the SAC server.

This greatly simplifies the complexities of integrating multiple third-party platforms, thereby allowing operators to freely define and quickly activate new services. At the same time, through use of industry-standard APIs, SAC supports the upstream and downstream transmission of information across all network elements and OSS/BSS solutions, including billing and customer care. Flexibility with respect to billing extends to two modes of operation, direct entry and billing-fed 2-way, where, as illustrated in Figures 2 below and 3 in the follow page, the operator can use either the billing interface built into SAC or the existing billing system interface for communications from the Customer Service Representative (CSR) and customers.

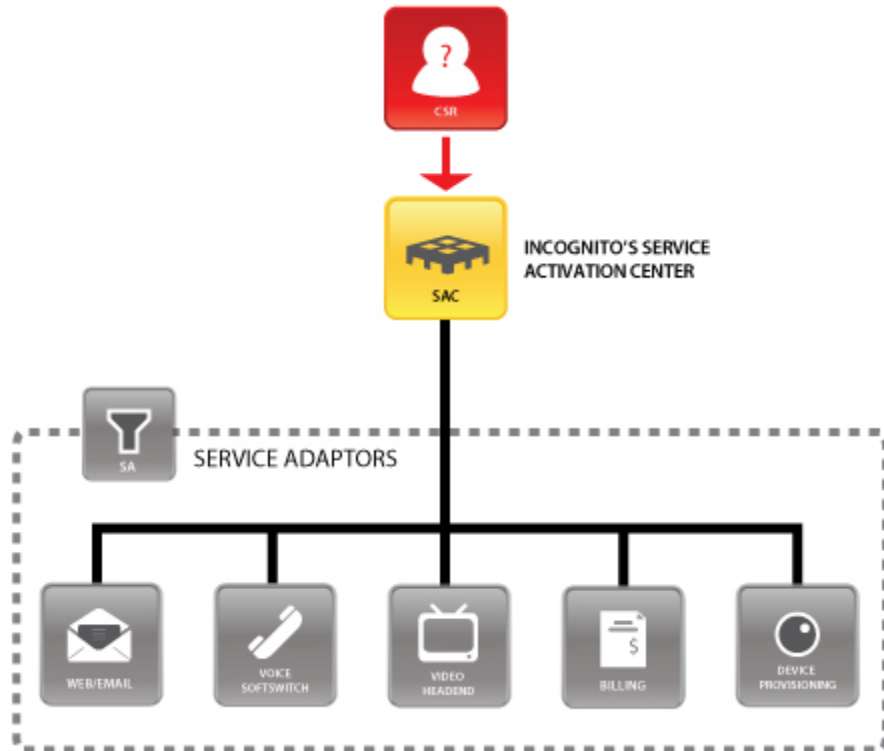


Figure 2 – Service Activation Center - Direct Entry Data Retrieval Model

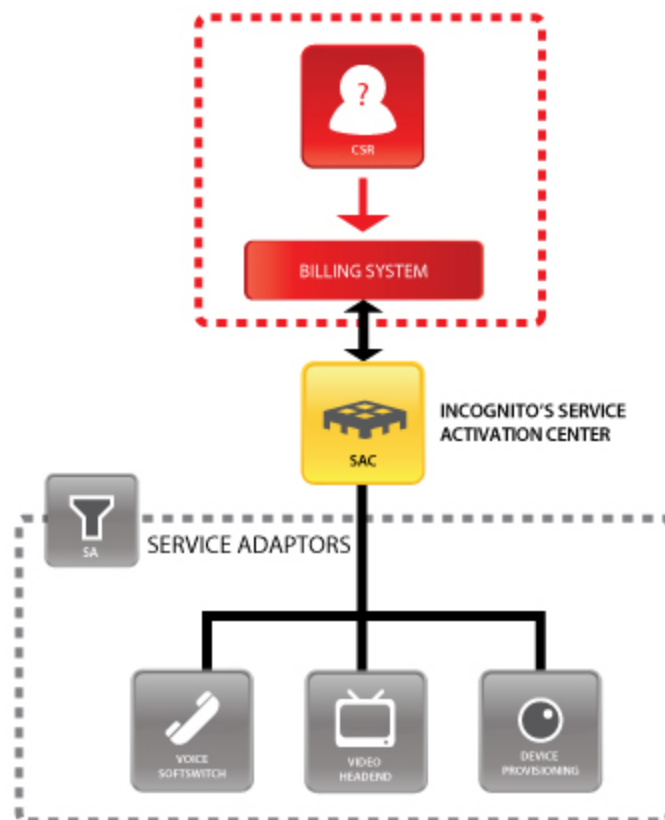


Figure 3 – Service Activation Center Bill-Fed 2-Way Integration Model

In the direct entry model, SAC is upstream from the billing system. The SAC GUI will be the main interface that is used by CSRs and subscribers and SAC will initiate all messages that are sent to billing. In the billing-fed 2-way model, SAC is downstream from the billing system. The billing system's GUI will act as the main interface that is used by CSRs and subscribers. Billing will initiate all messages that are sent to SAC. In this case, SAC's GUI is used for diagnostics purposes.

The modular architecture allows SAC to support all the broadband technologies important to cable and other providers' services, including DOCSIS, PacketCable Multi Media, SIP, WiMax, and FTTx. It also provides the mechanisms by which SAC enforces the integrity of all transactions across these multiple platforms, based on the operator's defined business process rules.

Service Adapters

A key to transactional integrity is the fact that adapters come with built-in features that help track each adapter's participation in transactions to facilitate adaptation to transactional failures. Adapters also provide a consistent queuing mechanism for asynchronous non-transactional operations with external entities.

