

The Elastic CDN Solution

Dynamic Content Delivery Network Built on NFV and SDN from Akamai and Juniper

Challenge

For service providers deploying their own content delivery networks (CDNs), the biggest challenge is determining how to dimension and allocate CDN resources and functionality closer to the network edge to optimize cost savings and subscriber quality of service (QoS).

Solution

An elastic CDN solution from Akamai Technologies and Juniper Networks leverages SDN and NFV to help service providers efficiently utilize available network and caching resources to improve subscriber quality of experience while quickly addressing changing service requirements.

Benefits

- Elastic CDN solutions enable service providers to offer on-demand (scale-out and scale-in) caching resources at peak hours.
- The joint Juniper-Akamai solution features simple yet powerful management to lower IT costs and reduce operational risk.
- Comprehensive analytics allow more sophisticated content routing, service-level agreement (SLA) delivery, and monetization opportunities.



Leveraging the synergies between their product families, Juniper Networks and Akamai Technologies, a Juniper Networks SDN Technology Partner, are delivering an elastic CDN solution that enables service providers to scale up and scale out delivery of video on demand (VOD) and other content to meet peak capacity requirements.

The Challenge

Many service providers today are deploying their own content caching and delivery networks to address the growing amount of on-net traffic generated by over-the-top (OTT) media and content providers, or to more efficiently deliver their own multiscreen video and other content to subscribers. Traditionally, these CDNs have been deployed in the operator's primary data centers, as shown in Figure 1.

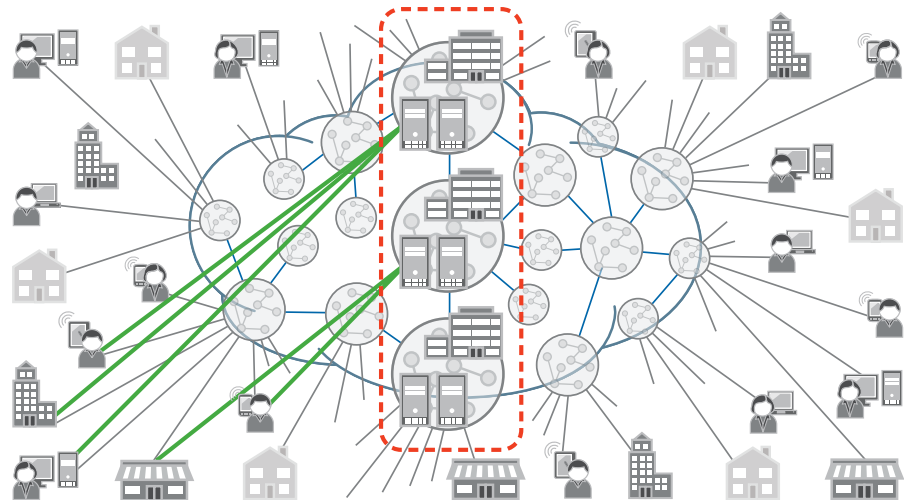


Figure 1: Traditional CDNs are deployed in top-level data centers.

The growth in the number of caching platforms being deployed by network operators creates a dual-fold challenge for operators looking to keep subscribers happy, especially during peak usage times or large delivery events. First, operators must determine how to optimally provision and turn up new caches; and second, they have to figure out how to enable caching closer to subscribers without dramatically increasing capital and operational costs.

The situation only promises to get worse. Growing demand is already placing tremendous stress on networks globally; the current demand for IP-based video delivery is only the tip of the iceberg. As a result, service providers need a cost-effective, distributed, and dynamic content delivery system that improves their own video delivery services while allowing them to effectively and efficiently deliver other Internet-based services at the same time. To do this at scale and with a high degree of quality requires a truly elastic CDN.

