EMA
IT & DATA MANAGEMENT RESEARCH, INDUSTRY ANALYSIS & CONSULTING

Prepared for:

NetBrain
DEMOCRATIZING NETWORK AUTOMATION

From Scripts to Platforms:

Why Homegrown Tools Dominate Network Automation and How Vendors can Help

June 2025 EMA Research Report

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Table of Contents

Network Automation: Projects Over Products

Do-it-yourself (DIY) network automation is everywhere. In conversations with network engineers, EMA analysts usually find that Python scripts and open source Ansible playbooks are dominant in automation toolsets. Over time, network teams may develop software that orchestrates these automations, or they will create applications with simple GUI interfaces that enable lower-skilled technicians to initiate automation.

EMA research in 2024 found that 64% of enterprises use homegrown software or scripts to automate their networks and 57% use open source software (anecdotal evidence suggests Ansible for playbooks and NetBox for a source of truth) without any vendor support. Furthermore, 61% of the network teams that take a DIY approach to network automation spend six or more hours per week maintaining and debugging those tools, as **Figure 1** reveals.[1]

61% of the network teams that take a DIY approach to network automation spend six or more hours per week maintaining and debugging those tools.

In general, IT leaders prefer commercial products for IT operations management solutions. Vendor-supplied tools are quicker to deploy, have more features, scale into larger environments, and come with customer support services that are accountable when a tool fails. Yet, network engineering teams buck this trend with automation. Regardless of what an enterprise does with the rest of its IT management toolset, network automation is often homegrown and open source. Scripts and playbooks dominate.

This research aims to find out why this status quo persists. We explore the value of this custom approach and the pitfalls. We also examine whether vendors can augment or transform these homegrown approaches without disrupting operations.

Figure 1. How much time per week does your team currently spend supporting, maintaining, and debugging homegrown or unsupported open source network automation tools?

Sample Size = 331

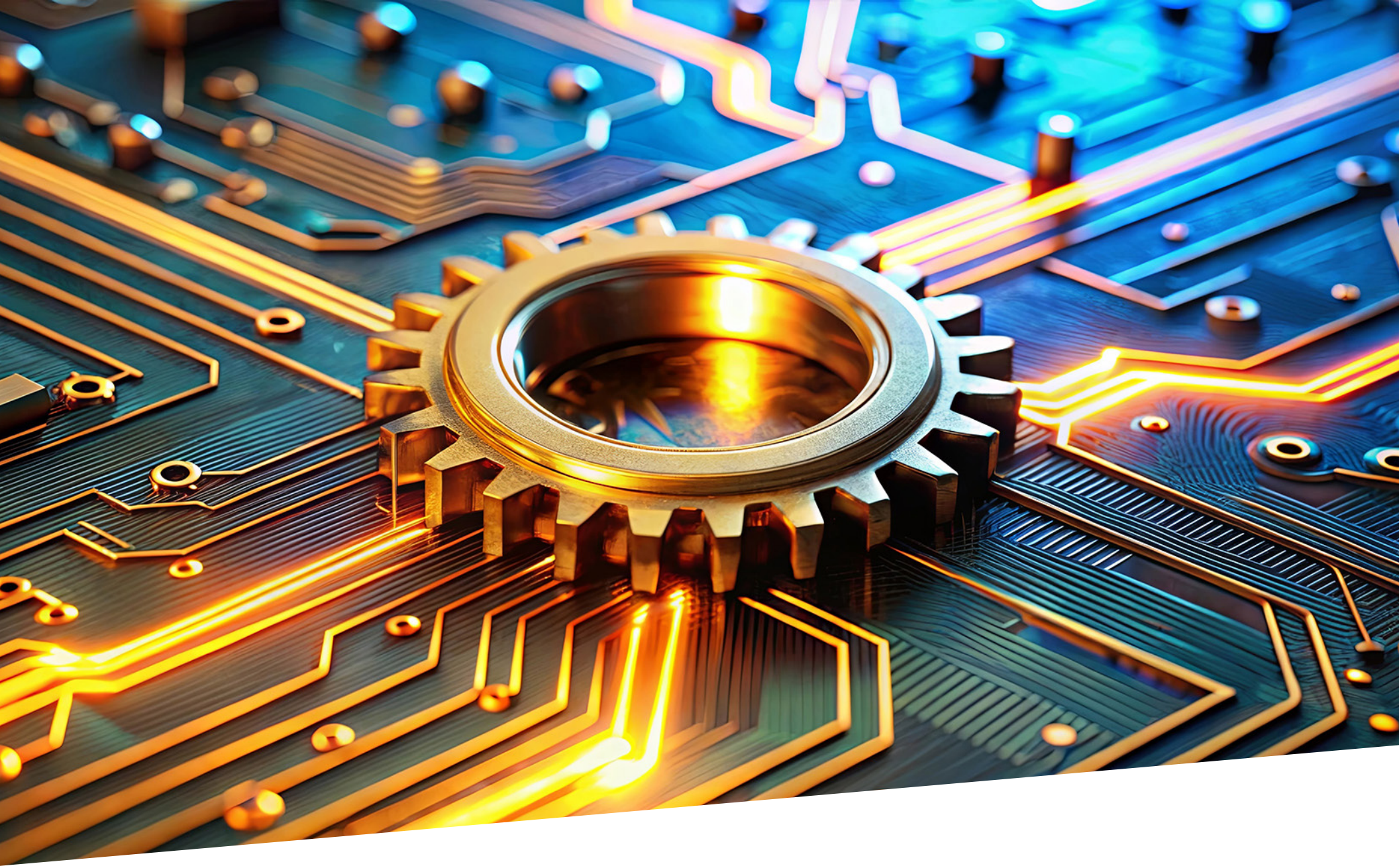
[1] EMA, "Enterprise Network Automation: Emerging From the Dark Ages and Reaching Toward NetDevOps," March 2024.

