

Infoblox Network Automation Platform

Return on Investment Evaluation

EXECUTIVE SUMMARY

Today, the vast majority of network problems are likely tied to change – mistakes made when manually changing devices, setting poor configurations, using inconsistent standards and inadvertently impacting other devices when enabling ports through firewalls. Many IT teams still rely on an assortment of tools including manual CLI access, custom scripts and vendor-supplied tools that haven't kept up with the new challenges in today's ever changing, dynamic world. The manual processes not only add risk, the sheer financial cost to organizations is spiking as networks become more dynamic. Automation can eliminate human error, reduces the reliance on senior IT expertise and enables staff to focus on critical business initiatives.

Infoblox commissioned Tolly to evaluate the return on investment (ROI) when comparing the efficiency of its Network Automation platform compared to traditional manual processes. Tolly found that the Infoblox Network Automation capabilities ultimately save users time and money through automation of common tasks, embedded expertise for multi-vendor environments, intuitive provisioning of changes including firewall and router ACLs and rules and continuous monitoring for security and policy enforcement.

THE BOTTOM LINE

Infoblox Network Automation Platform:

- 1 Provides an accurate view of multi-vendor infrastructures through automated network and end-host discovery
- 2 Provides change detection and change automation to reduce the manual time and effort to handle dynamic networks
- 3 Reduces the time to prove success for audits through policy standardization and compliance management
- 4 Improves implementation SLAs through automated ACL and rule provisioning

Network Management Return on Investment (ROI) Analysis

Infoblox Network Automation vs. Manual Configuration

	100 Network Devices	200 Network Devices	500 Network Devices	1000 Network Devices
Estimated Staff Hours/Year (without Infoblox Network Automation)	1,267	2,534	6,335	12,670
Estimated Staff Hours/Year (with Infoblox Network Automation)	62	124	309	617
Estimated One Time Savings From Labor	\$12,404	\$24,833	\$62,120	\$124,265
Estimated Annual TCO Savings From Labor	\$63,370	\$126,758	\$316,923	\$633,864

Note: 1. Labor rate is \$58.72/hour. Source: Employee Costs for Employee Compensation - December 2012, US Bureau of Labor Statistics. Management, business and financial occupations. <http://www.bls.gov/news.release/pdf/ecec.pdf>
 2. Calculation is based on evaluation and assumptions. See the Test Methodology section for detail.

Source: Tolly, May 2013

Table 1



Background

When networks were less dynamic and there was a single firewall between the organization and the Internet, manual processes and spreadsheets were often sufficient. The addition of complex, constantly changing networks with multiple network and security devices along a path to new initiatives such as virtualization, cloud, BYOD and IPv6 put new stress on staff resources required for manual configuration and management.

A major challenge for virtually every organization is that the most experienced, senior staff must often, out of necessity, still handle basic tasks to reduce risk. This approach can create a bottleneck where the resources of a few key staff are critical for everyday functions.

Tolly evaluated the Infoblox Network Automation solution to determine the extent of cost savings when comparing manual vs. automated approaches to network management. The automated approach helps organizations utilize staff

more effectively, but also helps manage risk associated with human error.

Test Summary

Return on Investment (ROI)

Tolly engineers evaluated four network administration scenarios - "network discovery", "network change & configuration", "security policies and compliance" and "router/switch ACL and firewall provisioning". In each scenario, 3 to 4 tasks were evaluated using the manual way and the automatic way with Infoblox Network Automation. Tolly engineers then used the time recorded for each task to analyze the estimated ROI for 100, 200, 500, and 1,000-device network environments.

Tolly estimates that the savings for a "small" 100-device enterprise could be as great as \$63,370/ year, and up to \$633,864/ year for a 1,000-device enterprise. See Table 1.

