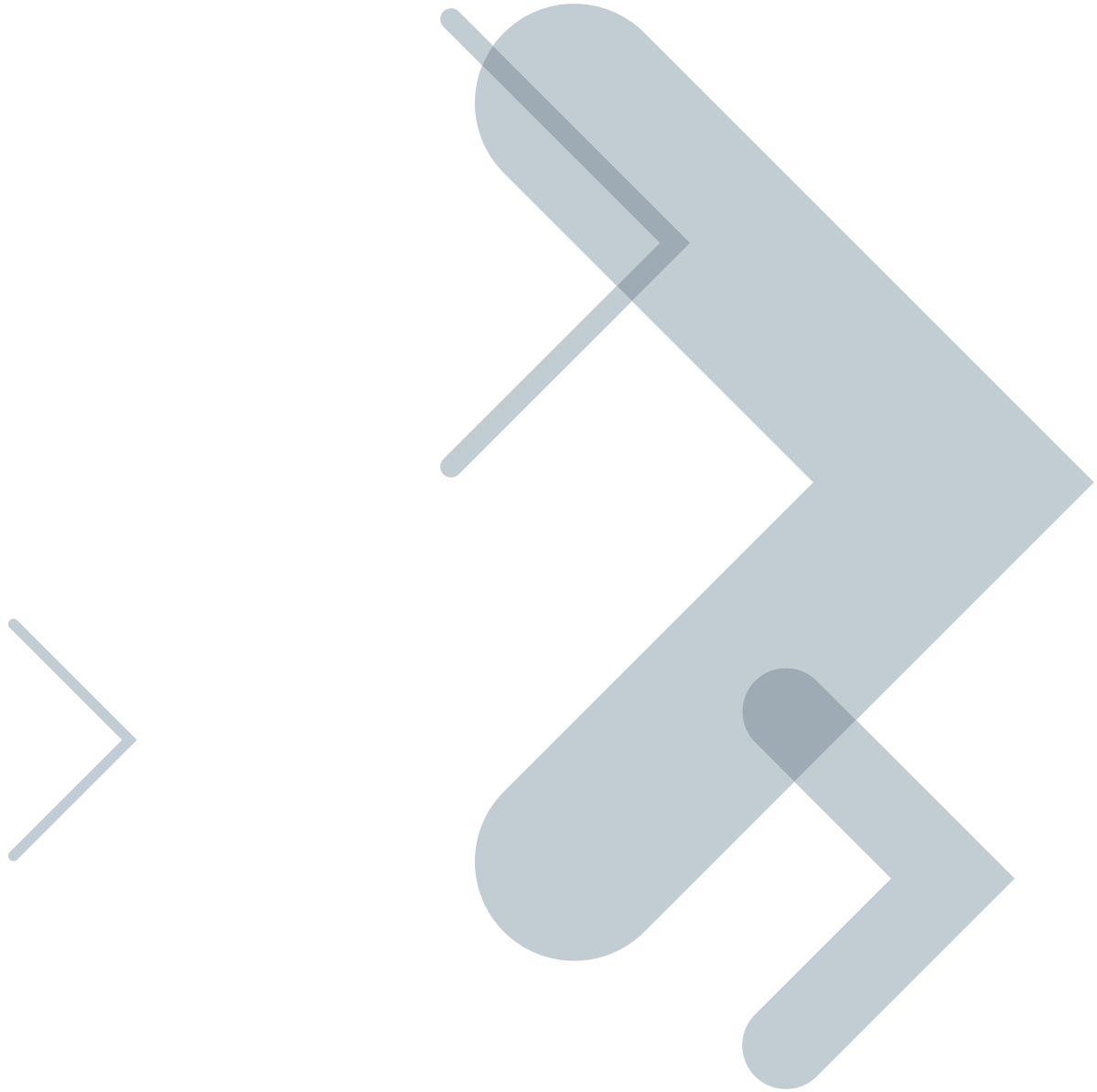
WHITE PAPER

Centrally Monitoring Set-tops and Implementing Whole-Home Video Assurance



Contents

From the Headend to the Home, Motorola Offers End-to-End Solutions for Remote Management and Monitoring to Improve Overall Video Service Quality at the Edge of the Network

Introduction

Monitoring video delivery is essential to delivering personal media experiences that increase revenue and market share. Video has long been the key revenue driver for cable video service operators, and it is now emerging as a core revenue driver for telcos as they deploy IP television (IPTV) services. Increased visibility into the set-top and the home local area network (LAN) is becoming essential as video infrastructure is used to deliver more and more content, in a proliferating array of formats—while also extending the video from the TV to the PC.