Research Methodology

This research is based on twelve in-depth interviews with enterprise experts on network automation. EMA analysts interviewed each of these individuals in one-on-one conversations that ranged from 60 to 90 minutes. These conversations allowed EMA to gain a full understanding of experts' current approach to network automation, including their toolsets, their challenges, and their future requirements. We also asked them to think about network automation product capabilities that would best enhance their current homegrown and open source toolsets.

To encourage candor, EMA guaranteed these individuals anonymity. To give the reader the full context of these conversations, we offer the following anonymized profiles of the interviewees. This report will quote these twelve anonymous individuals extensively throughout the report.

1. Network automation engineer, midsized renewable energy company
2. Network automation lead, European IT consultancy
3. Network automation engineer, midsized U.S. financial services company
4. Network automation director, large university in the Eastern U.S.
5. Network automation and tools engineer, large university in the Western U.S.
6. Network automation engineer, large collaboration solution provider
7. Network automation engineer, U.S. medical school and hospital network
8. Network engineer, large multi-national pharmaceutical company
9. Network engineering manager, U.S.-based Fortune 500 retailer
10. Network engineer, large European bank
11. Senior automation engineer, U.S. GPU as a service cloud provider
12. Senior network engineer, midsized U.S. financial technology company



Network Automation Use Cases

Before we explore network automation toolsets, it's important to understand what people are automating and why. Across these research interviews, EMA analysts discovered six popular automation use cases. This is not an exhaustive list of what engineers were doing with automation, but it does provide an overview of what these individuals prioritized.

Configuration and Change Management

Configuration and change management are some of the first use cases that come to mind for automation. Engineers reported that this is an opportunity to drive efficiency in network operations, but many also said they were motivated by reducing errors. Engineers in this research were especially focused on bulk updates across multiple devices to reduce errors and toil.

Network automation engineer with a large collaboration solution provider

"We focus on standardizing the whole change management procedure, from prepping the config, prepping the changes, validating the changes, pushing them, and anything that comes along before we push the change, such as, 'Is traffic bandwidth okay if we push this change?'"

Senior network engineer at a midsized U.S. financial technology company

"The main thing is pushing config. That cannot be wrong because we are an exchange with a lot of customer connections. I think of it as config generation and deployment."

Device Onboarding

Automation streamlines the process of onboarding multiple devices, particularly during a network transformation. This includes zero-touch provisioning that allows low-skilled personnel to do the work of physically installing network devices.

Network engineering manager with a U.S.-based Fortune 500 retailer

"If we take a switch out of the box and connect it to an uplink, our automation should pull all the configuration from the cloud. So, when we want to deploy a switch on the East Coast or West Coast, we can just hire a cable technician over there and we can ship him the switches. As soon as he plugs it in, it comes online in no time."

Compliance and Standards Enforcement

Compliance and standards enforcement is related to configuration management. Engineers build tools that scan the network for deviations from design standards and so-called golden configurations. This use case also automates the process of remediating violations of standards.

Compliance checks are difficult because homegrown tools don't necessarily report on the devices they cannot reach. Thus, some engineers will write scripts that run bulk checks on network device reachability before a compliance check.

Compliance checks are difficult because homegrown tools don't necessarily report on the devices they cannot reach.

Network automation engineer at a U.S. medical school and hospital network

"We have standards, and then we run jobs or playbooks against those devices based on a predefined template. Whatever devices don't match those templates, we use Ansible or other automation to correct it."

Network Troubleshooting

Many engineers were trying to optimize troubleshooting by automating data gathering. This shortens problem isolation and root cause analysis. More mature organizations integrate this automation with other systems, which allows them to enrich alerts and tickets with relevant data.

Network engineer at a large multi-national pharmaceutical company

"You look at your workflow in all those troubleshooting scenarios that you've been in, and you try to find the common denominator. What are you frequently looking at? What data would be nice to have immediately to troubleshoot a problem? What were the last log messages? Were there any routes removed or added to the route table? Were there any peering changes?"

Some engineers will build scripts for non-networking personnel to take on some aspects of troubleshooting. For instance, scripts can empower end-user support groups to perform basic network troubleshooting before escalating tickets to network engineers.

Network automation engineer with a midsized U.S. financial services company

"Right now, if [end-user support] thinks they have a network problem, they just send it to the network team. I want to change that. They need to do some basic network troubleshooting through scripts, like running traceroutes and pings and hunting down which ports and which switches are involved."

Firmware and OS Updates

Software updates are tedious for network hardware, especially in organizations in which network engineers maintain many different versions of a single vendor's network operating system, based on maintenance windows, risk tolerance, feature requirements, and more. Many engineers in this research built automation to update firmware for infrastructure. This drives efficiency and improves consistency.

Network engineering manager with a U.S.-based Fortune 500 retailer

"We used to manually log into routers and switches and manually upgrade them. Now, we can upgrade up to 100 devices at a time. It is saving us a lot of time."

