


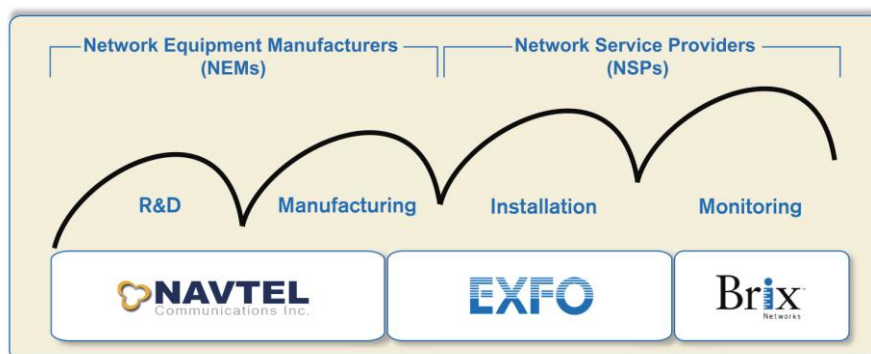
...umění optické komunikace  
...umění optické komunikace

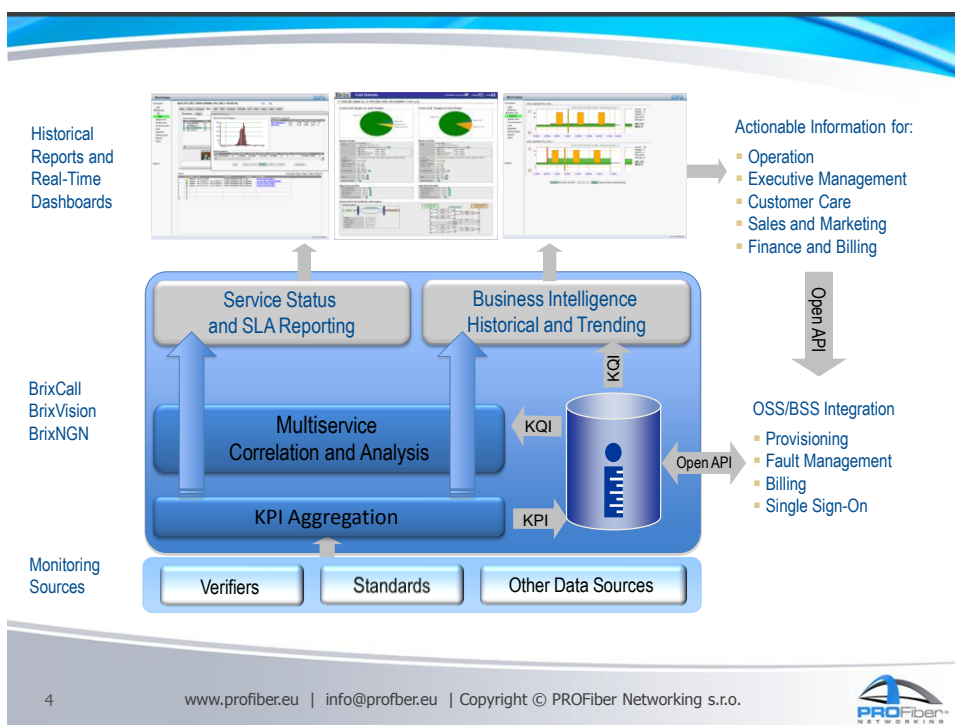
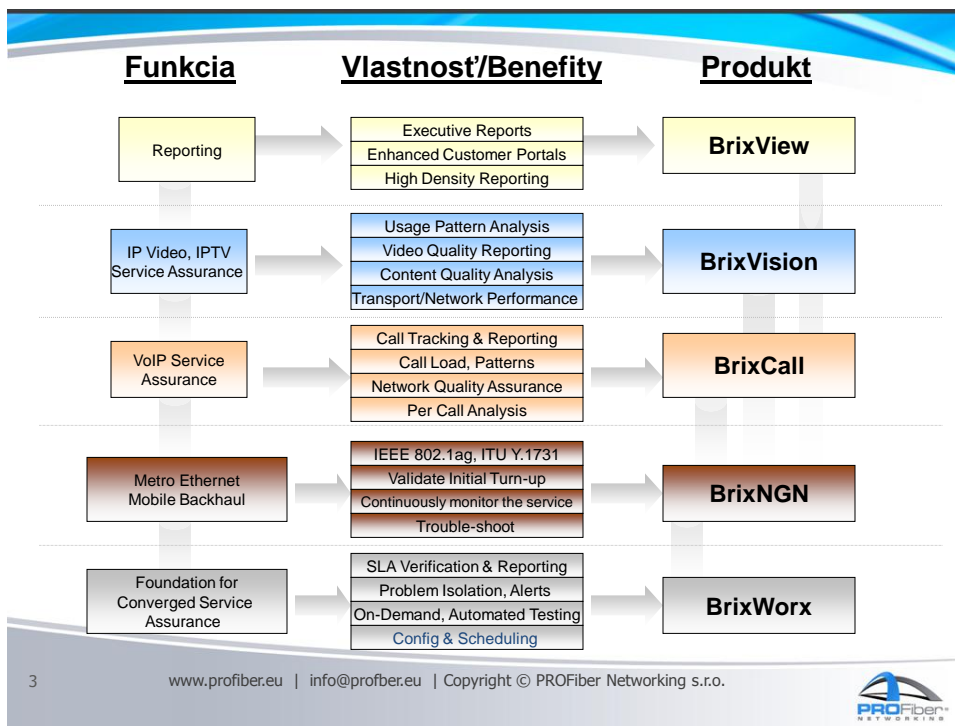
**EXFO Service Assurance**  
**Profesionálny monitoring sietí Ethernet / IP / TriplePlay**

