HOW JUNIPER NETWORKS IBN ALLEVIATES DATA CENTER PAIN POINTS, REDUCES COSTS

60%
of IT professionals report making operational or technology changes to support digital transformation.[1]

Companies are realizing the value of reviewing their enterprise networks to ensure that the intentions of their data centers still align with the strategic business objectives of the company. The result is a software-enabled automation process called intent-based networking (IBN). Rather than the business units of the company determining how best to utilize the technology at hand, an IBN management application determines which devices and routes best match the business intention and automates any decisions and necessary configuration changes. Using an IBN approach, the data center is simply a tool that the business uses to achieve its goals.

IS YOUR NETWORK STAYING THE COURSE?

Stay the course. It's the recipe for success on a human element. And when we stray off course, that is when we get distracted by temptations that offer little value in the end. As hybrid networks become exponentially larger and more complex with so many moving parts, the ability to stay the course becomes more challenging. What's more, the smallest change introduced into the network can result in highly unintended outcomes due to the speed and scalability that data centers operate at today. The question is, how do you know if the intent of your network is staying the intended course?

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Think of a commercial air flight. There is always a flight plan, and the smallest deviation can send a plane well off course and far away from its intended destination. Over the course of a long flight, pilots must contend with air turbulence, bad weather, and congested airways, all of which can force a plane to incrementally divert off course. Thanks to the plane's inertial guidance system, however, the plane automatically takes small self-corrective actions. In addition, the air traffic control system can alert the pilots of any corrective action that must be implemented on their part. It is these automated navigation systems that make air travel as reliable as it is today.

WHAT IS PILOTING YOUR NETWORK?

There are different types of turbulences occurring within your company's data center today. So, what's piloting your network to ensure that service level objectives are being met, performance objectives are reached, and business-driven outcomes are achieved? For a growing number of companies, the answer is Juniper Apstra, a turnkey, multi-vendor automated IBN solution that allows customers to design, build, deploy, and operate data centers and computer edge networks in a simplified, unified manner.

Like the airplane's inertial guidance system, this IBN management solution continuously self-validates network occurrences and resolves any detected issues in a self-correcting manner. Just as modern-day aviation relies on automated flight paths, modern day networks should be guided by automated analytics. In other words, data centers today shouldn't rely on humans to manually configure devices. This outdated practice is laborious and error prone. Juniper Apstra is particularly beneficial for companies that are migrating services from legacy data center architectures to modern environments that your internal IT teams are not as familiar with.

JUNIPER APSTRA SOLVES 5 PRIMARY PAIN POINTS

Where would your business be without its network? How long could it sustain operations in the event of network disruption? Today's data centers are so essential to business operations that the slightest disruption can quickly impair productivity and initiate unnecessary costs that negatively impact the bottom line. The problem is that while businesses grow more dependent on their data center networks, the complexity of these networks also increase. This conundrum creates real pain points that network architects and managers are forced to deal with. Five of the most prominent pain points include the following:

1. Resource Constraints

The human element is always the most difficult to contend with. The combination of macro-economic challenges and the fast-changing dynamics of technology and business innovation makes it highly challenging for companies to attract and retain the

necessary talent to support and manage their IT estates. As a result, companies are understaffed, and that staff is then consumed in putting out fires rather than working towards long-sustainable solutions. These personnel gaps restrain the technological potential of the network.

2. Agility

The year 2020 was the ultimate learning experience of how important agility is. The comfort of interacting with legacy technologies has indeed been trumped by the necessity for greater flexibility. Unfortunately, companies find themselves saddled with technical debt, brittle complexity, and a lack of visibility into what is truly occurring within their networks. It is clear that companies must be able to transition as quickly as possible to take advantage of narrowing opportunity windows and even reinvent themselves in times of potential jeopardy.

