

MVP-200 Digital Video Probe

JDSU PathTrak™ Video Monitoring



Key Benefits

- Increase visibility with simultaneous monitoring of all programs
- Maximize alarm usefulness with unique thresholds for each stream and program
- Transport stream recording for offline analysis
- Reduce costs by combining a full-time probe with a feature-rich MPEG-2 analyzer
- Multi-port design decreases per-port analysis and deployment costs
- Powerful API enables the MVP-200 to communicate results data with multiple OSS systems

The JDSU MVP-200 combines a digital video monitoring probe with a full, laboratory-grade Moving Picture Experts Group (MPEG) analyzer for troubleshooting. Developed for video service providers who must ensure the quality of service (QoS) for digital video networks, the MVP-200 is a cost-effective, scalable solution for monitoring, problem isolation, and troubleshooting.

The MVP-200 Solution

SimulTrack™ II enables users to monitor MPEG digital video on Gigabit Ethernet circuits with a breadth, depth, and accuracy never before available. They can now monitor up to 300 programs simultaneously for TR 101-290 parameters. Newly provided timing health monitoring includes program clock reference (PCR) accuracy, jitter with nanosecond resolution, and PCR drift and frequency offset.

Stream	Program	Number	CC Errors	PMT Errors	PID Errors	PCR Rte.	PCR Discontinuity Errors	PCR Accuracy Errors	PCR Jitter (ns)	PCR Accuracy (ns)	PCR Freq Offset	PCR Drift R
12	World Fishing Network HD	708	0	0	0	0	0	0	19	25	0	0.000
7	Vision	637	0	0	0	0	0	0	23	21	0	0.000
14	Taken Dismiss HD	711	0	0	0	0	0	0	33	33	-25	0.125
4	Thriller Max	652	0	0	0	0	0	0	32	41	4	0.000
6	Thriller Max West	695	0	0	0	0	0	0	18	19	0	0.000
23	The Travel Channel HD	720	0	0	0	0	0	0	18	21	0	0.000
12	The Tennis Channel HD	707	0	0	0	0	0	0	30	44	42	0.000
19	TMC:360 West	721	0	0	0	0	0	0	22	26	0	0.000
20	TMC:360 East	724	0	0	0	0	1	0	19	21	0	0.000
17	TMC HD - West	718	0	0	0	0	0	0	30	38	0	0.000
22	Speed HD	728	0	0	0	0	3	1	29	33	0	0.000
18	Showtime Extreme West	720	0	0	0	0	0	0	29	45	-21	0.000
20	Showtime Extreme East	723	0	0	0	0	0	0	01	38	4	0.074
18	Showcase HD West	719	0	0	0	0	0	0	17	22	0	0.000
19	Showcase HD East	722	0	0	0	1	0	0	38	37	6	0.000
17	SN2 HD West	717	0	0	0	0	1	0	19	23	0	0.000
24	QVC HD	731	0	0	0	0	0	0	19	22	0	0.000
4	Dater Max	691	0	0	0	0	0	0	21	22	0	0.000
11	More Max	706	0	0	0	0	0	0	21	41	4	0.000
8	More Max West	700	0	0	0	0	0	0	21	25	0	0.000
15	Max TV HD	713	0	0	0	0	0	0	33	38	-376	0.000
14	MGM Channel HD	712	0	0	0	0	0	0	20	26	0	0.000
15	Hallmark Movie Channel	714	0	0	0	0	1	0	22	22	0	0.000
2	HBO Zone	687	0	0	0	0	0	0	30	40	-3	0.000
2	HBO Zone West	688	0	0	0	0	0	0	20	16	0	0.000
10	HBO Signature	704	0	0	0	0	0	0	34	48	2	0.000
7	HBO Signature West	698	0	0	0	0	0	0	34	38	0	0.000

Monitoring QoS

The ability to customize monitoring profiles based on program source and content is vital to ensure the usefulness of the monitoring system. For example, engineers may define unique monitoring profiles for high definition (HD) content, standard definition (SD) content, as well as international and local programming. It also enables customization of thresholds for each program and for each monitoring point in the network.

The JDSU MVP-200 provides the following event threshold capabilities:

- Define unique monitoring profiles for over 40 measurements
- Multiple levels of threshold violation: warning, minor, major, and critical
- For each item monitored, users can define the level of violation that generates an event

The screenshot shows the MVP-200 Configuration Tool interface. The main window displays a table of monitoring profiles for a profile named 'Gary DTS-330'. The table has columns for Name, Level, SMMP, Notify, Warning, Minor, Major, Critical, Warm-Up, and Cool Down. The table contains 14 rows of monitoring items, each with a dropdown menu for the level and checkboxes for SMMP and Notify.