Ing. Peter Potrok  
Špecialista prístupových sietí  
peter.potrok@profiber.eu | www.profiber.eu



## Úplný prehľad o Next – Gen sieťach





# BrixWorx

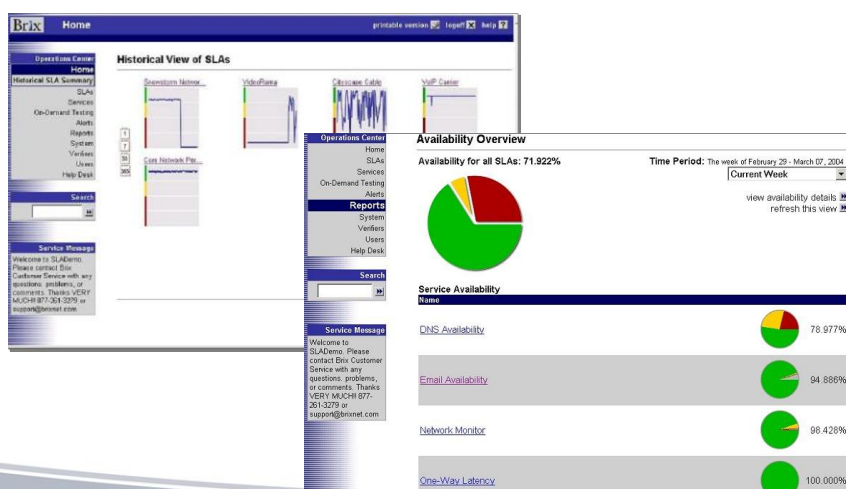
## Service Assurance

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## Reports–Business Manager



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# Reports - Operations

The screenshot displays the Brix reporting interface. On the left is a navigation menu with options like Home, Tests, Alerts, Reports, and System. The main area shows two reports:

- Custom Report: RTP Stats HQ to R&D (LH)**: A line graph titled '1: RTP Avg and Max Latency' showing latency in milliseconds over time.
- Custom Report: Yesterday's DNS Performance**: A line graph titled 'Server Response Time of DNS Active Test' with an average of 145.063 milliseconds. The graph shows response times over a 24-hour period.

On the right side of the DNS report, there are settings for 'Duration' (Previous Calendar), 'Time Period' (Current Hour), and 'Image Size' (400x400 pixels). A 'Service Message' sidebar is also visible on the left.