With downward pressures on pricing and rising operations and support costs, carriers and cable operators need a solution that helps accelerate the delivery of personal media experience with new services, while improving customer satisfaction, lowering operational costs, and minimizing truck rolls.

Subscribers and service providers require video experiences that are seamless and hassle free, despite increasing complexity in the service experience and service delivery. Adding remote management and support capabilities to video services helps operators deliver a high-quality end-user experience, which is critical to ensuring customer satisfaction. By deploying the Motorola NBBS Platform, service providers can not only monitor the broadband gateway, but they can also understand the status of devices in relation to the home network, providing a context for isolating impact to video quality, including the set-top box. NBBS is a service-level management platform that allows network operators to centrally monitor devices, network resources and service delivery, and it allows service providers to implement video service assurance for devices throughout the home.

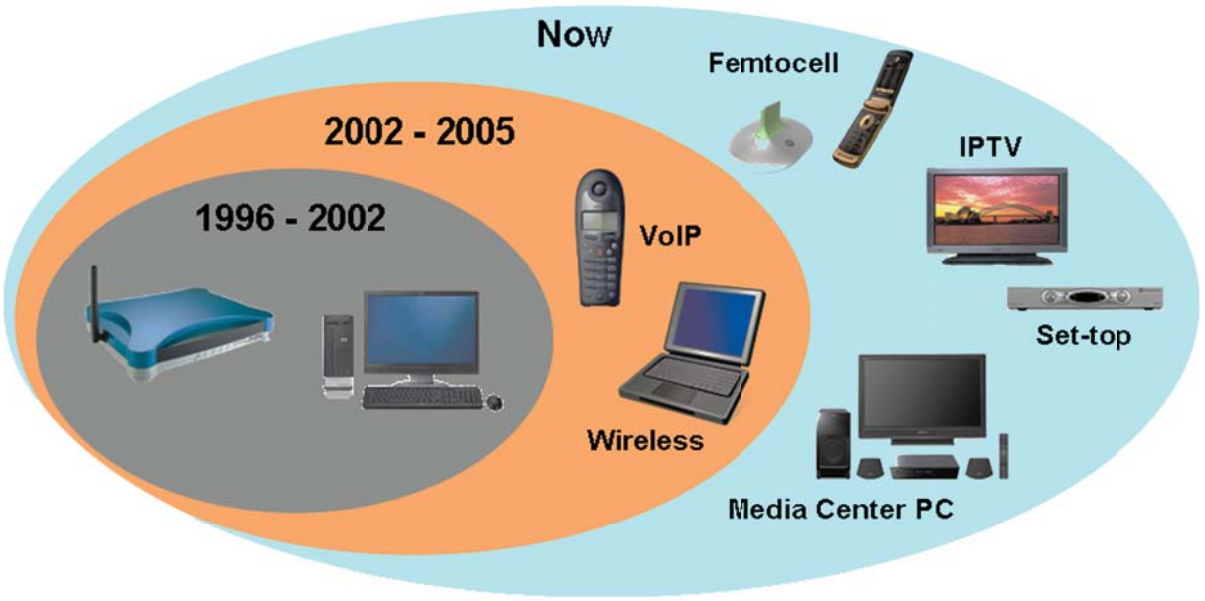
NBBS is a comprehensive, unified solution for monitoring the set-top as well as an evolutionary approach to implementing whole-home video service assurance by managing the entire subscriber home network. For telcos, Motorola's NBBS accelerates the deployment of IPTV services by offering standards-based video service monitoring. For cable operators, NBBS provides a competitive edge via customer services improvements, which are increasingly critical in triple-play and quad-play environments.

