

E-Guide

Pocket Guide to Network Management and Monitoring

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Unified Network Management Primer

Unified Network Management Tools, Key features, vendor approaches

Pros, cons of premises – vs. provider-based network management systems

Networking experts David Davis and Jessica Scarpati take a deep dive into the unified network pool to explore important management tools, key features, and vendor approaches in this expert pocket guide.

Unified Network Management Primer

Unified Network Management Primer

Jessica Scarpati

A user reports that the Wi-Fi in a conference room isn't working. After the helpdesk determines the problem doesn't stem from the endpoint, the network administrator logs into the management console monitoring the wireless LAN infrastructure to run some diagnostics. The result? The access point isn't overloaded, misconfigured or faulty. There is no radio-frequency interference. The WLAN controller is functional.

According to the console, everything looks OK. Unfortunately, the helpdesk has an incomplete picture. Without concurrent insight into the wired network, the network administrator may not see that the root cause of the problem is the connection between the wireless access point and the switch it plugs into.

"A management system that looks at only the wired network or the wireless network is likely to misinterpret some of the spikes in the response time and blame the wrong network component," wrote the authors of a Microsoft Research paper, *Towards Unified Management of Networked Services in Wired and Wireless Networks*. "A single system that jointly manages and diagnoses both aspects simultaneously has much better odds of correctly finding the cause of observed problems."

That's precisely the role of unified network management tools, which provide network administrators with a consolidated view of both their wired and wireless network assets.

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What is unified network management?

Through that single interface, network managers can identify, configure, monitor, update and troubleshoot all of their wired and wireless network devices. This approach -- often referred to as a "single pane of glass" -- eliminates the need for network admins to toggle between multiple network management tools to diagnose a performance issue or reconfigure devices. Many of the traditional networking vendors -- notably Cisco Systems and HP Networking -- sell unified network management tools, as do more specialized WLAN vendors. The market also includes third-party vendors that specialize in network management.

The concept of unified network management has been discussed for years, so it is not quite an emerging technology, but mature commercial products have only recently begun to take shape.

"The primary [wired network management] platforms have, for some time, been able to recognize and do fault or availability monitoring for wireless controllers and access points," said Jim Frey, vice president of network management research at Boulder, Colo.-based Enterprise Management Associates. "Configuration [management] and performance monitoring have not necessarily been under the same set of tools, but I think it's getting a little better."

Why should you care about unified network management?

Wireless no longer plays second fiddle to the wired network, with deployments today having evolved from spot coverage in conference rooms and lobbies to implementations blanketing entire buildings and campuses. At the same time -- or perhaps consequently -- users increasingly expect the corporate WLAN to provide full-throttled connectivity for their personal devices. Meanwhile, LAN architectures are getting more complex as they support larger amounts of bandwidth.

A unified network management platform that provides a holistic perspective of all network assets can help network admins quickly diagnose and resolve issues on either network, ultimately improving performance and reducing

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operating expenses.

Software-defined networking is also increasing the need for unified network management.

"It puts even more emphasis on better, more robust management practices and automation, which is something you need a more systemic view to pull off -- and hence you need a more unified [approach to] management," Frey said.

Moreover, these tools are finally becoming simpler for most IT shops to deploy on their own, he added.

"Historically, there were products that did this unification, but they were high-end products that needed professional services [to help with implementation] and customization," Frey said. "A broader slice of vendors are offering lighter-weight solutions that are easier to deploy ... which means it's more practical for the bulk of the mid-tier market, where there's a lot more pressure on total cost of ownership."

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Unified Network Management Tools: Key features, vendor approaches

Jessica Scarpati

Although vendor approaches to unified network management vary, network managers should look for five essential features and functions when evaluating these tools.