Documentation and Inventory Management

Finally, engineers are automating documentation and inventory management to improve their overall source of truth for their networks. This includes tracking device information, network connections, and configurations.

Senior network engineer with a midsized U.S. financial technology company

"We get our network inventory into ServiceNow for inventory management. I built something that goes into all my network devices all the time. It has all the right information about device models, serial numbers, etc. I exposed it via an API endpoint to ServiceNow, which scrapes it nightly and ingests it into its asset database."

Typical Homegrown Automation Journeys

EMA's interviews with engineers found a common homegrown automation path that IT organizations follow.

Stage 1: Standalone Scripts

- Individual engineers automate simple tasks to eliminate manual toil
- Many engineers start as novice coders, leading to uneven code quality
- Often isolated on engineers' laptops
- Limited governance, visibility, and documentation

Stage 2: High-Code Workflow Orchestration

- Engineers collaborate to automate workflows rather than simple tasks
- Accomplished by coordinating scripts into frameworks or by adopting open source tools, like Ansible, to build playbooks
- Requires significant coding expertise to build out and integrate the orchestration.

Stage 3: Homegrown Software

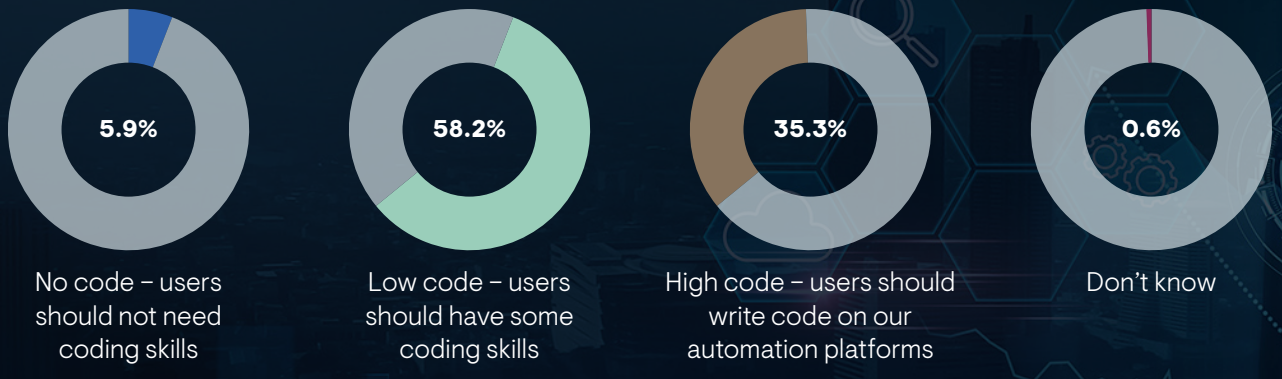
- Code is abstracted for certain end users
- Web-based applications provide GUI interfaces for users
- A software developer builds applications that add platform features like role-based access control, logging and reporting, and integrations with other systems
- Any new automations still require significant coding, so feature requests can pile up in the queue

Why Scripts and Playbooks Dominate Network Automation

While code-heavy approaches to network automation are common, EMA research learned that enterprises would like to find another way. For instance, 64% of IT organizations are seeking low- or no-code network automation solutions, as **Figure 2** reveals.[2] Homegrown automation, by definition, is a high-code solution. Every new feature that an engineering team adds to a homegrown tool requires additional coding. Why is this labor-intensive approach so common? This section explores several drivers.

64% of IT organizations are seeking low- or no-code network automation solutions.

Figure 2. What are your organization's goals in terms of the minimum amount of coding skills networking personnel will need to have when using your organization's network automation tools?



Sample Size = 354

[2] EMA, "Enterprise Network Automation: Emerging From the Dark Ages and Reaching Toward NetDevOps," March 2024.

Cost and Budget Constraints

Budgets are a major constraint for many network engineering teams. Even as IT leaders push them to automate operations as much as possible, those leaders rarely give network teams the funds needed to license a network automation product. IT leaders are more likely to approve budget for new infrastructure rather than automation tools that streamline operations.

Network Engineering Struggles to Sell IT Leadership on Commercial Tools

IT leaders often perceive network automation tools as an unnecessary budget line item. They think highly compensated network engineers should simply be more efficient and leverage open source tools.

Network automation engineer, large collaboration solution provider

"Our management is very open source-minded and not willing to pay third parties. We're trying to develop anything that we need as homegrown rather than pay for it. We're not even evaluating paid solutions unless they solve a major pain point. But that hasn't been the case so far."

It may seem obvious to some, but network teams often struggle to articulate how network automation vendors can deliver a return on investment.

Senior network engineer at a midsized financial technology company

"You can make a claim about risk reduction and future efficiency improvements, but it's very hard to put a dollar value next to that."

Do Commercial Tools Justify Costs?

Moreover, many networking professionals believe that network automation vendors are too expensive, especially vendors that offer tiered pricing. Some interviewees believe that the value some network automation vendors provide doesn't justify the prices they charge.

Network automation engineer at a large university in the Eastern U.S.

"Our network is so large, and most vendors charge per device. The average cost [quoted by vendors] was $300,000 a year, when we can do the same thing [in house]. It will take a little more work, but definitely not $300,000 worth of work to get to the same place on our own."

Network automation engineer at large university in the Western U.S.

