Give your eyes a rest...

A New Era in Preventive Monitoring

Gathering around picture monitors to pass the "Golden Eye" test of broadcast quality is no longer sufficient with the advent of digital television distribution.

Modern broadcasts deliver multiple streams of content over a single physical connection. That content – some passive, some interactive – may be comprised of any combination of video, audio and other data. It all adds up to extraordinary complexity.

With multiple SDI, RF, MPEG-2 and IP technologies in the network, tracking down the source of a malfunction – all while under intense pressure to restore operations – takes time and diligence. The simple "eye ball" test is just not enough.

DVStation
For many signals in one place

DVStation REMOTE
For a few signals in many places

DVStation IP^3
For video-over-IP, GigE

DVStation Mini^3
Affordable Transport Stream Analyzer

DV PROBE
Cost-Effective Transport Stream Probe for Cable

DVStor^2
Transport Stream Recording System

ECP ELECTRONIC COUCH POTATO
End-User Experience Monitoring

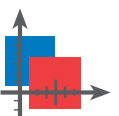**OMG OTT MEDIA GRINDER**
OTT (Over-The-Top) Media Grinder

StationView
Simple, Effective Monitoring

Consolidator
Network-wide Visibility

Pixelmetrix
corporation

MODULE SPECIFICATIONS

TSP-120
- ASI input with BNC connector
- Optional built-in 3 input hardware router
- Dedicated Ethernet port for media streaming

TSP-100

Asynchronous Serial Interface (ASI)
- Signal Level: -40 to 0 dB
- Input Impedance: 75Ω or Hi-Z pass through

Synchronous Parallel Interface (SPI)
- Signal Level: EIA/TIA-644 (LVDS)
- Input Impedance: 100Ω

DVB-S2
- Connector type: F connector
- Input signal: 950 to 2150 MHz
- Symbol Rate: 1 to 45 MSym/s
- DVB-S, DVB-DSNG, DVB-S2 capable
- Supports QPSK, 8PSK, 16APSK, 32APSK

QPSK-RF
- Connector Type: F connector
- Input Signal: 950 to 2150 MHz QPSK signal
- Symbol Rate: 3 to 30 Mbaud
- Code rate (Viterbi): 1/2, 2/3, 3/4, 5/6, 6/7, 7/8
- Power Level: -25 to -65 dBm

QAM
Three modules support all worldwide standards
- Connector type: BNC
- Input Signal: Annex A: 54 to 858 MHz
  Annex B+C: 47 to 862 MHz
- Modulation: QAM16 through to QAM256
  (where supported)

COFDM
- Input Impedance: 75Ω
- RF Power Level: -15 to -85 dBm
- Tuner Center Frequency Range:
  - VHF 174 to 230 MHz
  - UHF 470 to 862 MHz
- Tuner Channel Bandwidth: 7 or 8 MHz

8VSB
- Connector: BNC x 2 (IF & RF)
- Impedance: 75Ω
- RF Power Level: -25 dBm to -80 dBm
- Tuner Center Frequency Range: 57 MHz to 855 MHz

