Platform First

The Role of Platforms in Cloud-Grade Networking

Introduction

"Cloud-Grade Networking" builds on carrier-grade reach and reliability and enterprise-grade control and usability, bringing cloud-level agility and operational scale to networks everywhere. Cloud-Grade Networking essentially adds a new set of principles and capabilities to what the industry already knows, making networks less capital-intensive, more automated, and ultimately better suited for innovation, both on and within the network.

In many ways, Cloud-Grade Networking is an acknowledgement that the way networks are currently designed, built, and operated is changing. While these principles might have originated with the major cloud-scale properties, they are now transforming networks of all shapes and sizes, across all industry verticals.

What Does Platform First Mean?

Platform First is the acknowledgement that the network is never the end goal. Companies—whether service providers, cloud providers, or enterprises—are deploying more than just a network. In fact, the network is merely an enabler for network services and applications; every element within that network must ultimately be a platform. Hardware is a platform for software, software is a platform for network functions, the network is a platform for services, and the cloud is a platform for applications.

If a strong platform approach underpins the design and operation of the network, the result is an IT infrastructure that is more capable of supporting today's requirements, with the ability to grow and support tomorrow's innovations.

What Constitutes a Strong Platform?

A platform is a foundation—the thing on top of which other things are built. If the platform is built well, its strengths ripple throughout everything built on top of it; if it is built poorly, its weaknesses are amplified. While the specific requirements will vary from platform to platform, there are two ubiquitous properties that every well-built foundation shares:

- **Extensibility**: A platform without anything built on top is not useful. To be a platform, it must be extensible—that is, it must be able to support the individual purposes of anything that resides above it. The ultimate measure of a platform's efficacy is the richness of the ecosystem for which it was built.

- **Longevity:** Platforms must be built to endure. The platform is the bedrock; if it is constantly changing, it will breed instability in everything above it. As technology changes, the platform must be equipped to take advantage of the new advances.

Everything Is a Platform

From a networking perspective, most people understand intuitively that the underlying hardware is a platform for the software that runs on top, just as operating systems are platforms for applications. An appropriately componentized system treats virtually every element as a platform, as depicted below.

Cloud	Cloud as a platform for applications Example: AWS, Lambda, AzureStack, Office365 in the cloud
MANO	Management and orchestration supporting services Example: OpenContrail, ECOMP
Systems	Devices hosting multiple services Example: NFX250 running third-party VNFs
Software	OS as a platform for functions and software Example: Routing and security use cases, third-party software on Junos® OS
Silicon	Silicon reuse across multiple products Example: Juniper Networks ExpressPlus, Trio, x86, Broadcom

Figure 1: Everything is a platform

Platforms Change Economics

All the way up and down the technology stack, from silicon to the cloud, each layer serves as a platform for the layers above it. At a minimum, this means that there must be suitable interfaces between the layers. More importantly, if the measure of a platform's efficacy is the strength of its ecosystem, this means that individual platforms should have many things built on top. After all, the more a platform is used, the stronger it becomes.

This property helps drive platform economics. If an underlying component becomes a common platform, then activities like integration and qualification can be performed once and extended to the ecosystem above. Amortizing costs over a broad range of ecosystem plays (use cases, in networking parlance) is the surest way to contain costs. Not surprisingly, the major cloud-scale properties have standardized on a small number of nearly ubiquitous platforms in their pursuit of cost containment and widening margins.

Let 1,000 Flowers Bloom

No company has a monopoly on innovation. Ideas can come from anywhere. The best platforms will embrace this truth and support all types of advancements.

In a networking context, this means that key service components might run natively in the system, or they might be third-party software that runs on top of the networking platform. The wider the aperture for innovation, the more likely the operator will take advantage when something materializes. Especially important, if a company cannot predict where the next big innovation will come from, the best solution is to adopt a platform approach that allows for innovation coming from anywhere.

Mitigate Risk

Platforms also create a barrier to risk. If integration with the surrounding environment is handled through the platform, then changes to the ecosystem above the platform can be isolated and their impact reduced.

Take, for example, the software-defined WAN (SD-WAN) space. There are currently more than 30 SD-WAN companies today. It is unlikely that the market will support that many disparate offerings, which means some of these vendors will go away. Companies that select a solution from one of these failed companies will have to re-implement and reintegrate a replacement.

A strong platform insulates companies from this risk. If integration of surrounding tools and processes is handled at the platform layer, and SD-WAN can be relegated to a service that runs on top, then changes in the SD-WAN landscape will not necessarily require a change at the platform layer. This means other services already deployed can continue without disruption.

Conclusion: Making Platforms First

If Cloud-Grade Networks will be an enabling infrastructure, then companies need to plan for how the network contributes to their broader strategy. A strong platform approach will drive economics, account for an unpredictable future, and contain issues as the market evolves. Of course, this changes the criteria used to evaluate the infrastructure. It is less about how long a company can keep an asset in play to defray costs and more about how much life a platform breathes into the surrounding ecosystem and value chain.

About Juniper Networks

Juniper Networks challenges the status quo with products, solutions and services that transform the economics of networking. Our team co-innovates with customers and partners to deliver automated, scalable and secure networks with agility, performance and value. Additional information can be found at Juniper Networks or connect with Juniper on Twitter and Facebook.

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