

## Technology Brief

# Maximizing Communications Network Performance with Automated Assurance



### Introduction

As global communications workhorses, communications networks are vulnerable to service disruptions. The consequences of service-disrupting network faults amplify according to the number of customers affected and the time taken to correct the situation.

For instance, in the event of a fiber cut alarm, it can take hours to identify cause and effect, send notifications, and establish trouble tickets for affected customers. “Swivel-chair” operations further slow outage resolution, with procedures spanning multiple element management systems, inventory systems, and customer databases. Less dramatic but equally challenging are problems caused by gradual performance degradation. Service assurance systems that fail to establish baseline performance parameters will miss looming issues that build up over time.

### Proactive Assurance Minimizes Service Disruption

Network service disruptions may be inevitable, but their consequences are within operator control. Networks that use a reactive “watch-and-wait” approach to performance assurance are not adequately equipped to handle the demands of today’s customers and end-users. A proactive monitoring model, however, increases the effectiveness of service

assurance by providing information that helps operations staff detect and correct problems before they affect service.

### Automating the Problem-Resolution Life Cycle

By continuously monitoring alarms and performance metrics across networks and services, the Fujitsu Automated Assurance solution enables operations staff to understand normal network trends and quickly spot signs that something might be wrong. The solution automates the problem-resolution lifecycle using AI and Machine Learning (ML), and offers a holistic multivendor, multidomain view of the network topology.

Fujitsu’s Automated Assurance solution makes it easy to view the entire network, regardless of the complexity of the topology and cross-domain connections to support systems. With its simple, easy-to-navigate dashboard format, technicians can view and manage service health and customer data, as well as real time reports. When performance metrics indicate impending downtime, warnings or automated actions can prevent service performance issues.

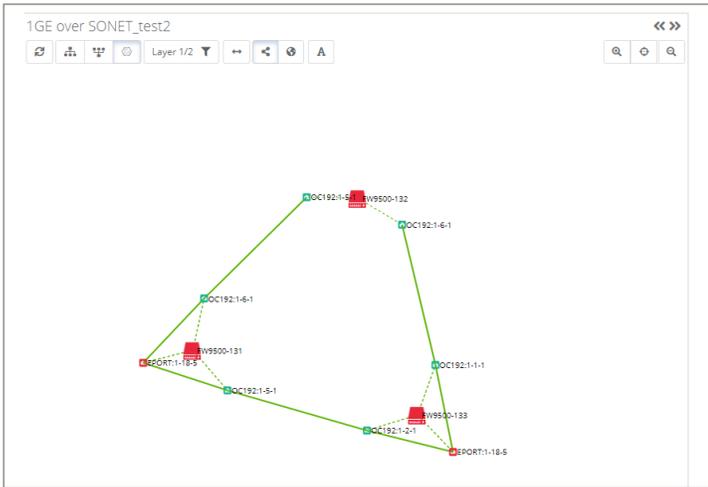


### Meaningful real-time performance reports, delivered through configurable dashboards

# Proactive Vigilance Minimizes Risk and Disruption

## The Fujitsu Automated Assurance Solution

At the heart of every Fujitsu Automated Assurance solution is a comprehensive, modular service assurance system for fault management, performance monitoring, SLA management, service analytics, and Ethernet service assurance.



## Fujitsu Automated Assurance provides an easy-to-read topology view

The Fujitsu Automated Assurance solution provides out-of-the-box device support for current technologies and protocols, including SNMP, NETCONF, and TL1. Full-cycle assurance continuously collects fault and performance data from the network and analyzes it against preconfigured thresholds. In addition, the AI/ML anomaly detection capability learns what's normal for your network and notifies personnel when it detects performance trending away from normal behavior. Fujitsu Automated Assurance can create trouble tickets, send notifications, and invoke automated corrective actions.

## Solution Highlights

With unprecedented data collection and analysis informed by AI and ML, the solution provides detailed performance information that improves network reliability, performance, and customer experience. Fujitsu Automated Assurance provides a dynamic, accurate, network-wide view of which services map to which resources. On-demand, real-time analytics provide a quick look into the network through easily created templates, custom dashboards, and performance trend charts.

