incognito software

WIRELINE SOLUTION OVERVIEW

Device Provisioning & Management Solutions for the Challenges of Today's Wireline Service Provider

Incognito Wireless Solutions for:

For the past 10 years, Incognito Software has been at the heart of the IP revolution. Through its carrier-grade device provisioning and IP address management solutions, Incognito has helped Service Providers (SPs) around the world become more competitive by helping them optimize their operations and launch new IP services quicker.

To take advantage of the increased demand for competitive quad-play services and the opportunity to reach more customers through new access technologies, such as WiMAX and PON, SPs must ensure they upgrade their infrastructure to ensure the best customer experience. In this competitive market, SPs who do not take advantage of these new technologies risk decreasing margins and raising customer churn rates.

Optimizing Device Provisioning with Centralized DHCP

Many wireline Service Providers (SPs) are limited by their legacy device provisioning solutions, where DHCP servers are spread on the edge routers of their access network, like a BRAS (Broadband Remote Access Server) for a DSL network.

This architecture leads to several problems. IP addresses are being tied to specific edge routers and regional load balancing cannot be implemented efficiently. Reliability is also an issue, as each edge router needs to be populated with extra IP addresses for handling a sudden influx of requests in case of an edge router failure, resulting in a waste of IP address space.

SPs are forced to allocate pools of IP address space that are double the number of live customers in order to support network failover. These extra addresses are difficult to acquire as the Regional Internet Registries are very reluctant to delegate public route space for this purpose. Furthermore, it prevents them from implementing IP address load balancing across different regions to support various peak hour trends.

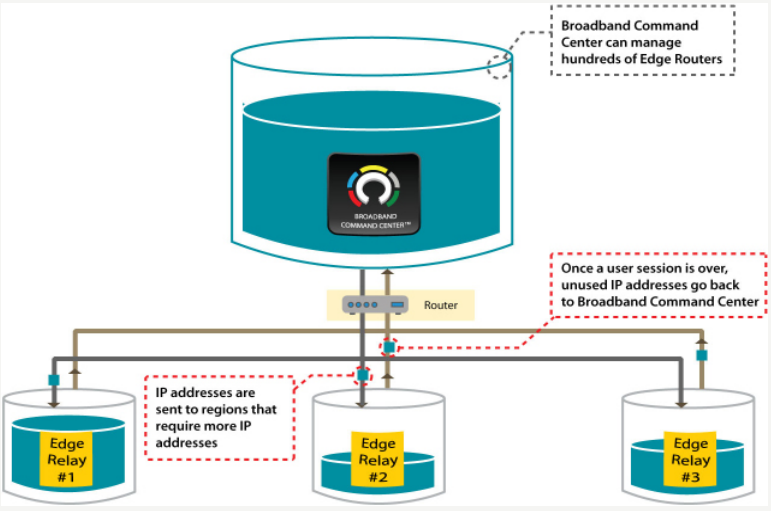
These issues cause the systems to become a bottleneck that is not only difficult and costly to maintain as well as manage, but also wasteful as it strands scarce IPv4 Addresses. Ultimately, these inefficient systems reduce SPs' service reliability.

Now, instead of configuring and managing the IP addresses over an extensive number of edge routers, network administrators can centrally manage all their DHCP services using Incognito's Centralized DHCP Solution.

The solution, comprised of Broadband Command Center and Address Commander, allows SPs to operate in multiple networks and realize significant operational costs savings in the provisioning and management of their customer devices.

Using its relay centric subscriber awareness, Broadband Command Center takes over the DHCP workload from the BRAS equipment and centralizes the DHCP function into several clusters of DHCP servers. Unique subscriber IDs are encoded in the access layer and forwarded by DHCP Relay Agents located in a BRAS.

Diagram 1.
Centralized IP Address Resources Reducing IP Waste



Broadband Command Center also solves reliability issues with DHCP clusters that consist of primary and secondary servers. Should the primary server fail, the secondary server will continue the addressing work while avoiding duplicate assignment issues. Since the two servers share the same pool of IP addresses, the scarce resource isn't wasted.

