

The 5-Step Multicloud Migration Framework

A Simple Path to Secure and Automated Multicloud

Managing Complexity in the Enterprise

Complexity is an inhibitor to progress in the network—so debilitating that managing complexity has become a core function of any networking team. Draconian change controls, common in many IT Infrastructure Library (ITIL) shops, have brought operations to a near standstill. The very network architectures that support enterprises are based on the belief that the best approach to handling complexity is to contain it.

Historically, IT in general and networking in particular have employed an aggressive isolation and containment strategy to deal with complexity. Enterprises create domains with hard boundaries—around a data center, campus, the backbone, or even an application. Resources are grouped and quarantined. Operations are handled by teams of specialists.

As a coping mechanism, this has absolutely been the right approach. But in creating these boundaries, enterprises have unintentionally added overhead and erected roadblocks that are simply not acceptable to any business that needs to grow, adapt, or even just keep pace with the world around it.

Each boundary imposes a “crossing tax” as people, systems, and processes navigate between contexts. Visibility and control tend to stop at the boundaries, rendering workloads immobile and operations domain-centric.

If the IT world were static, a divide-and-conquer approach to managing complexity might work. But if the transformative promise of the cloud is to be realized, these hard boundaries must be eliminated. And as enterprises lose containment, complexity is no longer just an inconvenience—it becomes a debilitating obstacle to progress.



Multicloud as the Driver for Change

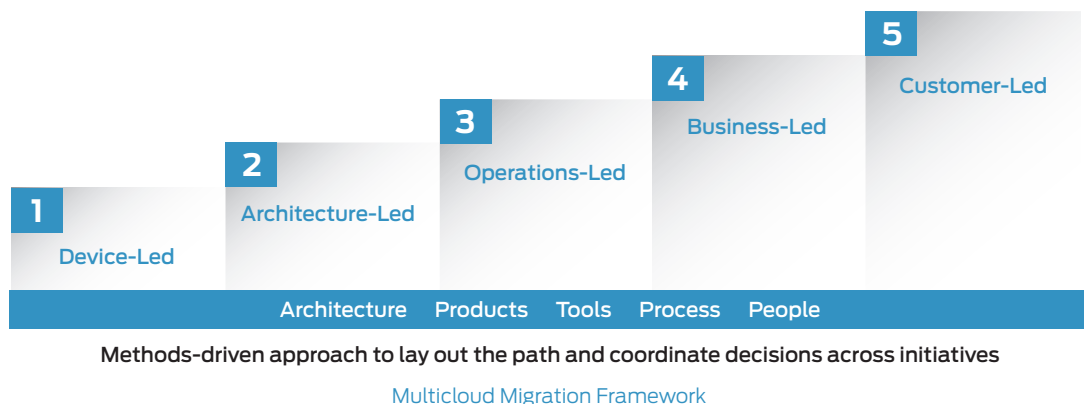
Multicloud is the natural conclusion for enterprises moving to the cloud. It's the recognition that economic, data privacy, application, and latency requirements drive the adoption of more than one cloud across an enterprise's IT infrastructure.

However, "multiple clouds" and "multicloud" are not the same thing. Multicloud is more than just tacking on another cloud to an existing deployment—it is about delivering infrastructure that is essentially invisible to the user. This requires several architectural tenets:

- **Security:** With data at the center of the IT universe, security is more than an add-on. It has to be a top-tier architectural consideration, especially when users and workloads are distributed.
- **Ubiquity:** One of the central theses of multicloud is that applications and services need to be everywhere. Indeed, if experience is dependent on location, the full promise of cloud will go undelivered.
- **Reliability:** Networks are expected to be as reliable as public utilities—everything must be available all of the time. Even small gaps in availability are intolerable. Reliability must be guaranteed in a multicloud world.
- **Fungibility:** To drive application and service ubiquity in a highly reliable way without breaking the bank, resources must be fungible. That means workloads cannot be bound to specific resources such that it impedes availability.

Making the Move to Multicloud

Ultimately, enterprises will not purchase a shrink-wrapped multicloud infrastructure. Migrating from contained silos to a more fluid operational environment involves more than just product; it requires architectural planning, tooling, and process considerations—not to mention cultural and people changes. The 5-step multicloud migration framework is designed to provide an agnostic way of thinking about staging the changes IT requires to adopt multicloud and what's important in delivering operational excellence.



As enterprises navigate their way from conventional networks to multicloud architectures, they will naturally shift how they approach architectural design, deployment, and operations, evolving from device-led to customer-led design.

From Device-Led to Operations-Led

Most enterprises are device-led, meaning they identify capacity requirements coupled with power and space constraints, then select a device that matches the need. When they interact with their infrastructure, they work device-by-device, frequently using CLI or lightweight scripts as the preferred tool.

More mature enterprises, however, are architecture-led. They might settle on a data center architecture (leaf-spine or IP fabric, for example) and then use it to drive requirements into the individual devices. When they interact with the infrastructure, they operate at an architectural level, bringing tools like Puppet, Chef, and Ansible into play.

Cloud companies, however, are fundamentally operations-led. They decide first on their data models, telemetry, and data distribution strategies, using them to drive requirements into the architecture and ultimately the devices. By elevating operations to the top tier in terms of design criteria, they optimize for automation. This is in stark contrast to enterprises that look at automation as a thing to add after deployment, relegating operations personnel to late-comer status in the entire design process.

Eventually, enterprises will drive architectural decisions from a set of business requirements that might include SLAs around service deployment or new site setup. Over time, these business-level requirements will yield to customer needs, like specific application experience or data privacy guidelines.

While the evolutionary path will vary from enterprise to enterprise, the future of networking will certainly evolve from the device-oriented approach common today.

A Simple Path to Secure and Automated Multicloud

The path to secure and automated multicloud cannot be traversed using only high-level guidelines. Complexity is not a problem in abstract representations of the network; it exists in the details that determine how a network actually operates.

This means that enterprises need to develop multicloud migration paths for each of the major places in their network: data center, campus, branch, and cloud. Additionally, they must consider how to evolve pan-enterprise disciplines like automation and security. While these domains and disciplines might initially evolve independently, if multicloud truly offers a seamless infrastructure experience, migration plans will need to converge on a common set of architectural principles and capabilities.

The key will be orchestrating the simultaneous yet decoupled efforts, maintaining constant progress towards a multicloud objective. Enterprises that understand their future state and use every refresh and expansion opportunity to ensure that their networking environment evolves to multicloud-ready will find that they are well positioned to take advantage of everything these emerging trends have to offer. By breaking the migration into consumable steps, organizations, people, and even budgets will be spared the jarring changes typical of larger transformations.

Put simply, these refresh and expansion events represent opportunities for change. The committed enterprise will ensure that they use these opportunities to do two things: make progress toward deploying better technology, and avoid making any decisions that unnecessarily limit the number of paths forward. In this way, the set of decisions and changes build towards a true multicloud infrastructure, where teams can manage policies and resources as a whole.

About Juniper Networks

Juniper Networks brings simplicity to networking with products, solutions and services that connect the world. Through engineering innovation, we remove the constraints and complexities of networking in the cloud era to solve the toughest challenges our customers and partners face daily. At Juniper Networks, we believe that the network is a resource for sharing knowledge and human advancement that changes the world. We are committed to imagining groundbreaking ways to deliver automated, scalable and secure networks to move at the speed of business.



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