

# CLOUD IAAS DATA CENTERS

## Delivering Dynamic L4-7 Services in a Cloud Data Center

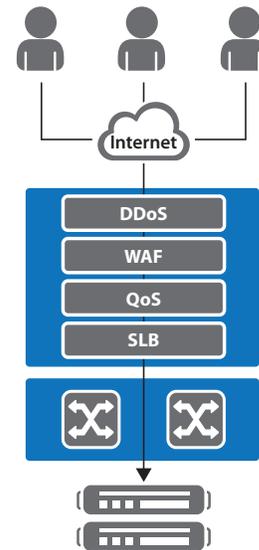
### Overview

IT organizations realize the substantial agility and cost benefits of rapidly growing Cloud Infrastructure-as-a-Service (IaaS) offerings, for example Amazon Web Services (AWS) and Microsoft's Azure. Leading enterprise IT organizations are evolving their IT strategy by adopting various cloud computing models and software-defined networking (SDN) technology architectures for their internal private data centers to achieve automation, business agility, and dramatically reduced operational costs.

These organizations need an equally automated and agile L4-7 network services architecture to ensure that application networking and security policies are fully integrated within these emerging cloud data center architectures, and deliver equal automation and cost of ownership benefits. Key challenges to be addressed include:

- Manual Service Provisioning:** Rolling out new or revised application networking and security services in a conventional data center is highly manual and time consuming, requiring weeks of change management planning and co-ordination across multiple IT teams. By contrast, emerging Cloud IaaS data center architectures use SDN network automation and cloud orchestration platforms to automatically provision compute, storage and network services with greater operational flexibility, agility and cost efficiency. As public and private data center operators face increased demands for on-demand cloud computing services, application networking and security services need to be integrated into these cloud automation platforms to deliver provisioning agility and flexibility.
- Static Service Delivery Model:** Legacy data center application services deployment model are relatively static, inflexible, and typically deployed with services inline. IaaS Cloud data center operators, by contrast, strive to deliver dynamically provisioned computing services and to increase responsiveness to the changing business needs. These data centers employ new operating models with automated service provisioning leveraging new cloud orchestration platforms that enable tenants to spin up virtualized compute, storage and network resources with the click of a button regardless of underlying physical infrastructure topology. IaaS Cloud data centers deliver end-user tenants vastly greater business agility, service provisioning times, and economics.

In order to integrate advanced L4-7 services into these new IaaS Cloud data center, operators need a full suite of application networking infrastructure that integrates within these new cloud environments, and that supports automated service provisioning of virtualized services per tenant or workload. These new models enable new architectures to be achieved, whether for software defined data centers (SDDC), SDN or for network function virtualization (NFV) goals.



*Traditional network with static services inline*

### A10 aCloud Services Architecture: Dynamic Service Delivery in IaaS Cloud Data Centers

A10 Networks aCloud™ Services Architecture is a portfolio of products and features that enable seamless integration with cloud orchestration platforms and SDN network fabrics through Application Programming Interface (API) calls to dynamically provision application and security policies per tenant. The aCloud Service Architecture ensures that tenant policies are enforced with dramatic improvements in provisioning speed, business agility and total cost of ownership.

**Automation:** A10 Network's aCloud Services Architecture enables operators to build an automatically provisioned application networking infrastructure by integrating plug-in service modules that support leading cloud orchestration platforms such as OpenStack, Microsoft System Center Virtual Machine Manager (SCVMM), VMware

Network Extensibility Program (NetX) and VMware vCloud Director. Service modules, like load balancer plug-ins, automatically inherit tenant policies and significantly reduces the time to provision, configure, monitor and manage application services on A10 physical and virtual devices. Similar integration with leading SDN controller platforms ensures that network security policies are accurately and automatically provisioned on A10's physical and virtual appliances. Plug-in service modules for leading SDN vendors, including Cisco Application Centric Infrastructure (ACI), IBM Software Defined Network for Virtual Environment (SDN VE) and VMware NSX, and support for data plane tunneling protocols like VXLAN and NVGRE provide automated enforcement of network segmentation policies. Together, these automation features eliminate manual configuration from the services provisioning process and drives down operational overhead and Opex.