The key characteristics of a unified network management platform include the following:

- **Multiple management functions.** Although some capabilities are still evolving, network managers should look for a vendor whose platform can perform a variety of management functions -- or at least have them on its roadmap. "This means not only monitoring for availability, faults and errors, but also tying into some concept of performance and some concept of configuration management," said Jim Frey, vice president of network management research at Boulder, Colo.-based Enterprise Management Associates. "So, when you recognize a problem...you have within that same product the ability to take an action to correct the issue."
- **Multi-network support.** At the most basic level, unified network management tools must provide visibility into both wired and wireless network assets. But there's also a growing need for these platforms to manage virtual networking components like virtual switches, as well as do some network performance monitoring for cloud services, Frey said.
- **Multi-vendor support.** With the exception of Cisco and HP Networking, few vendors manufacture both wired and wireless networking equipment. Consequently, many enterprises have multi-vendor networks, and support for such heterogeneous environments

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is crucial.

- **Reporting tools for multiple roles.** Network managers aren't the only ones with a greater need for visibility. As the network plays a bigger role in how enterprises do business, network managers need reporting tools that can analyze and present information about the network to different constituencies within and outside of IT, Frey said.
- **Endpoint awareness.** Although the capability is still developing, unified network management platforms have begun to offer visibility into some endpoints, recognizing key servers or ancillary devices like firewalls, application delivery controllers and load balancers, Frey said. This is a departure from traditional network management tools, which primarily provided insight into just the core network equipment like switches and routers. As networks grow more complex, network managers need a more comprehensive approach that enables them to zero in on a single device or pull back for a high-level view of the network, Frey said.

How do different vendors approach unified network management?

Because unified network management is an area of technology that is still evolving, it is best to research or contact potential vendors to learn about their latest approach. There are three general vendor paths to consider, according to Frey.

The first path includes wired and wireless network equipment vendors that provide integrated configuration management and monitoring across their wired and wireless product lines, he said. These include Cisco (with its Meraki and Cisco Prime product lines), HP Networking (Intelligent Management Center [IMC]), Enterasys (NetSight), Xirrus (XMS), and Aerohive (HiveManager).

"Other than HP, none of these solutions promote themselves overtly as being multi-vendor capable -- although they all are, to some extent, on the wired side of things," Frey said. "Also, other than HP and Cisco Prime, all focus

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primarily on the wireless side of the equation, adding wired management only as an adjunct capability. Basically, you would not buy any of these products, other than HP IMC, as a full-blown, multi-vendor, integrated wired/wireless solution -- only if or when you were investing in that vendor's wireless devices."

The second path comprises network monitoring platforms, many of which have added some degree of support for wireless elements from a fault- or availability-monitoring perspective, he said. Some vendors in this category are HP, IBM, CA, SolarWinds, Entuity, Ipswitch and Paessler.

The final path follows performance management systems that vendors have enhanced to gather statistics and metrics from wireless devices, and to decode wireless protocols for troubleshooting, Frey said. Examples of vendors in this group are CA, SolarWinds, NetScout, WildPackets, Riverbed and Network Instruments.

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Pros, cons of premises – vs. provider-based network management systems

David Davis

In an era where "cloud this" and "cloud that" dominate the headlines, it's easy to forget that hosted applications have been around for a long time. The idea is simple: Someone has a costly or complex software product, and they sell access to it in some form over a network. Through this approach, you have someone else doing something for you that you prefer not to do or can't afford to do for yourself. This is becoming more and more common across just about every type of product or platform you buy today. Companies are hosting your email for you, your tax data and even your family photos. In its simplest form, the heavily marketed "cloud computing" is really just a variety of different types of hosted access. Whether they're termed "hosted," "cloud" or "provider-based," they are all essentially versions of the same thing.

That said, all applications are *not* the same. While uptime and availability are important considerations underpinning every application running on your network, network management software could occupy an even more critical perch. So, how do you choose whether or not to implement your own network management application versus going with a provider-based alternative?

In the years I served as a network manager and IT manager, I evaluated a number of different hosted applications and compared them to existing or planned network management options. Rarely was my decision a difficult one, so let me share with you the pros and cons I used to help me decide, in hopes they will help you to make the right decision for your operation.

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Considering premises-based network management systems

Premises-based network management effectively means that you do it yourself. That's not to say that you won't get some help in the form of consultants, or that you won't hire a few new staffers to manage the application. Still, the responsibility for the success or failure of these products falls on you. That, as the saying goes, is a double-edged sword. In other words, you are in total control of the network management platform, and depending on whether it's a huge success or a massive failure, you will be either commended or demoted. As a "do-it-yourselfer" in most areas of IT, I personally relish this idea of total control, and you may too.