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# On Demand Testing

The screenshot shows the 'On-Demand Testing' interface. The left sidebar contains navigation options. The main area is divided into configuration and results sections:

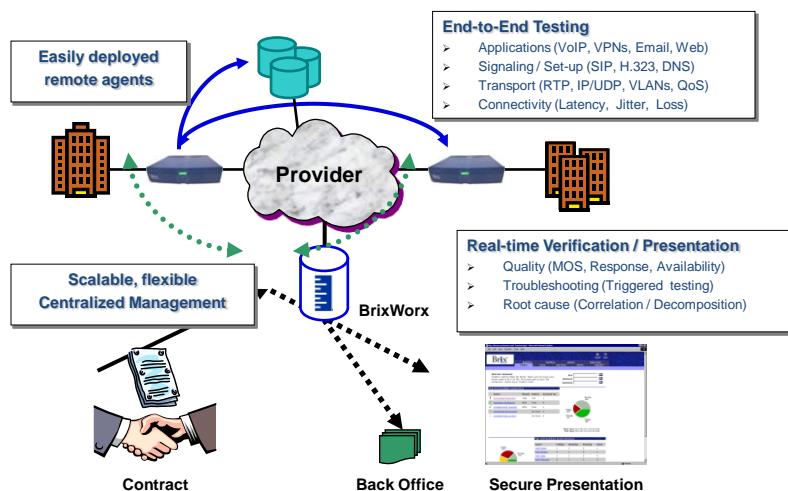
- Choose a Test**: A dropdown menu showing 'HTTP Active Test (Brix Verifier)'. Below it, a 'Select a Verifier' dropdown is set to 'Core - IAD'.
- Set Parameters**: A section for configuring the test, with 'Main Parameters' including 'URL' (www.expedia.com) and 'Page Download Mode' (Complete Page).
- Test Results**: A table showing the outcome of the test. The status is 'SUCCESS'.

Name	Value	Name	Value
Result	SUCCESS	Server Address	210.251.114.10
HTTP Error Code	200	First Page Number of Bytes	45568
<b>Response Times</b>			
First Page DNS Time	350302 µs	First Page Connect Time	450019 µs
First Page Disconnect Time	295459 µs	First Byte Response Time	198821 µs
First Page Download Time	4254180 µs	First Page Authentication Time	
Total Page Download Time	5582936 µs		
<b>Redirect Statistics</b>			
First Page Number of Redirects	1	First Page Redirect Time	258879 µs
<b>Embedded Objects Statistics</b>			
Objects Downloaded	29	Objects Number of Bytes	39887
Objects DNS Time	320496 µs	Objects Connect Time	585267 µs
Objects Download Time	435999 µs	Objects Disconnect Time	608034 µs
Objects HTTP Errors	0	Objects No Responses	0
Objects DNS Lookup Failures	0	Objects Connection Drops	0
Objects Connection Failures	0	Objects Number of Redirects	0
Objects Redirect Time	0 µs		

Test: HTTP Active Test (Brix Verifier)  
Verifier: Core - IAD

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## BrixWorx – The Brix System



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## Comprehensive IP Service Tests

- Range of IP communications and services tests
  - NGN Networks – Core MPLS, Metro Ethernet
    - Jitter, Packet Loss, Latency, Out of sequence
  - INTERNET Services
    - Email – Includes SMTP, IMAP, POP round-trip capabilities
    - Web – Includes HTTP, HTTPS, FTP, NNTP, and web scripting features
  - VoIP – Comprehensive suite of performance and quality tests for range of signaling protocols and Tri-Q analysis for signaling, content and, media
  - Video – Performance and video quality tests for video over IP applications e.g. video conferencing, VoD, streaming and IPTV

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## Brix Active Verifiers (IP)



### Brix 100M

#### Designed for CPE deployments

- | Inline or one-armed
- | Auto-configures for zero-truck-roll install
- | Sealed chassis, no local administration

#### Fail-safe inline operation

- | Separate packet-forwarding and network testing paths
- | Automatic wire relay

#### Tech Specs

- | 6" x 8" x 1U
- | Two 10/100 Ethernet ports
- | 16 MB memory



### Brix 1000

#### Designed for in-POP deployments

- | -48V DC power option
- | CLI via telnet & console port
- | NEBS Level 3 certified
- | Carrier-class design and management

#### Timing options

- | NTP, GPS and CDMA cards
- | Enable accurate one-way delay measurement

#### Tech Specs

- | 17"W x 9.75"D x 1.75"H (1U)
- | 10/100 Ethernet test port
- | 10/100 Ethernet mgmt port
- | 64 MB memory