## Carrier Ethernet Support

The Fujitsu Automated Assurance solution supports MEF-compliant Ethernet traffic with a rich ITU-T Y.1731-compliant capability for modeling and managing carrier Ethernet virtual circuits (EVCs) carried over optical and packet traffic. The solution monitors Ethernet service health in real-time, and accurate, automated baselines help ensure operators are notified before customers experience service disruption.

## Inventory and Workflow Automation

Fujitsu Automated Assurance saves time by automating tasks that network operators previously performed manually. The solution consolidates information into its "nodes and services" view. From there, workflow automation can create trouble tickets, emails and SMS notifications, as well as automate optimization or remediate service issues. This improves the Mean Time to Repair (MTTR) dramatically.

## Automated Alarm Correlation

One of the biggest challenges facing today's service providers is how to interpret massive amounts of network data to identify the root cause of issues and outages. The Fujitsu Automated Assurance solution provides sophisticated alarm correlation, cutting out clutter and presenting useful information that's easy to navigate and interpret.

Alarms & Events > FW9500-132

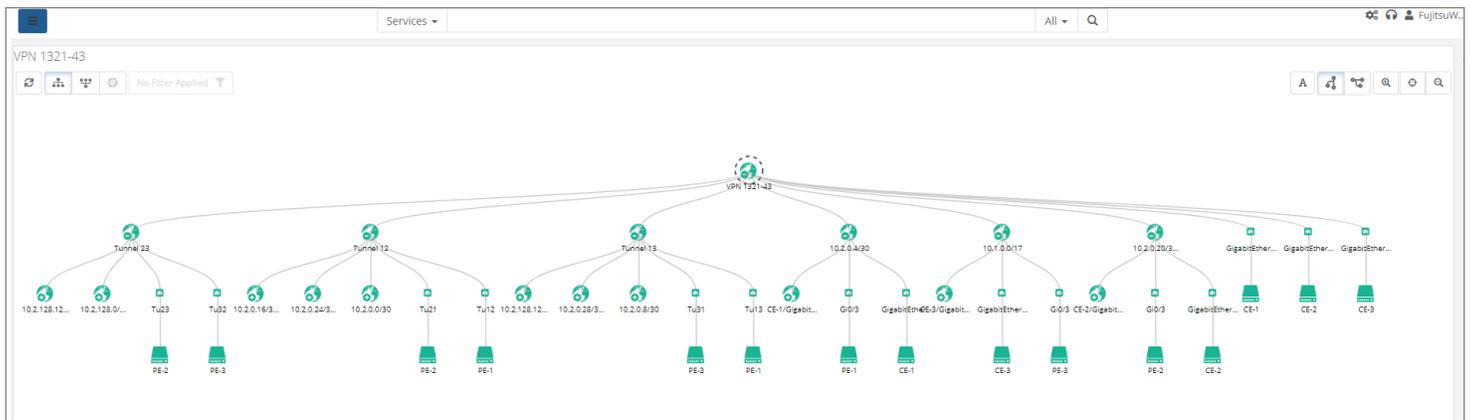
Current Day Week Month Year Custom  All Alarms  Select All

Select filter(s) to be applied

Owner	Severity	Source	Priority	Node	Classification	Specific problem	Service name	Additional Information	Source Description
	Major	FW9500-132	High	FW9500-132	Layer 1 failure	UNEQ-V			
	Major	EQPT:1	Normal	FW9500-132	Layer 1 failure	FILTR		FAN Filter Should Be Replaced. Timer Expired: TYPE = US-300	WOM2L00GRF
	Critical	FW9500-132	Urgent	FW9500-132	Layer 1 failure	UNEQ_P			
L	Critical	STS1:1-1-14-2	Normal	FW9500-132	Layer 1 failure	UNEQ-P		UNEQuipped indication - Path	
L	Critical	STS1:1-1-14-4	Normal	FW9500-132	Layer 1 failure	UNEQ-P		UNEQuipped indication - Path	
	Minor	EQPT:1-15	Normal	FW9500-132	Layer 1 failure	RMVD		Equipment Removed: TYPE = IFPS-VF11	
	Critical	EPOR1:1-1-2	Normal	FW9500-132	Reachability failure	LOC		Loss of Carrier	
	Critical	EPOR1:1-2-2	Normal	FW9500-132	Reachability failure	LOC		Loss of Carrier	

