Customer Success Story:

How DeNA Increased IT Agility by Breaking Down Network and Server Silos

The journey to improve IT responsiveness and speed

DeNA develops and operates a broad range of mobile and online services including games, e-commerce and entertainment content distribution. Established in Tokyo in 1999 with the launch of an online auction service, DeNA has rapidly expanded its user base with a diverse array of services and is currently moving into the areas of healthcare and automotive. DeNA's services run on infrastructure that consists of approximately 4,000 on premise servers, as well as resources in the cloud. The IT Platforms team continually works to optimize operational efficiency, including developing in-house automation tools.

They are focused on streamlining operational tasks between networking and server teams and eliminating the need for change request tickets. Siloed operations between the networking and server teams, and the need for change tickets, greatly inhibited DeNA's efficiency and had even started to prevent services from being delivered on schedule. Speed is critical in the web services industry. New services need to be released as quickly as possible to stay in front of competitors. Improving IT responsiveness and speed is a continuous task for the DeNA team. In 2015, the IT Platforms team was involved in 33 projects, averaging a release of 2.75 projects or services each month. In an environment of such rapid innovation and change the bottleneck to operational agility existed in the operational walls between server and networking silos.

> *"Most of the products available in the market were based on overlay networking technologies. We had almost given up on finding the right solution, and considered developing the technology in-house."*
>
> **- ATSUSHI ONO**
> **General Manager of IT Platform Department**

OBJECTIVE

- Optimize operational efficiency
- Release new services at a rapid pace, continually improving to meet user demands
- Build a scalable and economical solution to address current and future needs

SOLUTION

- OpenStack to build an integrated infrastructure for networking, servers and storage
- Big Cloud Fabric to connect servers provisioned by OpenStack to the network

RESULTS

- BCF provided the agile infrastructure that DeNA was driving towards, streamlining operations by eliminating change request tickets
- BCF has become a critical piece of the
- infrastructure, enabling DeNA engineers to innovate at a rapid pace and continuously add value to the Company's various services
- BCF provided seamless integration with OpenStack, making the entire solution affordable and allowing DeNA's continuous path to agility

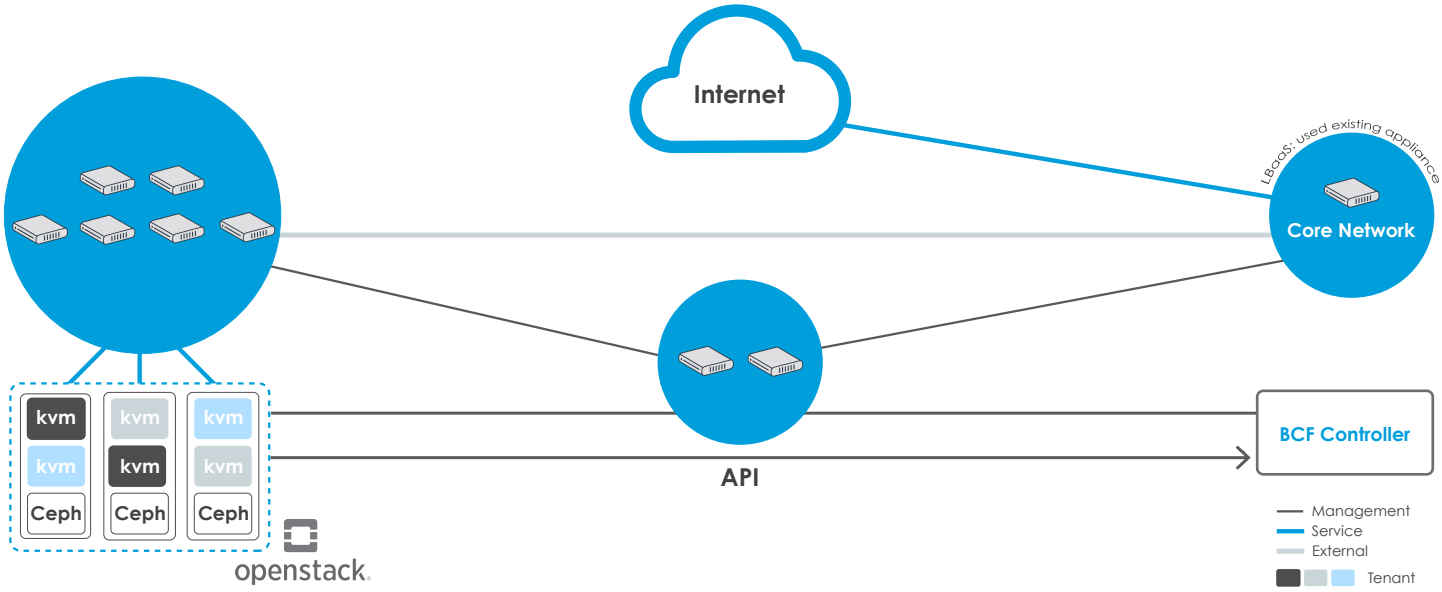
"The value provided by BCF is twofold: it does things that were not possible using legacy networking solutions, for example, OpenStack networks are automatically reflected to the physical network and we can continue to troubleshoot using familiar networking techniques. Using BCF also enabled us to improve our operational efficiency."