The Need for Home Network Visibility for Managing Video Services

Regardless of the access technologies they utilize, all service providers face increased competition, ongoing threats of commoditization, and the challenge of effectively managing subscriber expectations despite flat or declining service pricing.

Innovative new services and the ability to continuously satisfy customer expectations make service assurance essential, even as the providers face the challenge of delivering exciting new video services to retain existing customers and attract new ones. Historically, service assurance was simple: a single device ran a single application to deliver a single service. Consumers typically did not have home networks and did not rely on multiple platforms deployed throughout the home.

But with the delivery of rich multimedia services, this is no longer the case. The complexity of home networks has increased tremendously, and service providers cannot succeed if this complexity is pushed to the customer. Service providers are now delivering multiple services, often to multiple devices, and perhaps even over multiple networks. As a result, point products can no longer address successfully the increased complexity of delivering robust services. IDC forecasts the worldwide market for clientless remote support services tools is expected to grow from $126.1 million in 2007 to $335.7 million in 2012, at a compound annual growth rate (CAGR) of 21.6 percent.

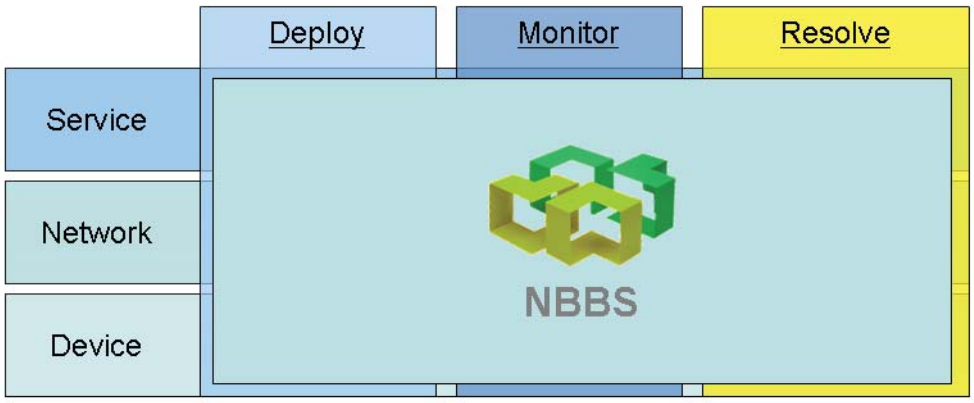


The increasing complexity to install and troubleshoot the home environment is becoming beyond the abilities of most residential subscribers.

Increasing demand for multimedia services is rapidly increasing the support demands on the network operator.

- Complex installation, setup, and troubleshooting in the home environment is beyond the abilities of most consumers.
- Subscribers will increasingly rely on service providers that can support the reliable delivery of diverse services to multiple devices throughout the home.

Value-added monitoring and management of subscriber services can differentiate one service provider from another, and service providers need the ability to deploy and monitor devices, networks, and services while resolving service issues and delivering service-aware video application support. The Motorola NBBS platform delivers flexible support for IP services that allows network operators to centrally monitor and manage video service delivery so they can build closer and longer-lasting bonds with residential subscribers.



Complex installation, setup, and troubleshooting in the home environment is beyond the abilities of most consumers.

Video Service Assurance: The Key to Customer Satisfaction

Video increasingly drives decisions to purchase triple-play services, and major television networks are increasingly offering IP video content streams online. Younger subscribers in particular seek out new media IP video services, and older subscribers are spending more time in front of the television. Assuring the consistent, reliable, and high-quality delivery of video services is key to retaining existing subscribers and attracting new ones.

ABI Research recently found that 63 percent of U.S. online households watch video in their Web browsers—up from 32 percent just a year ago. Market research firm iSupply predicts that IPTV growth over the coming years will be dramatic: it forecasts the premium video services market to increase from the less than $200 billion in revenue generated in 2007 to $270 billion in revenue by 2010.

Due to these competitive pressures, video provided by cable operators and telcos is becoming increasingly complicated. Motorola's innovative video solutions allow service providers to deliver video services to the edge of the network and into the home. Scalable solutions from Motorola allow network operators to manage millions of devices with automated tasks and service-provider specific business logic. Service-aware provisioning simplifies activation of new services.