### Brix 2500

#### Designed for core network deployments

- | Optical or copper gig-E
- | High speed time-stamp resolution
- | NEBS Level 3 Certification

#### Modular platform

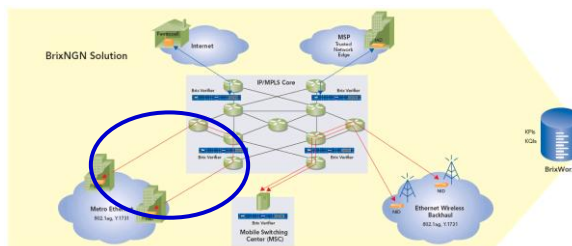
- | Supports NTP, GPS and CDMA timing modules
- | Enable accurate one-way delay measurement

#### Tech Specs

- | 17"W x 16"D x 3.5"H (2U)
- | Test port media modules
- | 10/100 Ethernet mgmt port
- | 128 MB memory

## BrixNGN (Metro Ethernet)

## Metro Ethernet Services



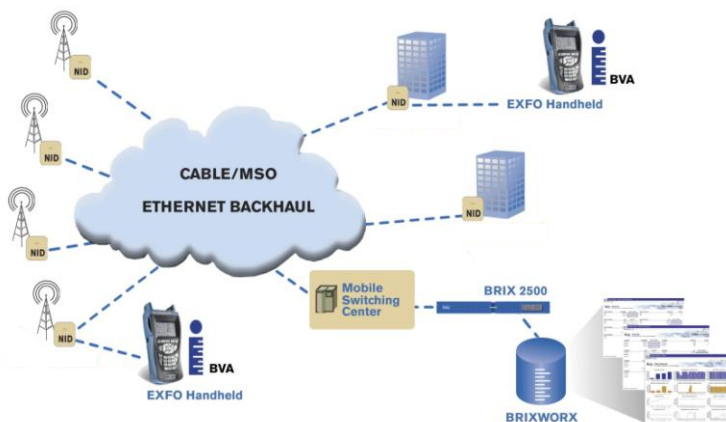
- Leverage Standards
  - 802.1ag and Y.1731 compliant
    - IEEE 802.1ag - Continuity checks, Loopback, and Link trace tests
    - ITU Y.1731 - SLA verification, Frame loss, Frame delay and Frame delay variation, throughput, availability
- Validate Initial Turn-up, continuously monitor the service, trouble-shoot
  - Verifier to NID testing
    - Interoperate with qualified compliant devices
- Tests & Metrics Results
  - Birth Certificate
  - SLA
  - On-demand results
- Correlation & Analytics
  - Spatial composition – by customer, location
  - Temporal aggregation – Overall network performance
  - Engineering & Operations reports

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## Ethernet Backhaul Service Assurance



Complete service assurance, from turn-up to monitoring/troubleshooting and ongoing correlation and analysis

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# BrixCall

See it before they hear it!

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# Service Health

- Monitoring and Aggregated Reports
  - Call failures by type by region
  - Call success/failure ratios by region
  - Call quality (and impairments) by region
  - Average call duration, average call bandwidth
  - Peak hour statistics
- Centralized correlation and reporting
  - Call Quality Records reflect correlation of signaling, media, RTCP and RTCP-XR legs
  - Filter by number, performance, DSCP
  - Simple per call drill-down