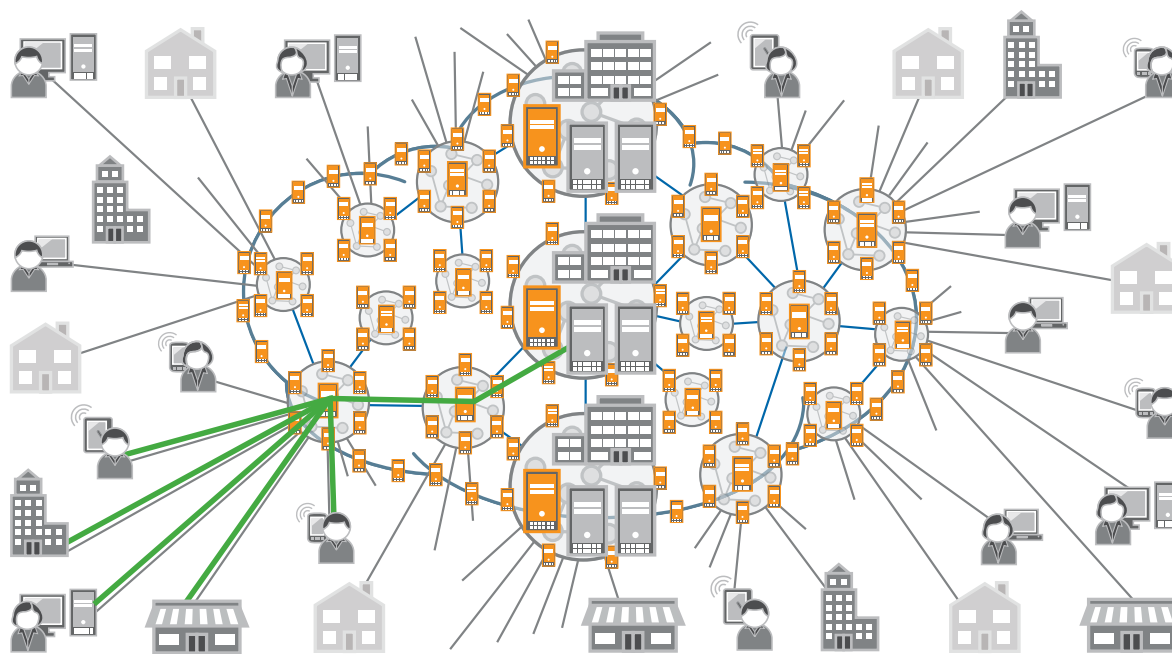


Figure 2: Elastic CDNs can be deployed deeper in the network, closer to the subscriber edge.

An elastic CDN creates a network architecture in which CDN functions are dynamically allocated across the operator's network. These virtualized network functions (VNFs) are instantiated to virtual machines (VMs) defined within servers that can be located even in lower level data centers closer to subscribers, since the elastic CDN requires less operator involvement and can utilize less expensive server configurations and network connectivity (see Figure 2).

The Elastic CDN Solution from Akamai and Juniper

Working together, Juniper and Akamai are integrating their respective solution sets to deliver an elastic CDN solution that leverages open platforms, Network Functions Virtualization (NFV), and software-defined networking (SDN) for seamless deployment across data centers within the network operator's service footprint.

Employing virtual network overlays and service chaining, the joint Juniper-Akamai solution reduces the time it takes to deploy video services on the physical network and facilitates the ability to leverage other network services, adding significant value by enabling service providers to better monetize their services and accelerate content delivery.

Features and Benefits

- Joint solution leverages generic data center resources for NFV-based caching.
- Software-only CDN with OpenStack integration allows service providers to use their hardware platform of choice.
- Juniper Networks® Contrail Cloud Platform supports on-demand elastic scaling and virtual network overlays, dramatically simplifying connectivity and provisioning.

- Automated, programmable networking automatically connects software caches in disparate, remote data centers.
- QoS policies are maintained across physical and virtual transport networks, ensuring consistent quality of service.
- Dynamic service chaining creates opportunities to easily combine security or other applications within the CDN.

Solution Components

- Akamai's [Aura](#) Licensed CDN
- Juniper Networks [Contrail Cloud](#) Platform
- Juniper Networks [MetaFabric™](#) Architecture

Summary—Vision of an Elastic, Content-Aware Architecture

Service providers continue to deploy CDN caches in top-level data centers to provide offload where most needed—at peering links and in the network backbone. While effective to this point, this model does rely on dedicated fixed infrastructure and connectivity within the carrier's network, and will need to change over time.

The joint Juniper-Akamai elastic CDN solution seeks to minimize time-to-service, maximize the utilization of network and caching resources, and simplify operations to add revenue, build subscriber loyalty, and minimize costs.

Next Steps

To learn more about the Juniper-Akamai virtual CDN solution, please contact your Juniper Networks representative and visit us at www.juniper.net

About Akamai Technologies

Akamai is the leading provider of [cloud services](#) for helping enterprises provide secure, high performing user experiences on any device, anywhere. If you've ever shopped online, downloaded music, watched a Web video, or connected to work remotely, you've probably used Akamai's cloud platform. The Akamai Intelligent Platform reaches globally and delivers locally, providing unmatched reliability, security, and visibility into your online business.

About Juniper Networks

Juniper Networks is in the business of network innovation. From devices to data centers, from consumers to cloud providers, Juniper Networks delivers the software, silicon and systems that transform the experience and economics of networking. The company serves customers and partners worldwide. Additional information can be found at www.juniper.net.

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