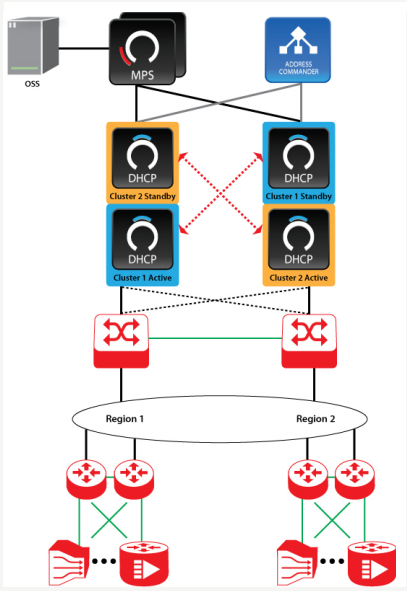
Additionally, Broadband Command Center offers a Weighted DHCP solution, allowing SPs to assign a weight to each network. These weights influence the behavior of Broadband Command Center's allocation of dynamic IP addresses based on the DHCP Relay client a request comes from. This means that a back-up IPv4 address may be selected only when required. On top of that, the resource pool can span across many relays, thus no longer stranding the precious resource.

Thanks to the Weighted DHCP features, edge routers can now retrieve IP addresses from a pool assigned to each DHCP server, while allowing geographic load balancing to cope with various regional peak hours.

Broadband Command Center integrates to SPs' Operations Support Systems, through its MPS module, facilitating the overall subscriber service activation process.

With this solution in place, Mobile Operators can improve the availability and response time of their IP address delivery even during peak hours, achieving 5-nines reliability with 1:1 server backup for DHCP failover.

Diagram 2.
Weighted DHCP Influences
the Allocation of Dynamic IP Addresses



Address Commander also allows SPs to plan out their IP space and safely automate the allocation of IPv4 and IPv6 addresses throughout the network. Address Commander can intelligently discover dynamic IP scopes and usage information from the distributed Incognito DHCP clusters, and incorporate the relay centric scopes into the holistic view of a SP's IP network. Address Commander's snapshot, reporting, alerting and trending subsystems can then be used by SPs to make proper decisions on how to configure Broadband Command Center to make best use of their IP and network resources.

The Address Commander platform also supports end-to-end management requirements, encompassing IPv4, IPv6, DNS integration, dynamic reporting, lawful intercept IP reporting and Internet Registry reporting.

Key Benefits

- Reduce costs in integration and hardware requirements in the edge network
- Offer flexibility and control over a scalable and linear DHCP solution, reducing IP address needs
- Carrier-grade solution with geographic redundancy and load balancing functionalities

Key Technical Benefits

- Weighted DHCP allows SPs to improve their public IP addresses usage and availability via weighted DHCP functionality
- Works agnostically in all Ethernet in the First Mile networks

Reducing OPEX with MAC-less Provisioning for Quad-Play Gateways

In DSL TR-069 provisioning, the DSL CPE has to identify itself with a unique ID to the ACS server, so that ACS can validate and assign it the right configuration. Broadband Forum terminals leverage device provisioning and offer enhanced diagnostics and subscriber services. They identify themselves using a serial number and a vendor id.

The Service Provider must register a subscriber device for service prior to shipping to customer or implementing a walled garden portal for new device registrations.

Incognito 'MAC-Less' provisioning enables Service Providers to leverage back office inventory and activation platform awareness of the

subscriber loop information. This loop information is most often used by IP DSLAMs to convey subscriber identity within DHCP Relay sub option data. Incognito DHCP solutions use this information to allocate IP addressing, DHCP Options as well as influence the Broadband Forum terminal use of its Provisioning Code Functionality.

As a result, modem shipment logistics are simplified, and customer support response times are improved in case of CPE failure because new devices can be shipped without having to be re-registered in the database.