These savings are not only derived from shorter time spent on network tasks. Users can greatly reduce the risk associated with

Infoblox, Inc

Infoblox Network Automation Platform



Return on Investment Evaluation

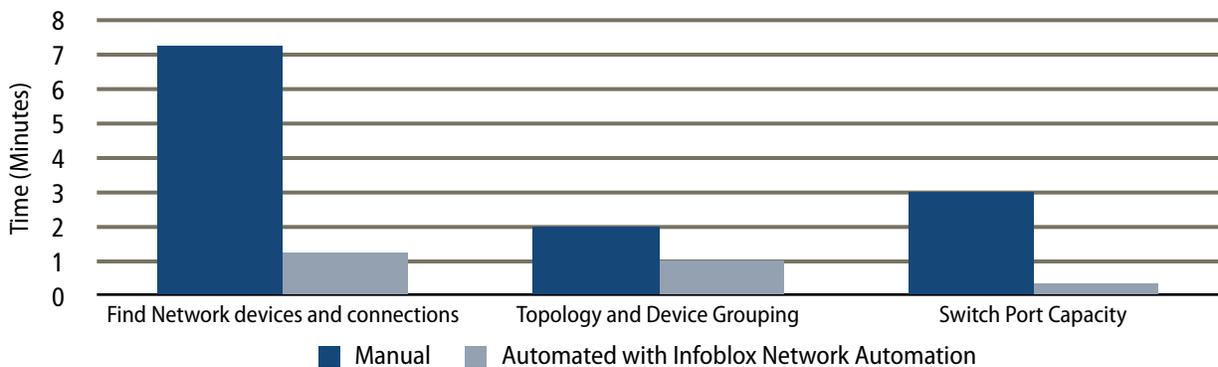
*Tested
May
2013*

unplanned changes or unintended consequences.

For Network Discovery, Infoblox Network Automation discovers and maintains the topology and information of all devices in specified network.

For Network Change and Configuration, all device changes are identified, saved and can easily be compared or rolled back with Infoblox Network Automation. Users can also quickly and securely push configuration changes out to dozens of

Network Discovery: Manual vs. Automated with Infoblox Network Automation



Note: Chart shows the time to execute each task for a single device. The manual approach requires additional time to update data while Infoblox Network Automation provides continuous monitoring and updates.

Source: Tolly, May 2013

Figure 1

Comparison of Key Characteristics: Manual vs. Automated Network Management

	Manual	Infoblox Network Automation
Efficiency	Multiple steps with multiple log-ins with high risk of human error. Typically requires senior network manager for common changes.	Automated platform to collect, analyze and push common and complex changes. Role-based access pushes basic tasks to less senior staff.
Speed	Requires human intervention for every task and goes device-by-device. Slow time per device average and increases deployment times.	Automation greatly reduces time per task and shortens time to deploy.
Consistency	Typically only considered when an audit is required. Takes multiple people days or weeks to compile the reports.	Continuous compliance monitoring 24x7 with single-click reports.
Scalability	Best suited for small networks without many changes and a single vendor.	Scales to the largest of enterprises via powerful automation.
Ease of Use	Requires multiple spreadsheets and tools which are normally out of date and require different skill sets.	Integrated interface with continuous updates with multiple views.
Expertise	Requires extensive expertise for different vendors and different device types which is expensive and difficult to obtain.	Embedded expertise for multiple vendors out of the box and simple English commands for most tasks.

Source: Tolly, May 2013

Table 2

different devices even from different vendors.

For internal security policies and/or external compliance mandates, Infoblox provides embedded best practices, notification of violations, remediation options and single-click audit reports.

For ACL rule provisioning, Infoblox can search, compare and analyze the right configuration change to a device.

All these features together free up valuable time and resources from configuring, mitigating, tracking and fixing network issues caused by human error.

Test Results

Network Discovery

Tolly engineers evaluated three common network discovery tasks - finding network

devices and connections, topology and device groups, and port capacity tracking.

Network administrators need to document attributes of network-attached devices, such as: the OS version, MAC table, routing table, HSRP/VRRP status and current configuration. When attributes are documented manually, administrators need to interact individually with each device and copy the information to a spreadsheet. With Infoblox Network Automation, administrators can always see the latest and all previous configurations as the application keeps track of the configuration changes and status of all network devices using protocols like SNMP, Syslog, etc.

