Finance Leader Migrates to Next-Gen Application Delivery

UBS uses virtualized ACE Modules to lower costs, boost application performance, and simplify management.

EXECUTIVE SUMMARY

UBS AG

- Industry: Financial Services
- Location: Zurich and Basel, Switzerland (headquarters)
- Number of Employees: 64,000

CHALLENGE

- Replace existing load-balancing solutions approaching end of life
- Minimize total cost of ownership (TCO) for IT
- Overcome 1 Gbps bandwidth limitation to improve application performance and meet compliance requirements

SOLUTION

- Migrate from load-balancing appliances to blade solution
- Virtualize load balancers, to minimize total amount of hardware and more cost-effectively achieve redundancy
- Give role-based access to application server teams

RESULTS

- Lowered overall load-balancing costs by more than 50 percent
- Reduced network organization's administrative and solution management time
- Increased flexibility and direct control of servers for application teams, with ability to restrict access by groups

Challenge

In addition to its main corporate center, UBS comprises four business divisions: Wealth Management & Swiss Bank, Wealth Management Americas, Global Asset Management, and the Investment Bank. Today this global company, with 150 years of heritage in the financial services market, operates in more than 50 countries and participates in the major financial centers around the world.

The IT organization is headquartered in North America, with engineering teams located around the world to deploy and manage the numerous data centers and networks that support operations. One of these teams was recently given the challenge of replacing parts of one vendor's installed base of application load balancers in UBS data centers. The solutions were approaching end of life, and engineering was asked to qualify a new solution that was cost effective, easy to deploy throughout the various data centers, and able to address the latest Swiss financial industry requirements.

"The engineering group that I lead is responsible for engineering standards for the whole IP network, which includes routers, switches, server load balancing, data center design, and WAN design," says Markus Benz, IP network engineering lead, Switzerland, UBS. "The employees we serve include the applications teams that manage all of the UBS mission-critical applications. We needed to qualify a load-balancing solution that could nondisruptively replace the existing appliances, and we also wanted to make it easier for the applications teams to control and change load-balancing parameters without having to get us involved. This would make it possible for them to more quickly introduce changes, and also save time for our group over the life of the solution."

In the past, load balancers were dedicated to specific groups, so that they could maintain strict separation and access controls for the different applications and related data sets. The IP network team hoped to find a way to reduce the overall number of required load balancers, without compromising the level of security required for compliance.

> "Besides virtualization, the biggest benefits we gain with the Cisco ACE solution include lower costs, many fewer physical boxes, and the ability to introduce intelligent role-based administration."
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> **– Markus Benz, IP Network Engineering Lead, Switzerland, UBS**

Solution

Having previously learned about and deployed Cisco® ACE Application Control Engine solutions, the engineering team recognized the cost-saving potential of the Cisco virtualized load-balancing design as well as the blade form factor that could be integrated with the company's existing Cisco routers. Intelligent load-balancing and content-switching technologies of the Cisco ACE are also combined with acceleration and security capabilities.

A preproduction test of the Cisco ACE Application Control Engine Module for Cisco Catalyst® 6500 Series Switches was carried out, during which time the team was able to fully assess the solution's ability to meet all of this project's requirements including capabilities and performance.

Virtualization

By taking advantage of the virtualized architecture of the Cisco ACE Module, UBS discovered that they could replace the end-of-life appliances with a fewer number of blades. Each *virtual* load-balancer can be dedicated to a specific application group or business division data center, with the physical blades being shared across organizations. Role-based administration makes it possible to give users (the application teams) access to and control over the load-balancers that relate to their specific areas of responsibility. The virtualized architecture and role-based administration help streamline provisioning and make it possible to deliver multiple load-balancers from a single module for increased data center scalability.

Role-Based Administration

"We have many different independent service responsibilities, running different application services," says Adrian Casutt, the lead engineer for load balancing in Switzerland, UBS. "To activate or suspend services requires flexible role-based control of the load balancers. We are replacing load balancers that did not offer role-based administration. This Cisco feature, combined with virtualization, allows us to give the application teams restricted access to configuration controls that impact only their own applications."