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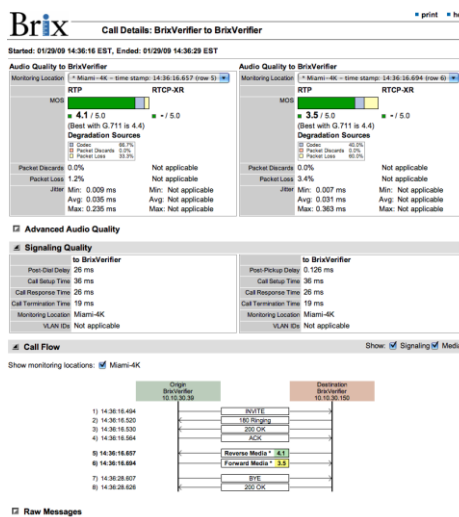
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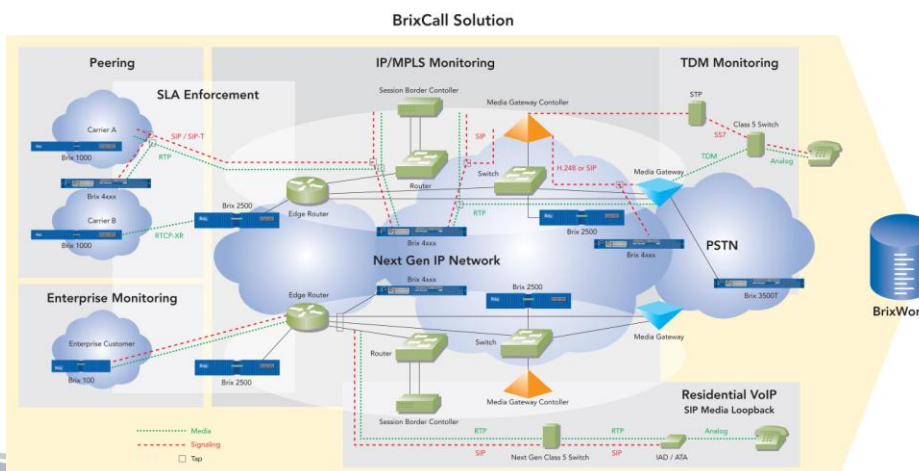


# Live Call Analysis

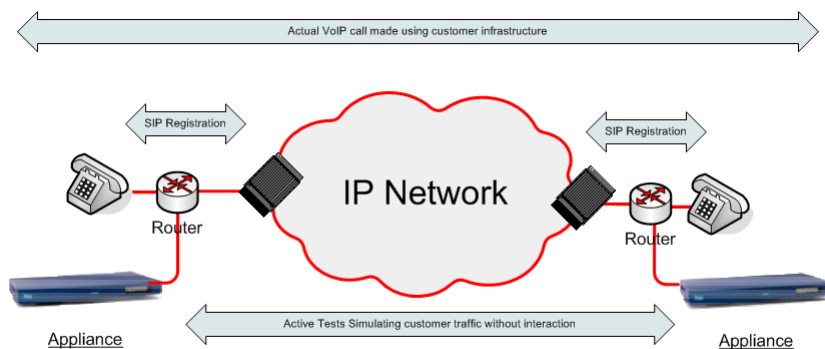
- Comprehensive, live call and customer service application
  - Scalable, centralized independent call-signaling, media correlation and service analysis
- Benefits to you
  - Provides detailed visibility to live customer calls for per-call service analysis and troubleshooting
  - Simplifies reporting and tracking call success ratios and durations
  - Visibility into overall call loading and traffic patterns



# BrixCall Architecture

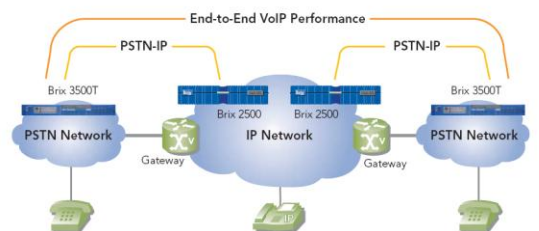


## VoIP Active Tests



## TDM/VoIP Gateway

- Gateway converts Voice to VoIP
- Ensure correct coding of VoIP bearer traffic



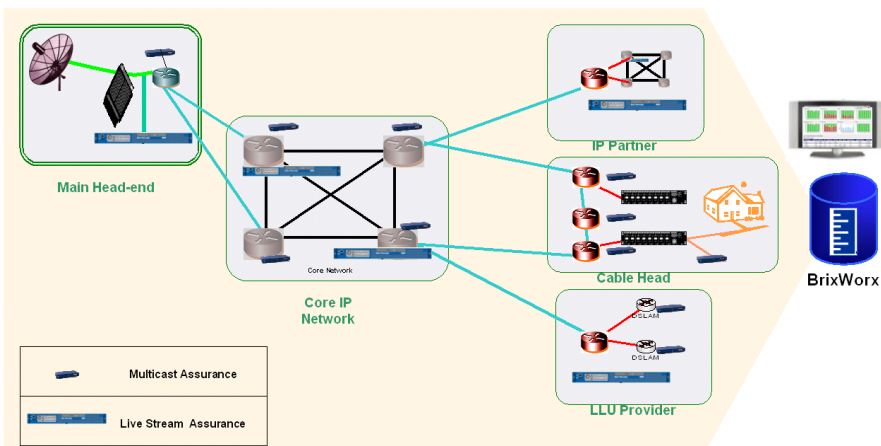
Measuring VoIP Performance Throughout Converged PSTN-IP Network with Brix Verifiers