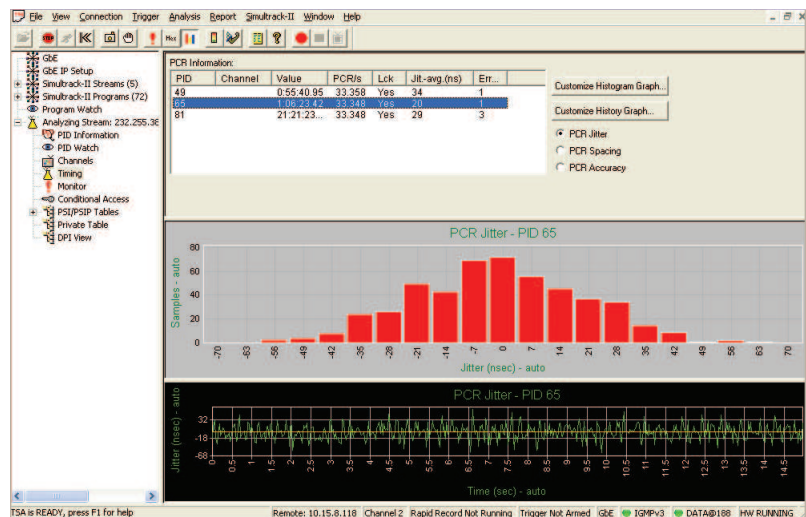
Name	Level	SMMP	Notify	Warning	Minor	Major	Critical	Warm-Up	Cool Down
PD Bitrate Low	Off	<input type="checkbox"/>	<input type="checkbox"/>	50.0Kbps	10.0Kbps	5.0Kbps	0.0Kbps	5.0s	5.0s
PD Bitrate High	Off	<input type="checkbox"/>	<input type="checkbox"/>	300.0Kbps	800.0Kbps	5000.0Kbps	10000.0Kbps	5.0s	5.0s
Program Bitrate Low	Wa	<input type="checkbox"/>	<input checked="" type="checkbox"/>	500.0Kbps	100.0Kbps	50.0Kbps	10.0Kbps	5.0s	5.0s
Program Bitrate High	Wa	<input type="checkbox"/>	<input checked="" type="checkbox"/>	8000.0Kbps	16000.0Kbps	20000.0Kbps	30000.0Kbps	3.0s	3.0s
Program Loss	Crit	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1.0s	2.0s	3.0s	5.0s	1.0s	1.0s
Stream Loss	Crit	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1.0s	2.0s	3.0s	5.0s	1.0s	1.0s
Stream Bitrate Low	Off	<input type="checkbox"/>	<input type="checkbox"/>	36500.0Kbps	38000.0Kbps	37000.0Kbps	35000.0Kbps	5.0s	5.0s
Stream Bitrate High	Off	<input type="checkbox"/>	<input type="checkbox"/>	39000.0Kbps	39500.0Kbps	40000.0Kbps	41000.0Kbps	5.0s	5.0s
Audio Bitrate Low	Crit	<input type="checkbox"/>	<input type="checkbox"/>	150.0Kbps	100.0Kbps	50.0Kbps	10.0Kbps	2.0s	2.0s
Audio Bitrate High	Crit	<input type="checkbox"/>	<input checked="" type="checkbox"/>	500.0Kbps	1000.0Kbps	2000.0Kbps	5000.0Kbps	4.0s	4.0s
Video Bitrate Low	Crit	<input type="checkbox"/>	<input checked="" type="checkbox"/>	500.0Kbps	100.0Kbps	10.0Kbps	5.0Kbps	5.0s	5.0s
Video Bitrate High	Maj	<input type="checkbox"/>	<input checked="" type="checkbox"/>	14000.0Kbps	16000.0Kbps	18000.0Kbps	20000.0Kbps	5.0s	10.0s
NULL Bitrate Low	Off	<input type="checkbox"/>	<input type="checkbox"/>	5.0Kbps	3.0Kbps	1.0Kbps	0.0Kbps	10.0s	10.0s

The flexibility of the MVP-200 allows users to define the method used to join transport streams for monitoring. Users may choose to employ Internet Group Management Protocol (IGMP) from the MVP-200 to actively join transport streams or connect to the network using passive methods such as SPAN ports or network TAPs.

Troubleshooting Analysis

When needed, users can initiate the Detailed Analysis and Troubleshooting mode of the MVP-200. Focusing on a selected transport stream or program gives users the ability to remotely isolate problems and troubleshoot specific issues. Analysis of tables and metadata, video/audio timing comparisons for lip-sync analysis, PID-based utilization graphs, PCR timing graphs, and much more can eliminate costly dispatches unless absolutely necessary.

Troubleshooting mode has no impact on the monitoring functions of the MVP-200 eliminating the need for users to choose between monitoring functions and troubleshooting analysis. Each MVP-200 also has over 300 GB of hard disk drive space available for recording selected video transport streams to later provide to equipment manufacturers or for analyzing offline.