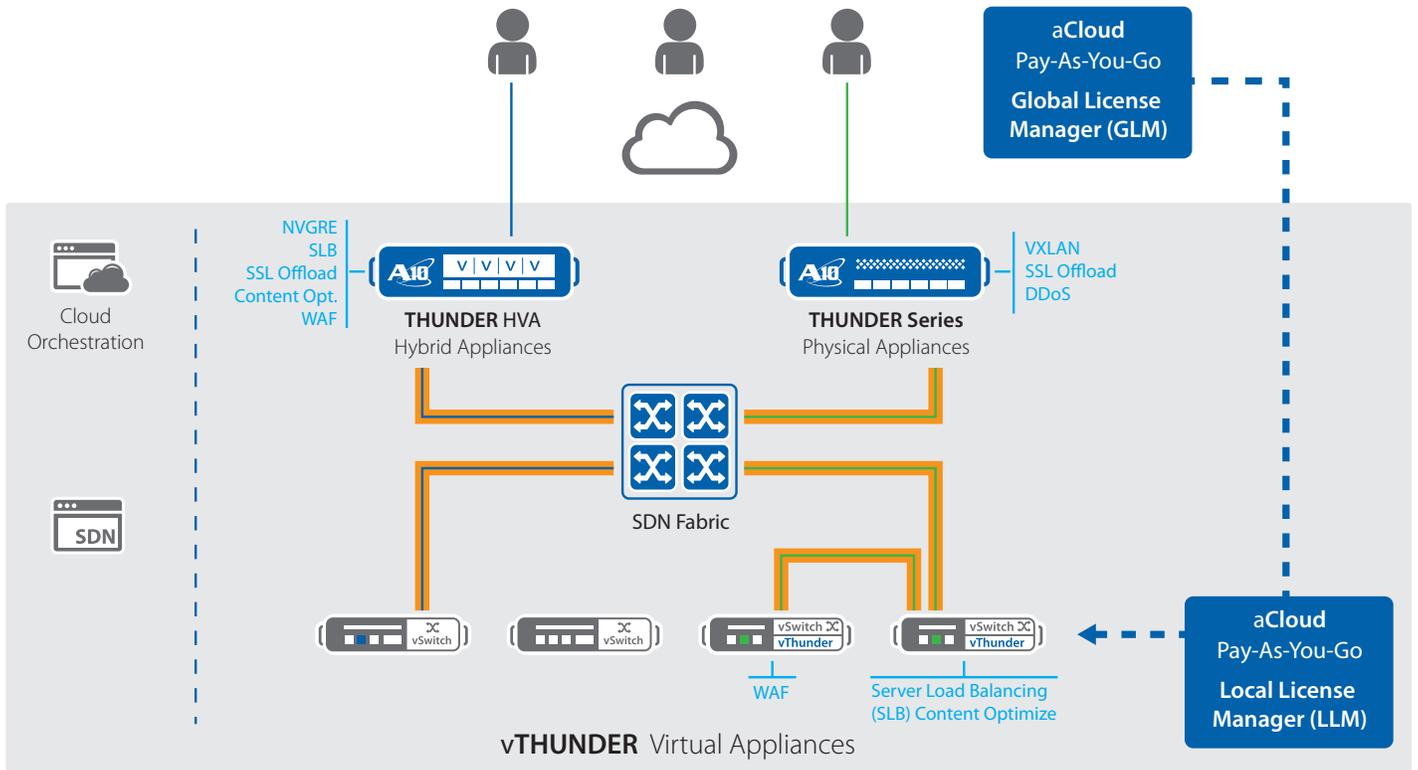
**Agility:** A10 Networks aCloud Services Architecture also supports emerging IaaS data center requirements to deliver application subscription services with on-demand virtual appliance licensing consistent with the way that these data center operators deliver their other IaaS subscription services. The vThunder Pay-as-you-Go licensing model enables cloud service providers to spin virtual appliances up or down on demand, and offer a broader array of subscription services to their customers. As emerging IaaS cloud data center operators strive to deliver a full suite of agile, on-demand data center subscription services, the vThunder Pay-as-you-Go licensing ensures that rich application and security services can be delivered on a similar subscription basis.