Key Benefits

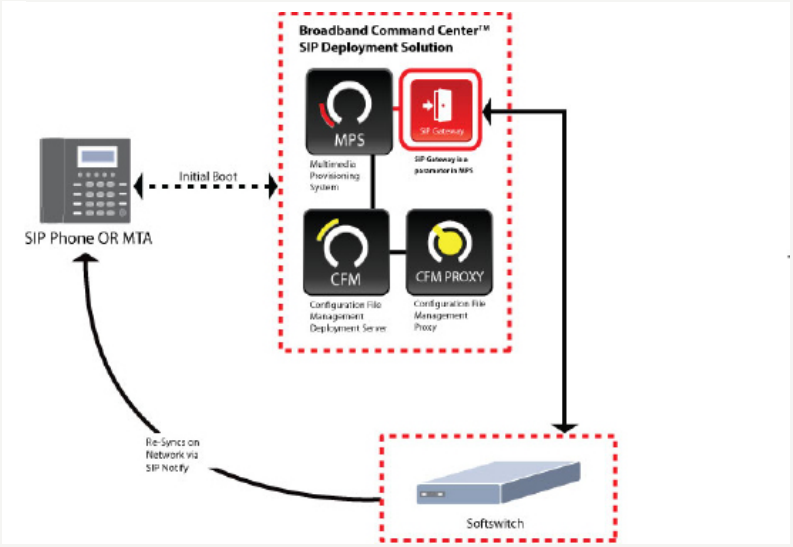
- Enable Zero Touch provisioning
- Reduce Service Providers' operational and logistic cost
- Improve quality of experience and customer support response time in case of CPE failure

Flexible SIP Device Provisioning

Many IP Phone manufacturers have developed their products for the Enterprise market. This market does not have the same requirements as Service Providers do in the deployment of SIP VoIP terminals. However, for SPs looking to market and launch a VoIP service using a vendor specific VoIP phone, centralized VoIP device provisioning is key. Each device manufacturer has its own vendor-specific configuration file format and uses different encryption algorithms to encode the files. These vendor-specific configurations further add complication to the already intricate deployment of SIP-based services and drastically affect the time-to-market of these services.

SPs that have deployed Broadband Command Center for SIP device provisioning were able to overcome the challenges associated with the vendor specific implementations.

Diagram 3.
Broadband Command Center brings SIP-based devices online by dynamically generates configuration files



Broadband Command Center software automatically brings SIP Phones, modems, MTAs, ATAs, and other customer premise equipment (CPE) online based on subscriber-selected services and operator-defined policies. The software provides templates where basic service and device parameters can be entered. It then dynamically generates the appropriate configuration files based on these parameters, thus simplifying the configuration of these SIP devices. The ability to generate dynamic files also enables SPs to offer an unlimited number of subscriber-unique services whilst minimizing the costly manual administration associated with business and residential VoIP services.

By supporting the largest group of leading vendors (Motorola, Polycom, Cisco-Linksys, etc.), VoIP phones, MTAs, eMTAs and ATAs of any provisioning software in the market, Broadband Command Center removes the manual labor associated with configuring these devices and provides SPs the flexibility to choose the devices that best fit their business.

Key Benefits

- Automated dynamic provisioning for SIP devices
- Support for the largest group of leading vendor SIP-based devices
- Integrates with SIP Softswitch platforms and OSS to provide end-to-end service activation

Ensuring a Smooth Transition From IPv4 to IPv6

IP address management, always a formidable challenge, has presented new complications with the coming of IPv6.
With less than 10% of public IPv4 space available and roughly 100 million new public IP addresses consumed per year, the telecommunication industry is expected to hit IPv4 depletion by the end of 2011.
This situation is pushing Service Providers (SPs) to actively prepare a transition plan from IPv4 to IPv6. But there is no 'hard-stop' on this transition, making it difficult to plan and assess progress.

Most IPv6 migration strategies being considered within the industry require some form of coexistence of IPv4 and IPV6 services, at least for device provisioning and internet content services.

Because of the length of time required to make a complete transition and the complexity of managing both types of IP address schemes, the capability to centrally assign, track and report IPv4 and IPv6 addresses will be fundamental to a successful IPv6 service rollout.

Using Incognito's Centralized DHCP solution, SPs can effectively deal with their short-term IPv4 address shortage and assignment efficiency, while preparing SPs today for their IPv6 implementation and migration needs.

SPs can assign both IPv4 and IPv6 addresses across multiple DHCPv4 and DHCPv6 Relays in the network, thus simplifying operations through a relay centric subscriber network. The solution also provides SPs with the ability to plan IPv4 and IPv6 dual stack resources, while viewing and managing IPv4 alongside IPv6 addresses.