# BrixVision

## Seeing the Problem

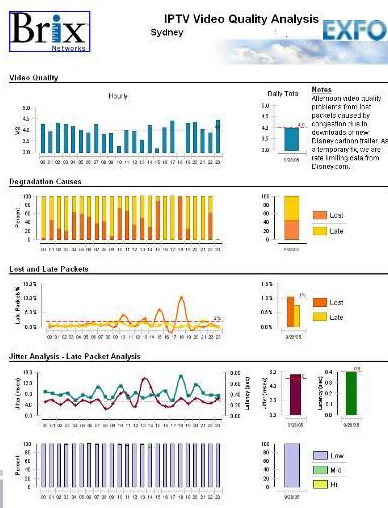
# IPTV Distribution

BrixVision Solution



# Video Quality Analysis

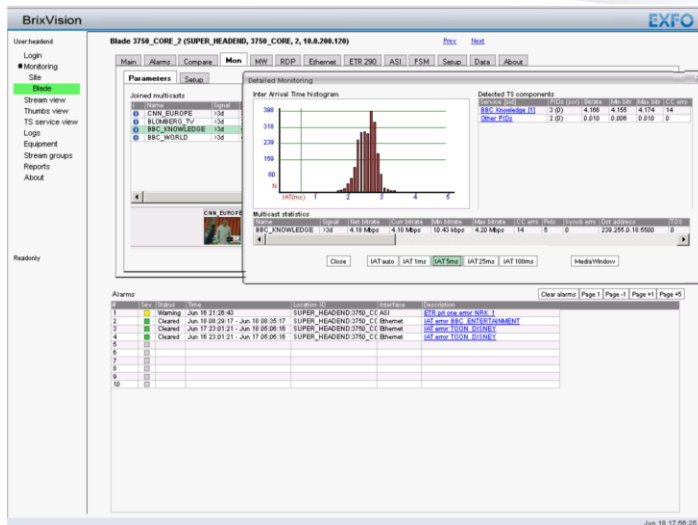
BrixVision Diagnostic Package



- Diagnostic Report
- Shows detailed information analyzing some problem
- Poor VQI due to Lost Packets
- Used by
  - Network Engineering
  - Operations...

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Userheadend

- Login
- Monitoring
- Stream view
- Selected**
- Thumbs view
- TS service view
- Logs
- Equipment
- Stream groups
- Reports
- About

Ready

**DISCOVERY\_CIVIL**    Prev: [DISCOVERY](#)    Next: [DISCOVERY\\_SCIENCE](#) [Ethernet (Last minute)]

Bitrate:	3.57M	Encoding:	4:2:0	Address:	239.255.0.37:5500
Video:	3.39M clear	Size:	544x576		
Audio:	0.10M clear	Aspect:	4:3		
Teletext:	0.07M clear	Service name:	DiscovWorld [1]		

#	Last 96h	Now	Interface	Probe	Signal	cur(Max:AT)	cur(Max:bit)
1	<div style="width: 100%; height: 10px; background-color: green;"></div>	<div style="width: 100%; height: 10px; background-color: green;"></div>	Ethernet	SUPER_HEADEND:3750_CORE_1	>4d	3.8ms	3.6Mbit/s
2	<div style="width: 100%; height: 10px; background-color: green;"></div>	<div style="width: 100%; height: 10px; background-color: green;"></div>	Ethernet	SUPER_HEADEND:3750_CORE_2	72m	3.8ms	3.6Mbit/s

[Compare Media/Windows for selected probes](#)  
[Compare ETR measurements for selected probes](#)

**Alarms for all sites**    [Clear alarms](#)    [First page](#)    [Prev page](#)    [Next page](#)    [+5 page](#)

#	Sev	Status	Time	Location ID	Interface	Description
1	1	Cleared	May 28 12:45:17 - May 28 12:46:17	SUPER_HEADEND:3750_COI	Ethernet	No signal DISCOVERY_CIVIL
2	1	Cleared	May 28 10:16:16 - May 28 10:18:17	SUPER_HEADEND:3750_COI	Ethernet	No signal DISCOVERY_CIVIL
3	1	Cleared	May 18 14:33:19 - May 18 14:34:17	OSLO_DVB-T-COFDM_193_2	Ethernet	No signal DISCOVERY_CIVIL
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