3. Poor Reliability

To err is human. It's been a fact of human nature since the beginning. When you consider how much the average network relies on human intervention, manual device configurations and group-think design decisions, you begin to realize how much err exists in your networks. Design flaws and fat-finger configuration inputs create errors that require time and money to troubleshoot, and this is time and money that could be spent far more productively. Reliability risk isn't just the result of human error. It can stem from the loss of key personnel who leave behind small vacuums of knowledge due to inadequate documentation policies.

4. Slow Deployments

Everyone needed it yesterday. That's especially true of new applications, software features, and services. For technology to work for the business, it must also keep pace with the speed of business. Even small-scale deployments must often be implemented within narrowly defined window gaps. Missing those gaps creates friction within the organization and results in higher costs. Slow and steady is no longer applicable today. Rather, speed and efficiency is what's needed.

5. Lack of Infrastructure Choice

You may value the relationship of your network vendor, but what's good for the vendor isn't necessarily good for you. While you obviously benefit from a freedom of choice, your solution manufacturers are profiting from entrenchment – the practice

of coupling hardware and software together to restrict a customer's ability to leave the plantation. Whatever system you choose to pilot your network must be able to integrate with as many vendor platforms as possible.

Having a viable network is no longer enough. Everyone has some sort of data center presence made up of virtual machines, applications, and Layer2/Layer 3 infrastructure. Today, it is about maximizing the performance of your network and the performance of your business. That's why you need a pilot system like Juniper Apstra' s IBN technology overseeing your network.

PROVEN COST SAVINGS ACROSS THE LIFECYCLE OF YOUR NETWORK

Before we talk about the technology architecture that drives Juniper Apstra' s IBN solution, let's cut to the chase and talk about cost savings. Data centers are riddled with underlying costs that deter IT capital from other optimal investment opportunities. These costs come in the form of inefficient designs that never get addressed, code-intensive configurations that are error prone, and labor-intensive network failure tracking that proves reactionary at best.

Juniper commissioned Forrester Consulting to conduct a Total Economic Impact study to determine the potential ROI an organization may realize by adapting an IBN approach using Juniper Apstra. The study involved technology leaders whose companies were utilizing Juniper Apstra. Input from the participants were then compiled into a composite organization with global operations, two major production data centers, $3 billion in annual revenue and 7,500 employees. Costs were analyzed across the entire lifecycle of a network beginning with its very design, otherwise known as Day 0. It then went on to study the costs involved in network deployment (Day 1) and network operations (Day 2). Below are some of the quantitative 3-year results.

Day 0

The faster the design phase, the sooner you can realize the benefits of a proposed data center. Forrester found that those who used Juniper Apstra's IBN from the inception of the idea to build it experienced a 60% reduction in requirement scoping and design time. This equated to a savings of more than $73,000. This is achieved by using predesigned templates, validated reference designs, and building blocks that reduce the number of required FTE hours. All design components are tested and validated prior to deployment, thus reducing the need to troubleshoot costly configuration errors that delay the deployment process.

Day 1

Deploying devices means deploying their configurations. With Juniper Apstra, there's no need to touch every device. All device configurations are performed through an intuitive GUI admin console where admins can configure switches, servers, and network appliances. Admins can run multiple test deployment scenarios, confirm proper cabling for all connected infrastructure, and validate every micro deployment step before moving on. In the end, study participants saw implementation times reduced as much as 22 hours per device. This equated to a savings of more than $72,000.

Day 2

While the design and deployment stages are critical, the bulk of your potential savings takes place in the operations phase. Juniper Apstra reduces your dependency on senior level technology staff because it simplifies and automates so many of the operational processes. This, along with the enhanced visibility, advanced telemetry analytics, policy assurance, and root-cause identification procedures all contribute to a total cost savings of more than $448,000 over a three-year period.

The study also outlined non-quantified benefits as well such as the ability to manage multiple vendor devices and avoid costly vendor lock ins. Study participants realized a faster time to market of around 50% for a new data center. Other benefits included greater scalability, configuration consistency and standardization, and ease in upgrading and managing operating systems.