**Dynamic service chaining per tenant:** Leverage our vThunder virtual appliances and Thunder Hybrid Virtual Appliances (HVA), IaaS Cloud operators can enable their tenants to spawn new instances for Application Delivery Controller (including advanced security services) or Carrier Grade Networking (CGN) services on demand, and support dynamic L4-7 service insertion according to tenant-defined or provider-defined policies.

vThunder and Thunder HVA service chaining provides the following benefits:

- L4-7 service chaining to the tenant and/or workload level
- Granular policy enforcement set by tenant or provider
- Support for multi-tenancy architecture

**Lower TCO:** A10 aCloud Services Architecture reduces total cost of ownership through a variety of means. As demonstrated above, automated service provisioning eliminates manual provision overhead, time and costs. Our on-demand vThunder Pay-as-you-Go licensing models allow the service providers to eliminate CAPEX, and only pay for the services as they are consumed. By consolidating multiple vThunder virtual appliance instances on a single high-performance Thunder HVA appliance, data center operators can run various application networking services simultaneously on shared hardware. And, cloud orchestration and SDN platform integration reduces operational costs by avoiding manual configuration tasks and reduces implementation times.



A10 Networks aCloud Services Architecture Example

The aCloud Services Architecture is a portfolio of products and services for these emerging IaaS data centers, including:

- High performance Thunder Series hardware appliances capable of performing resource-intensive perimeter functions such as VXLAN/NVGRE tunnel encapsulation/decapsulation, SSL offload, and volumetric DDoS attack prevention at the service edge
- vThunder virtual appliances service chaining with full ADC or CGN feature sets
- Thunder HVA delivers hardware acceleration and strong tenant isolation through single root I/O virtualization (SR-IOV) technology and support for multi-tenancy
- vThunder for Amazon Web Services (AWS) for customers to enable L4-7 service delivery and cloud-bursting within the Amazon EC2 or VPC Cloud
- vThunder Pay-as-you-Go Licensing for IaaS service pricing model with subscription based ADC and CGN offerings in two licensing models, the rental billing model (RBM, a fixed bandwidth license per month) and utility billing model (UBM, licensed per byte use)
- Software plug-ins for leading cloud and SDN platforms, including Cisco ACI, OpenStack, Microsoft SCVMM, OpenStack, IBM SDN-VE and VMware NSX.

## Summary

With A10 Networks aCloud Services Architecture, Infrastructure-as-a-Service (IaaS) cloud data center operators can automatically provision application networking and security services with the significant increase in provisioning speed, business agility and reduced costs. aCloud Services architecture enables you to ensure that centralized tenant policy information is automatically applied as new workloads and application services are created. It allows the enforcement of security and network segmentation policies on every flow entering into the network.

## About A10 Networks

A10 Networks is a leader in application networking, providing a range of high-performance application networking solutions that help organizations ensure that their data center applications and networks remain highly available, accelerated and secure. Founded in 2004, A10 Networks is based in San Jose, California, and serves customers globally with offices worldwide. For more information, visit: [www.a10networks.com](http://www.a10networks.com)

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To learn more about the A10 Thunder Application Service Gateways and how it can enhance your business, contact A10 Networks at: [www.a10networks.com/contact](http://www.a10networks.com/contact) or call to talk to an A10 sales representative.