

The Future of Enterprise Cloud Networking

Why Enterprises Haven't Yet Achieved Business Agility in the Cloud

Successful Digital Transformation Requires Business Agility

As the pace of technology advancement increases unabated, changing consumer behavior and expectations, modern businesses are under intense pressure to innovate or become obsolete. The last few years have shown how new entrants can leverage a technological edge to disrupt relatively stable businesses, such as transportation and grocery industry, leaving former household names on life support. Modern businesses are under intense pressure to transform their business models and operations to meet new consumer demands. Whether trying to grow revenue through new products and services, or reduce costs by streamlining operations, enterprises need to make more important decisions with less certainty than ever before. Many companies have decided that the best way to mitigate the risks of a wrong decision is to leverage technology to make the business *agile*.

Business agility is more fundamental than faster product development, accelerated operations, and faster time-to-market. Business agility is the ability to react to new market stimuli in real time. True business agility is required at all levels of the business, including operations and infrastructure. Without an agile foundation, management will never be able to pivot fast enough to react to new customer opportunities, competitive threats, or new regulations which change the market landscape.

Business Drivers for Digital Transformation

Grow Revenue

- New products and services

Reduce costs

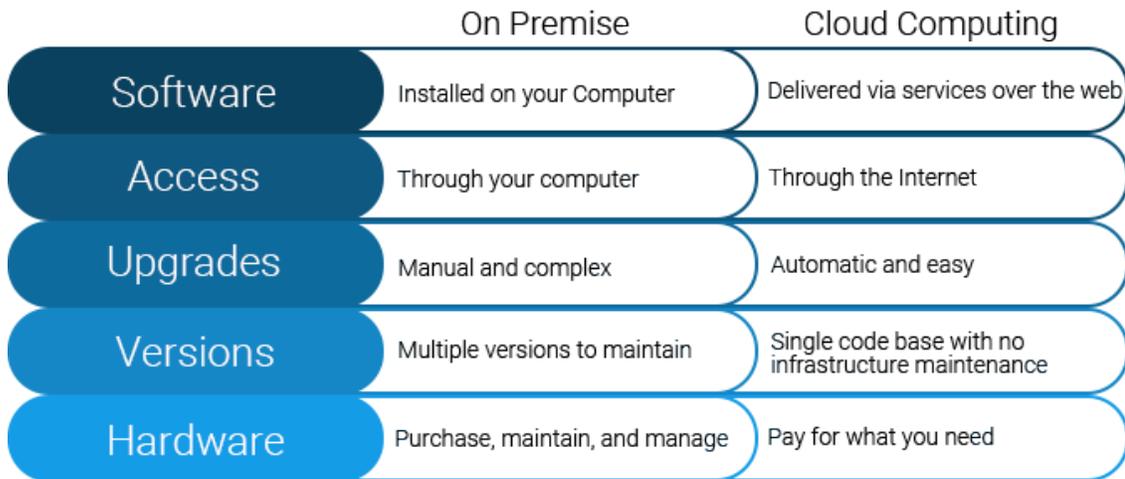
- Streamline the supply chain
- Do more with less
- Automate

