

ROI for IPAM Solutions in Small-Mid Sized Enterprise Environments

An ENTERPRISE MANAGEMENT ASSOCIATES® (EMA™) White Paper
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ROI for IPAM Solutions in Small-Mid Sized Enterprise Environments

Table of Contents

- Executive Summary 1
- Controlled IP Address Management (IPAM) 1
- The SolarWinds IPAM Solution 2
- Case Studies 3
 - Healthcare Organization 3
 - Financial Services Provider 4
 - Managed Healthcare Service Provider 4
- ROI Benefits Summary..... 5
- EMA Perspective..... 6
- About SolarWinds 7



ROI for IPAM Solutions in Small-Mid Sized Enterprise Environments

Executive Summary

Our growing dependency on IP-based networks, coupled with an ever-increasing number of IP-based devices and connectivity, results in rapid consumption of available IP address space. The problem is exasperated as a company grows, adding more IP-based infrastructure that can often span multiple geographic regions. When an organization is small, this is typically managed with paper and pencil or in an Excel spreadsheet. As long as the network remains relatively static, such techniques are typically sufficient. However, as a network grows and more frequent changes are being made, the IP address schema requires more frequent updating and is being altered by an increasing number of people, thereby making the spreadsheet approach unsustainable over the long term. Manual processes become inefficient as changes become more frequent, causing erroneous or out-of-date information, as well as reducing operational productivity. The business case for a formal and centralized IP Address Management (IPAM) solution becomes clear as it brings order to chaos, creates an audit trail through change tracking, and reduces the chances for costly, manually introduced errors. This ENTERPRISE MANAGEMENT ASSOCIATES® (EMA™) white paper examines the opportunities for realizing the ROI of controlled management of IP addresses, including a detailed analysis of three use case examples of organizations that deployed the SolarWinds IP Address Manager solution.

Controlled IP Address Management (IPAM)

The management of IP addresses is usually the domain of the network operations team and typically begins as a manual process using a shared spreadsheet to track the information. This means that other IT infrastructure teams are dependent upon network operations to complete the task, and since IP address management is not typically given a high priority, it often delays other teams from completing their projects. In a recent survey, EMA found that over 52% of IT infrastructure pros other than networking cited IP address provisioning as being a task that took the most time to accomplish. This manual approach, besides being slow and inefficient, is prone to errors, incomplete information and a fragmented IP schema full of orphaned IP addresses.

Typical IPAM solutions come in one of two flavors – software or appliance-based. Originally, IPAM solutions were targeted at very large enterprises and service providers, because they had such large IP address pools to manage. These solutions were designed to scale and handle very large volumes of traffic, and have been primarily appliance based, with price tags to match. Since then, software-based solutions have emerged to provide alternatives for small and medium enterprises. Now that IP-based computing is the de facto standard, from the smallest to the largest enterprise, and the number of IP-based devices and technologies running across these networks are growing unabated, the need for more formalized IPAM is no longer just an issue for large enterprises and service providers.

**IP Address Management
is no longer just an issue
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and service providers.**

The most obvious business case driver for investing in an IPAM solution is better efficiency, from both an IP address usage point of view as well as from a visibility perspective. Manual methods create blind spots and gaps in knowledge, creating an incomplete and often inaccurate picture of the true state of the IP schema. Manually pinging addresses to discover what is available is a hit or miss method of discovery at best. Without any formal and centralized structure, it is too easy to overwrite an existing IP address or accidentally assign IP addresses already in use (causing address duplication), which can cause

ROI for IPAM Solutions in Small-Mid Sized Enterprise Environments

unplanned downtime and disruptions in service. A formal IPAM solution provides historical tracking and logging of changes, so it is much easier to see what has changed and when. This not only speeds up everyday tasks, but it also improves the ability to more rapidly troubleshoot a problem around address conflicts, since changes are tracked and logged. In conversations with end users, EMA has found that as the number of IP addresses being managed grows from “hundreds” to “thousands” of devices, the manual spreadsheet approach begins to break down. And while not all organizations are looking for a complete integrated DDI (DHCP, DNS, IPAM) solution, IPAM is commonly the last of the three to be formally addressed. Total licensing cost is also a factor, since IPAM is often viewed as helpful, but not yet mission critical in organizations going through this transition (although EMA research indicates that few would be willing to give up their IPAM solutions once deployed.) For this particular use profile, an IPAM solution that is cost effective, easy to deploy and manage, and that requires no additional training will do the job.