Service providers need the ability to deploy and monitor devices, networks, and services while resolving issues and delivering service-aware application support. The Motorola NBBS platform delivers flexible support for IP services that allows network operators to centrally monitor and manage video service delivery so they can build closer and longer-lasting bonds with residential subscribers.

Ensuring that customers are consistently provided with quality video services is key to increasing average revenue per user (ARPU) rates and building longer-lasting subscriber relationships. To do this, service providers must obtain a holistic view of the home network and understand home LAN implications for video service delivery, which requires the ability to monitor the status of set-tops. With solutions designed for proactive management and support, Motorola equips cable operators and telcos with the right tools to efficiently and successfully provision, maintain, and support video services.

Video services are becoming more complex, with expanding video on demand (VOD) and IPTV applications and the extension of video to the Web/PC and mobile delivery. Fortunately, Motorola offers innovative solutions that allow service providers to assure the delivery of services—including video—throughout the customer premises. Network operators may use the centrally deployed Motorola NBBS to monitor set-tops and ensure the consistent delivery of video traffic over DSL or cable networks. The NBBS enables unprecedented monitoring of video set-tops using a wide range of protocols for Motorola and third party set-tops:

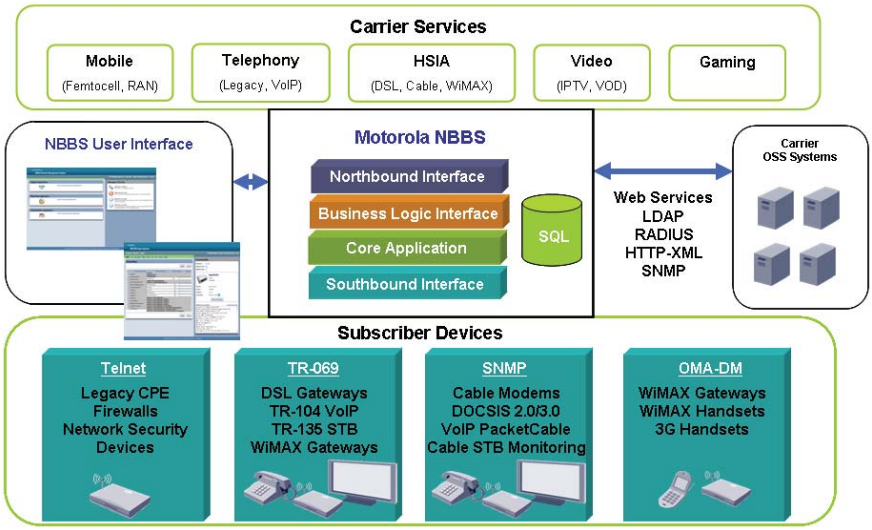
- DSL Forum TR-069 remote WAN management specification for monitoring DSL and WiMAX gateways
- Monitoring of Motorola set-tops via proprietary protocols using the Motorola SmartStream Terminal Data Collector (STDC) for aggregation
- Simple Network Management Protocol (SNMP) monitoring for third-party QAM set-tops
- A Telnet interface for managing legacy customer premises equipment (CPE), firewalls, network security, and other network devices
- An HTTP management interface

NBBS is a software solution for managing, maintaining, and troubleshooting subscriber equipment. It functions as the gatekeeper for monitoring and interpreting video events on the subscriber's home network and ensures that the set-top and the home gateway are configured correctly. It also provides a migration path toward monitoring and managing devices throughout the customer's home network.

NBBS is a scalable, carrier-grade software platform that enables operators to remotely access, configure, manage, and troubleshoot a full portfolio of consumer devices, home networks, and services, including gateways, modems, Webcams, and set-tops. The NBBS platform allows network operators to increase revenue by accelerating new service introduction, and service-aware provisioning capabilities simplify the activation of new video services.

NBBS allows network operators to centrally remediate subscriber problems, including the ability to reset set-tops and monitor for dropped packets to ensure high-quality video delivery. It provides centralized service and device management for IP-based consumer equipment and enables zero-touch configuration and firmware updates. NBBS enables active monitoring of consumer equipment for the activation, management, and support of QoS-sensitive services, such as video and voice over IP (VoIP).