DIGICIPHER-II
- Connector Type: BNC
- Input Signal: 950 to 2150 MHz
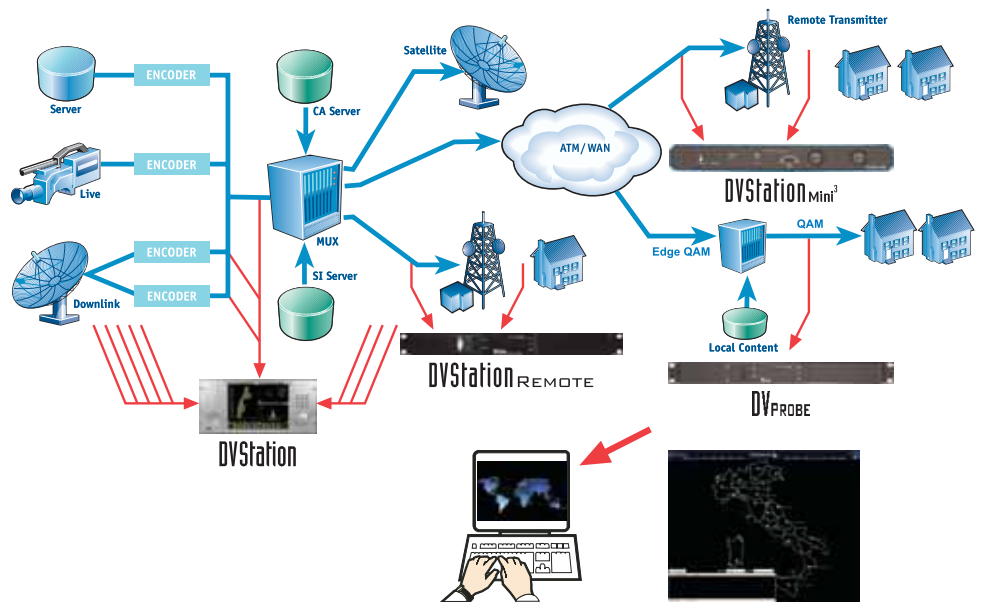- Symbol Rate: 1.83 to 29.27 MS/s
- Power Level: -25 to -65 dBm

SDI Audio
- Input Signal: 270 Mbps Serial Component

SDI
- Quality measurement module
- Input Signal: 270 Mbps Serial Component
  Digital Video

REMOTE, DISTRIBUTED MONITORING

Rising Complexity

Consolidating remote operations to a central site while introducing new channels, multimedia and datacasting has made effective monitoring of digital television networks critically important.

Having visibility of network performance and configuration is the first step. Having global visibility of that information is the next.

Pixelmetrix Consolidator helps you concentrate performance information from multiple remote locations to a central site.

Alarm status is clearly indicated and active hot-links let you immediately access the DVStation at the affected site for deeper analysis.

Standards Based Interface

Remote DVStation and DVProbe systems communicate with Consolidator via standard TCP/IP and SNMP protocols. Simply connect the ethernet cable, give the machine a name and select either automatic or manual IP address assignment.

Active Hot-Links for Deeper Analysis

Clicking on any site name within the Consolidator main window immediately connects you to the remote interface of the DVStation at that site. Now you have the full power of DVStation at your fingertips to identify and isolate the root cause of alarms.

Additionally, use the remote interface to access and retrieve detailed log files collected by each machine. Individual logs are maintained for Measurement, Bandwidth, Error and RF Performance.

Management Information Base

Within every DVStation is a detailed and comprehensive management information base – MIB – which contains all of the real-time performance and quality information collected by DVStation. Each measurement parameter can be configured to send an alarm or SNMP TRAP to the Consolidator application. Configuration is flexible – you specify what faults warrant immediate action and which faults can be ignored.

A COMMON PLATFORM

All models share the same architecture, features and GUI
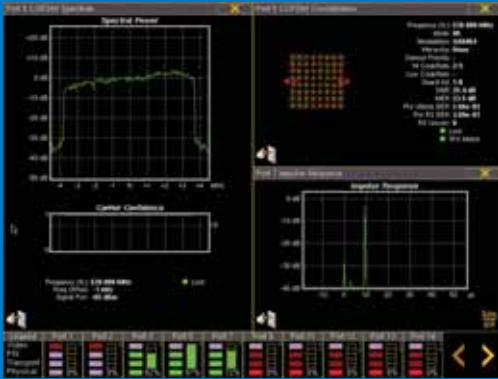
- Simultaneous RF, MPEG and Content Monitoring
- Real-time analysis
- Transport Stream capture

- Captured stream playback and post analysis
- Automatic On-air Content Validation (OCV)
- Common software and GUI

FAMILY HIGHLIGHTS

Physical Layer Analysis

Whether connecting to a QPSK satellite signal, DVB-T COFDM signal or a cable QAM signal, all DVStation modules can perform full verification of key physical layer parameters.

