Solution Provider Gets Full Benefit of Cloud Delivery Model

Adoption of FlexPod helps KPN accelerate time to market while streamlining data center organization for greater customer focus

EXECUTIVE SUMMARY

Customer Name: KPN

Industry: Service Provider

Location: Netherlands

Number of Employees: 25,000

Challenge
- Eliminate customer dissatisfaction with long solution lead times
- Help enable introduction of new cloud-based service offerings
- Transform IT organization for optimal flexibility and efficiency

Solution
- Implementation of pre-validated and standardized FlexPod data center architecture based on Cisco Nexus switching, Cisco UCS servers, NetApp storage, and VMware virtualization
- Assistance from Cisco Services for fast and risk-free deployment

Results
- Marketplace differentiation through ability to offer cloud-based products
- Server deployment times cut from weeks to minutes, along with 36 percent saving in energy use
- Improved disaster recovery capability, with incident troubleshooting reduced from weeks to days or hours

Challenge

Well-known worldwide as the Netherlands telecommunications carrier, KPN is also present in markets such as Belgium, France, Germany, and Spain. Its enterprise arm, KPN IT Solutions, employs around 3000 staff. Offering a wide range of data center services, KPN IT Solutions used to support these through three teams for networking, storage, and computing. However, these units operated in isolation, which meant that customers could wait a very long time before a platform came together.

KPN IT Solutions technology officer, Kevin Reeuwijk, says: "When the solutions were actually up and running it was fine, but onboarding new customers took months. It was our main customer complaint and therefore priority number one." Management cost was another issue. In the old environment, everything was custom made using a variety of suppliers. Lifecycle management involved different operating systems, applications, and middleware, which was complex and expensive.

The business and its customers needed a standardized hardware platform with a single support package. This solution would also help KPN provide agile cloud-based service models. "The old world of dedicated hosting was becoming uneconomic," says Reeuwijk, "so we decided to move to a shared service data center platform." Accordingly, a request for proposal was issued to four vendors including Cisco.

Solution

FlexPod was selected as the KPN IT Solutions data center standard. "We chose FlexPod for its standard design, high level of integration, and rich feature set," says Reeuwijk. Offering pre-validated data center architecture, FlexPod is built on Cisco Unified Computing System™ (UCS®) servers, Cisco Nexus® data center switches, NetApp storage components, and VMware virtualization software.

Since KPN had no prior experience of FlexPod or Cisco® UCS, Cisco Services was engaged to help reduce risk in deployment and migration. Cisco Services aided in high-level and low-level designs and project management.

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Kevin Reeuwijk
Technology Officer
KPN IT Solutions

The data center network is based on Cisco Nexus 7000 Series Switches and Cisco Nexus 5000 Series Switches. Storage is through NetApp FAS6000 Series Enterprise Storage Systems, while Cisco Nexus 1000V Series Switches add virtualization intelligence. The Nexus 5000 platforms connect directly to the Cisco UCS 6100 Series Switches and 6248UP Fabric Interconnects in each FlexPod.

The solution also includes Cisco UCS B200 M2 Blade Servers with Intel® Xeon® 5600 Series Processors and Cisco UCS B200 M3 Blade Servers with Intel Xeon E5-2600 Series Processors. All components are managed through Cisco UCS Manager. Going forward, the company has standardized on the Xeon E5-2630L 2GHz Series Processor because of its lower power consumption, just 60 watts compared to 95 for standard models. Reeuwijk says: "When you run multiple large data centers, quite a lot of power gets burnt through the CPUs even though, in practice, server utilization is quite low."

Originally KPN installed four FlexPod enclosures with 32 blades in each, but this quantity has been increased to six: four in Amsterdam, one in Aalsmeer, and one in Apeldoorn. The FlexPod setup has also been refined. The original design mixed virtual machines with standalone servers, but the latter took up slots that could more efficiently be used for virtualization. Now, KPN has a separate FlexPod for standalone servers and is running 20 virtual machines per UCS blade, giving a total capacity of around 3500 virtual machines.

Windows and Linux operating systems are currently supported along with, among others, Java and JavaBeans Open Source Software Application Server middleware, and applications including Oracle, SAP, Microsoft SharePoint, and Microsoft Exchange. "When it comes to applications," says Reeuwijk, "FlexPod supports anything and everything."

Elsewhere in the KPN data center architecture, Cisco ASA Adaptive Security Appliance and ACE Application Control Engine modules are used for secure and highly-available connectivity. Cisco Fabric Extender Technology is increasingly being used to integrate non-Cisco enclosures to achieve a standardized data center environment.

Results

The FlexPod architecture has given KPN the opportunity to differentiate itself through new cloud offerings. These offerings include infrastructure-as-a-service, which helps customers cut costs by only paying for the services they use, and virtual desktop infrastructure (VDI). "It makes sense to have a technologically flexible platform to deliver that," says Reeuwijk. Enterprise VDI customers often need to customize their virtual desktops, and FlexPod gives KPN plenty of computing capacity upon which to integrate desktop images.

