



ServAssure™ Advanced Performance Management



Why Do Something Different?

- Operators need to continuously and proactively improve network reliability
- Operators need to improve customer satisfaction

Why Now?

- DOCSIS® 3.0 has introduced increased complexity
- Non-revenue generating truck rolls are increasing OPEX

Why ARRIS?

- Customer Experience measurements
- Solutions for DOCSIS 3.0 networks & devices
- Increased serviceability and quality
- Advanced capacity planning
- Modular offering to meet your needs
- ARRIS manages 70+ million CPE devices worldwide
- Market leader in network, service assurance

Network and Subscriber Experience at a Glance

ARRIS ServAssure Advanced Performance Management is one of the modular offerings in the comprehensive ARRIS ServAssure suite of network and service management solutions. ServAssure Advanced is specifically designed to provide you with comprehensive subscriber experience monitoring and management. Including complete data-collection compatibility with multiple vendors, ServAssure Advanced transforms raw data into meaningful information to help you take full control of cable's last mile. In addition, you can proactively find, assess and manage High Speed Data (HSD) and Voice over Internet Protocol (VoIP) quality in real-time.

Integrated Network Control and Analysis

ServAssure Advanced features a selection of applications that enable Multiple System Operators (MSOs) to manage and control CableLabs® DOCSIS® services, bandwidth, and devices on broadband networks while speeding deployment of new Internet Protocol (IP) services. With patented "finger-printing" and normalization technology, ServAssure Advanced offers complete data collection capability with multiple vendors and support for multiple DOCSIS standards. You choose the application options that address the challenges you face, enabling you to design a custom network and service assurance solution to meet your specific needs.

ServAssure Advanced enables you to provide superior network reliability and serviceability that directly impacts subscriber satisfaction. By providing you with a network and service management solution aimed at consolidating loads of health metrics into meaningful data and presenting expert recommendations that are directly related to factors that represent the customer experience.

ServAssure Advanced is well equipped to assist you on your road to increasing customer satisfaction.

DataAssure

DataAssure provides a best in class software solution for monitoring broadband cable networks down to the device level. Capable of monitoring millions of devices, DataAssure guarantees maximum performance and availability. Combining comprehensive network data collection and correlation capabilities, DataAssure isolates and prioritizes problems before providing quick and efficient recommendations to resolve issues.

DataAssure correlates and analyzes all traffic and connectivity measurements to create a unique measure of subscriber experience and service availability represented on a single screen via network health summaries. With these summaries, you can measure network availability based on Degraded Modem Hours (DMH) and Severely Degraded Modem Hours (SDMH). Network health summaries enable you to:

- Quickly identify the most severe problems on the network and detect where the most customers have been impacted for the longest time
- View a user-configurable list of the detected problems and sort on a variety of factors
- Get detailed recommendations in order of least cost or operational impact
- Compare relative performance of markets and hubs

Recognizing the importance of immediate notification of network problems, DataAssure comes with a flexible, real-time mechanism for delivering critical network events. You can subscribe to personalized events, which are delivered to your DataAssure inbox or multiple e-mail addresses. These events, categorized as high or extremely high, cover the key indicators of network problems.



DataAssure also provides you with detailed views of the location, configuration, settings, and network performance of any Cable Modem (CM) and Multi Media Terminal Adapter (MTA) on your network. ServAssure Advanced was the first software to provide real-time and historical data for the CM as well as the interface and Cable Modem Termination System (CMTS) supporting that device. DataAssure enables you to react and escalate quickly, reducing mean time to repair with focused fix agents.

The ServAssure Advanced platform data collection engine periodically polls all elements in the broadband cable network. All data collected from the network is checked for integrity and persisted for further processing and analysis. DataAssure analyzes this data and collects real-time information to pinpoint specific CM and MTAs in the network topology while performing configuration and statistical analysis and providing historical and real-time reports.