The platform provides seamless integration into existing provisioning, billing, and operational support system (OSS) applications while delivering powerful device management for configurable devices at the network edge. NBBS allows the network operator to effectively implement video service assurance and scalable device management capabilities that allow network operators to manage millions of devices with automated tasks and service provider-specific business logic.



NBBS offers a powerful architecture that integrates video and other broadband services with devices deployed on the customer premises.

Motorola's Set-Top Diagnostics Solution

Motorola's SmartStream Terminal Data Collector (STDC) Platform delivers detailed performance metrics for delivery of high-quality, consumer video services. STDC is a solution for remote collection and presentation of set-top diagnostic information. It reports detailed diagnostic data, saving service providers on operating expenses and increasing customer satisfaction. The STDC joins with the Motorola NBBS Device Management Platform to deliver comprehensive device management capabilities across the broadband-connected home through the entire device life-cycle. Device management capabilities include installation, configuration, bulk modifications, and trouble resolution.

How Does It Work? The STDC solution includes a server at the cable headend and client software on consumer set-tops. It gathers critical information about the set-top population as a whole, as well as the individual status of a single set-top. The diagnostic information is grouped into intuitive data sets enabling customer service reps (CSRs) and technical support personnel to quickly and easily debug a variety of device issues remotely. The data sets available in STDC make it a powerful and affordable diagnostic solution, enabling quality of service for delivery of broadcast video and interactive applications, such as video-on-demand (VOD) and switched digital video (SDV).

STDC brings an unprecedented level of visibility into the working performance of cable set-tops. Its remote capabilities mean operators can not only deliver better quality of support to their subscribers, but they can also reduce costs by saving on truck rolls. This optimized approach provides service assurance and enables cable operators to increase subscriber satisfaction and retention in an increasingly competitive market.

Key data sets in STDC's offering include:

- Core Diagnostic — General set-top state and status
- In-band Diagnostic — Tuner and signal quality information
- Decryptor Tier Report — Set-top authorization information
- Download Object Diagnostic — Set-top software data
- Aloha Diagnostic — Network traffic information
- Service Information Diagnostic — MPEG (PAT/PMT/PID) information

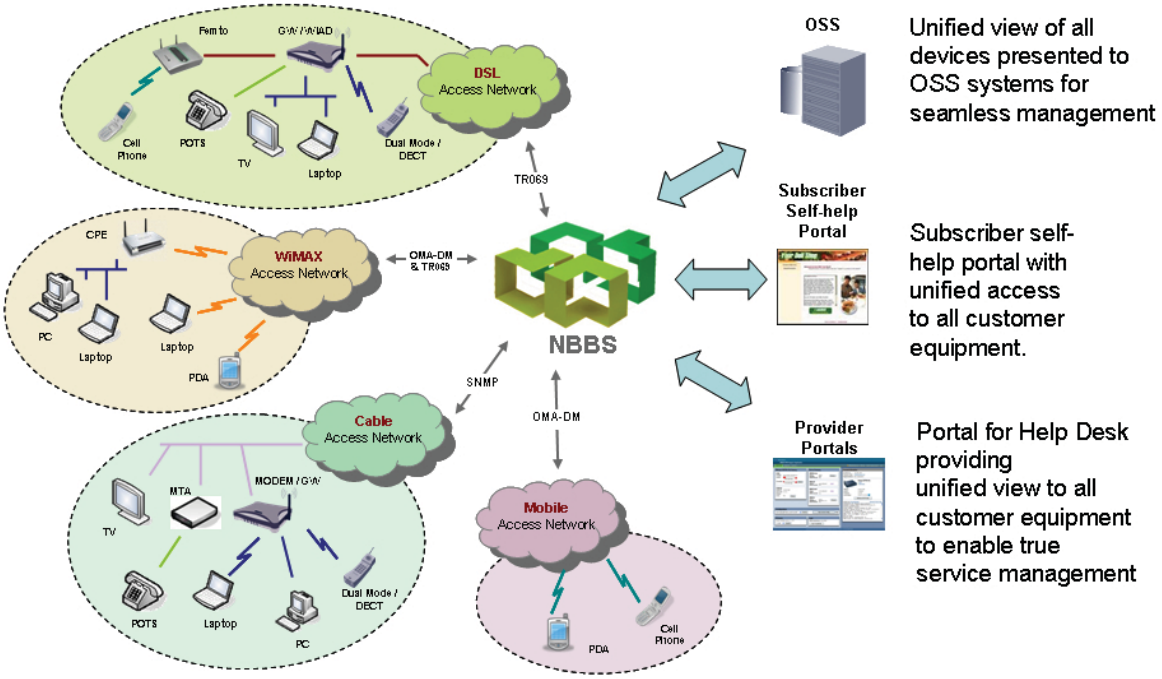
STDC is scalable to multiple set-tops in a home as well as multiple output locations for report viewing. It is easily bundled with Motorola's NBBS platform to provide Quality of Service (QoS) at the edge of the network. Together this Service Assurance Solution Suite is both flexible and customizable for those cable operators seeking a full device diagnostic system. It enables operators to remotely access, configure, monitor, and troubleshoot the full portfolio of consumer devices, home networks, and services. They not only lower operational expenses and operators' costs by reducing truck rolls but also increase revenues by accelerating new service introduction.