By hiding the integration details associated with specific external components, the adapter layer decouples applications from external systems, thereby allowing similar types of adapters for other external systems to be plugged in or taken out with minimal or no changes to the Service Activation Center (SAC) business layer. Thus, the architecture

allows operators to flexibly change out third-party components as technologies evolve, without interfering with the service activation processes.

Tables 1 and 2 list some of the adapters that come with the basic SAC system and others that are available optionally. Through its work with customers, Incognito is continually adding to the adapter suite.

Table 1: Out-of-Box Adapters

Adapter Type	Application
Voice Adapter	Nortel CS2k Cedarpoint Safari
Video Adapter	NDS CAS Nagravision CAS Scientific Atlanta DNCS Motorola DACS
Device Provisioning Adapter	Incognito MPS
Billing Adapter	GLDS CSG

Table 2: Optional Adapters

Adapter Type	Application
Voice Adapter	Nuera NSN hiQ OpenTV
Billing Adapter	Comverse DST Innovis Geneva
Application Adapter	Sendmail GoogleMail Trouble Ticketing

Management Modules

The SAC platform layer comes pre-integrated with several management modules designed to simplify how SAC is used to accelerate activation of services and special offers. These include:

- **Content and Access Management API:** Provides a simple means by which operators can create and manage end-user self-service portals, offering subscribers such capabilities as parental controls and content personalization.
- **Monitoring and Diagnostics Module:** Enables a CSR or Administrator to check the active status of a managed customer device, display devices assigned for each service, check the status of those devices with such tools as ping, TraceRoute and SNMP Walk, and retrieve current provisioning and lease information.
- **Product Catalogue Module:** Supports existing product sets and assists in the definition and maintenance of future product sets by defining services by service type, configuration and filtering conditions; enables rapid creation and deployment of tailored packages based on combinations of geography, network equipment and CPE; supports storage of all service-specific information on a per-subscriber basis, and allows flow-through provisioning through direct access to subscriber data contained in operations and business support systems.

- Prepaid Services Module – provides a simple way to flexibly set up pay-as-you-go or try-and-buy offers, along with various modes of payment, such as credit card and smart card, or for existing subscribers, direct additions to billing statements.

SAC in Action

Over the short time Service Activation Center (SAC) has been available, many cable and other types of service providers have put it to use to expedite their service and promotion efforts, providing vivid illustrations of the versatility and game-changing nature of the platform. Some SAC customers have been publicly identified, including StarHub in Singapore, Telstra Clear and Foxtel in Australia, TeleCable in Europe and Comporium and WildBlue in North America.

These and many others are continually adding new adapters as they discover the impact that the platform can have on planning and time-to-market with new offers. For example, in the case of one large triple-play provider, the marketing department, after putting SAC to work in support of a pay-as-you-go option for broadband customers, discovered how free they were to create and introduce new offers. With SAC well integrated into back-office and network components, they were able to continually invent new applications with the result that 35 management modules have been added to the original implementation of the platform.

In another instance, an MSO wanted to implement delivery of triple-play consumer services over a Gigabit Passive Optical Network (GPON) with the flexibility to easily add new services and offers simultaneously with implementations over its legacy network. Incognito took just two weeks to complete the management module that allowed the operator to extend the existing SAC activation capabilities directly to the GPON customers.

SAC capabilities also apply to service applications directed to wholesale customers. This was illustrated with a wireless carrier's recent implementation of SAC modules to serve the different Service Level Agreement (SLA) requirements of multiple resellers. These modules are now ensuring enforcement of these varying requirements for all the carrier's reseller customers.

For cable operators, rollout of DOCSIS 3.0 with the ability to support the many types of service offerings that could be implemented on that platform has become a major priority. Frequently, as was the case with some MSOs who are now SAC users, existing element management systems are not equipped to work smoothly with DOCSIS 3.0. These operators changed out their legacy mediation systems so they could make use of the DOCSIS 3.0 interoperability and service flexibility inherent to SAC.

Conclusion

The momentum around Service Activation Center (SAC) applications is building rapidly as operators of every description discover the powerful new approaches to marketing and new service introduction that are now within reach. Many operators are using SAC with its out-of-the-box adapters and modules exactly as they have been designed by Incognito. Others are customizing those management modules to their specific operational environments. And many of these customers are coming to Incognito for assistance in building new types of modules to capture new opportunities. In most of the latter cases, these new modules can be built by Incognito very quickly without having to send personnel on site.

As Incognito works with its individual customers to continually expand the uses of SAC in their networks, the company is also developing new modules and adapters to fit emerging market needs of the operations community at large. In some cases, as with TV Everywhere, these modules are designed for subscriber-facing services, and in others, they are designed to meet internal operational needs or requirements tied to affiliations with outside partners, as is the case with implementations of EBIF applications. Indeed, many existing SAC modules are designed for non-subscriber-facing requirements, such as monitoring of softswitches and other network systems.

At a time when network operators have an unprecedented array of complex interactions to manage across all network, back-office and end-user components, SAC has become the solution of choice among a growing number of network operators worldwide. Once in place, the platform gives operators an opportunity to step back and look at a wealth of opportunities to cut costs and increase revenues, often in ways they never thought were possible.

There may be nothing more vital to network operators' competitive strength than efficient orchestration of service activation, special offers and component operations across all networks and external interfaces. Many challenges faced by service providers are daunting with much work left to be done before they are met. Fortunately, this is not one of them.

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