Configuration Tool

A web-based configuration tool allows users to create, store, and distribute configurations to probes. This tool supports user-defined grouping of units and interfaces along with status indicators. The MVP-200 configuration tool changes such as channel lineups and event thresholds enable easy distribution to probes throughout the network.

The screenshot displays the MVP-200 Configuration Tool interface. The main window is titled "MVP-200 Configuration Tool" and features the JDSU logo in the top right corner. The interface is divided into several sections:

- Navigation:** "Configure" and "Update" tabs are visible at the top left.
- Folders:** A tree view on the left shows a hierarchy: Probes, Interfaces Groups, Configurations, Channel Plans, and Profiles.
- Channel Plan - datasheet2:** The main area displays a table of streams with columns for ID, Name, Destination, Source, IDMP, PAT Req, Complete, Profile, Programs, and PIDs.

ID	Name	Destination	Source	IDMP	PAT Req	Complete	Profile	Programs	PIDs
1	Stream 1	192.168.0.128-1000	192.168.0.124	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Inter HD	12	0
2	Stream 2	192.168.0.128-1002	192.168.0.124	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Inter HD	12	0
3	Mux 1	192.168.0.128-1000	192.168.0.124	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Inter HD	4	1
4	Mux 2	192.168.0.128-1010	192.168.0.124	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Local SD	28	0
282	Encoder 18	192.168.0.128-1000	192.168.0.124	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Inter HD	18	0
- Programs:** A table below the streams table lists programs with columns for Name, MPEG #, STB #, and Profile.

Name	MPEG #	STB #	Profile
BIOHD	212	181	Sat HD
DMCHD	184	121	Inter HD
POCSD	186	102	Sat HD
WZTC-SD Local	188	103	Local SD
- PIDs:** A section on the right shows a table for PIDs with columns for PID and Profile.

PID	Profile
CAT	Cond Access

Buttons for "Add Stream", "Add Program", and "Add PID" are located at the bottom of their respective sections.

Scalability

Multiple MVP-200 units can be deployed in a system environment for monitoring at key points in the network. Or deploy a single MVP-200 and use a single PC to control it without having to deploy or integrate it into a full system. This scalability enables providers to leverage their initial investment as needs grow and evolve from a few stand-alone units to a larger centralized monitoring system with full analysis capabilities.

Additional Interfaces

For troubleshooting, the MVP-200 also supports asynchronous serial interface (ASI) for use separately or in conjunction with the Gigabit Ethernet interface to monitor and troubleshoot problems such as:

- validating transcoder operation
- comparing multiplexer input and output for proper configuration and operation
- monitoring and validating source video feeds
- ensuring error-free transport network operation
- monitoring timing health
- comparing video and voice PID timing drift for lip-sync issues

API

Integration of the MVP-200 can enhance the monitoring systems for many users. JDSU provides an open Extensible Markup Language (XML)-based API for complete integration of monitoring functionality. Lighter integration users may choose to support a subset of these capabilities or employ the simple network management protocol (SNMP) trap generation feature of the MVP-200.

Conclusion

The MVP-200 is a highly scalable MPEG monitor/analyzer that combines the needs of both a system-integrated monitoring probe with all the features of a stand-alone digital video analyzer. Highly scalable with laboratory-grade results the MVP-200 addresses the needs of both network monitoring groups and troubleshooting engineers simultaneously in a single scalable, affordable package.

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Specifications**MVP-200 Digital Video Probe**

Chassis (W x H x D)	Industrial 19-in, 2U rack-mount 42.5 x 8.9 x 50.8 cm (16.75 x 3.5 x 20. in)
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Memory	2 GB RAM
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Storage	300 GB for transport stream recording (400 GB total)
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Regulatory compliance	FCC, CE, MET
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Power requirements

MVP200 AC-powered chassis	110 to 220 VAC 135 W (400 W max)
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MVP200 –48VDC DC-powered chassis option	–48 VDC 135 W (400 W max)
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**Interface options
(chassis supports 2 interfaces)**

Gigabit Ethernet (1000BaseT, 1000BaseLX, 1000BaseSX, 1000BaseZX)
ASI Input

Software (included)

Transport Stream Analyzer (ATSC and DVB)
SimulTrack™ II for Gigabit Ethernet
Web server Configuration Tools

MVP-200 Software (optional)

Transport Stream Record	Provides the ability to record a selected TS to the HDD
Digital Program Insertion	Analysis of SCTE-35 DPI
Frame Capture	Allows capture of IP over MPEG frames
XML API	API for use in centralized monitoring system
XSI/OpenTV	Analysis of XSI/OpenTV format
MHP Analysis	Analysis of MHP/DCM-CC

System Software (optional)

PathTrak Video Monitoring System	Centralized monitoring and management system
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