Additionally, Address Commander offers a centralized view of IP address usage across all networks that will help SPs to safely plan and execute their migration, avoiding unnecessary IPv6-related capital expenditure.

Administrators can automatically generate IPv6 addresses and manage Full AAAA 'quad A' IPv6 DNS resources. The administrative team will be able to save valuable time with customized and generic IPv6 address reports, including Lawful Enforcement and Internet Registry reports.

Key Benefits

- Ensure business continuity by facilitating IPv4 to IPv6 transition
- Lower Operational cost linked to IPAM and IPv6 transition
- Avoid long and costly in-house development thanks to a field proven commercial solution

Lawful Interception Reporting to Support CALEA Requirements

Compliance with law enforcement agencies and intelligence agencies around the world has made keeping records of IP communications an obligation for Service Providers (SPs). In general, a SP must be able to retrieve telecommunication records over a period of six months to two years, and make them available to law enforcement upon request. To do so, SPs must implement a solution to store and retrieve DHCP leases over a long period of time.

Using Incognito's integrated solution, SPs can now leverage Broadband Command Center and Address Commander to easily implement an efficient Lawful Enforcement Reporting solution.

Broadband Command Center helps SPs easily retrieve and store DHCP lease information by having the DHCP record the time period in which a device uses a specific IP address. Lease activities are sent to and processed by Broadband Command Center, which writes the data to an SQL database, allowing the SP to retain the records over an extended period of time.

The SQL central database is then used by Address Commander, Incognito Software's IPAM solution. Address Commander's reporting system provides SPs with unprecedented visibility into their IP address usage, whether static or dynamic. With this, SPs can attain information on address usage from one central interface regardless of how many DHCP servers are deployed on the network.

Key Benefits

- Leverage DHCP and IPAM revenue generating solution to deal with Lawful Intercept requirements
- Lower integration and management cost
- No need for ad hoc or in-house solution
- Leverage Address Commander broad functionalities to plan, assign, manage and report all IPv4 and IPv6

Managing Business Customer IP Requests

The request for public IPv4 and IPv6 routable space is required to facilitate many of the services Service Providers (SPs) provide to their business customers. Ensuring that the address space is properly and uniquely allocated to customers and that authoritative DNS has been properly configured is a key step to ensuring these services are rolled out and continue to operate properly. Care must also be taken to properly decommission these services such that sufficient time is given to business customers and networks to adjust to the changes before the limited IPv4 resources are given to other customers.

Incognito's Name Commander propagates any changes to DNS records and configuration data across all servers in real-time, while Address Commander helps automate many of the tasks required to safely provide routable IPv4 and IPv6 space to end customers. It allows network planners to tag blocks that have been properly provisioned for a specific service in a particular region, so that requests for new address space can be automatically retrieved from the appropriate pool and assigned to the customer.

The entity-centric model embedded into Address Commander allows resources, such as IPv4 and IPv6 ranges, static IP assignments and DNS authoritative data, to be directly associated to an entity (business or wholesale customer). This view can be easily accessed by customer service representatives or business customers via a portal to review the current status of the resources associated with the end customer.