"Is it saving me enough time to justify the cost? If it's costing me as much as a junior employee's salary, but it's only 20 hours a week of savings, it's kind of a wash."

Customizability and Control

Many network automation experts believe that scripting and coding grant them more flexibility and allow experts to customize their automation to the bespoke needs of their unique networks.

The Power to Tackle Any Use Case

Engineers told EMA that vendor platforms cannot possibly address every use case that an organization might need for network automation. When a unique requirement emerges, network engineers want to deliver a solution right away. With scripting and homegrown tools, they have the power to build whatever is needed when it is needed, whether it's a workflow to gather data for troubleshooting certain scenarios or a collection of tasks that automate port changes for devices in the field, like security cameras or printers.

Network automation director at a large university in the Eastern U.S.

"The big issue with these commercial products is that they're not customizable enough to the granular level that we might need, because you're kind of built for everyone's general use case. I feel like we have very specific use cases. We have 50 different [network automation] applications that are used by very different kinds of teams to get their jobs done."

Engineers working with homegrown tools appreciate the ability to adapt their tools to new use cases as they emerge. They don't believe they can get this level flexibility from vendors.

Network automation engineer at a U.S. medical school and hospital network

"There will be something that comes up that you want to change, that you want to customize, that you want to extend."

Network automation lead at a European IT consultancy

"These free and open source tools only require some time to learn them, then you get the power to do what you need to do when you need to do it properly."

Adapting to Unique and Changing Networks

Some companies have unique network designs or topologies that challenge the flexibility of vendors' tools. A senior automation engineer with a U.S. GPU as a service cloud provider said his company has eBGP fabrics in its data centers, which he described as a hybrid of a service provider's network and an enterprise's network. Vendors "are really tailored more for the enterprise-type networks, especially with the lack of eBGP support."

That same engineer said that his company is embracing SONiC as its network operating system, and automation solutions for this platform are hard to find. "There really isn't much out there that's off the shelf yet."

Embedded Network Automation Anywhere

Some organizations are building distributed network automation that embeds in tools people outside of network engineering use. They think commercial tools are too centralized.

Sometimes, this automation targets network devices embedded in operational technology and industrial systems that are outside the management scope of the IT organization, such as medical scanners, electrical vehicle chargers, or manufacturing systems. When operational technology teams provision, change, or monitor these technologies, network automation scripts are embedded into their management tools.

Network automation engineer, large university in the Eastern U.S.

"The entire job of our developers is to make applications [for field technicians], and then we have several people who [script] the automation. We are developing tons of apps. Some of the tools are are simple things, like moving a switch port. It's just a simple website where you go see a stack of switches, pick one, and drag and drop a port. They only need to do this one thing, rather than open an application that has a billion things in it where they will get confused."

Network automation engineer at a midsized renewable energy company

"I don't want to get into the position of building a new automation platform. I'm in the process of finding systems that we have already that I can latch onto. We have a site system manager that we use to build out sites. I'm talking to the folks that do the data modeling there, then we want to have the network topology live there."

Fighting Vendor Lock-In

Many network engineers want more control over their network automation roadmap. This is especially relevant with network automation solutions that network infrastructure vendors supply. These solutions typically only automate a single vendor's products, while most enterprises are multi-vendor. If they rely too heavily on that vendor's tool, it prevents adopting other vendors. Alternatively, they might have to use separate automation tools for different vendors, which can add complexity to overall operation, especially as they try to impose configuration standards and security policies across siloed tools.

Network engineer, large multi-national pharmaceutical company

"What's appealing about using just straight Python is that we're able to interface with different vendor systems and we're not at the mercy of what the vendor gives us."

Network automation engineer, large collaboration solution provider

"We had to use a different product for different vendors, and we had to put all that together. Now, we need to maintain several products and we need to train engineers on several products, which causes a lot of headaches."

Open Source Tools are Industry Standards

Engineers view open source and free tools as proven industry standards. Moreover, the skills they build with tem are transferrable. Once an engineer has learned Python and its associated network automation libraries (NAPALM, RANCID, etc.) and open source tools like Ansible, Jenkins, Git, and NetBox, they can implement these technologies anywhere for free. They don't need budget approval to get started. Moreover, it's not just about their ability to build solutions based on these so-called standards. It's about giving end users something they are familiar with.

Engineers perceive that every vendor has a learning curve associated with its network automation product. Python and open source software also have learning curves, but once you reach the apex of that curve, you can take those free tools to your next role and deliver value quickly.

Senior network engineer with a midsized U.S. financial technology company

"Some vendors have their own proprietary query languages for querying data in their platforms. They're trying to create a proprietary walled garden that you have to plant yourself in to really leverage the tools."

Evolution Through Modularity and Reusability

Many of the engineers EMA spoke to had evolved their automation as they matured. They may have started with single-use scripts and/or playbooks years ago, but their focus on modularity and reusability allowed them to build something more powerful over time, without giving up the control and customizability they expect from scripting.

Network automation engineer with a large collaboration solution provider

"Scripts are the smallest units of code within our orchestration. We've developed a change management system in which everybody can write their own code, and that becomes the smallest unit that needs to be tested, verified, and approved. We build a system in which those [automated] tasks can be put together, merged, and combined into different variations that we call templates."

Many network engineers mentioned that they built middleware or used abstraction layers that separated device-specific code from business logic, making automation more portable.