Become Agile

- Reach to shorter product lifecycles
- Speed time-to-market

The Public Cloud Has Become the Centerpiece of Business Agility Strategy

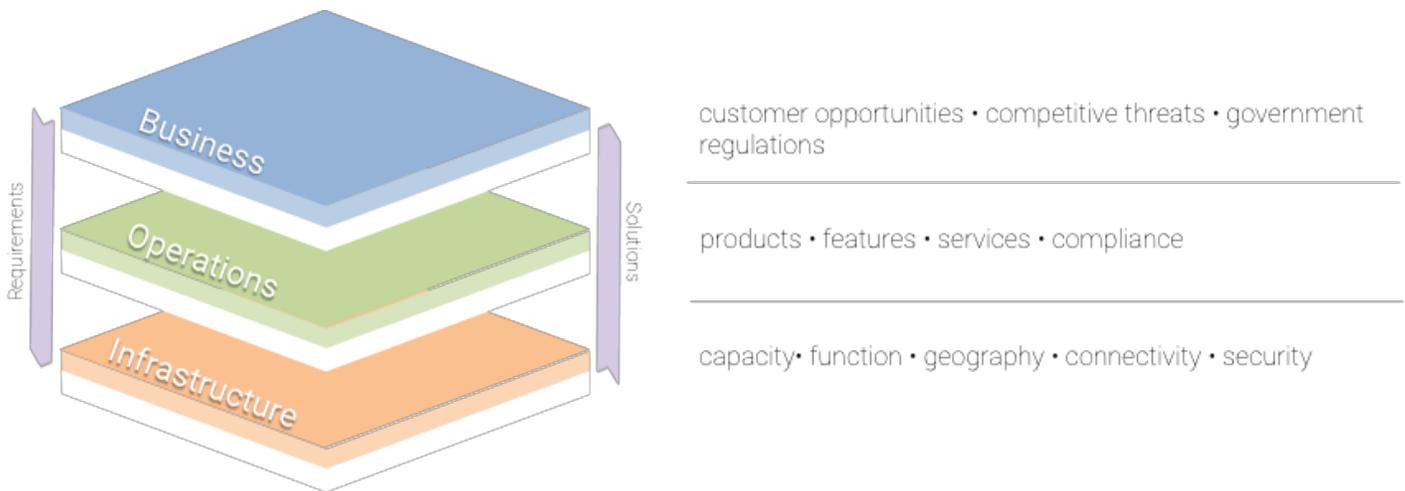
Enterprises looking to improve business agility have been quick to embrace the public cloud as the centerpiece of their business agility strategy. SaaS and IaaS with micro-services have made compute power running the application workloads more affordable and easier to procure than ever before, making owning a traditional capital-intensive and power-hungry datacenter decidedly out of fashion.



Companies have a revolutionary way to interact with partners, customers, and any cloud ecosystem in terms of development speed and ease, especially when the public cloud is being compared to using a private datacenter. Companies can work collaboratively with partners, passing iterations without requiring physical co-location or implementing a private security zone with customized access controls to host applications. With benefits like availability, accessibility, upgradability, and cost effectiveness, it is not hard to understand why the public cloud gets so much attention from executive management. However, as the early adopters of the public cloud have begun to realize, the public cloud by itself is not a panacea for business agility challenges.

The New Infrastructure Agility Bottleneck

The public cloud only solves challenges related to applications, compute and storage resources that are moved to the cloud; things work well, so long as an application fits entirely within the cloud provider’s walled garden of services. It turns out that very few major enterprise applications can run entirely within one cloud provider, without any dependencies on external databases or services whatsoever. Even the simple applications typically rely on authentication from an existing on-premises LDAP server; more complex cases can involve build scripts that rely on on-premises code repositories, or even existing on-premises data warehouses that cannot be moved because of size, dependencies from other applications, regulatory compliance, or simply lack of resources or losing the technology know-how due to legacy systems. If an enterprise’s network infrastructure is not able to support the agility required to connect cloud business projects rapidly, those project schedules can be severely impacted. Frequently, early cloud adopters find months into a cloud adoption project that their network infrastructure has become the new bottleneck preventing the cloud from realizing full operational with business agility.



Existing Enterprise Network Was Not Designed to Provide the Necessary Agility

Traditional enterprise IP networks are designed for reliability and optimum performance and are inherently static in terms of provisioning and configuration. The network can become unstable for one application when a change is made for others. This is because traditional network infrastructure has been mostly implemented under a *shared*

fabric concept, providing unified services and access for all applications. Any connectivity error can impact the applications and potentially introduce security holes that can lead to data loss, fines, and compliance issues.

Many organizations have strong processes in place to ensure that changes are thoroughly documented, reviewed and approved before implementation. After implementation, changes are validated and applications are monitored so the changes can be rolled back if needed. From this perspective, enterprise IP networks are designed to *decrease* infrastructure agility in favor of consistency. Existing enterprise networks were never designed for the cloud paradigm.

As many early adopters have discovered, the infrastructure changes needed to support cloud projects end up taking much longer to carry out than expected, which can ultimately defeat the purpose of cloud projects and the business agility benefits the cloud brings. To unlock the promises of cloud for business agility, enterprises need to urgently *modernize* their networks in order to provide an agile network infrastructure.