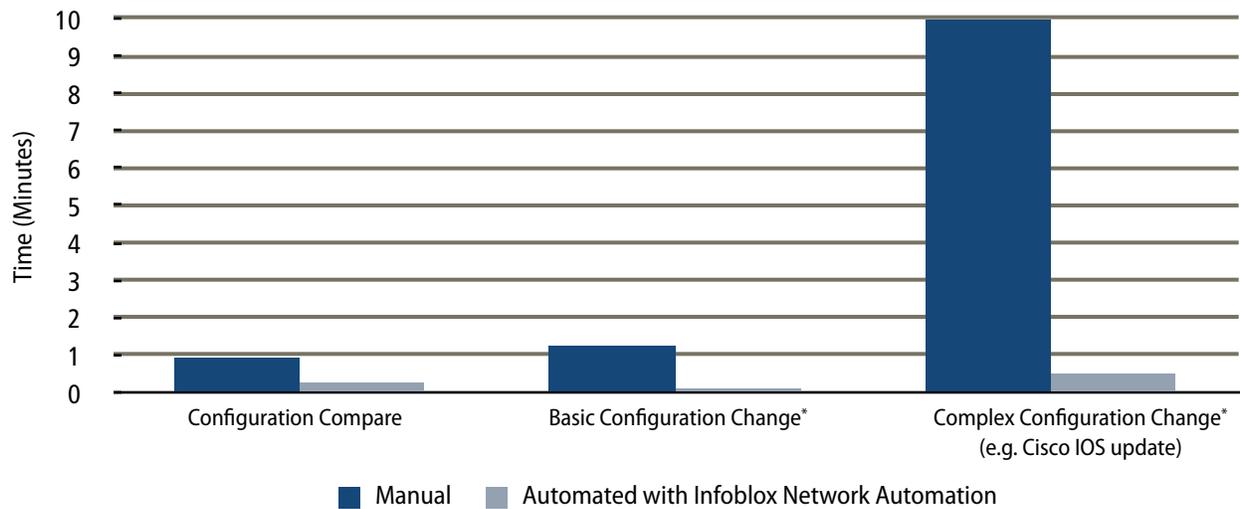
To keep the network topology in a graphical format and group network devices manually, administrators must check each device's neighbor with CDP or

LLDP and draw the topology. With Infoblox Network Automation, administrators can view the up to date network topology with one click. Tolly engineers also evaluated Infoblox's Visio plug-in, which could export the network topology to a Microsoft Visio file. The exported Visio file contains status information of each device. Infoblox Network Automation also supports automatic grouping with device style, name, vendor, etc.

Tracking the usage of switch ports can help network administrators troubleshoot current problems or plan for future network upgrade. Infoblox Network Automation shows total ports, free ports (currently unused ports) and available ports (unused ports in the last x days) for switches. So administrators do not have to manually go to each device and document the port status.



Network Change & Configuration Manual vs. Automated with Infoblox Network Automation



Notes: Infoblox Network Automation can push configuration change tasks out to a group of devices. On average, Tolly assumed 10 devices as a group for all changes in the ROI calculation. Time consumption results shown in the table were averaged to a single change on one device.

Source: Tolly, May 2013

Figure 2

Infoblox provides automated layer 2 and 3 network discovery and switch port capacity management across multiple vendors in a single platform. The solution ensures users have current and correct inventory and connection data to help troubleshoot faster, ensure accuracy of maintenance contracts and plan switch capacity better. See Figure 1 for the time consumption comparison between manual and automated.

Network Change and Configuration

Network administrators need to change configuration of network devices and troubleshoot upon requests. With the manual way, administrators need to login to each device and change the configuration using CLI or Web interface. When troubleshooting, administrators need to compare the current running

configuration to the previous working configuration.

With automated change detection and archiving along with change provisioning provided by Infoblox Network Automation, users can greatly reduce the risk associated with unplanned changes or unintended consequences. Infoblox saves the configuration of all device changes, that can be easily compared or rolled back. Administrator can do simple tasks like changing VLAN membership and port status with a few clicks. For more complex changes, administrators can write scripts in Infoblox Network Automation and push out to multiple devices.

With the help of built-in scripts, users can also quickly and securely push configuration changes out to dozens of different vendors ranging from password

changes to OS upgrades. See Figure 2 for the time consumption comparison between manual and automated execution.

Security Policies and Compliance

Network security is important for all organizations. Some organizations have their own security policies for network devices, while some organization have to follow certain public security standards like Payment Card Industry (PCI), Defense Information Systems Agency (DISA), etc.

