

SOLUTION BRIEF

Intelliden Multi-Service Solution for Cable Operators

Cable companies are transforming themselves to be true multi-service operators. Most cable operators have already extended their traditional cable TV offerings to offer triple-play services of voice-over-IP (VoIP) and high speed internet (HSD) as they compete with traditional incumbent carriers for the multi-service broadband customer. They are also aggressively launching 'next gen' video services such as digital television (DTV) and high-definition television (HDTV) that offer superior quality of experience, greater programming choice and more interactive services.

New Services Require New Networks, Systems and Processes

In addition to VoIP, internet and new video services, cable companies are also starting to enter the wireless services arena — either through partnerships or acquisitions, and key under-served pockets of business services markets for large enterprises and small medium businesses. The reasons are simple. Growth in traditional video business has slowed down in mature markets, and cable operators must introduce new services in order to accelerate their growth rates. The ability to offer bundled service offerings not only increases their wallet share of the broadband subscriber but also increases the stickiness and reduces churn.

“The triple play is driving incredible operating momentum and we see that accelerating as it continues to roll out. We now expect Comcast Digital Voice penetration to exceed 20% by the end of 2009...the triple play is increasing the already strong growth of our video and high-speed Internet services — we expect to deliver at least 7 million RGU additions per year through 2009.”

**— Brian Roberts, Chairman and CEO,
Comcast Corporation**

This growth strategy requires capital expenditure in the form of new network infrastructure, new operational systems, and new technology platforms. Not surprisingly cable operators are aggressively expanding and enhancing their IP-based network infrastructure to provide a cohesive, open, and scalable platform to deliver their 'triple play' service offerings. Beyond VoIP services, cable architectures are being extended with specifications such as CableLabs PacketCable™ Multimedia (PCMM) and DOCSIS 3.0 to enable operators to deliver greater programming choice, enhanced multimedia services, including interactive gaming, messaging, video telephony, video-on-demand, and set-top box (STB) integration with communication services.

The number of programming channels in HDTV format is growing by leaps and bounds. With the arrival of DTV and HDTV, cable operators face a multitude of configuration issues related to distributing high definition content, and managing new demands on infrastructure and bandwidth.

In order to effectively manage and control this complex, evolving, multi-service infrastructure consisting of IP routers/switches, cable modem termination systems (CMTS), node splits and switched digital video (SDV), cable operators must add a new layer of OSS support and IP expertise. Combined with hiring new technicians and engineers and upgrading skill sets of existing personnel, cable operators must implement new systems and processes that aid automation.

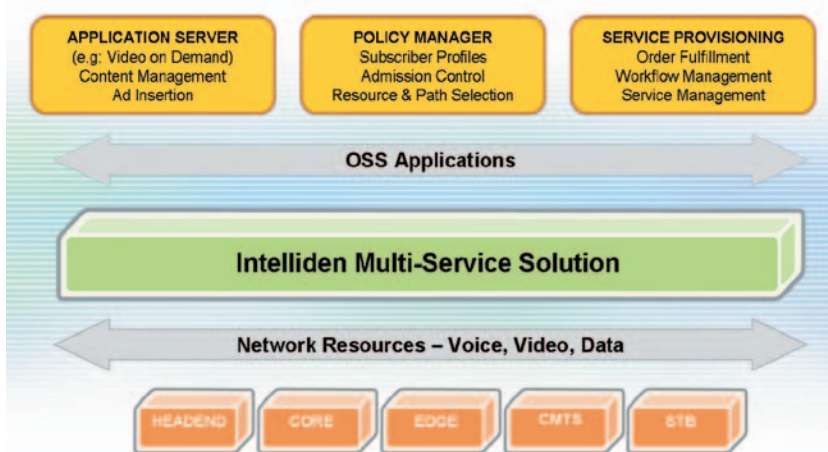


Figure 1 (above): The Intelliden R-Series® works with third-party OSS solutions to support intelligent networking and reliably deliver delay-sensitive services across a broad set of IP network devices such as switches, routers, and CMTS.

Multi-Service Deployment Challenges

Delivering multiple, high-quality, real-time triple-play services across a large and dynamic subscriber base requires an open, flexible and scalable infrastructure which is comprised of hundreds of network devices from multiple vendors. The challenges surrounding the deployment of next generation IP infrastructure include:

- **Guaranteed Quality of Service (QoS)** — Flawless delivery of bandwidth-intensive and delay-sensitive services (e.g. IPTV and HDTV) requires deterministic performance, and coordination of a complex ecosystem of middleware and network components. Guaranteeing QoS, scalability, and reliability across such a diverse architecture is essential for the cable operators to delivering differentiated customized services, maximizing user experience and increasing revenues. Also the VoIP service must match or exceed the quality and reliability level of incumbent's voice service in order to maximize customer adoption.
- **Network resource optimization** — Traditional cable infrastructures deliver all channels to all subscribers. However digital video multi-casting to all homes is an expensive proposition. Switched Digital Video, which provides dedicated bandwidth to each home, is certainly one way to maximize limited resources. Regardless, with HDTV requiring up to 4X the bandwidth of standard television signals, the availability of hundreds of video and audio channels

and the customer demand for a rich library of VoD programming, cable operators will undoubtedly face a bandwidth squeeze. Over provisioning of network resources cannot be the answer and operators must find new ways to optimize their limited network resources.