JUNIPER APSTRA ARCHITECTURE

Think of Juniper Apstra as the orchestrator that provisions services and multiple device types across your IT estate. It's a governance management system that identifies anomalies across your data centers, pinpoints the root causes of the problems, remediates them automatically and shares the findings with the network engineering team. Despite its massive scalability and natural integrative capabilities with so many vendor devices, the Juniper Apstra system only consists of three components.

1. Agents: Juniper Apstra uses multiple agent types. A web agent interacts with human operators through an intuitive interface. Device agents are installed on both physical and virtual network devices to allow the central manager to manage them. These device agents also stream telemetry data back to the controller to keep it informed of real time operations and events.

2. The Data Store: Juniper Apstra runs on a virtual server within your data center. It is here in the data store that all the information about your network is stored, providing you the answers you need to run for a well-managed ship.

3. Graph Database: Every data center element is represented by an object on the host server. For instance, every switch is represented by an object as is every port on that switch. All the configurations for IP addresses, VLANs and routing protocols are stored here as well. Objects and configurations are continually updated to reflect the latest real-time environment. The graph database also stores the stated intent for these network elements and uses it to compare the actual network state against the prescribed intent to ensure that the network aligns with expressed business outcomes.

The simple architecture of this IBN system provides a centralized controller that uses analytics and machine learning to monitor all network activity. What separates it from being configuration and deployment manager however is its ability to constantly discern operator and business intent, so that deployed policies and configuration are intent driven.

HOW JUNIPER APSTRA RELIEVES NETWORK PAIN POINTS

There was a time when the only way a builder could speed up the construction pace of a building's framework was to assign more carpenters. Then one day, the hammer was replaced by the nail gun and suddenly that restrictive truth was averted. The traditional way of manually configuring devices was the equivalent of the hammer. Juniper Apstra provides a powerful suite of tools that exponentially augments the capabilities of your engineering and admin team. It also relieves the admin team of common operational tasks such as upgrades, configuration changes and troubleshooting getting them done quicker than any human team. This also benefits the team who can now focus on more impactful projects.

Greater agility is sought after by every organization today and it is acquired in multiple ways. By speeding up the completion time of migrations, deployments and upgrades, IT personnel can move on to the next project faster. Faster deployments translate into faster return on investments, freeing up capital so it can be directed to new projects. Because Juniper Apstra is vendor agnostic, companies aren't restricted to a single purchasing path when upgrading systems. This allows engineers to choose the best component based on the needs of the business, not the requirements of a vendor's upgrade path.

Greater reliability is attained through greater visibility into the thousands of data points that comprise your data center so that potential problems can be dealt with before performance degradation or workflow disruptions can take hold. Because every step is validated before being processed, costly mistakes are avoided. Because all information is

archived in a central location, the data center is no longer dependent on the knowledge base of one team member.

CONCLUSION

What makes a modern-day data center isn't the components it is comprised of. It's getting the most out of every facet of the data center to ensure that the business of the organization is forever moving forward as productively and efficiently as possible. The only reason to invest in a new data center is if it helps the business achieve its objectives, and that is what Juniper Apstra does. Intent based networking is the future, which thanks to Juniper, is now the present.

ABOUT WEI

WEI is an innovative, full service, customer centric IT solutions provider.

Why WEI? Because we care.
Because we go further.

At WEI, we're passionate about solving your technology problems and helping you drive your desired business outcomes. We believe in challenging the status quo and thinking differently. There are a lot of companies that can take today's technology and create a great IT solution for you. But we do more. We go further. And we have the customer, vendor and industry awards to prove it. WEI is a premier technology partner, who always puts our customers first while providing the most innovative solutions for over 30 years.

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IT managers must be prepared for the next data center migration and Juniper Apstra gives them the tools, services, and sequential organization to ensure that future projects are completed successfully and on schedule. At WEI, we will see your journey through from start to finish. Contact us to get started.

Sources:
1. Foundry Research commissioned by WEI, January 2022