Network automation lead with a European IT consultancy

"We build our tools so that they're modular. If we come across something that can be segregated into a repeatable block of code, llike parsing certain bits of the configuration or building the change snippet, we tend to build it as a separate module that can be reused in other projects."

Challenges to Homegrown Network Automation

Most of the engineers EMA interviewed have a strong preference for homegrown, code-heavy network automation, but all of them recognized that their chosen path is challenging, and many conceded that vendors could help. This section highlights the most frequently cited issues.

The Human Capital Gap

It is difficult to find people who have the right mix of skills to build code-heavy network automation tools, especially as an organization tries to mature that automation and grow adoption. It's one thing for an individual network engineer to teach himself or herself Python, write some scripts, and automate some of his or her daily tasks. Making that automation shareable, scalable, and capable of orchestrating complicated workflows requires more sophisticated skillsets.

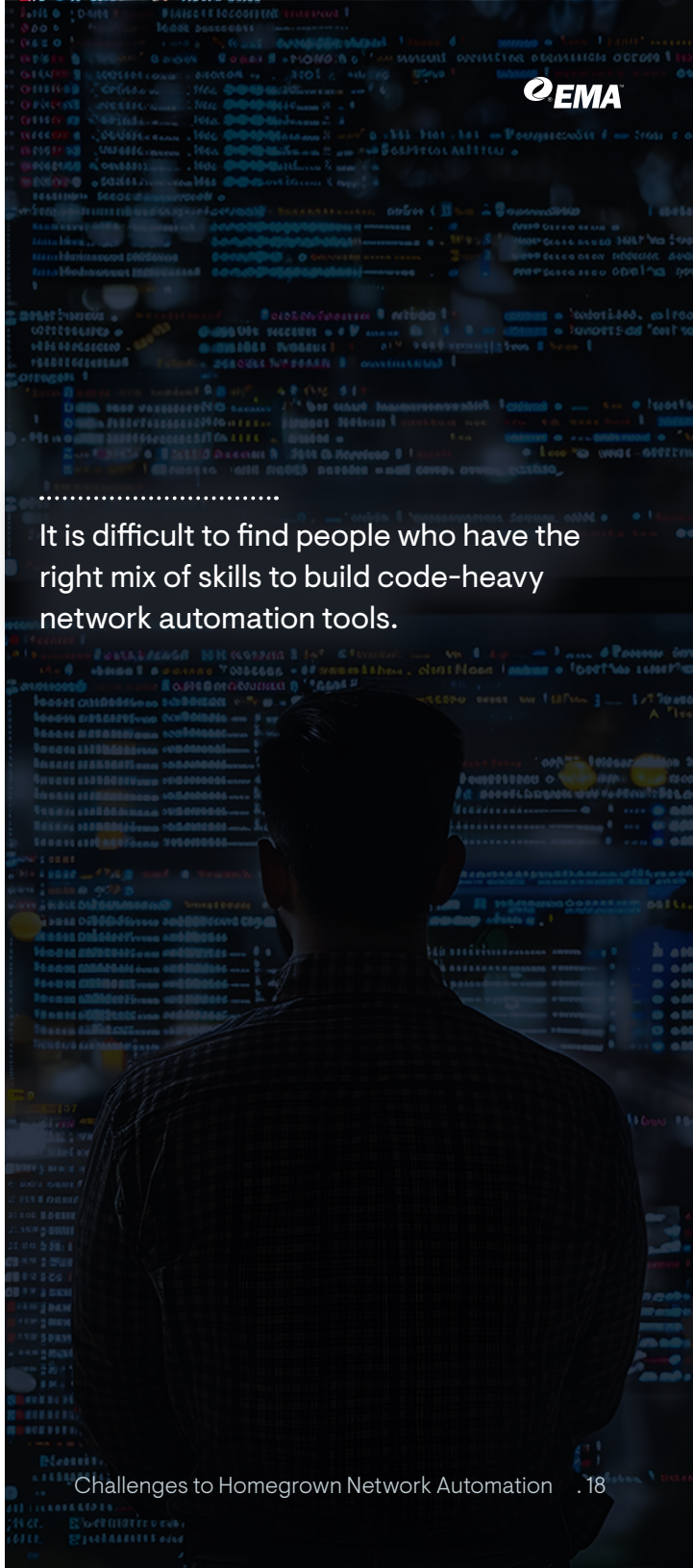
Organizations need people with a mix of network engineering and software development knowledge. It's hard to hire and train people on these hybrid skills, especially because many software developers aren't interested in learning about network engineering.

Network engineer with a large multinational pharmaceutical company

"[Software development hasn't] been historically taught to network engineers. Half the battle is getting everybody on the same page and understanding this new skillset. It's one thing if I write an awesome script, I share it with my team, and they just hit run. But it's another thing entirely if I can share that script with them, we can collaborate, and use that code to solve other problems. That's way more valuable and impactful to the organization."

Network automation director at a large university in the Eastern U.S.

"Developers who have networking experience are a very small subset of people out there. My most recent hire is an amazing developer, but it took about a year for him to grasp some of the network knowledge, to understand what the heck he's doing."



Tool and Project Complexity

As homegrown toolsets grow, complexity increases. Without proper documentation and collaboration, automation teams will struggle to manage projects. Their work may overlap, or gaps may grow in their toolsets. Over time, it becomes difficult to move forward. Many of the engineers in this research devote time and energy to mitigating complexity, but that level of effort varies from company to company.