## Nested correlated alarms present a clean, clear view

# Flexible Alarm Filtering Speeds Diagnosis



## Network and service layer view

Automated correlation performs out-of-the-box root cause analysis by maintaining a real-time topology view across network layers, and leveraging this to automatically correlate related alarms and suppress symptomatic alarms. This quickly identifies the root cause and dramatically reduces alarm noise.

In addition, flexible, easy-to-create filters provide custom alarm views, guaranteeing that important alarms won't be missed. This capability, in combination with configurable automated workflows, root cause analysis, and service impact analysis, enables operations staff to move quickly to troubleshoot and resolve outages.

## Performance Anomaly Detection

Using AI/ML technology, sophisticated anomaly detection monitors millions of data points collected across the network and analyzes this data over time, pinpointing even tiny signs of problems and alerting staff whenever intervention is needed.

## Trouble Ticketing

In addition to reducing the number of tickets with event correlation and compression, the Fujitsu Automated Assurance solution creates trouble tickets automatically in various third-party help desk and service support systems. The ticket editor allows parameters to be configured appropriately for specific ticketing systems. Ticket numbers and status are automatically synchronized, which ultimately cuts MTTR and alarm clutter.

Owner	Severity	Source	Priority	Node	Classification	Specific problem	Service name	Additional Information	Source Description
	Major	FW9500-132	High	FW9500-132	Layer 1 failure	UNEQ-V			
	Major	EQT:1	Normal	FW9500-132	Layer 1 failure	FILTR		FAN Filter Should Be Replaced. Timer Expired: TYPE = US-300	WOM2L00GRF
	Critical	FW9500-132	Urgent	FW9500-132	Layer 1 failure	UNEQ-V			
	Minor	EQT:1-15	Normal					Equipment Removed: TYPE = IFF5-VF11	
	Critical	EPOR:1-1-2	Normal					Loss of Carrier	
	Critical	EPOR:1-2-2	Normal					Loss of Carrier	

## Easily launch trouble tickets manually or automatically

# Understand and Optimize Your Network's Performance

## Root Cause Analysis (RCA)

RCA combines network topology data, real-time anomaly detection, and supervised control of machine learning to deliver optimum root cause analysis. The automated alarm correlation assists RCA by interpreting massive amounts of network data.

## Service Quality Benchmarking and Playbooks

Once the Fujitsu Automated Assurance solution is deployed, KPIs and KQIs are captured, documented, and categorized. The aggregated performance metrics use machine learning and analytics to inform run book automation and closed loop automation, proactively responding to events and requests, and improving customer service and support.

## A-Z Circuit Troubleshooting

The Fujitsu Automated Assurance solution also includes end-to-end, hierarchical visualization of all services across all network layers and service components with a consolidated view of alarms and performance from a single view. Users can see all service alarms and where they are in the service path across all devices. The solution also identifies the root cause and correlates alarms, resulting in faster problem diagnosis, troubleshooting and resolution.

## Conclusion

With today's fast-evolving networks and services, manual monitoring is no longer sustainable. Legacy tools cannot proactively pinpoint and resolve outages and performance issues. Network operators need a solution that improves efficiency, empowers their operations staff, increases customer satisfaction and retention, and reduces operational costs. Fujitsu Automated Assurance is a comprehensive and modular solution that applies AI/ML and automation to proactively address all these challenges for multivendor, multitechnology networks, including Ethernet, MPLS, packet, WDM, and OTN.

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