With the manual approach, security experts and network administrators have to work together to figure out the specific requirement for each network device and make changes. For internal and external audits, administrators have to document configuration of each network devices and



check the compliance to all requirements of a standard. This process typically needs to involve multiple people and take a few days.

Tolly engineers verified that for internal security policies and/or external compliance mandates (e.g. PCI, DISA), Infoblox provides embedded best practices. When any of the devices violate any of the policies, Infoblox provides notification to administrators with warnings. Infoblox also supports remediation options. When a device matches pre-set criteria, Infoblox can push out configuration changes to the device automatically. Administrators can generate automated reports with a single click. These capabilities make it easier to ensure consistency and prove success. See Figure 3 for the time consumption comparison between manual and automated.

Router/Switch ACL and Firewall Rule Provisioning

When manually changing ACL rules on security devices, administrators must search and verify that the intended changes won't violate the organization's black/white lists, review and build configurations for each security device to be changed, provision the configuration, and then identify and review any potential issues, such as duplicated, overlapped or contradictory rules.

Infoblox helps reduce the complexity of analyzing and provisioning ACLs and rules for firewalls, routers and switches. Administrators can simply put in the intended source/destination IP range and port number. Infoblox Network Automation can then analyze the current ACLs on the devices and automatically

generate the configuration to make changes.

With multi-vendor support, users can search, test, analyze and provision changes across multiple devices with simple English commands. The embedded expertise converts the requests into vendor-specific syntax and highlights if blacklisted or whitelisted services will be impacted. See Figure 4 for the time consumption comparison between manual and automated

Test Methodology

One Infoblox Network Automation 1102-A appliance running software version 6.6.1.11 was used as the system under test. The network devices under test includes several simulated Cisco 3620 routers, Cisco ASA5520 firewalls and Cisco Catalyst 3700 series switches in the GNS3 0.7.3 environment. One physical Cisco 2960