RF Interfaces monitor key modulation performance parameters such as spectrum, constellation, Modulation Error Ratio (MER), Signal to Noise Ratio (SNR), etc. Alarms or logging can be set for any of these parameters to notify users of errors detected.

Additionally, the DVStation central scheduler can be set to automatically scan through a set of frequencies for long-term, multi-channel performance monitoring.

Transport Stream Analysis and Content Validation

Alarms on MPEG TS parameters such as bandwidth, SI tables, TR101-290, PCR etc, are calculated in real time. All Transport Stream modules contain capture of up to 96 MB of the Transport Stream. A flexible trigger point provides for pre and post-capture.

The stream playback function allows the stream you have captured to be played in a loop mode to analyze errors as they occurred.

Exclusive On-air Content Validation continually search for deviations from expected content – whether there is an entire service missing, dropped subtitles or the wrong language.

Multiple Remote Access

All models support remote access over LAN/Internet using a standard web browser, Multiple users can access simultaneously. VNC and X-Window access is also supported.

Error and Measurement Logging

A comprehensive logging subsystem tracks errors as they are detected. Log files are easily viewed or exported for in-depth analysis and troubleshooting. In addition, measurement logs can be generated upon user-defined settings, useful for determining proof-of-performance of signal quality and integrity.

DVStation

The most advanced guardian available to continuously monitor the quality of digital signals and content
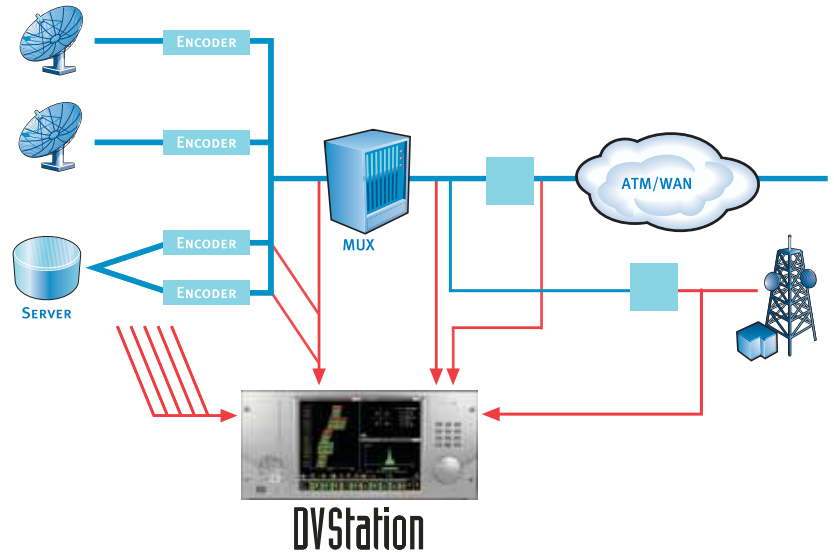
DVStation, the flagship product of the Pixelmetrix Preventive Monitoring line, has the power and flexibility to track thousands of parameters within hundreds of television signals. From the SDI signals that pass through the broadcast plant, to the encoded MPEG and RF signals that reach viewers' homes. All real-time, simultaneously, continuously and from one easy-to-use, self-contained device.

Powerful Parallel Processing Architecture

DVStation can simultaneously monitor the global health of a digital network on multiple layers. As all activity occurs in a single system, operators can control and monitor 21 ports at once, and be instantly alerted to a deviation in any of thousands of predetermined parameters.