- **Stringent security requirements** — Ensuring the security requirements dictated by providers of licensed video content as well as subscribers will be essential for the broad based adoption of the 'next gen' services. In addition, cable operators must be able to control which subscribers receive certain specific types of services and service add-ons.

- **Maximizing operational efficiencies and service uptime** — In order to move beyond limited trials, cable operators need to efficiently scale their network infrastructure and ensure service availability for millions of subscribers. Each network device in a complex heterogeneous infrastructure must be configured and provisioned accurately to ensure reliable service delivery. Network configurations must meet key operational and service level parameters and other network policies. Furthermore, cable operators must be able to rapidly provision new services, ensure service availability and resolve any service failures.

Intelliden Multi-Service Solution for Cable Operators

Intelliden's automated capabilities for cable broadband services enable operators to control, manage, and scale critical network resources, while providing assured delivery of applications and services. With Intelliden's patented technology and solutions, operators can rapidly and reliably deliver IP telephony over PacketCable™ voice architecture, video-on-demand and other next generation services over a converged IP infrastructure.

Intelliden provides cable operators with a modular, open solution to managing network infrastructure in support of critical new revenue-generating services. Intelliden's multi-services solution for cable operators is intended to support the high levels of reliability and QoS required for a competitive, high quality voice service and reliable on-demand video, and enables more effective control of SDV infrastructure. The Intelliden solution can be applied independently, or seamless integrated with existing third-party policy management and service fulfillment applications via open APIs that support PCMM standards as well as other OSS solutions.

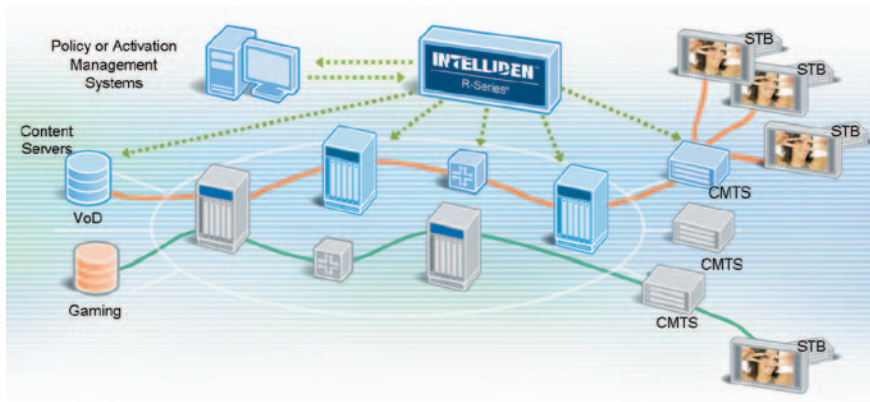


Figure 2 (above): The Intelliden R-Series can rapidly provision equipment and communication paths, and support the mass deployment of new services to large numbers of subscribers. This helps reduce operational complexity and cost, while improving network resiliency and reliability.

The Intelliden Multi-Service Solution for Cable Operators is comprised of three high-performance applications within the Intelliden solutions suite:

- **Dynamic Resource Provisioning (DRP)** provides real-time allocation of network resources such as network elements, paths, and bandwidth to meet the dynamic resource demands of converged, multi-service network environments supporting delay-sensitive services such as VoIP and high-bandwidth services such as HDTV.
- **Network Change and Configuration Management (NCCM)** provides highly granular device awareness

Intelliden (www.intelliden.com) is a leading provider of Intelligent Networking Solutions that enable organizations to control, manage and scale their networks. With Intelliden solutions, network-driven organizations can deliver next generation services, ensure compliance and completely automate network change and configuration management. Intelliden's innovative and patented solution is the first example of truly "intelligent automation" of networking devices. It is the only solution that gives companies the real time state of the network—the key to ensuring accuracy across increasingly dynamic networks. Intelliden has been proven in global telecom companies, financial services organizations, federal government agencies and other network-driven businesses. Customers include British Telecom, Bell Canada, Comcast, KPN, and TELUS.

and comprehensive change and configuration management across multiple vendor network devices, and is optimized for the demanding and evolving requirements of cable broadband networks.

- **Policy-based Compliance Management (PBCM)** ensures that network configurations at critical aggregation points such as CMTS nodes, for example, can be carefully controlled. In the case of errors or exceptions, configurations can be automatically rolled back to "golden" configurations without any disruption to existing services and customers.

Solution Benefits

- Facilitates revenue-generating IP-based services bundling (VoIP + internet + video)
- Meets requirements for network QoS, resiliency, and reliability
- Automates addition of new subscribers and services
- Reduces operational complexity and cost
- Scales to meet cable operator requirements
- Enables policy-based workflow and approval processing
- Designed to accommodate industry standards such as PacketCable™ and EuroCableLabs (ECL)
- Provides open integration with third-party OSS applications

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