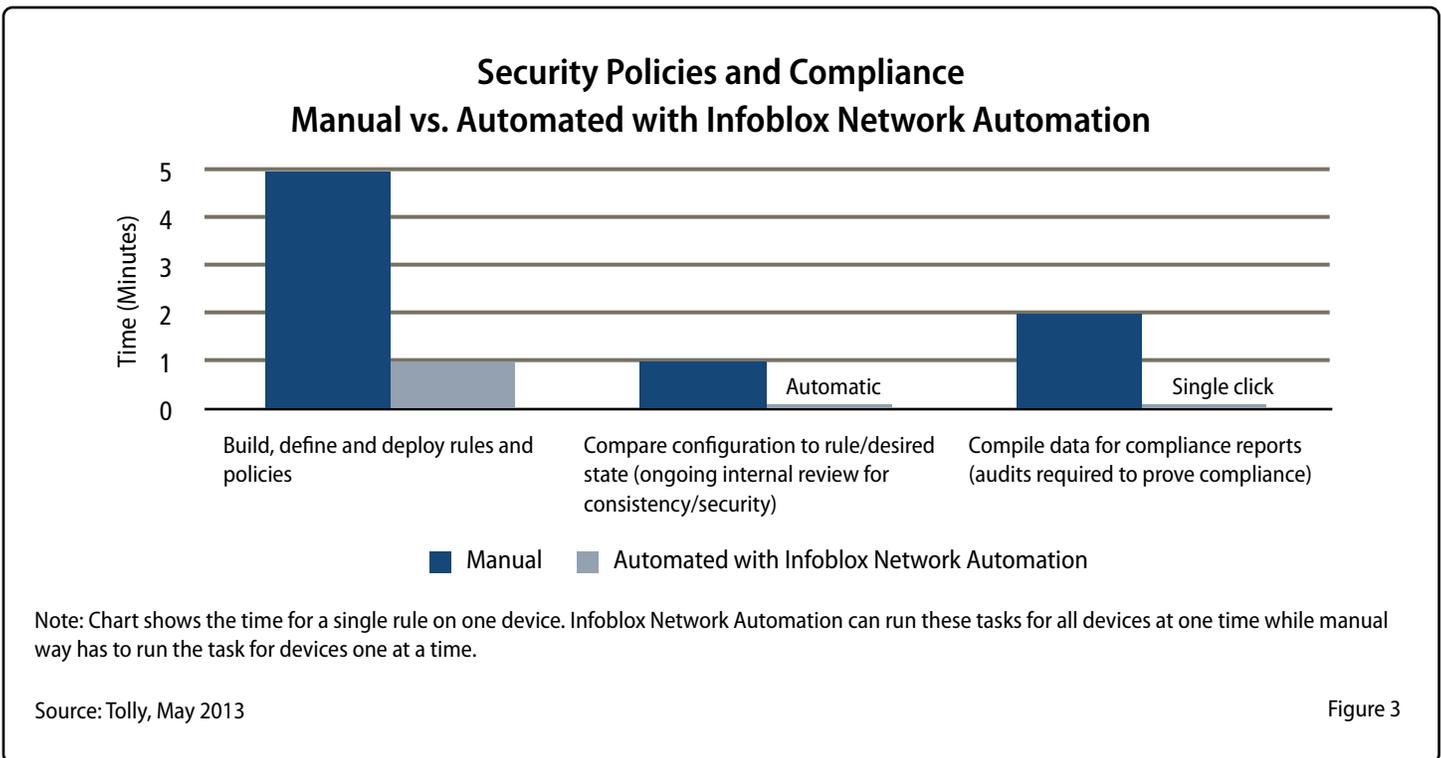


Figure 3



switch was also used. See Figure 5 for the test bed diagram.

Return on Investment (ROI)

To analyze the estimated ROI, Tolly engineers tested the time required to execute each task, and made assumptions for the frequency to run these tasks. See details below.

Network Discovery

Find Network Devices and Connections - Manual: 7:15 min per device per instance; Automated - 1:15 min per instance; frequency assumption - once every month.

Topology and device groups - Manual: 2 min per device per instance, Automated: 1 min per instance; frequency assumption: one time and when new devices are added.

Port capacity tracking - Manual: 3 min per device per instance; Automated: 0:10 min

per device per instance; frequency assumption: once per month.

Network Change, Configuration and Troubleshoot

Configuration Compare - Manual: 0:55 min per change per device; Automated: 0:15 min per change per device; frequency assumption: 4 changes per device per month.

Basic Configuration Change - Manual: 1:15 min per change per device; Automated: 1 min per change to 10 devices (group push); frequency assumption: 4 changes per device per month, 10 devices as a group on average.

Complex Configuration Change (e.g. Cisco iOS update) - Manual: 10 min per change per device; Automated: 5 min per change to 10 devices (group push); frequency assumption: 1 change per device per year, 10 devices as a group on average.

Security Policies and Compliance

Build, define and deploy rules and policies - Manual: 5 min per rule, per device; Automated: 1 min per rule; frequency assumption: one time with 25 rules.

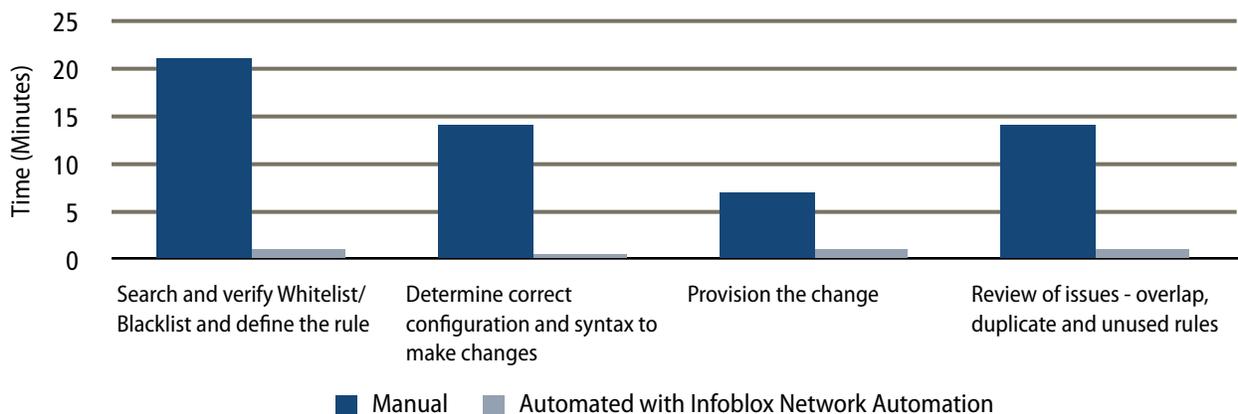
Compare configuration to rule/desired state (ongoing internal review for consistency/security) - Manual: 1 min per device per rule per instance; Automated: continuous; frequency assumption - 8 rules per month.