As the number of IP addresses grows from the 100s into the 1000s, manual approaches to management break down

The SolarWinds IPAM Solution

SolarWinds is exclusively focused on delivering management solutions for IT operations. The company’s software solutions range from free tools to an extensive set of products designed to help IT operations tackle a wide range of issues, including enterprise network, systems and application management, storage resource management, log and event management, and server virtualization management. IP Address Manager is part of the broader SolarWinds portfolio of network management products.

IP Address Manager is a software-based solution that is available either as a standalone application or as an integrated plug-in to products on the Network Performance Management (NPM) platform. IP Address Manager is designed to centrally manage, monitor, alert, and report across the entire IP infrastructure. IP Address Manager overlays and works with the existing DHCP/DNS infrastructure. To make deployment easier, IP Address Manager provides an import wizard, so IP address and subnet information can be imported directly from an Excel or .CSV file. For multi-vendor DHCP and DNS settings, SolarWinds IPAM provides consolidated management for Microsoft, Cisco, and BIND DHCP and DNS services from a single, integrated interface. The product provides automatic change tracking so there is a detailed event record of what changed and when. The SolarWinds IPAM solution comes with an active IP conflict detection and alerting feature that helps to prevent duplicate IP address allocation.

Another way that the SolarWinds solution helps to keep IP addressing in order is in regard to subnets. Subnets often get fragmented over time, and there are several ways that IP Address Manager helps prevent that from happening. Operators can access a quick top 10 list to see the allocation of each subnet, the percentage of the IP addresses in use and how many IP addresses are still available. The dashboard can be customized for each user. A subnet allocation wizard is available to create more efficient IP address assignment for subnets. The tool enables users to get a better handle on their overall state of the IP infrastructure through a series of built-in reports, including, for example: all available IP addresses, all reserved IP addresses, all used IP addresses, all subnets, and last 250 events. The report writer can further be customized, so users can create their own reports.

ROI for IPAM Solutions in Small-Mid Sized Enterprise Environments

Case Studies

The best way to validate the benefits that can be realized by deploying an IP address management solution such as SolarWinds IP Address Manager is to hear directly from those who have live deployments in a production environment. Following are three case studies where the SolarWinds IP Address Manager has been employed to centralize and better organize the usage and allocation of IP addresses within the respective organizations.

Healthcare Organization

Situational Snapshot: This healthcare organization has over 3700 IP addresses under management, made up of infrastructure elements such as servers, networking equipment, ADCs, and firewalls (no end user devices or printers.) This subsidiary is responsible for managing remote connectivity with their healthcare provider customer base.

Challenge: A 10–12 person networking team was using a spreadsheet with multiple tabs to keep track of IP addresses. The problem was that the spreadsheet was always out of date with either incorrect or incomplete information. IP resource allocation was not efficient.

SolarWinds IP Manager solution: The SolarWinds IP Address Manager solution has been in production for over three years and the entire networking team uses the product to manage, allocate, and check on IP address availability. The systems team also uses the product, so they can see what IP address are in use and allocate temporary IP addresses, which IP Address Manager tracks and marks specifically as “temporarily assigned.” The team was already familiar with SolarWinds products and so deployment required no additional training.

Values recognized – The most immediate benefit was gaining a clear picture of the IP address schema that was both accurate and current. Information is better organized and much easier to find. Custom fields allow network engineers to add additional detail, such as VLAN information. This helps to paint a more complete picture of how things are connected and the dependencies that exist, which is particularly helpful for troubleshooting. Also, all the information resides in one place and the solution keeps the information up to date through ping sweeps, and there is historical tracking and logging of what changes are made when.

**A healthcare organization
experienced higher
workforce efficiency
and better address
management accuracy.**

An unexpected value realized was the ability of SolarWinds IP Address Manager to clean up decommissioned IP addresses on its own. Now with IP Address Manager the company can not only keep track of all the decommissioned IP addresses, but set a specific time for when decommissioned IP addresses are reset to unused and returned to the active pool of available IP addresses. Previously, decommissioned IP addresses would be forgotten unless someone remembered to free up the IP address manually. IP Address Manager also includes a report that shows all the decommissioned IP addresses, making it easier to manage the decommissioned IP addresses.

Another feature implemented about a year and half ago was the use of custom scripts. The team was able to create custom scripts that can pull information from other devices, in this case F5 equipment, regarding details about virtual server nodes and member information, and pull it into the IPAM solution.