DeNA meets Big Cloud Fabric

DeNA looked to OpenStack to begin solving this problem, as the team felt OpenStack had sufficiently matured and was production ready as OpenStack had become more widely distributed and easier to integrate into many different IT resources. The next challenge they faced was finding a solution that connects servers provisioned by OpenStack to the network.

At OpenStack Summit Tokyo (2015) DeNA was introduced to Big Cloud Fabric™ (BCF). DeNA learned that Big Switch's flagship product, BCF, supports seamless integration with OpenStack through the Neutron plugin for L2/L3 networking and L4-7 service insertion. With the BCF controller, and Horizon dashboard enhancements from Big Switch Networks, managing both physical and virtual switching infrastructure in the data center from a single pane of glass is now possible.

Once the decision was made, the project to deploy OpenStack and BCF went into motion at full speed. Testing started in November 2015, which included integrating with DeNA's existing systems. In March 2016, the platform was fully integrated with Ceph and LBaaS and went into production. The number of systems and services hosted by this new private cloud is currently increasing at a gradual pace.



BIG CLOUD FABRIC BRINGS MODERN HYPERSCALE-STYLE BENEFITS TO DENA, SUCH AS:

1. **Simplicity**: zero-touch fabric and single-point of management. Administrators configure, manage, debug/troubleshoot, and upgrade BCF using CLI, GUI, or REST API – familiar networking technologies. This centralized view enhances operational simplicity by providing a single dashboard as well as quick and easy access to troubleshooting, analytics and telemetry information.

2. **Agility**: network automation for OpenStack, REST APIs for optional NetOps/DevOps automation. For example, in DeNA's new platform, a "tenant" which equates to a VRF is automatically created in BCF when a "project" is provisioned in OpenStack. Similarly, an OpenStack "network" automatically spawns a BCF "logical segment," and an OpenStack "subnet" maps to a BCF "logical segment interface." BCF is also aware of security group configurations in OpenStack.

3. **Vendor choice**: DeNA deployed BCF to integrate with OpenStack for layer 2 networking because the solution's open APIs enabled DeNA to develop a tool in-house (from open source technologies) to automatically configure layer 3 information such as IP address allocation and automation. "This was only possible because of BCF's open API. It would not have been feasible with proprietary networking products," further explained Mr. Ono.

4. **Innovation Velocity**: Faster time to service enablement as well as rapid (hitless) network software upgrades enable rapid deployment of new features. For example, the BCF architecture has a single interface for calling the API, relieving the network from having to speak to each and every switch in the environment like traditional networking approaches.

Ultimately, Big Cloud Fabric provides seamless integration with OpenStack, affordability through hardware / software disaggregation, simplified management and, with a controller-based SDN architecture, network agility.

Results

With Big Cloud Fabric, DeNA was able to build the agile infrastructure it needed to improve operational efficiency. DeNA eliminated change request tickets and optimized infrastructure operations, all delivered under budget.

It is often said that CapEx savings is the primary advantage brought through the disaggregation of hardware and software by using bare-metal switches and an open network OS. The DeNA team argues that the CapEx savings weren't huge, when you take into account the license costs and maintenance fees. However, BCF was not deployed because it was more affordable, the real value provided by BCF is that it does things that were not possible using legacy networking solutions, which enabled DeNA to improve their operational efficiency dramatically. These improvements will enable DeNA's future innovations.

The teams' pursuit of agility does not stop with this change. The next step is to complete automation of provisioning using Infrastructure as a Code technologies. They plan on leveraging tools like Chef to automate the entire process of infrastructure provisioning from servers to networks, and eliminate human requests made between the teams completely. The continuous search for agility translates to DeNA as the need to integrate each piece of the infrastructure more and more tightly.

In addition, DeNA plans to build a development environment using OpenStack and BCF so that every internal developer in DeNA can have their own network. To address security concerns in such a use case, DeNA is considering giving users the ability to configure ACLs by themselves.

Developing the skillset of IT engineers to be full-stack oriented instead of "server only" or "networking only" has been an important strategy at DeNA. Now, these engineers spend time on sophisticated and creative tasks, while not having to wait for change tickets to be fulfilled. Big Cloud Fabric has become a critical piece in the infrastructure that these engineers require to innovate at a rapid pace to continuously add value to DeNA's various services.

To learn more about Big Cloud Fabric, register for BSN Labs to get hands-on experience via our self-paced labs modules. To register (it's free): http://labs.bigswitch.com

big switch networks

Big Cloud Fabric (BCF) is a next-generation data center switching fabric inspired by the design principles hyper-scale operators like Facebook and Google have developed to build intelligent, agile and highly flexible network architectures. It leverages software-defined networking (SDN) principles to architect a redundant logical switch architecture consisting of hundreds of switches and deliver intent-based networking workflows to streamline and accelerate IT operations

BCF supports all workloads (physical, virtual machine, and container) and choice of orchestration software. It provides L2 switching, L3 routing, and L4-7 service insertion and chaining. The scalable fabric is fully resilient, with no single point of failure, and supports headless mode operations. Big Cloud Fabric supports seamless integration with OpenStack through the Neutron plugin for L2/L3 networking and L4-7 service insertion. With the Big Cloud Fabric Controller and Horizon dashboard enhancements from Big Switch Networks, managing both physical and virtual switching infrastructure in the data center from a single pane of glass is possible with BCF.