Multi-Layered Monitoring

DVStation reports the status of all ports, layers and parameters within a single integrated display. An LCD touch panel allows a fast drill down to problem areas. When a deviation occurs, users can simply touch the port showing red bars and all the relevant port status information are displayed.
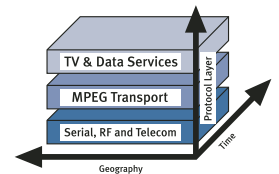
Multiple User Access

Network information and system control is widely available wherever it is needed – within a central facility or remote site. DVStation was designed for multi-user access through a corporate LAN, WAN or HTML via a low-bandwidth Internet connection. Other user interface options include an efficient animated GUI display utilizing Virtual Network Computing (VNC), which allows users to view a computing desktop environment not only on the machine where it is running, but from anywhere on the Internet.

Remote Control

Remote control can also be achieved via any typical SNMP-based network management system. DVStation can directly send alerts via email, SMS or Internet chat message. As a key design philosophy, Pixelmetrix has erased all geographic boundaries for access and control of DVStation products.
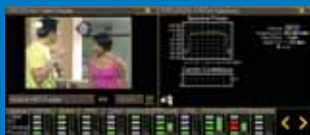
Key Features

- Simultaneous real time measurement of up to 21 inputs
- Variety of input modules:
  - ASI/SPI Transport Stream Processor
  - 8PSK DVB-S2 TSP
  - QPSK DVB-S TSP
  - COFDM DVB-T TSP
  - 8VSB
  - QAM Annex A, B and C
  - SDI Quality Monitor Module
  - Digicipher-II
- Programmable triggers for errors, bandwidth and content errors
- Automatic 256 MB transport stream capture with variable pre-trigger
- Concurrent multi-user architecture
- Multiple remote control options: LAN, WAN, dial-up modem, Web Browser, VNC, SNMP, CORBA, etc
- Field upgradable software

### Comprehensive Web Interface

DVStation REMOTE

Users & Software Applications

Local	HTML	VNC	X	SNMP	CORBA

Presentation System

Measurement Database

Event Dispatcher

Linux Operating System

TSP	COFDM	QPSK	QMM	QAM	8VSB

SPI · ASI · DVB-T · DVB-S · SDI · DVB-C · DVB-S

DVStation Mini³

DVPROBE

DVStation-Remote

High-performance, expandable real-time Preventive Monitoring for small or remote facilities

DVStation-Remote, a four-port version of the DVStation, is the ideal monitoring solution for small broadcast facilities.

The economical DVStation-Remote was designed for the facility that might not need the full 21-module capability of the DVStation-211. It provides the same level of in-depth signal monitoring and analysis as the full DVStation-211, at an affordable price.

In addition to remote PC control, local operation is available at the Remote Controller by plugging in a customer-provided VGA computer display and mouse.
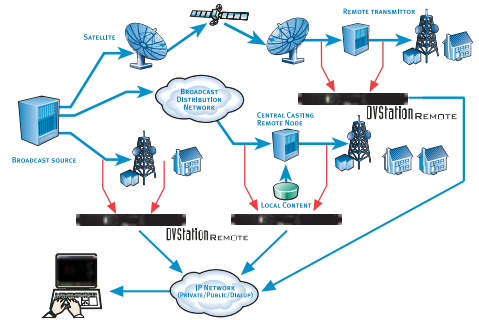
KEY APPLICATIONS FOR DVSTATION-REMOTE

- Expandable and cost-effective for operations with multiple sites
- Error and measurement logging for satellite, cable and terrestrial broadcast facilities
- Affordable preventive monitoring solution for small facilities and broadcasters

DVStation-Mini³

Affordable Transport Stream Analyzer

The DVStation-Mini³ makes an excellent tool to anaylze and troubleshoot digital signals in satellite communications, broadcast radio and television facilities, cable television plants and other operations handling digital signals.

Light and portable, it easily slips into a tool case. DVStation-Mini³ borrows most of the advanced features of the full DVStation including its extraordinary user interface, on-board Transport Stream capture, internal playback and analysis, and error and measurement logging.

Based on the award-winning Transport Stream analyzer architecture, the DVStation-Mini³ comes with an ASI, COFDM, QAM or L-Band input. The DVStation-Mini³ is a fully self-contained unit. Simply power it up, connect to network and it is ready to analyze the signal of the input.