Compile data for compliance reports (audits required to prove compliance) - Manual: 2 min per device per rule per audit; Automated: 2 min per audit; frequency assumption - 2 times (one external and 1 internal) per year.

Router/Switch ACL and Firewall Rule Provisioning

Search and verify whitelist/blacklist and define the rule - Manual: 3 min per device

Router/Switch ACL and Firewall Provisioning : Manual vs. Automated with Infoblox Network Automation



Note: Chart shows the time to add a service that touched 7 firewalls along a path. Infoblox Network Automation can run the task for all 7 devices at one time while manual way has to run the task for devices one at a time.

Source: Tolly, May 2013

Figure 4

per rule per change request, Automated :1 min per change request.

Determine correct configuration and syntax to make change - Manual: 2 min per device per rule per change request; Automated: less than 1 min.

Provision the change - Manual: 1 min per device per rule per change request; Automated - 1 min per change request.

Review of issues - overlap, duplicate and unused rules - Manual: 2 min per device

per rule per change request; Automated: 1 min per change request.

Frequency assumption for all tasks in ACL/ rule provision: 20% of all network devices are security devices where ACLs will be changed. The number of change requests are 2 times of total security devices per month. An average of 7 devices will be impacted for each change request.

Test Environment

Infoblox Network Automation Appliance



Graphical Network Simulator 3 Environment



Source: Tolly, May 2013

Figure 5



About Tolly...

The Tolly Group companies have been delivering world-class IT services for more than 20 years. Tolly is a leading global provider of third-party validation services for vendors of IT products, components and services.

You can reach the company by email at sales@tolly.com, or by telephone at +1 561.391.5610.

Visit Tolly on the Internet at: <http://www.tolly.com>

Infoblox Network Automation



For more information on Infoblox Network Automation, go to <http://www.infoblox.com/products/network-automation>

Terms of Usage

This document is provided, free-of-charge, to help you understand whether a given product, technology or service merits additional investigation for your particular needs. Any decision to purchase a product must be based on your own assessment of suitability based on your needs. The document should never be used as a substitute for advice from a qualified IT or business professional. This evaluation was focused on illustrating specific features and/or performance of the product(s) and was conducted under controlled, laboratory conditions. Certain tests may have been tailored to reflect performance under ideal conditions; performance may vary under real-world conditions. Users should run tests based on their own real-world scenarios to validate performance for their own networks.

Reasonable efforts were made to ensure the accuracy of the data contained herein but errors and/or oversights can occur. The test/audit documented herein may also rely on various test tools the accuracy of which is beyond our control. Furthermore, the document relies on certain representations by the sponsor that are beyond our control to verify. Among these is that the software/hardware tested is production or production track and is, or will be, available in equivalent or better form to commercial customers. Accordingly, this document is provided "as is", and Tolly Enterprises, LLC (Tolly) gives no warranty, representation or undertaking, whether express or implied, and accepts no legal responsibility, whether direct or indirect, for the accuracy, completeness, usefulness or suitability of any information contained herein. By reviewing this document, you agree that your use of any information contained herein is at your own risk, and you accept all risks and responsibility for losses, damages, costs and other consequences resulting directly or indirectly from any information or material available on it. Tolly is not responsible for, and you agree to hold Tolly and its related affiliates harmless from any loss, harm, injury or damage resulting from or arising out of your use of or reliance on any of the information provided herein.

Tolly makes no claim as to whether any product or company described herein is suitable for investment. You should obtain your own independent professional advice, whether legal, accounting or otherwise, before proceeding with any investment or project related to any information, products or companies described herein. When foreign translations exist, the English document is considered authoritative. To assure accuracy, only use documents downloaded directly from Tolly.com.

No part of any document may be reproduced, in whole or in part, without the specific written permission of Tolly. All trademarks used in the document are owned by their respective owners. You agree not to use any trademark in or as the whole or part of your own trademarks in connection with any activities, products or services which are not ours, or in a manner which may be confusing, misleading or deceptive or in a manner that disparages us or our information, projects or developments.