Network automation engineer at a midsized renewable energy company

"Sooner or later, these tools turn into this Frankenstein's monster. Before you know it, you've got 15 Frankensteins running around with a lot of overlap and a lot of distinctness. It's kind of a hassle to build functions and make sure you can recreate them in different environments."

Network automation director at a large university in the Eastern U.S.

"I've reached a point where I've lost track of what's going on as a manager. We had more people come on board, and they kind of became kings of their own little kingdoms. It's gotten to the point where some people own certain parts of the environment, and it's only in their heads. I would like to get better documentation or better cross-training."

Usability Issues

Complex Toolchains

Many homegrown tools lack point-and-click or drag-and-drop workflows. Instead, engineers adopt multiple technologies to build and execute their automation, stitched together across scripts, files, and other objects, and these toolchains must be executed in a certain way. Sometimes, users fail to follow prescribed steps, or they use a tool in a way that wasn't intended.

Network automation and tools engineer with a large university in the Western U.S.

"Scripts are a very distributed model of configuration management. If someone runs a script, but they don't pull the exact right inventory out of our source of truth, then as we push out the configs, that is only going to 700 out of 1500 switches, for instance."

Unexpected Use Cases

Engineers build automation to address a specific use case, but end users may try to use the tools in a way they didn't account for, which breaks the automation.

Network automation director at a large university in the Eastern U.S.

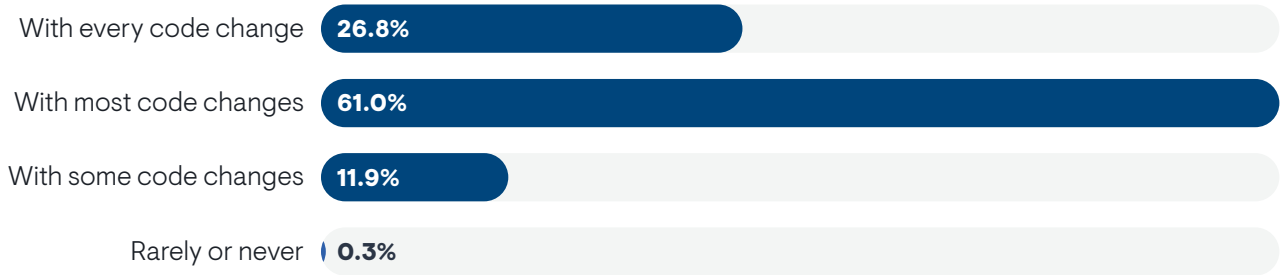
"We don't know with 100% certainty what end users are going to do with [our automation]. We don't know every little use case that could possibly be done in one of our applications. We can't anticipate the errors that could happen because we don't know all the processes that are users are following."

Maintenance and Support

IT teams worry that homegrown automation will fall apart if the engineers who built it move on to other roles, retire, or go on vacation. Extensive code commentary and documentation can empower new skilled personnel to maintain and build upon these tools, but many engineering teams fail to do this work consistently.

In previous research on network automation, EMA found that 11% of homegrown network automation is completely undocumented. Unfortunately, those who do have documentation are not keeping it up to date. Only 27% of network automation engineers update their documentation every time they make a change to their code, as **Figure 3** reveals.[3]

Figure 3. How often does your team update the documentation for its homegrown network automation?



Sample Size = 331

Network automation engineer at a midsized U.S. financial services company

"It's very hard to maintain network automation code. I'm the only person on our network team that knows Python. Also, you can't just hand it off to some developer. They might understand the code, but they're not really going to understand what's happening with the network."

Only 27% of network automation engineers update their documentation every time they make a change to their code.

[3] EMA, "Enterprise Network Automation: Emerging From the Dark Ages and Reaching Toward NetDevOps," March 2024.

Security Risk

Nearly every engineer EMA interviewed was uneasy about the security risk associated with their homegrown automation. They try to maintain good practices, such as never writing secrets into scripts. However, policies around secrets management and secure coding practices can be difficult to enforce in custom tools.

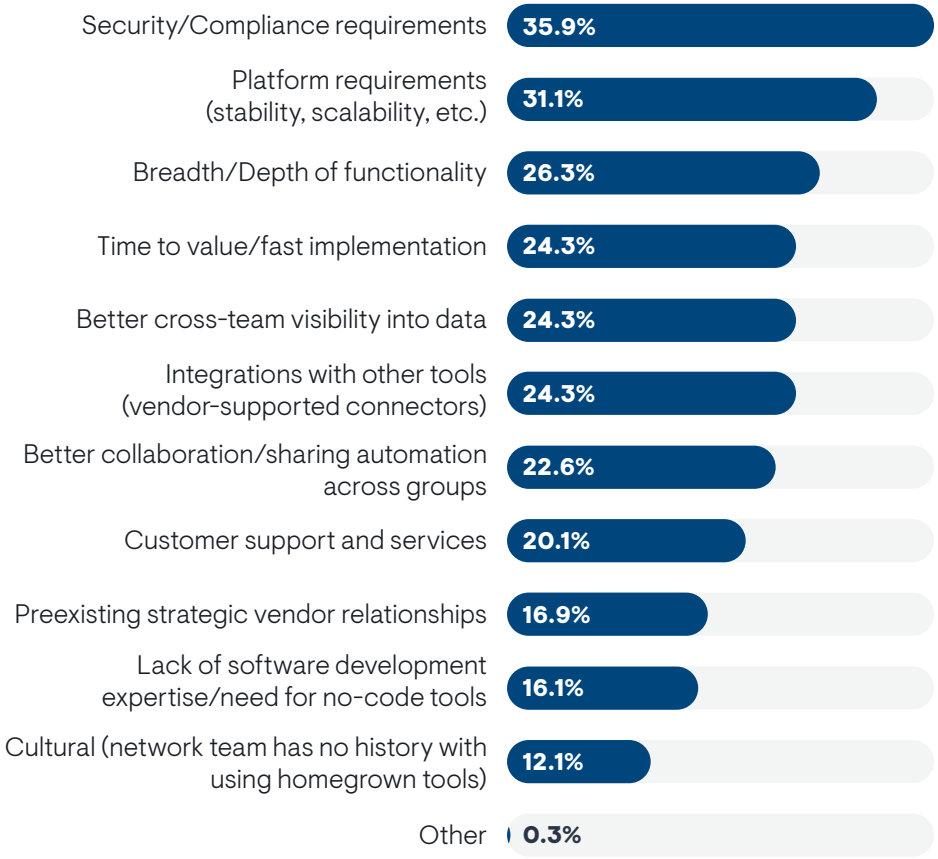
Network automation engineer at a midsized renewable energy company