Operational efficiency has improved significantly. FlexPod has helped improve troubleshooting because data center engineers can work more closely as one team. This capability has brought down trouble-ticket resolution times from weeks to days or hours. Staffing requirements have also reduced. Previously the deployment of a new server would have required coordinating the three separate departments. With 50 to 60 people in each, this requirement often made it difficult to track down the person responsible for a particular job at a particular time.

Now, deployment is managed by a small number of people. "FlexPod is an integrated design, which has enabled us to consolidate data center provisioning into a single group," says Reeuwijk. "We now have a specific team, optimized to deliver our services, while the non-FlexPod departments have been freed to focus their attention on our customers."

> "FlexPod provides greater density so we can fit in more computing capacity per square meter, which will help us significantly extend data center lifespans."

Kevin Reeuwijk
Technology Officer
KPN IT Solutions

As a result, time-to-market has accelerated. Previously it would take four months or more to get a customer onto a KPN IT Solutions platform. Within that, deploying a single server could take up to a week because of the different departments involved. Lead times are being cut by the ability to deploy additional resources from the cloud. "If a customer requires a new virtual machine, they can select one from a catalogue, and it's up and running in minutes," Reeuwijk remarks.

In terms of infrastructure costs, KPN has found FlexPod more efficient and faster and easier to deploy than traditional rack servers. FlexPod is also cheaper to build out compared to other systems, because of the simplicity offered by fabric extender technology. "FlexPod provides greater density so we can fit in more computing capacity per square meter, which will help us significantly extend data center lifespans," says Reeuwijk.

Business continuity has been strengthened too. KPN had planned for disaster recovery by pairing its three data center locations so that, within each pair, one data center would act as a primary location and the other as a failover. FlexPod will offer KPN a more flexible arrangement where network, storage, and computing capacity is containerized and divided into multiple virtual domains. Workloads can be divided into as many domains as required to meet a customer's individual disaster recovery requirements. The domains are based on virtual machines that can be smoothly shifted between data centers without business impact.

"Our goal is to move to a software-based solution that will allow us to automate the entire process," says Reeuwijk, "so if an event happens, we only have to supervise the situation."

The sustainability benefits are equally impressive. The use by KPN of low-power processors is allowing the company to cut its wattage per CPU by up to 36 percent, without any significant loss of performance. Compared to standard blades, the FlexPod low-power servers save a total of 6.7 kilowatts of energy every hour. That not only reduces running costs but also contributes to the high-profile image of KPN as an environmentally friendly company.

Next Steps

Alongside its existing FlexPod deployments, KPN has around 24,000 square meters of rack-equipped floor space available for hosting. The company is in talks with Cisco to upgrade this area to include standardized FlexPod capacity so that customers can buy raw computing power delivered from tested and validated hardware.

Another potential project under consideration is the creation of FlexPod arrays dedicated to specific applications such as SAP or Oracle. In addition, KPN is working with Cisco to adapt the FlexPod configuration so it can be scaled out more easily. Specifically, increasing the blade capacity of each FlexPod from 32 to 160 blades, increasing memory per blade, and configuring two FlexPod enclosure blocks within which computing and storage capacity can be interchanged. This approach would allow KPN to individually tailor storage and computing resources to customer requirements, for example to meet the differentiated needs of a heavy storage user or a heavy computing user.

Finally, KPN is also interested in offering Cisco technologies such as ASA-as-a-service, so its customers can be offered features such as security and load balancing at the click of a mouse. As the service provider continues to evolve towards more flexible, cloud-based delivery models, there's also the possibility that Cisco Capital® could help fund pay-per-use services, thereby smoothing cash flow and reducing financial risk.

For More Information

To learn more about the Cisco architectures and solutions featured in this case study, please go to: www.cisco.com/go/flexpod

For more on Cisco Services, see: www.cisco.com/go/services

Product List

Data Center Solutions

- Cisco Unified Computing System (UCS)
  - Cisco UCS B200 M2 Blade Servers
  - Cisco UCS B200 M3 Blade Servers

Routing and Switching

- Cisco Nexus 7000 Series Switches
- Cisco Nexus 5000 Series Switches
- Cisco Nexus 1000V Series Switches

Fabric Interconnects

- Cisco UCS 6100 Series Fabric Interconnects
- Cisco UCS 6248UP Series Fabric Interconnects
- Cisco Fabric Extender Technology

Network Management

- Cisco Unified Computing System Manager

Security and Load Balancing

- Cisco ASA Adaptive Security Appliance
- Cisco ACE Application Control Engine

Cisco Services

- High-level design
- Low-level design
- Project management

Processors

- Intel Xeon 5600 Processors
- Intel Xeon E5-2600 Processors

Storage

- NetApp

Software

- VMware
- Oracle
- SAP
- Microsoft SharePoint
- Microsoft Exchange

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