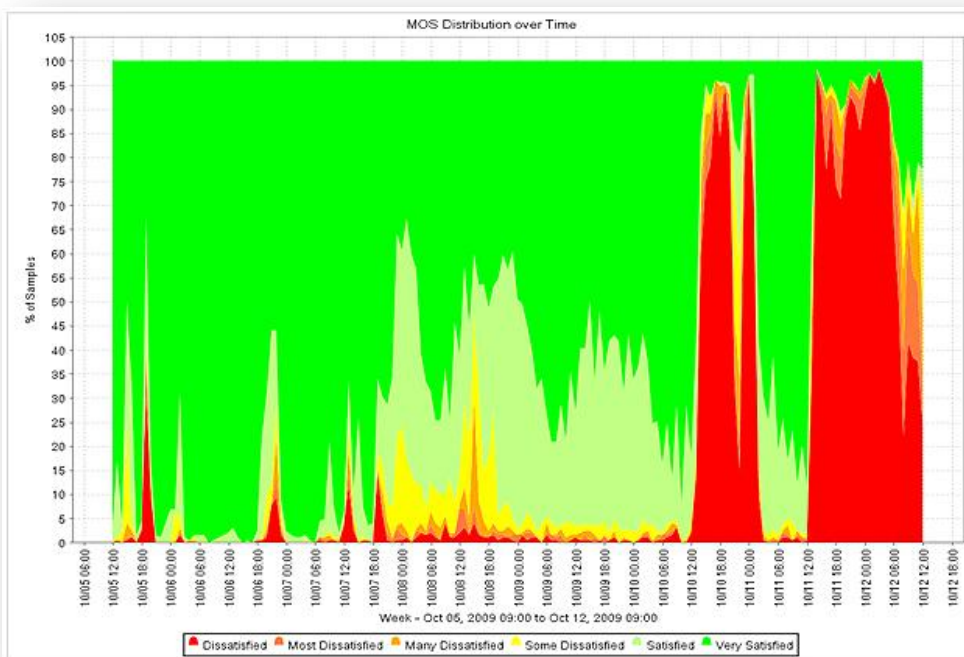
VoiceAssure

Meeting customer demands for quality voice and VoIP service satisfaction

VoiceAssure offers you a complete VoIP service lifecycle management from initial network analysis and optimization to ongoing fault and performance management to capacity planning. Enabling you to view and manage critical health metrics for quality and capacity management of your IP networks and IP telephony-based services. VoiceAssure facilitates quick time to market and efficient management of high value services and is focused on service and service assurance versus traditional network monitoring.

VoiceAssure facilitates the delivery of fast, flawless VoIP installations and troubleshooting for continued quality of service (QoS) and customer satisfaction. With easy to use and simple service views, VoiceAssure helps operators determine in real-time where VoIP will work problem-free. Having real-time instant access to continually updated operational information enables you to efficiently deploy, provision, and communicate with customers as well as establish maintenance processes for quality service assurance.

VoiceAssure incorporates cable/telephony standards, research, and best practices to provide you with user-friendly tools to proactively identify and manage VoIP service issues and ongoing maintenance concerns.



Bandwidth Usage Reporter

Bandwidth Usage Reporter (BUR) is designed specifically for bandwidth management on broadband cable networks with up to millions of devices. BUR stops "revenue leakage" by transparently collecting and accurately identifying all devices on the network, and quickly identifying overactive bandwidth consumers and miss-provisioned unauthorized devices. Now, you can obtain an instant inventory of the CMs on your network as well as the associated bandwidth consumption patterns, provisioned class of service, and QoS configuration.

BUR comes with out-of-the box reports and graphs to provide you with valuable information on bandwidth issues. Now, you can immediately determine which subscribers are using the most bandwidth during peak hours, locate modems that are in violation of fair-use policy, and more. Because the majority of the reports are configurable, ServAssure Advanced provides you with maximum flexibility to enable you access to the analysis and bandwidth information that is most relevant to your needs.

ServAssure Advanced IPDR

Today's MSO's are also facing the challenge of increased CMTS capacity with connected CPE devices exceeding 50,000. Device capacity issues impact the efficient exchange of information and makes it increasingly difficult for both the CMTS and the polling infrastructure. Optimizing the use of bandwidth and figuring out how to address the difficulties in managing data capacity and throughput are critical.

The introduction of Internet Protocol Detail Record (IPDR) based data collection enables ServAssure Advanced to further scale in terms of data collection and this is especially true with the introduction of DOCSIS 3.0 where a large number of devices are being added to the CMTS with channel bonding. The collection of Subscriber Account Management Information System (SAMIS) data through IPDR can replace the equivalent Simple Network Management Protocol (SNMP) management object collection from the CMTS depending on vendor availability of support for IPDR. A CMTS can be configured within ServAssure Advanced to support SAMIS data via IPDR vs. the equivalent MIB data via SNMP. ServAssure Advanced IPDR provides the added benefit of improved efficiency of collection and improved service flow usage reporting.

Exploring new ways to increase revenues often comes with challenges and in the case of consumption-based billing, the ability to capture vital customer-usage information is critical. To address this challenge and facilitate the success of such innovative service offerings, ServAssure Advanced IPDR includes support for tiered service rollouts in the form of new reports and graphs for classifying subscriber consumption based on service flow information collected through IPDR. This provides the much needed visibility into service flow information for consumption based billing and includes support for flexible bandwidth metering in the form of Service Class Profiles.



ServAssure Advanced Platform Options

The ServAssure Advanced Platform is a distributed infrastructure comprising of one central Platform Controller and one or more StarNodes. Each StarNode implements services that collect, filter, and analyze information from the CMTSs assigned to the StarNode and from the CPEs supported by the CMTS. ServAssure Advanced includes a variety of platform options designed to complement the features of the integrated product suite:

Topology Light

Topology Light provides you with an option to import subscriber and billing related information into ServAssure Advanced. ServAssure Advanced then matches this information to the end customer's CPE, HFC topology and other plant data linking subscriber and network data for more advanced proactive and reactive troubleshooting. This advanced insight into a customer's unique experience helps Customer Service Representatives (CSRs) and Technicians pinpoint possible issues and react quickly and accurately to avoid service degradation and outages.

