Transformation to CLOUD-BASED NETWORKING Enabled by NFV

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Network Services
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To Start...

• **Introductions**
  - Who am I? & Who are you?
  - (very very) Quick Company Overview

• **What am I going to talk about today?**
  - Cloud-Based Networking Enabled by NFV technology
  - Transformation of Service Provider
  - Recommendations/Conclusions
Quick Company Facts –
NTT Communications
**NTT: a leading global network service provider**

One of world’s top 3 telecoms companies by credit rating and revenue*

*Source: Standard & Poor’s long term credit rating, as of xxx 2014; US SEC (Edgar), as of xxx 2014
A global communications corporation

- 251,000m² total server room area
- 20,400 employees worldwide
- 130 data centres all over the world*
- 1,230+ billion JPY (c. US$12.3 billion) turnover FY 2013
- 190+ countries where NTT services are available
- 123 cities in 43 countries with NTT subsidiaries or offices
Global Presence

Located in 123 cities in 43 countries / regions (as of Dec 2014)
More than 21,600 employees dedicated to business services (as of Dec 2014)
### Products and Services

We offer an extensive suite of cloud, network and technology services and products.

#### Professional Services
- Operation
- Solution Delivery
- Cloud Enablement
- Consulting

| Security & Risk Management | Firewall / UTM  
|                           | DDoS Detection and Mitigation  
|                           | Thin Client  
|                           | Disaster Recovery  
|                           | Global Internal Security Control  |
| Unified Communications | • IP Telephony  
|                         | • Conferencing Solutions  
|                         | • Mobile Workforce  
|                         | • Voicemail and Unified Messaging  
|                         | • Contact Centre Solution  |
| Hosting / Cloud | Hosting  
|                 | Dedicated hosting  
|                 | Private Cloud (GVS)  
|                 | Public Cloud  
|                 | Enterprise Cloud  
|                 | Application Management  |
| Data Center | • Colocation  
|             | • Managed Colocations  |
| Global Network | Enterprise Network  
|                | Arcstar Global IP-VPN  
|                 | Arcstar Global Leased line  
|                 | Arcstar Global Ethernet VPN  
|                 | Ethernet Dedicated Internet Access  
| Office ICT | • Managed Switch  
|             | • Thin Client  
|             | • Managed Firewall  
|             | • Managed WAN Accelerator  |
Cloud-based Network Service (CBNS) Enabled by NFV
A definition of Cloud-based Network Services

With **CBNS** we are creating network-related services that are delivered from the enterprise wide area network cloud through a shared infrastructure, without having to deploy and maintain dedicated equipment, by taking advantage of SDN and Network Functions Virtualization (NFV) technologies.
The impact

Gartner analysts predict
"By year-end 2017, virtualized cloud network services will replace at least

\[ 10\% \]

of the installed base of enterprise WAN equipment, up from less than 1% at year-end 2014."

"In a recent Gartner survey, more than

\[ 70\% \]

of respondents had already adopted cloud delivery for functionality such as DDoS mitigation, email security and secure Web gateway."

[Source]
Gartner, "Predicts 2015: Enterprise Networking and Network Services"
Neil Rickard et al, 4 December 2014

NTT’s survey research with IDC shows
by year-end 2017, service providers that will have launched trials of SDN/NFV controlled services

\[ 80\% \]

10% have already deployed NFV controlled services at least on a local base and 30% are in the testing phase.
Things are changing faster than ever...

Still growing ...
- Data transmission speed
- Processor speed
- Bandwidth per user
- Number of Internet hosts
- Growth of IP Traffic
- Enterprise end-points and devices

Needs ...
- High availability
- Global uniform coverage
- Secure platform
- Per user profile/application treatment
- Flexibility/agility
- Simplicity
But how about Enterprise WAN?
Becoming a bottleneck for transformation

Network Outages  Lack of resources
Slow Delivery    Operation complexity
Patchy Connection
Connectivity expensive in certain locations
Scattered Appliances
Poor Application Performance
Lack of Visibility  Security Risks
Degraded End User Experience  Higher Cost
Lack of expertise
Enterprise WAN as the enabler of transformation

Right technology + infrastructure + support

Enterprise WAN can become...

