

VirtualWisdom NAS Performance Probe (ProbeNAS)

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Q: What is the NAS Performance Probe?

A: The VirtualWisdom NAS Performance Probe (aka ProbeNAS) is the industry's most complete real-time, full line rate monitoring solution for NFSv3 NAS. Working completely out-of-band, the ProbeNAS analyzes every IP Packet on monitored NAS ports, in real-time, and reports hundreds of metrics every second to provide comprehensive, accurate, and vendor agnostic monitoring at the protocol level. It captures the true, unaltered, I/O profile of the actual application traffic, detecting application performance slowdowns and transmission errors by measuring every I/O transaction time from start to finish. The ProbeNAS is offered in a 2U chassis with up to 16 x 10GE links.

ProbeNAS metrics are correlated with those from other VirtualWisdom Probes, persistently stored, and presented by the VirtualWisdom Platform Appliance—providing holistic and timely insight into the health, utilization, and performance of large-scale, heterogeneous, open-systems based infrastructures.

Q: Who can use the NAS Performance Probe?

A: Companies who are deploying mission critical applications on NFSv3 are in a perfect position to benefit from the ProbeNAS. Typical industries include Financial, Insurance, Healthcare, Service Providers, Manufacturing), Media & Entertainment, Oil & Gas, and Electronic Design Automation (EDA). Individuals within IT include NAS or Storage Engineers, NAS or Storage Architects, or Enterprise Storage Managers.

Q: Why did Virtual Instruments develop the NAS Performance Probe?

A: The #1 reason is: our customers asked for it. Most large enterprises deploy some mission critical applications on NAS, especially NFS. The ProbeNAS fills a customer need in the same way as our Fibre Channel performance probes, and solidifies VI's pre-eminent position as a premier supplier of storage Infrastructure Performance Analytics solutions.

Q: What about other NAS and IP protocols?

A: We are working on future support for SMB3, and iSCSI.

Q: Does our NAS Performance Probes work with all NAS devices?

A: The Probe works with any device that communicates via NFS version 3 today. This includes industry leading products like EMC Isilon, HDS Blue Arc, NetApp FAS, and many others.

Q: How is the ProbeNAS different than other monitoring solutions?

A: Our advantages are very similar to the advantages we have in the fibre channel (FC) space. For instance, we are vendor agnostic, just as we are with the Fibre Channel probes as we work at the protocol level. Software probes have to stay current with all changes in the vendor storage systems very time they update their devices. Many software solutions require the use of agents; we do not. Compared to SRM products, such as NetApp's OnCommand, we focus on performance. Others focus on discovery and capacity reporting, with weaker performance metrics. Compared to many hardware vendor's proprietary solutions, our VirtualWisdom platform supports both Fibre Channel and IP networks, including environments where the protocols are mixed on the same device. And we're delivering full functionality today, not "sometime in the future".

Q: How does performance of NFS compare to Fibre Channel?

A: The answer to this question could be very long, but for many applications, the performance can be nearly identical. Performance doesn't have to be the reason to select Fibre Channel over IP/NFS or vice versa, especially with block-like workloads, that is, workloads without a lot of metadata.

Q: What TAPs do we use for the NAS Performance Probe?

A: We use the same TAPs and the same 8Gig SFPs as we use for our traditional Fibre Channel deployments. Optical only, no copper. Customers TAP in the same places and ways that they TAP in Fibre Channel. You would TAP in between the storage node and the switch at the point of greatest fan-in.

Q: What VirtualWisdom features are we supporting at announcement?

A: We are supporting a very complete menu of metrics, entities, alarms, reports, and analytics, most notably, most of the advanced analytics available in the current shipping VirtualWisdom release 5. Please refer to the ProbeNAS datasheet for details.

Q: Which Advanced Analytics are supported by ProbeNAS?

A: ProbeNAS is supported by all Analytics which are not probe-specific, including Event Advisor, Trend Matcher and Seasonal Trends. Analytics that are not applicable to NAS include: Balance Finder is ProbeSW-specific (MPIO is not a NAS concept), VM Coordinator is ProbeVM-specific (VM CPU and Memory optimization is not a NAS concept), Queue Solver is ProbeFC-specific (HBA Queue Depth is not a NAS concept).

Q: What do we monitor / track?

A: We monitor all end-to-end, Source-Destination-Filesystem conversations. Discovered entities on the host are at the source IP address, a VLAN switch, and for storage, the destination IP address, monitored link / LAG, and the NAS filesystem. It's important to note that the host can have both IP NICs and Fibre Channel HBAs. Conversations belonging to all source IP addresses are recorded and reported upon, including those associated with Virtual Machines.

Q: How does the ProbeNAS report on NFS commands?

A: We bucket them. On Fibre Channel, we report on Read/Write/Other, but that's not good enough for NFS. For NFS, we bucket the RPC commands thusly:

VirtualWisdom Bucket	RPC Commands
READ	read
WRITE	write, commit
ACCESS	access
LOOKUP	lookup
READDIR	readdir, readdirplus, readlink
CREATE	create, remove, mkdir, rmdir, rename, link, symlink, mknod
ATTR	getattr, setattr, fsinfo, fsstat, pathconf
OTHER	null, nlm, mnt, & anything not listed above

We provide flow metrics for each of these 8 buckets:

1. Procedure Rate (per second)
2. Average Payload (bytes)
3. Min/Avg/Max Response Time (ms)
4. Min/Max Pending Procedures (#)
5. Success vs. Failure Rates
6. Total Procedure Count
7. Ratio to Total Procedures
8. Sum of Payload Bytes

And we provide R/W histogram metrics. Finally, we provide other RPC statistics:

- RPC Counts (report procedure calls)
 - NFS, MNT, NLM, NSM, NFSACL, PMAP

- Badly Formed RPC
- Denied / Non-Success RPC
- Unsupported Program
- NLM Counts (network lock manager)
 - LOCK, UNLOCK, CANCEL, GRANTED, TEST
 - LOCKMSG, UNLOCKMSG, CANCELMSG, GRANTEDMSG, TESTMSG
 - LOCKRES UNLOCKRES, CANCELRES, GRANTEDRES, TESTRES
 - SHARE, UNSHARE, NMLOCK, FREEALL

Q: How does the NAS Performance Probe compare to the ProbeNTAP?

A: We don't get controller metrics with the NAS Performance Probe, but the ProbeNTAP doesn't get the level of data to the granularity we get with the ProbeNAS and of course, it's only for NetApp FAS systems. For NetApp FAS sites, both probes provide a comprehensive and compelling view of performance and utilization.

Q: How can I see a demonstration of the new NAS Performance Probe?

A: Go to <http://www.virtualinstruments.com/request-demo/> and request a live demo. Or watch for our announcements to be at a local IT event and stop by and see us

Q: Where can I learn more?

A: Call your Virtual Instruments reseller or [sales person](#), or for more information on VirtualWisdom, the platform that drives the ProbeNAS, see [this FAQ](#).



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