"Security is a concern, especially when you talk about exposing automation to users. I want to make it so only internal services can access the APIs, and that we use the best and most appropriate authentication mechanisms."

How Platforms can Transform and Operationalize Homegrown Automation

In previous research, EMA asked network automation decision-makers to reveal what might motivate them to move away from homegrown tools and work with a network automation vendor. **Figure 4** reveals that security, compliance, and platform requirements, like stability and scalability, are the biggest factors.[4]

Figure 4. Which of the following are the most compelling reasons to adopt commercial network automation solutions, as opposed to DIY network automation?



Many network automation engineers want to bring their homegrown tools to vendor platforms.

However, this current research found that many network automation engineers want to bring their homegrown tools to vendor platforms. Vendors recognize these requirements. They now offer products that integrate with, leverage, and maintain existing homegrown tools. In other words, they can operationalize existing scripts and playbooks while adding additional value.

Senior network engineer with a midsized U.S. financial technology company

"I would like a platform to onboard my scripts, stitch them together, and wrap them in a nice package. I don't have to tell people to go log into a Linux server and run an Ansible playbook. Instead, they get this nicely named workflow with a nice GUI, and you'll see little boxes turn green as it progresses through the steps."

Network automation engineer at a large collaboration solution provider

"Putting my code together and making it into something like workflows would be very valuable. Especially if I could say 'run this if this happens' and 'run that if that happens.'"

The following pages review some of requirements that engineers would demand from such a product.

[4] EMA, "Enterprise Network Automation: Emerging From the Dark Ages and Reaching Toward NetDevOps," March 2024.

Governance and Security

Centralized Control

Engineers want to control who can use automation and what they can do with it. At the same time, it should enable collaboration. Multiple engineers told EMA that any such platform must have powerful and granular role-based access control (RBAC) that would allow network engineering to maintain control while sharing automation with as many people as possible.

Network automation engineer at a U.S. medical school and hospital network

"You would need access privileges, then you need the ability to have somebody authorize changes. Someone would need the ability to view the code before it is merged."

Mitigate Security Risk

Engineers have mixed feelings about the security of homegrown tools. Platforms that integrate with systems for identity and access management can ensure only authorized personnel are using the system. Integrations with secrets management tools prevent users from writing sensitive data into their code.

Applying DevOps Principles

Many engineers have adopted DevOps and continuous integration/continuous deployment (CI/CD) practices with their custom tools to improve the quality, consistency, and supportability of their automation.

Best practice: A vendor platform can apply version control, testing, and continuous integration to sprawling scripts

Network automation engineer at a midsized U.S. financial services company

"It would have to be as simple and easy to work with as GiitHub, so that I can fork and make different branches and see all the changes folks have made. And it would have to allow multiple users to work on the same code at the same time."

Modularity, Extensibility, and Integration

Network engineers don't want a vendor to dictate how they automate their networks. They want the option to bring their preferred tool ecosystem into whatever platform they buy. They want the flexibility to extend or modify the platform in whatever way makes sense to the needs of their business. They also want powerful APIs that allow them to control how the tool integrates with existing tools and processes.

Modularity and Extensibility

Many engineers will continue to have preferred tools for certain aspects of automation. Any platform must be flexible enough to allow users to substitute native capabilities for third-party tools that can integrate tightly into the overall solution. For example, many engineers are attached to their existing version control tools, and they want to Network engineer with a large multi-national pharmaceutical company

Network engineer with a large multi-national pharmaceutical company

"I'd want it to integrate nicely with Git. It's top dog for version control. I would want that industry standard system over something proprietary. A lot of network engineers are going through the process of learning the different tools needed to automate. They're going to be more familiar with Git, and they won't want to learn a proprietary version control system."

Engineers don't want boundaries or walled gardens in this tool. They want the freedom to extend the platform via scripting and integrations without proprietary tooling.

Senior network engineer with a midsized U.S. financial technology company

"I want extensibility without proprietary vendor nonsense. Whatever integrations they give me out of the box, I should be able to create my own and I should be able to stitch them together through a standard language, like Python. I should not have to learn a proprietary vendor language or system. This makes it intuitive to anyone else who knows Python. If I get hit by a bus, my organization won't have much trouble hiring someone who can take over and continue running it."