The Export Connector

Gain operational efficiencies by using the data extracted by the ServAssure Advanced Export Connector to proactively address possible service, bandwidth, and capacity issues before they affect the end user. Additionally if you are looking to generate new revenue streams, using the Export Connector in conjunction with Bandwidth Usage Reporter, enables you to create new service offerings based on subscriber bandwidth consumption, threshold capabilities, and/or bandwidth on demand.

The Trap Connector

Supports a variety of network connectivity and traffic events and enables you the flexibility to customize event thresholds, state transitions and trap payload parameters.

The Web Service Connector

Streamlines integrations with third party applications by providing an open interface to both real-time and historical data elements provided by the DOCSIS network. The Web Service Connector (WSC) can be easily incorporated into consumer call center applications to address the following scenarios:

- Bring together performance and fault management information with call center data to dramatically reduce the possibility of service disruptions to end users. The WSC addresses the performance needs of both centralized and distributed organizations, enabling your support organization to reduce truck rolls, increase productivity, and improve customer satisfaction.
- Pre-integrated with WorkAssure™ Workforce Automation, the WSC enables technicians with WorkAssure supported handhelds to send commands to ServAssure Advanced and perform whole house checks before leaving the subscriber's home. The HouseCheck Solution provides a snap-shot from ServAssure Advanced DataAssure and includes the creation and storage of CPE birth certificates.

Installation Records for Cable Modem 00010386290A

Select Record: On Jun 14, 2007 16:11:12 by administrator

CM Provisioning	Pass
MTA Provisioning	Fail

Fact	Value
Service Level	allow10100058.cfg
Downstream Frequency (MHz)	633.0125
Upstream Frequency (MHz)	21.0
Upstream Channel Width (MHz)	3.2
Downstream Channel Width (MHz)	6.0
Upstream Modulation	apsk
Downstream Modulation	qam64
Upstream Capacity (Mbps)	5.12
Downstream Capacity (Mbps)	30.341646
CPE IPs Learned	00:15:c5:2d:20:4f
CPE NICs Learned	00:02:b3:c3:74:a9
Modem IP	10.10.3.25
CMTS	wr
Upstream	Cable40-upstream0
Downstream	Cable40-downstream
Version	MCNS external 2-way Cable Modem 3CR29223 HW_REV: 2.00; VENDOR: 3Com; SW_VER: 01.22

Fact	Min	Avg	Max
MOS Upstream	4.41	4.41	4.41
MOS Downstream	4.41	4.41	4.41
Upstream CER (%)	0.0	0.0	0.0
Upstream CER (%) for this CM	0.0	0.0	0.0
Upstream SNR (dB)	25.5	26.973	28.0

Fact	Min	Avg	Max
Upstream SNR for this CM (dB)	26.601	26.932	27.4
Upstream Tx (dBmV)	31.0	31.0	31.0
Downstream CER (%)	0.0	0.0	0.0
Downstream SNR (dB)	35.0	35.7	36.4
Downstream Rx (dBmV)	0.0	0.0	0.0

Technician ID: 571
Work Order ID: 090384191
Username: administrator

Complete

HouseCheck Connector

Leverages the ServAssure Advanced WSC to provide an open interface to enable third-party workforce management systems to request real-time whole house checks for the following CPE - CMs, MTAs, DOCSIS and Scientific Atlanta set-top boxes (STBs). The HouseCheck Solution provides detailed data about the performance levels of the CPEs in a subscriber's home while also allowing for the creation of a CPE birth certificate. HouseCheck support for Motorola STB's will be generally available in 2011.

- The industry average for a newly installed subscriber requiring a repeat call within 30 days due to faulty installation is 10 – 15% and rising. These repeat calls can be avoided by ensuring proper installation quality during the initial installation using the HouseCheck solution and its complementary birth certificate feature.
- HouseCheck can reduce the time spent by installers on each job, saving money and ensuring a higher rate of quality service delivery during the initial installation. It also significantly reduces, if not eliminates, costly post-install trouble calls, increasing customer satisfaction and retention.

ServAssure Advanced Performance Management

WSC Router

Helps streamline operations for MSOs with multiple instances of ServAssure Advanced by managing WSC requests. The request doesn't need to know what instance of ServAssure Advanced is managing a device because the WSC Router has the ability to transparently route web service requests from a central call center to multiple ServAssure Advanced instances.



ServAssure Advanced – Performance and Analytics Management

ServAssure Advanced is just one of the application suites in the comprehensive ARRIS ServAssure family of products. It is designed to offer a flexible, end-to-end solution or a modular, integrated one that works with an operator's existing infrastructure. ServAssure Advanced is a proven, real-world performance and analytics assurance solution that saves operator's money; while improving subscriber satisfaction by better managing and utilizing new and existing resources.

Please contact ARRIS for more details: www.arrisi.com

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