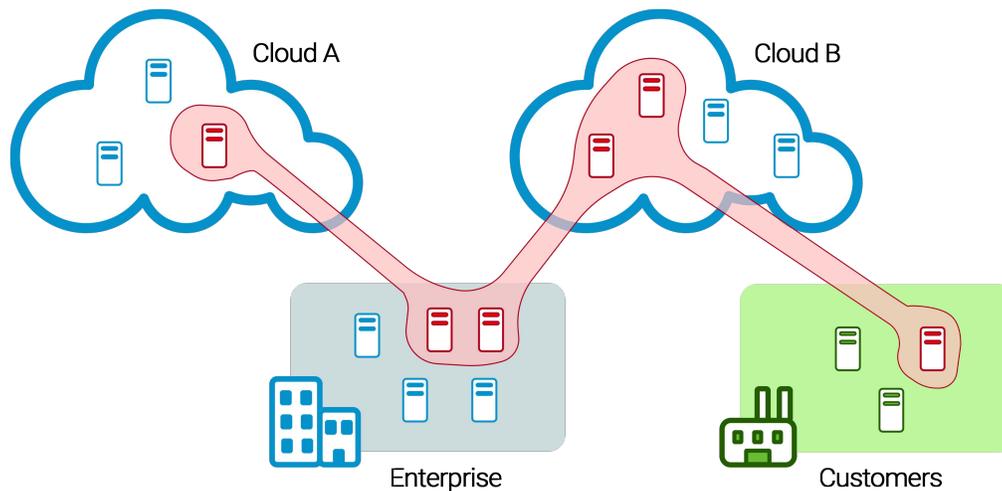
The Ideal Solution – An Elastic Overlay Network that Supports Existing Investment

What is an “Elastic Overlay Network”?

“Elastic Overlay Network” is a term to describe a software-defined application-centric virtual network that runs on top of existing IP networks. The overlay approach enables application connections to be made instantly without touching existing underlay IP network topology and network security (e.g. firewalls). Instead of getting tangled in the “spaghetti” of networks in the existing infrastructure, elastic overlay networks allow enterprises to build a new virtual network that respects existing investment, while providing the network agility required for public cloud projects.

Since the overlay network is now decoupled from legacy infrastructure, it becomes as elastic as a cloud VPC, which administrators can implement rapidly across any domain. Complex network configuration is abstracted into centralized, per-application software-based connectivity policies. As a result, the elastic network is able to support multiple business projects, multiple clouds, and multiple parties without coupling them all together. Implemented

on top of a company's existing network silos, this virtual overlay network can provide dramatic simplification and agility without requiring costly upgrades to existing physical network infrastructure. Lastly, having an elastic overlay network improves the portability of business applications, reducing the potential for cloud vendor lock-in.



Of course, the elastic overlay network must also meet the industry's security requirements. Features like network segmentation, end-to-end network encryption, and overlay access control lists (ACL) must be included in the network. Because of the overlay capabilities, these features should be implemented without changing the existing security implementations in the underlay.

With this elastic overlay network, enterprises can

- Rapidly change application connectivity in the overlay network, rather than the underlay
- Make changes that are limited to one application in scope, avoid coupling with other applications
- Migrate workloads to the cloud transparently to applications and users
- Deploy hybrid applications that span multiple cloud providers and on-premises datacenters
- Deploy applications into networks they do not control (e.g. those owned by partners or customers)

| | Underlay (Current Approach) | Elastic Overlay Network |
|-------------------------------|---|---|
| Business Agility | Turns on in months | Turns on in minutes |
| Time-to-Market | Infrastructure remains a bottleneck | Overcomes the infrastructure bottleneck |
| Cloud Readiness | Customization for each cloud/datacenter/connection | Any cloud, any geography |
| Span of Control | Within enterprise only | Extends to third-party environments |
| Operational Efficiency | Requires continued investment to upgrade infrastructure/operations | Preserves existing investments in infrastructure/operations |
| Project Risk | High risk Dynamic cloud projects delayed by standard IT ticket process | Lower risk Potential for automation and self-service |
| Future Proofing | Legacy | Cloud technology |

Enterprises that have adopted this approach have been able to reduce network reconfiguration time from months to minutes – enabling the infrastructure agility needed for operational and business agility.

Authored by Jaushin Lee, Ph.D., and CEO, Zentera Systems