Integrations

Some engineers built software that integrates their automation with various IT operations applications. If they migrate their automation to a commercial platform, that platform must have APIs that can support those applications.

Network automation director at a large university in the Eastern U.S.

"All our applications talk to an API, and that API talks to our [script-based and playbook-based automation]. Maybe one day there will be an off-the-shelf product that we can move to, and all we have to do is go to the API and change how it talks to things."

Prebuilt integrations with other IT operations management systems are also essential. Engineers said they would be more inclined to adopt a vendor's platform if it shipped with powerful integrations into service management platforms and IP address management tools, for instance.

Logging, Reporting, and Dashboards

Better Visibility

Engineers want platforms that can provide visibility and insight into network automation. This allows network teams to track automated jobs, identify and troubleshoot problems with automations, and understand who made what changes and why.

ROI Insights

Engineers believe this visibility will help upper management understand the value of the platform and the automation it runs.

Network automation and tools engineer with a large university in the Western U.S.

"Being able to show upper management what is actually occurring will get buy-in. A dashboard that shows that a script saved us 15 days this year would be great."

Low-Code and High-Code Options

Expand Adoption of Automation

Many engineers love the idea of eliminating coding requirements altogether, but others want the flexibility to work at any level of coding, depending on skill level of individual personnel and use cases those personnel are tackling.

Network automation engineer at a midsized renewable energy company

"You're always going to have people who are at different expertise levels. You'll have people who want to work in [a low-code] workflow, and you'll have folks who are really experts at coding. This enables folks to contribute to the same platform. I think they're going to coexist for a long time. There is some stuff that just works better [in scripts]. You can test quicker. I can get information on the CLI a lot quicker."

Address Niche Use Cases

Most engineers believe that there will always be a need for scripts because low-code tools simply can't address every use case they have. Thus, they think vendors should give them the flexibility to dive into code whenever they need to.

Network automation and tools engineer with a large university in the Western U.S.

"I need the ability to spin up something very custom with coding, because sometimes low-code is very limiting in terms of the building blocks offered. Low-code and no-code platforms struggle to handle complex workflows."

Senior automation engineer, U.S. GPU as a service cloud provider

"With low-code you can do maybe 80% of what you need to do, but then you still have these corner use cases that require coding. Otherwise, I would embrace low-code 100%."

Assistance with Code Generation and Maintenance

Engineers see value in a platform that assists with code generation. For instance, if one is writing a Python script, an AI-based assistant could ask questions aimed at improving code quality. Assistance with code maintenance is also important.

Network automation engineer at a midsized renewable energy company

"I'd like a tool that can identify mistakes in my code. And it would be nice to have the ability to scan for obvious security oversights."

Network automation engineer at a midsized U.S. financial services company

"If we upgrade all our firewalls, it would be cool if the platform could somehow update all the scripts and account for any changes in the API for that new firmware."

Conclusion

Network engineering teams have invested their time into building their own network automation for many reasons, including:

- They have more control and flexibility
- They can deliver value without major budget outlays
- They build expertise with open source technology that they can apply anywhere

However, there are plenty of challenges to this approach to automation.

- Automation projects become too complex
- Users with limited experience can break fragile toolchains
- Ongoing support and maintenance are difficult, especially with human capital at a premium
- Security risk and governance become challenging

Engineers invest a lot of time into their custom tools, and they see them as essential to current operations. In many cases, their scripts contain algorithms that are filled with business logic. These tools are often integrated into disparate systems that run various aspects of IT and business operations.

Today's network automation platform vendors are aware of the value of homegrown tools, and they've tailored their solutions to offer the flexibility to integrate homegrown tools into their platforms. These vendors offer:

- Centralized control over automated workflows for improved quality and better security
- Simplified maintenance and support of existing automation
- Code generation tools that improve the quality of new custom automation
- Low- and no-code options that empower more users to build their own automation
- Reporting and dashboards to track automation and demonstrate value

More and more vendors understand that network engineering teams want help with improving their existing homegrown network automation, rather than a total rip-and-replacement of those tools. EMA recommends that network engineers engage with vendors that are focused on adding value to existing homegrown tools while expanding what is possible with network automation.

EMA recommends that network engineers engage with vendors that are focused on adding value to existing homegrown tools.

Example Vendors that Integrate with and Support Custom Network Automation

The following is a non-exhaustive list of network automation products that can help network engineering teams advance their homegrown network automation solutions:

Gluware Intelligent Network Automation Platform

IBM Rapid Infrastructure Automation (formerly Pliant)

Itential Platform and Itential Automation Gateway

NetBrain Next Gen

NetBox Labs

Network to Code Nautobot

Red Hat Ansible (IBM)

Resolve Actions

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Founded in 1996, Enterprise Management Associates (EMA) is a leading IT research and consulting firm dedicated to delivering actionable insights across the evolving technology landscape. Through independent research, market analysis, and vendor evaluations, we empower organizations to make well-informed technology decisions. Our team of analysts combines practical experience with a deep understanding of industry best practices and emerging vendor solutions to help clients achieve their strategic objectives. Learn more about EMA research, analysis, and consulting services at **www.enterprisemanagement.com** or follow EMA on **X** or **LinkedIn**.

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