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**Blade Output-1\_1 (SUPER\_HEADEND, Output-1, 1, 10.0.200.193)**    [Next](#)

Main | Alarms | Mon | MDI | RDP | Ethernet | **ETR 290** | ASI | FSM | Setup | Data | About

ETR Overview | ETR Details | Services | Bitrates | PSI/SI/PSIP | PID list | PCR | ETR thresh. | PID thresh.

Service thresh.

**Ethernet**    [Show only this input](#)

Mon	Lock	Tuning setup	microETR
<input checked="" type="checkbox"/>		NRK_1 239.255.0.1:5500	<div style="width: 100%; height: 10px; background-color: green;"></div>
<input checked="" type="checkbox"/>		NRK_2 239.255.0.2:5500	<div style="width: 100%; height: 10px; background-color: green;"></div>
<input checked="" type="checkbox"/>		TV2_NORWAY 239.255.0.3:5500	<div style="width: 100%; height: 10px; background-color: green;"></div>
<input checked="" type="checkbox"/>		TVNORGE 239.255.0.4:5500	<div style="width: 100%; height: 10px; background-color: green;"></div>
<input checked="" type="checkbox"/>		DR1 239.255.0.54:5500	<div style="width: 100%; height: 10px; background-color: green;"></div>
<input checked="" type="checkbox"/>		STAR 239.255.0.6:5500	<div style="width: 100%; height: 10px; background-color: green;"></div>
<input checked="" type="checkbox"/>		SHOWTIME 239.255.0.7:5500	<div style="width: 100%; height: 10px; background-color: green;"></div>
<input checked="" type="checkbox"/>		CNN_EUROPE	<div style="width: 100%; height: 10px; background-color: green;"></div>

**ASI**    [Show only this input](#)

Mon	Lock	Tuning setup	microETR
<input checked="" type="checkbox"/>		ASI input 0 ASI	<div style="width: 100%; height: 10px; background-color: green;"></div>

**TR 101 290 Full Analysis**

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**BrixVision** EXFO

User headed  
 Login  
 Monitoring  
 Stream view  
**Thumbs view**  
 Selected  
 TS service view  
 Logs  
 Equipment  
 Stream groups  
 Reports  
 About

Ready

Stream group [All streams] ▾  
 1-44 45-88 89-132 133-176 177-220 221-264 265-308 309-352 353-396 397-440

Jun 19 19:54:11



**BrixVision** EXFO

User headed  
 Login  
 Monitoring  
 Stream view  
 Selected  
 Thumbs view  
 TS service view  
 Logs  
 Equipment  
 Stream groups  
 Reports  
 About

Ready

SUPER\_HEADED3750\_CORE\_1  
 TOON\_DISNEY(236.255.0.48:5500) - Range: 90h Resolution: 1h  
 ESQ(4): 10h  
 ESQ(MLR): 1s  
 ESQ(RTP): 0  
 ESQ(overload): 0  
 IAT: 2.9  
 MLR: 0

SUPER\_HEADED3750\_CORE\_2  
 TOON\_DISNEY(236.255.0.48:5500) - Range: 65h Resolution: 1h  
 ESQ(4): 10h  
 ESQ(MLR): 1s  
 ESQ(RTP): 0  
 ESQ(overload): 2s  
 IAT: 2.8  
 MLR: 0

IAT: MLR: PW: MLR: IAT: RTP: [K] << >> [4 days] 24 hours | 8 hours | 30 min | tuning