Performance

Switzerland places unique technical requirements on finance companies. For example, banking law specifies that the original IP address of the host must be visible on the server. As a result, the load balancer has to be placed inline between the clients and the servers. This means higher throughput on the load balancer since the non-load-balanced traffic needs to route through the load balancer as well, without adding dual homed interfaces on the servers. Therefore, throughput limitations of the load balancer directly affect application performance and, therefore, customer service. "To meet our business application objectives, we have to deliver higher speeds on our local LANs," says Casutt. "For this replacement project, the load-balancer bandwidth we needed was greater than 1 gigabit per second [Gbps]. The previous vendor offered a faster 10 Gbps appliance, but at a much higher price than the Cisco ACE Module. With the Cisco solution, the internal fabric interfaces of the blade form factor also support 16 Gpbs, but the licensing makes it possible to pay for only the bandwidth we need, when we need it. If we start with 4 Gbps and later need 10 Gbps, we can change our license without having to change out the physical blade device. If we went with the competition, we'd be faced with overbuying bandwidth in the beginning, or having to swap out the box later. Either way, we'd pay more for the high performance, compared to Cisco."

Results

The preproduction testing phase allowed the engineering team to fully assess the total cost of ownership (TCO) for the Cisco ACE Module within the company's data centers throughout Switzerland. Several solution characteristics combine to help UBS drive down TCO for load balancing. First, the flexible licensing brings down the up-front costs. "The Cisco ACE Module turns out to be far less than half the price, compared to the main competitor, when you consider its potential for consolidation," says Benz. "Using virtualization, we can replace two or three appliances from the previous vendor with a single Cisco ACE Module. And bandwidth is also more affordable, in terms of the speed of the Cisco internal interfaces and the flexible licensing model."

Being able to share bandwidth further improves the cost efficiencies of the blade solution. “With Cisco ACE Modules, we can support multiple, parallel server-to-server connections on the same interface,” says Casutt. “Each connection can take advantage of the available bandwidth.”

Introducing a Cisco load-balancing solution will simplify day-to-day administration, for lower operating costs. Besides driving down initial and ongoing costs, Cisco ACE Modules will also be helping IT provide better service to the applications and server teams at UBS. “If our server operations group requests a server load balancer, we can give them a user name and password that restricts their view to only their load balanced Services. So they can't harm any other Services they are not responsible for,” says Benz. “With our previous vendor, we couldn’t give them access because every account had a view of all localizers and servers, and with that came the ability to change configurations and do damage. Role-based administration for Cisco ACE Modules allows us to delegate control to other engineers without putting all of our servers and applications at risk.”

PRODUCT LIST
Data Center Interfaces and Modules
• ACE Application Control Engine Module for Catalyst 6500 Routers

Casutt adds, “We have hundreds of servers, and more than 50 people managing them. They are organized into several groups. Cisco lets us give each group the ability to actuate their *own* servers. Other vendors were not able to support this.”

The Cisco ACE solution ultimately protects and enhances customer services that are delivered across the company’s data centers in Switzerland. “In the past, not all load balancers were deployed as redundant pairs, for cost reasons,” says Benz. “Now, since we moved all dedicated environments to the virtualized and redundant ACE installation, we get redundancy for free, even for environments that did not previously include redundancy. Instead of having to purchase pairs of physical devices, ACE Modules can be virtualized to support multiple purposes or logical environments on each blade. Besides virtualization, the biggest benefits we gain with the Cisco ACE solution include lower costs, many fewer physical boxes, and the ability to introduce intelligent role-based administration.”

Building reliability into the application deployment architecture helps ensure excellent business continuity, and the flexible, affordable upgrade path will let the IT team transparently upgrade end-of-life appliances and scale performance when and where needed.

For More Information

To find out more about the Cisco ACE Module, go to: www.cisco.com/go/ace.

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