ROI for IPAM Solutions in Small-Mid Sized Enterprise Environments

ROI realized – The ROI benefits of implementing an IPAM solution are not always hard benefits that can be attached to a dollar number. It is best summed up in greater efficiency and usage of the IP schema. When asked if we took away the SolarWinds IP Address Manager and had the team go back to doing everything manually in spreadsheets, there was a long pause, followed by the response, “There would be mutiny.”

Financial Services Provider

Situational Snapshot: A Windows Server Team within a business unit of large financial service provider needs to actively manage 1800 IP addresses across Web, application, and database servers (no end user devices) for two east coast datacenters. The team was told to use the corporate IPAM solution, but the tool proved to be too difficult to access and use remotely. The problem was that there was no budget allocated for a local installation. The team was able to get approval for the SolarWinds IP Address Manager as part of another purchase and deployment.

Challenge: The increasing number of subnets was becoming difficult to manage. The company has a lot of different subnets and they were having trouble keeping track of what was allocated and keeping everything organized. The team needed better visibility into subnet usage.

SolarWinds IP Manager solution: The SolarWinds IP Address Manager solution has been in production for one year. The team was already using SolarWinds Server and Application Monitor, so the interface required no additional learning or training. It was intuitive and easy to use out of the box. The IP Address Manager was an affordable solution that gave them just the level of management and visibility they required.

Values recognized – Immediate benefits were realized via the organization and visualization of information. The IP address data they had previously was disorganized, fragmented, and incomplete. An added benefit was that all the new information, such as VLAN details, could be added using customizable fields. Now information that had been scattered in multiple locations could all be found and managed in a single location. This has saved time and made their jobs easier by reducing research time whenever a change is planned and/or a problem is analyzed. An additional benefit has been found in gaining a better overall perspective of the entire IP schema. The team can now see, at a glance, which subnets have higher usage than others. Concurrent subnet IP addresses can now be reserved for future use, and there is no more guessing and blind pinging.

A financial services provider saved both time and effort, reducing both IT and human resource needs.

ROI realized – Without a doubt, timesaving and more efficient use of the IP schema are the most important benefits that have led to a greatly improved work process and better use of both human and IT resources.

Managed Healthcare Service Provider

Situational Snapshot: This managed healthcare organization underwent a complete overhaul and replacement of their network monitoring system two years ago. As part of the refresh, the manual process for tracking IP addresses using a spreadsheet was replaced with a software-based IPAM solution from the same vendor. The NOC rolled out the IPAM solution six months after the initial deployment of the new network monitoring solution and did not bother to import the data from the spreadsheet,

ROI for IPAM Solutions in Small-Mid Sized Enterprise Environments

but used the new tool to get a complete and accurate IP address inventory. The NOC owns the IPAM solution, but have set it up in a way that enables other IT infrastructure groups to obtain IP addresses using the tool in a self-serve fashion, eliminating the need for direct hands on IP address allocation by the network operations team.

Challenge: The networking team was managing IP addresses using a manual spreadsheet process. The team would average 20 requests per month for IP addresses from other infrastructure teams. These requests were not given a high priority and consequently these other teams were kept waiting until someone in network operations picked up the ticket and filled the request.

SolarWinds IP Manager solution: The SolarWinds IP Address Manager was deployed, and has 72,000 devices under management, incorporating everything with an IP address including IT infrastructure, end user devices, and printers. The NOC administers and manages the product, but the individual groups manage and assign their own IP addresses. This self-service model has greatly improved operational efficiency across multiple IT organizations.

Values recognized – The most immediate benefit to the infrastructure teams was the time savings. The request and allocation process is immediate, so no one has to wait for the network operations team to complete the task. The tool performs the entire discovery process as well as tracking IP address information both current and historical, providing a complete and accurate picture of the IP schema. One unexpected benefit was the ability to manage and alert if a DHCP scope is filling up. This feature uncovered the root cause of an ongoing problem the company had been experiencing with DHCP. The SolarWinds solution helped them to correlate the information and uncover the source of the problem as the VoIP system, which grabbed, but then failed to release, IP addresses when coming online during a switch reboot. Now, anytime the company plans a switch reboot, this problem is noted and accounted for in change review meetings.