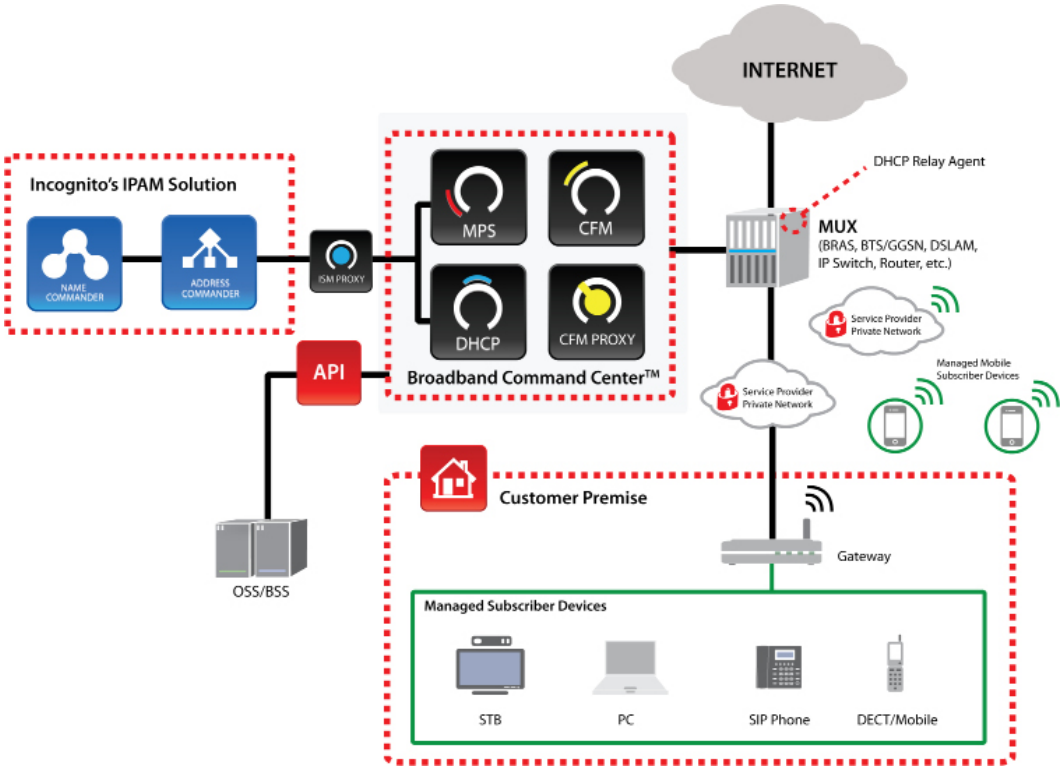
The decommissioning process is simple and facilitated by a grace period that places the IP range in a reserved state for a specified time before it is automatically returned to the free pool and made available to other customers.

Key Benefits

- Easily tag and assign address blocks
- Associate resources to specific business or wholesale customers
- Simple decommissioning process

Wireline Solution Product Family

Incognito's wireline solution product family includes Broadband Command Center, Address Commander and Name Commander.



Broadband Command Center

Broadband Command Center, a widely deployed provisioning software, is capable of handling a mixture of network types and can help free up stranded IP address assets by centralizing the DHCP server function before spreading in the access network Mux. When integrated with Address Commander, all IP address management tasks can be handled from a single interface and any changes will be automatically pushed to the DHCP servers.

Broadband Command Center Highlights

•Innovative features set enabling centralized DHCP and MAC-less Provisioning

•Best-in-class performance and scalability

•Most advanced high-availability and redundancy; 5-nines availability with 1:1 server backup for DHCP failover, and redundancy of MPS servers

•Most extensive toolkit: Web Services, XML, CORBA, CLI, facilitating OSS integration

•Flexible device support, allowing Service Providers to choose devices that best fit their business

Wireline Solution Product Family

Incognito's wireline solution product family includes Broadband Command Center, Address Commander and Name Commander.

Address Commander

Address Commander is a carrier-grade IP Address Management software that helps Service Providers plan, assign, manage, as well as report on IPv4 and IPv6 addresses. Address Commander can also be closely integrated with DNS and DHCP services, as well as business services such as LDAP. This close integration allows Address Commander to detect problematic configurations and send alerts when problems occur.

Address Commander Highlights

•Comprehensive alerts and reporting, including RIR & Lawful Intercept (CALEA)

•Flexible representation of topology

•WHOIS server configuration file generation

Name Commander

Name Commander is a domain management system (DMS) for management of BIND and Controlled Name Servers (CNS). Changes to zone, resource records and configuration information are automatically propagated across all the servers in real time. When integrated with Address Commander, IP management changes can be automatically synchronized, and all auditing, diagnostic and configuration of related DNS information can be accessed directly from one management console.

Name Commander Highlights

•Automatic, real-time propagation of zone and resource record deletion, additions and modifications

•Central management of DNS BIND 9 option management

•Policy management and/or enforcement of common DNS records and BIND options

•Split DNS management of internal and external DNS records

•Automatically synchronize IP management changes with IPAM systems