KEY APPLICATIONS FOR DVSTATION-MINI³

- An inexpensive analyzer to set up, commission installations and to troubleshoot signal problems
- Low-cost, entry-level test analyzer for small facilities

DVProbe

Cost-effective Probe

The DVProbe-S2 is a future-proof satellite downlink monitoring solution. Decode advanced modulation formats in DVB-S2/S networks and execute in-depth transport stream analysis and monitoring in a 1RU box with support for H.264 SD and HD video.

The DVProbe-C is an ideal preventive monitoring and operational debugging solution for CATV networks. The device connects directly to the QAM RF cable network and uses the award-winning Pixelmetrix DVStation transport stream analysis technology. Packaged as a 1RU rack-mount system, the DVProbe-C integrates easily even in space-constrained environment.
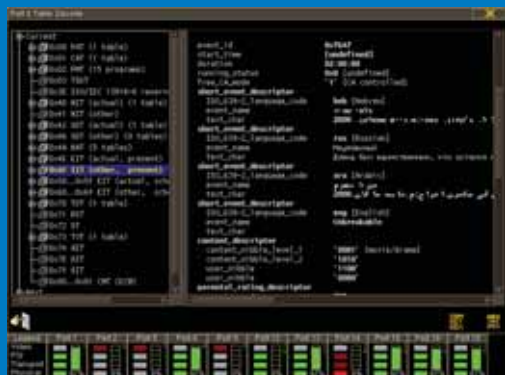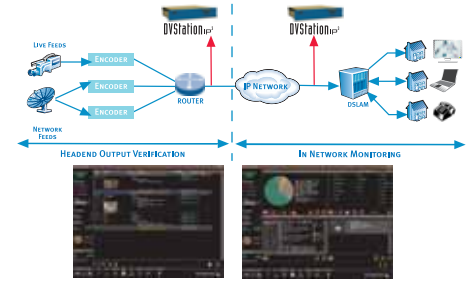
DVStation·IP³

KEY FEATURES

- IP input payload capability of up to 1 Gbps (Full GigE input)
- Support for both MPEG-2 & H.264 services
- MDI (Media Delivery Index) on ALL services Full GigE monitoring
- Support for both MPTS & SPTS delivery mechanisms
- High Definition & Standard Definition support (MPEG-2 & H.264)
- Real-time comprehensive Transport Stream monitoring
- IGMP Join/Leave capability
- Configurable thresholds and alarm settings
- HTML, SNMP and remote control
- Remote Service View and On-air Content Validation
- IP Bandwidth on full GigE traffic
- Real-time thumbnails of monitored services

ECP   ELECTRONIC COUCH POTATO

KEY FEATURES

- Clip Recording
- HDMI support
- Video Quality Index
- Monitors and reports quality of experience from end-user point of view
- Controls STB through built-in IR controller to emulate the end-user changing channels
- Reports freeze frame, blackout, audio tone, audio silence on STB-decoded video
- Telepresence: Live service thumbnails and streaming of content from remote site to central consolidator
- Automatic checking of actual channel switch time
- ECP Consolidator™ software controls and correlates thousands of end points
- Flexible architecture supports user-programmable test scenarios
- Automated Channel Package Audit eliminates time-consuming, error-prone manual scanning

DVStation-IP³

Advanced monitoring of next generation Video-over-IP Networks

The Pixelmetrix DVStation-IP³ is an MPEG-2/H.264 Gigabit video over IP test and monitoring platform that enables operators to ensure the integrity of the services they deliver to their customers.
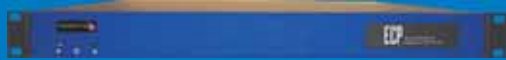
DVStation-IP³ provides MPEG-2 Transport Stream analysis and monitoring over an IP connection via a 10, 100 and 1000 Mbps ethernet port. Once connected, DVStation-IP³ can be set to sniff out video traffic on any set of IP address pairs, extract the MPEG-2 Transport Stream and perform extensive verification.

