VIRTANA SAN PERFORMANCE PROBES FOR LINE-RATE WIRE DATA OBSERVABILITY

Key Challenges Addressed

Virtana Infrastructure Observability (IO) optimizes the performance, availability, and cost of mission-critical application infrastructure across data center, private- and hybrid-cloud compute, network, and storage infrastructure.

Virtana SAN Performance Probes are hardware tools that provide the highest resolution insights into the operation and performance of Fibre Channel SAN environments.

The combination of Virtana IO with our Fibre Channel SAN Performance Probes yields millisecond-level high- fidelity storage port data with full- stack views of applications and market- leading analytics.

This enables you to:

- **Speed problem resolution** with AI-powered recommendations that identify solutions even as alarms are raised
- **Ensure resource availability** with AI-driven predictive capacity management from port to LUN, VM, host, or full application infrastructure sets (including cloud environments)
- **Automate storage and other application infrastructure resource optimization** for cost, performance, and risk with AI, ML, and statistical-

Hardware Probes Enable High Fidelity

- Storage arrays in your SAN can collect statistics, but they cannot monitor over a per-second granularity. Doing so would impact their primary function, which is to provide on-demand storage capacity to applications. Offloading the monitoring function to a dedicated appliance allows the storage array to stay focused on its primary function – serving data.
- An event that occurs for a few milliseconds but impacts the SLA of your business-critical application would be lost to software monitoring solutions as they rely on sampling.
- As Virtana SAN Performance Probes operate at the protocol level, the solution is agnostic to the storage or SAN vendor. This enables a consistent single-pane-of-glass view across multi-vendor SAN and storage to identify root cause of infrastructure issues impacting your application SLA.
- Monitor every application conversation from the initiator up to the target LUN.

Virtana Fibre Channel SAN Performance Probe

- Up to 24 ports of 4/8/16/32G Fibre Channel in a 1U chassis appliance, reporting at 1 sec. resolution.
- Benefit from histograms that provide sub-second visibility into application conversations with metrics for R/W latency including Exchange Completion Time (ECT), R/W ratios, and R/W I/O size.
- Identify credit starvation by tracking buffer credits and the number of unacknowledged frames that can be in flight between a source and destination.
- Rapidly find low level physical layer errors as well as higher

- Identify delays at the host and storage level
- Leverage over 400 metrics gathered and summarized at 1 sec., 10 sec., and 1 min. intervals.
- An application conversation is a discrete communication between an initiator (host), the target (storage port) and the LUN being accessed. Virtana Infrastructure Observability tracks every conversation by taking 31 measurements per conversation per second.
- A single Performance Probe can monitor 19,200 unique ITLs per second
- Get to root cause on issues that occur for only a few seconds with ML-based analytics that proactively optimize storage to prevent problems before they affect applications that depend SAN environments
- **Queue Solver** troubleshoots flow control issues and enables you to understand the impact of I/O queue depths across hosts. Queue depth refers to the number of I/O requests (SCSI commands) that can be queued at one time.
- **Storage Port Balancer** enables improved application performance by optimizing the storage ports' load on your Fibre Channel SAN.
- **Trend Matcher** gets to root cause of problems created by an entity that is several hops away from the alarm location. Machine Learning assists in cross domain correlation and actionable recommendations as the traffic flow between entities could comprise thousands of micro transactions per second that converge and diverge at different nodes.
- Deployed with passive TAPs that ensure every I/O is monitored with zero performance impact on the infrastructure.

Connectivity

- **SAN Link Interface:** Connectivity to the TAP monitor outputs is provided by field-replaceable small form factor pluggable plus (SFP+) optical transceivers.
- **SAN Link Capacity:** ProbeFC-32G SAN Performance Probe monitors up to 24 concurrent Fibre Channel SAN links operating at 4/8/16/32 Gbps speeds.
- **Virtana Infrastructure Observability Platform Connectivity:** SAN Performance Probes connect to the Virtana Infrastructure Observability Platform Appliance and transfer calculated SAN metrics for persistent storage, analysis, and display.

Deployment and Serviceability

- No physical or remote console access is required. Firmware maintenance, device configuration, and operational monitoring are all performed remotely via Virtana Infrastructure Observability.
- Performance probes are deployed completely Out of Band from the primary data stream. The only In-band device is the non-powered optical TAP Patch Panel, meaning zero production impact introduced by the hardware probe.
- Initial configuration and ongoing management are performed through a standard browser interface via a dedicated (directly connected) Ethernet port that is not network accessible.
- Redundant hot-swappable power supply modules provide high availability.
- Field-replaceable and reversible cooling fan modules support both front-to-rear and rear-to-front airflow. calculated SAN metrics for persistent storage, analysis, and display.

How Do I Buy?

Virtana gives you greater flexibility in acquiring the hardware you need for your specific deployment. You can choose between buying the hardware upfront or leveraging Virtana's Hardware-as-a-Service (HaaS) program. Virtana's HaaS program alleviates the initial hardware investment and makes it easier to maintain budget requirements. Speak with your Virtana representative to learn more.

Safety and Emissions Compliance

Safety

- UL/EN/IEC 60950-1
- Restriction of Hazardous Substances (RoHS)

Emissions

- United States: FCC Part 15, Subpart B (Class A Device)
- Canada: ICES
- Europe: EN 55022
- Korean: KN 22

Environmental

Temperature

- Operating: +10° C to +35° C (50° F to +95° F), max. gradation 10° C per hour
- Non-Operating: -20° C to +80° C (-4° F to 176° F), max. gradation 20° C per hour

Humidity

- Operating: 20% to 80% non-condensing, max gradation 20% per hour
- Non-Operating: 5% to 95% non-condensing, max gradation 20% per hour

MECHANICAL	PROBEFC-16G-12	PROBEFC-16G-24	PROBEFC-32G-24
HEIGHT	1U, 1.75 in (4.45 cm)	1U, 1.75 in (4.45 cm)	1U, 1.75 in (4.45 cm)
WIDTH	17.2 in. (43.7 cm)	17.2 in (43.7 cm)	17.2 in (43.7 cm)
DEPTH	• 28.2in(71.6cm) • Maximum fixed projection from front face 0.75 in (1.9 cm), from rear face 1.0 in (2.5 cm) • Optional cable manager projects 4.5 in (11.4 cm) from front face	• 28.2in(71.6cm) • Maximum fixed projection from front face 0.75 in (1.9 cm), from rear face 1.0 in (2.5 cm) • Optional cable manager projects 4.5 in (11.4 cm) from front face	• 28.2in(71.6cm) • Maximum fixed projection from front face 0.75 in (1.9 cm), from rear face 1.0 in (2.5 cm) • Optional cable manager projects 4.5 in (11.4 cm) from front face
WEIGHT	42 lb (19 kg) including rack rails and cable management system	35 lb (15.9 kg) including rack rails and cable management system	35 lb (15.9 kg) including rack rails and cable management system
RACK MOUNTING	The included sliding rails support 4-post rack mounting with square, round or threaded holes and rail depths from 26.5 in (67.31 cm) to 36in(91.4cm). A1U,25in(61 cm) deep shelf kit available for alternate rack deployments.	The included sliding rails support 4-post rack mounting with square, round or threaded holes and rail depths from 26.5 in (67.31 cm) to 36 in (91.4 cm). Accessories for alternate rack deployments are available.	The included sliding rails support 4-post rack mounting with square, round or threaded holes and rail depths from 26.5 in (67.31 cm) to 36 in (91.4 cm). Accessories for alternate rack deployments are available.