Jun 19 18:00:23

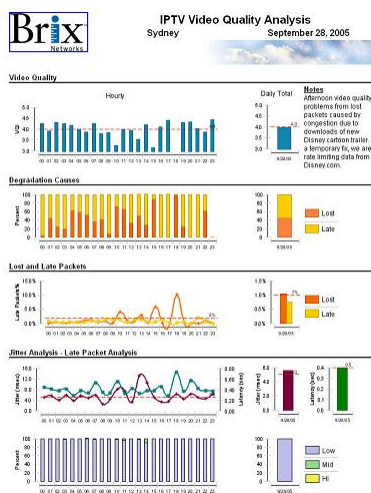
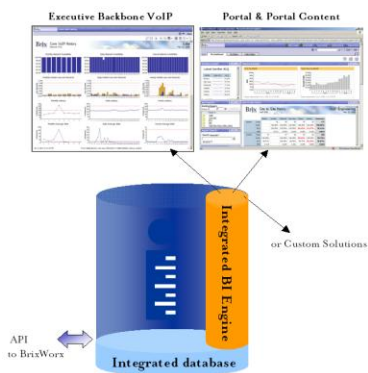


# BrixView

## Exposing the Detail

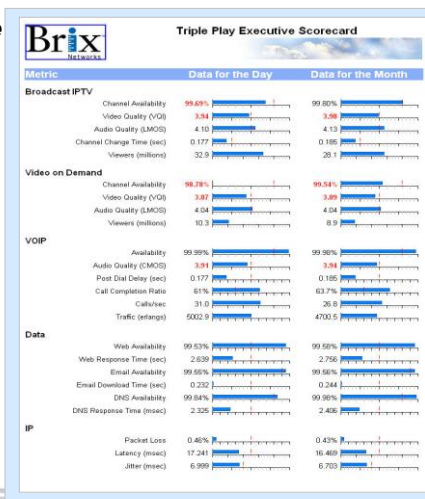


# BrixView Executive Reports



# Executive Scorecard

## Triple Play Executive Information Package

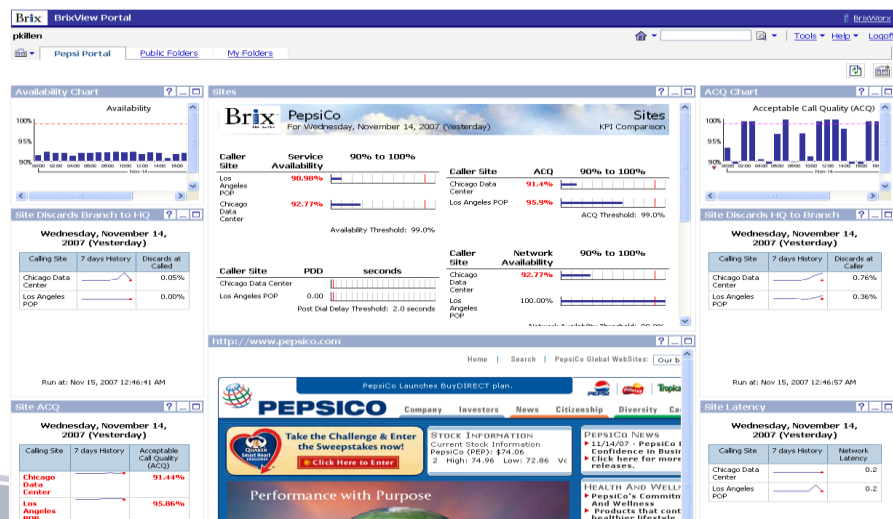


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# BrixView Portal



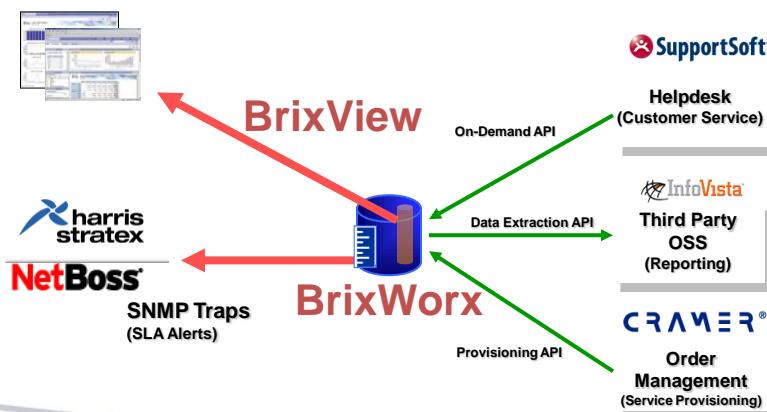
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## Brix Integration with OSS



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## EXFO Service Assurance

Telco	ISP/Tier 2	MSOs	Wireless

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