ROI realized – While improved operational efficiency is the most apparent benefit, the unexpected advantage in aiding to troubleshoot a DHCP problem was extremely valuable. Also, the complete and accurate count of each and every IP device touching the network provided a level of detail that was missing previously. With this additional knowledge, the provider is able to resolve issues more quickly when they do occur.

A managed healthcare organization was able to troubleshoot address problems faster while also improving operational efficiency.

ROI Benefits Summary

The introduction of compute virtualization has brought this issue to the forefront. For example, in a recent study, EMA found that 34% of organizations were provisioning upwards of 200 VMs per month. Each new system will typically require a dedicated IP address, which must be obtained from the network team. If the manual process, with full validation, takes 10 minutes, whereas an IPAM-automated solution takes only 2 minutes and a few mouse clicks, supporting 200 changes per month represents over 300 man-hours saved annually. The network component is no longer preventing other groups from getting their jobs done. Using EMA estimates for average fully loaded operator headcount of \$35/hour, this would roughly translate to over \$10,000 of staff efficiency savings alone per year.

ROI for IPAM Solutions in Small-Mid Sized Enterprise Environments

Factor	IPAM Improvement	Savings
200 IP addresses per month for VMs	80% (2 min vs. 10 min to assign/verify each)	300 man-hours/yr
\$35/hr for operator's time	300 man-hours/yr	\$10,500/yr
IP address mismanagement resulting in address conflicts	Reduced/zero conflicts	\$5k-100k+/hr
IT pros bogged down by manual processes	More time to focus on strategic activities	Priceless

Table 1. ROI Summary for IP Address Management Solution

With this type of savings, an IT group could deploy an unlimited license version of SolarWinds IPAM and achieve complete payback within 18 months, or even more quickly if one of the smaller, fixed license packages fit the needs. Any additional savings realized via reduced downtime by, for instance, avoiding duplicate address conflicts or accelerating troubleshooting of DHCP, would accelerate these returns.

EMA Perspective

Too often, in conversations with IT professionals, EMA hears that the network operations team is viewed as the long pole in the tent. Many processes within the NOC are manual. EMA research repeatedly indicates that manual processes do not scale, and as the infrastructure grows, manual processes become the root cause of increased errors and reduced operational efficiency. The manual administration of IP addresses is one such process that lends itself to a formal centralized management solution. IPAM solutions are often considered to be optional, not business-critical. In other words, most companies will continue to try and make do. However, once IPAM tools are in place, not a single practitioner EMA spoke with during this research (and other similar projects) could imagine going back to manual spreadsheets. As a matter of fact, when asked how the teams would respond if someone threatened to take away the tool the words “riot” and “mutiny” were often used to describe potential reactions among networking’s internal customers.

Datacenter virtualization is driving the effort towards a more fluid and dynamic IT infrastructure that translates to a growing consumption of IP address space. The ability to quickly deploy and recycle IT infrastructure resources is the way of the future as companies look to rapidly respond to market dynamics to remain competitive. Companies are dependent upon their IP-based infrastructure to run the business. A centralized, managed IP address management solution enables companies to quickly and effectively manage and troubleshoot their IP infrastructure. Based on inquiries with real solution users, EMA has found that the SolarWinds solution for IP address management demonstrates savings in both time and efficiency, enabling IT operations to do their job faster and smarter, eliminating blind spots, avoiding errors, and painting a more complete picture of underlying resources.

The SolarWinds IPAM solution demonstrates savings in both time and efficiency, allowing IT Ops to do their job faster and smarter.

ROI for IPAM Solutions in Small-Mid Sized Enterprise Environments

About SolarWinds

SolarWinds was founded in 1999 and is listed on the New York Stock Exchange under the ticker symbol SWI. The SolarWinds mission has been to provide purpose-built products that are designed to make the IT professionals' jobs easier. The company offers value-driven products and tools, including [IP address management](#) that solve a broad range of IT management challenges – across a number of IT disciplines including: networks, servers, applications, storage and virtualization.

About Enterprise Management Associates, Inc.

Founded in 1996, Enterprise Management Associates (EMA) is a leading industry analyst firm that provides deep insight across the full spectrum of IT and data management technologies. EMA analysts leverage a unique combination of practical experience, insight into industry best practices, and in-depth knowledge of current and planned vendor solutions to help its clients achieve their goals. Learn more about EMA research, analysis, and consulting services for enterprise line of business users, IT professionals and IT vendors at www.enterprisemanagement.com or blogs.enterprisemanagement.com. You can also follow EMA on [Twitter](#) or [Facebook](#).

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