Simplifying Home Network Management

Through NBBS, service providers and operators can deploy and monitor video services and automatically resolve issues so that the complexity of delivering the service can be masked from the consumer. It accelerates device and service deployment, decreasing the time to market and facilitating the introduction of new, revenue-generating video services. NBBS allows operators to install, maintain, and troubleshoot subscriber equipment and enable enhanced service delivery so that service providers can:

- Reduce the cost of deploying and supporting subscriber devices and services.
- Differentiate services through improved customer care.
- Accelerate the delivery of new media services.
- Make better operational decisions through access to enhanced usage and performance information.

NBBS enables unified monitoring of all the devices on the home network via a single management system to eventually control and manage all subscriber devices and services. It enables a unified view of the set-top and other devices on the home network. It also allows carriers and cable operators to provide subscriber self-help portals that present a unified view of customer equipment. Operators also benefit from portals that provide Help Desk staff with a unified view into customer equipment to enable service-aware management.



NBBS enables unified monitoring and management across cable operator and telco networks.

NBBS also uses standards-based device interfaces as well as a command line interface (CLI). Additionally, NBBS provides HTTP-based northbound Web interfaces to backend systems for service provisioning, management, and support. This broad support for multiple interfaces enables NBBS to manage the widest variety of third-party IP-enabled devices, allowing network operators to centrally:

- Update device configurations.
- Configure advanced services.
- Perform real-time CPE monitoring and troubleshooting.
- Enable customer self-service provisioning and troubleshooting.

NBBS uniquely enables central monitoring of set-tops at the customer location to enable video assurance, and it offers a field-proven, scalable, and secure architecture that can scale from supporting a few devices to supporting millions of devices using highly secure administration.

Implementing Whole-Home Video Service Assurance

NBBS provides an industry-leading level of home network monitoring and management. It has already been deployed by over 20 network operators and is currently used to monitor and manage millions of CPE devices worldwide. It allows network operators to monitor and manage the delivery of IP services throughout the connected home, providing operational support staff with holistic home network visibility into IP devices connected to the home network.

NBBS enables the concurrent presentation of gateway and set-top data, delivering an integrated view of the subscriber's managed devices that enables more rapid trouble isolation and control. It provides an evolutionary path to whole-home video service assurance and serves as a comprehensive, unified solution for monitoring:

- IP set-tops
- Motorola set-tops
- Third-party set-tops

Motorola provides the products, systems, and professional services that enable efficient and reliable visibility into the connected home. NBBS allows cable operators and carriers to exceed customer expectations by allowing them to diagnose and resolve problems in the home network remotely. Motorola also provides the professional services expertise to help carriers and cable operators manage the end-to-end delivery of video services to the connected home.

Carriers and cable operators can swiftly deliver high-quality video services to increase revenues, increase ARPU levels, improve service, and streamline troubleshooting, and they can build closer bonds with subscribers by enabling service assurance for robust video services delivered throughout the home. For more information about NBBS, please visit **www.motorola.com** or contact your Motorola account representative.

Motorola, Inc. www.motorola.com

568505-001-a 02/09