In addition to its extensive Transport Stream monitoring capabilities, DVStation-IP³ includes a full featured monitoring and trace analysis tool for Ethernet and IP protocols.

KEY APPLICATIONS FOR DVSTATION-IP³

Real-time signal measurements, user-configurable alarms and graphical displays make this product ideal for:

- Operational monitoring/Headend output verification and troubleshooting
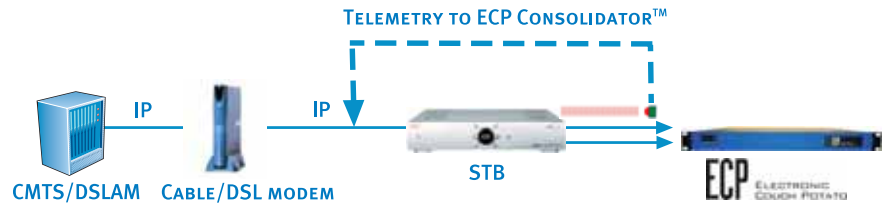- Service level agreement verification
- System test and integration labs

Electronic Couch Potato™ & ECP Consolidator™

Monitors and reports quality of experience from end-user view point

The Electronic Couch Potato™ (ECP) utilizes the decoded signal from a consumer grade Set Top Box to fully and truly evaluate the users' Quality of Experience. Each ECP reports measurements to a central Consolidator. Multiple service quality parameters relating to decoded audio/video are intuitively presented on the central management console - The ECP Consolidator™.

The Consolidator can remotely control, configure and manage large numbers of ECPs spread across the delivery network. Without the ECP, operators have no reliable way of knowing what the picture looks like at a remote site without actually dispatching a person to the site.

Display of live service thumbnails and the ability to stream content from the ECP to your desktop make the ECP the perfect tool in that last link of the broadcast chain.

DVStor²

Transport Stream Recording System

The DVStor² is the premier solution for legal compliance recording - capturing everything in the transport stream for later playback and analysis. DVStor² avoids the cost and complexity of traditional servers making it ideal for disaster recovery playout, delayed rebroadcast, and simple content recording and playout. Set up is easy: simply connect the ASI and Ethernet cables, set the IP address, and select either local or NTP time sync. Control and operation is via a simple web browser interface.

Models available from 1 TB to 72 TB, additional storage modules allow a total of nearly 300 TB.

OTT Media Grinder

QoS/QoE for Streaming Video

The OTT Media Grinder (OMG) simulates thousands of OTT clients (iPhone, iPad, etc) with multiple user-defined behaviors. Simulating multiple client pools playing real assets, to the end or abruptly terminating, OMG provides in-depth and unparalleled visibility of adaptive bit rate 'gear changes', buffering, as well as server and network problems.

To quantify the unique QoS/QoE performance factors for OTT, Pixelmetrix has developed the comprehensive VideoMargin™ Metrics, which give complete insight into the OTT delivery. Measuring network, HTTP and video layer performance, the seven VideoMargin™ parameters measure each aspect of the delivery domain spanning content server, network, authentication, individual client behavior and collective client behavior as well. Consolidated 'service availability' is also provided as a single number in a familiar '5 nines' type of representation.

Consolidator

Network-wide visibility

Consolidator provides a consolidated view of network status and health. The Consolidator aggregates event information (errors/warnings) from all the monitoring probes in the network into an easy-to-analyze view.

Consolidator is a customizable platform that comes built-in with default visualization and reporting. Consolidator can be extended to fit your requirements and business logic needs. Consolidator was built to work hand-in-glove with Pixelmetrix products. It can also monitor any device with an SNMP interface, making it an affordable and highly flexible solution for network health monitoring.

