Introduction

As today's complex packet data networks grow, and voice and data networks start to converge, network traffic management becomes more important and more complex. As the network increases in complexity, the ability to know and understand what is going on in the network becomes both more important and at the same time more difficult.

Performance operations systems to manage congestion in voice networks have been in use since the 1970s. The same types of "unusual" network events that can cause congestion in circuit-switched networks can cause congestion in packet-switched networks. This is especially true for voice over packet (VoP) networks. For example, a network failure, a disaster such as an earthquake, or a call-in program can cause traffic to exceed engineered network capacities. Proactive network performance monitoring and quick response are particularly important in the VoP environment, where performance is unpredictable.

In the packet environment, including IP and ATM, network congestion can impact service levels. In the circuit-switched environment, congestion may lead to new calls being blocked, but existing calls can continue with high quality. In the packet environment, congestion may also degrade existing VoP calls by increasing delay, jitter, and packet loss. Congestion management is needed to maintain quality of service (QoS) during periods of unusual events.

By visualizing and analyzing the cause of the congestion, the network manager can effectively and proactively deal with congestion events in the network. A primary advantage of congestion management is to allow VoP calls and other usage based data traffic to maintain QoS, thereby maximizing revenue for the service provider. Secondarily, it can improve customer satisfaction and increase customer retention.

VitalEvent allows the service provider to maintain high QoS for delay-sensitive services over a complex, multi-vendor packet network by managing congestion that affects delay. The software allows network managers to view and analyze performance in real time, instead of waiting for daily reports.

Value Proposition

VitalEvent provides value:

- By identifying what is happening in real time
- With powerful analysis and thresholding to recognize trouble conditions
- With presentation options to support rapid detection of congestion
- By increasing revenue and decreasing costs

Real Time

Real-time performance data provides an advantage over daily reports by giving network managers the ability to monitor network performance and detect performance problems that might otherwise be detected only when customers call to complain about their service.

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Real-time data allows network managers to analyze performance events quickly.

Management of the packet network in real time allows the service provider to affect quality of service in real time. After isolating and fixing problems, network managers can then monitor performance on an ongoing basis to verify the effectiveness of the congestion resolution. Network operations personnel are instantly aware of the impact of their actions on service quality.

Real-time data gives customer service representatives access to immediate network updates to reduce service call times.

Powerful Analysis and Thresholding

Powerful analysis allows network managers to sectionalize, isolate, and correct performance problems. Network managers can use flexible queries to focus on specific network elements or components, and flexible thresholds and alerting features to manage the network according to specific QoS metrics.

VitalEvent provides insight about performance that is not directly available from raw performance measures, such as packet or error counts. For example, normalized error rates can provide a more useful view of network performance. VitalEvent provides both real-time and historical views of network performance to allow analysis to be put in context and to analyze performance patterns over time. VitalEvent can help identify whether a problem is related to congestion (high utilization, dropped packets) or to a hardware or facility fault (high errors).

The analysis takes performance data from an EMS level and allows managing and controlling congestion at the service level.

Flexible thresholding provides system default exception conditions. In addition, the service provider can customize the exception conditions for all measurements.

Presentation

VitalEvent displays a graphical representation of all network elements and their associated event levels, with customized interval views (historical vs. current data). The user interface for VitalEvent is entirely web browser based and provides the following displays:

- Summary: a display showing the current state of the network.
- Overview: links to a display showing events in the network.
- Devices: a display showing devices, and their associated events and resources.
- Subnetworks: a display showing subnetworks and their associated resources.
- Paths: a display showing paths being monitored, and their associated events and resources.
- Topology: a display showing 3-D views of network connectivity and events.
- Overlay: a display showing specific measurement types on specific resources.
- Analyze: a display showing reports available and scheduled.
- Event Groups: a display showing groups of resources or devices.

Increased Revenue and Decreased Costs

VitalEvent helps the service provider increase revenue and decrease costs as follows:

- Charge a premium for guaranteed better quality service with a service level agreement (SLA). Charge a premium for a cutting edge SLA that has aggressive penalties when not met. Generic SLA metrics include availability, data delivery ratio, round trip delay, mean time to repair, provisioning lead-time. This allows for tiered pricing, which can be profitable.
- Avoid short holding time calls due to poor quality in VoP networks.
- Sell more services to existing customers when their traffic levels indicate they are needed.
- Avoid rebates due to missed performance agreements.
- Maximize investment in data networking hardware and transport equipment, which can increase revenue per call/service/subscriber.
- Reduce risk of major congestion event, which can damage service image and create great stories for competitors.

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