These are the pros of premises-based network management systems:

- **Cost.** In many cases, the cost of a premises-based option is less (of course, providers would argue differently). You already may have a server to run it on, the software may be licensed per CPU socket instead of per node, and you may already feel comfortable with implementing it. In most cases, unless there is a huge initial capital expenditure, it's usually less expensive to do something yourself (assuming you have the time and expertise).
- **Control.** Because a premises-based application is your software, configured by you, run on your servers and in your data center, you have total control. It's up to you to back up the server and troubleshoot it if it doesn't work. On the other hand, that total control breeds pride, interest and expertise in the network management software that you own, versus just accessing someone else's.
- **Customization.** With your own software, you can customize it as needed and integrate it with other products. A provider might impose limitations or restrictions on how its software can be customized, in order to keep its customers and configurations normalized.

These are the cons of premises-based network management systems:

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- **Time.** In many cases, IT staffers are already maxed out on their available free time for a new project. Companies usually have mission-critical IT projects for IT pros to work on, and network management systems aren't usually among them. Plus, you have to question the best use of the time that is available.
- **Liability.** If your own software goes down or doesn't work as you had envisioned, you only have yourself to blame. It's likely there isn't even a guarantee, as you might have with a provider. If the database becomes corrupted and the system is down, it's up to you to get it back up (and let's hope you were backing up the data).
- **Aging and refresh.** One downside to owning your own system (like owning your own hardware) is that at some time, it will be old and you'll want to refresh it. In fact, you might even grow tired of the software and prefer a different product. However, until the platform you bought depreciates, it might be unlikely that you'll be able to swap it.

Considering provider-based network management systems

On the flip side of the premises-based approach is the provider-based system. With a provider-based system, you are paying for access to a product run at someone else's location and accessing it over the network. While your provider may have specialized expertise in network management, and its product may be the best in the business, the provider may also have server troubles or a data center outage, or you could lose network access. That said, the pay-as-you-go model has strong proponents.

These are the pros of provider-based network management systems:

- **Speed.** A provider that specializes in hosted network management should be able to get your system into production dramatically faster than you could if you were doing it yourself.
- **Features.** In many cases, a hosted system can capitalize on the vast experience the provider has cobbled together from its diverse base

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of customers and industries, and having done so, offers a product with more features and functionality than a shrink-wrapped application purchased and implemented internally has.

- **No Capex.** Because most hosted applications are sold as Software as a Service, or SaaS, provider-based network management products usually require no up-front expenses. This may enable a quicker return on investment and thus eliminate any roadblocks that can occur when you're attempting to get a large capital expenditure approved.

These are the cons of provider-based network management systems:

- **Liability.** Just as you incur a liability in conducting network management yourself, you also incur a liability in entrusting someone else to do it. The provider can have the same problems as you, and there is no guarantee it can resolve them any more effectively than you can. Problems and outages happen; demand a service-level agreement that offers monetary damages for outages or poor performance.
- **Stability.** Regardless of the provider's size, it could still go out of business. And regardless of the provider's plans to ensure continuous operation, network connectivity issues can occur, costing you control. To that end, carefully consider the negative impact that provider-based network monitoring might have on your company if the application is inaccessible -- or worse, no longer available.
- **Licensing.** Most provider-based products are priced per device or per node, where a node could even be every interface on a device that is being managed. To that end, you might have many more devices than you planned on, and the pay-as-you-go cost for this could end up surprising you. On the other hand, if it turns out you don't need to monitor as much as you used to because of business conditions or other external factors, the monthly cost could be reduced.

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What should you do?

If I had to boil it down, I would recommend making your decision based on these considerations: First, whom do you trust more (yourself or the provider)? Second, which approach appears to be the most reliable? Third, which option costs the least?

Finally, and this is key: Talk to other IT pros who have used the product you are considering, be it premises-based or provider-based.



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