Key Applications for Consolidator

- Broadcast network redundancy status monitoring
- Out-of-footprint satellite transmission status
- SLA verification for transmitted content
- Network-wide visibility for end-to-end broadcast operations

StationView

Simple, Effective Monitoring

StationView is a simple and effective monitoring solution aimed at small-scale broadcast operations. It can monitor up to 15 transmission sites for quality of broadcast. Monitoring is done in a muti-layer manner, starting from the health of the physical layer, all the way up to the fidelity of the content layer.

StationView allows drill down for the isolation of the problem at hand. The event listing for StationView has full-text search capability, making it very simple to quickly track down event history.

StationView ships as a 'network appliance' set up to work out of the box, with quick configuration of the probes to be monitored.

The Endgame™ Value Propositions

- Reduce OPEX

- Isolate service-affecting issues proactively: HD vs SD channels, region vs Neighborhood, cable vs JWI vs loop, home network or individual STB

- Collect, record and analyze transient errors, with short and long-term trending reports

- Deploy with confidence, shorten trial cycles with focused diagnostics to monitor the impacts of upgrades

- Integrate with existing investment in probes, EMS and OSS/BSS

- Correlates consistent measurements at each phase of the service delivery system

- Assess the consumer experience objectively in real time

- Detect faults and isolate customer problems proactively

- Monitor and record continually the customer experience to confirm detection of transient or silent issues

- Eliminate the need for customers to describe complex impairments to the help desk

- Reduce MTTR, eliminate repeat calls and unnecessary in-home service calls

- Simplify activation process with verification of the install or even extend to a customer self-installation program

- Benchmark installation service: evaluate quality of installation or repair

EndGame™

End-to-End Quality Assurance Monitoring Architecture
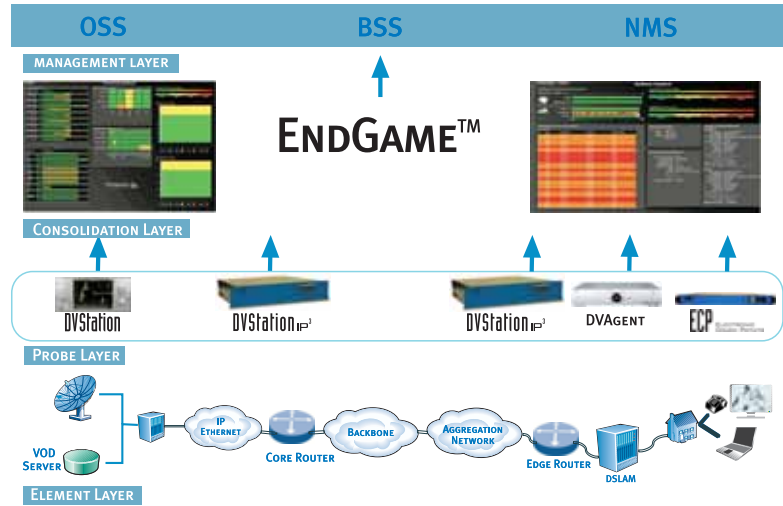
EndGame™ is Pixelmetrix end-to-end quality assurance architecture that provides QoS/QoE monitoring at all points along the content delivery chain: from the Headend, to the Network and to the end-user (STB). The EndGame™ architecture aligns with ITU-T guidelines, which divides IPTV into multiple 'domains' and goes on to define what kind of monitoring is required within each domain. This makes EndGame™ the truly end-to-end monitoring architecture.

PROFESSIONAL SERVICES

Productivity gains with Pixelmetrix Professional Services

Let Pixelmetrix Professional Services help you build and integrate fully automated service and quality broadcast monitoring systems. Our personnel are trained to deliver tailored solutions which meet your time to market requirements and smooth your introduction of new digital broadcast services.

Tailored Solutions

Using the DVStation™ platform, Pixelmetrix is able to implement cost-effective applications that go beyond simple monitoring. Whether you build a Service Level Agreement validation application or integrate with your existing billing or management system, our experience can help you reach your customers' demanding expectations and achieve your overall business objectives.

Distributor Contact

Pixelmetrix
c o r p o r a t i o n