✓ Agile
✓ Flexible
✓ Cost effective
✓ Part of the IT eco-system
So what technology should we use?

NTT believe "NFV" is one of the answers.

Enterprise WAN can become the ENABLER instead of an OBSTACLE for Enterprise Transformation.
What NFV enables us to do...

- Agility
- Flexibility
- Cost Efficiency

Asset-Light Branch Office

- Antivirus
- URL Filtering
- IPS
- Authentication
- Firewall
- Application Acceleration
- WAN Router

IP-VPN
Internet Cloud

SDN & NFV Platform
Simplify the complexity – Portal Driven

Different Network Functions virtualized within one platform

Internet
Enterprise network
Internet

SDN Platform
Portal

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Use Case – European Chemical Company

Pain Points
1. High cost
2. Missing flexibility to easily respond to business needs
3. Unhappy with the existing operations
4. Did not feel customer intimacy

Our Solution
1. Fully managed IT
   - Application Management
   - DC / Cloud Service / Hosting
   - Hybrid network of MPLS and cheap internet access
   - On-demand, scalable Cloud-based SSL VPN
   - Cloud-based Secure Web Gateway
2. NTT Group Companies solving all system integration issues - customer intimacy
3. Professional, high quality service

Results & Benefits
1. Optimized cost and TCO (Reduced approx. 40% from the original cost)
2. Professional support for cloud services – Less operational issues; faster resolution in case of trouble
3. Flexibility and agile solution for mobile access and internet offload – improved speed and end-user satisfaction
4. One single global provider – Saved time to coordinate different providers; focus on core business

Customer Overview
- Employees: 500+
- Footprint: Global business operating in over 20 countries with 11 manufacturing and technology centers
- One of the one the world's largest company specializing in chemical
Our Transformation Journey
The Service Provider Transformation

How were we able to get here in one year?

Recipe for Transformation

Main ingredients:

- Standardization & Automation
  - Solution vs Product
- Process & Systems
- People & Knowledge
- Customer Education

& a dash of...

- Mind-set Changing Driver
  - Taskforce
Standardization & Automation

The old way

- Sales
- Engineer
- Operator

- Customer

- Customized solutions tailored to the customer needs
- Multiple support personnel requiring specific knowledge

The new way

- Sales
- Portal

- Customer

- Standardized functions and features
- Self-controlled
A Need for a Standardized Environment

Without discipline you have customized implementations

Happy customers but maybe not a happy service provider... as a customized implementation often means:

- Configurations on a per-customer basis
- Special processes supported by people; limited people with knowledge; people-heavy solution; high costs

New products require standardization in the offering which also means standardization of

- Processes
- Data models
- Equipment/modules, configurations
Standardization of Past Solutions

- Analysis of services provided to current customers to find commonalities

Methodology

- approx 80/20 rule
- Profitability
- New customers & expansion of business

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<th>Feature</th>
<th>Customer A</th>
<th>Customer B</th>
<th>Customer C...</th>
<th>Customer ...</th>
<th>Customer ...</th>
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<tr>
<td>Feature x</td>
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<td>In use</td>
<td>In use</td>
<td>In use</td>
<td>-</td>
<td>Yes</td>
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Sample Matrix Used to Identify which features to Standardize

- Challenges
  - “Customized” Solution
  - Tied to a methodology not the service
  - Migrations... get it right the first time around
**Revamp of the Standard Process & Systems**

**Process:**
- SOW and process handoffs – minimize the teams, create broader SOWs for a smoother/shorter end-end process

**Systems:**
- Portal development - start by showing milestones/progress in the portal – next steps should include initiating the process from the portal
- Data flow-thru – single systems as much as possible

**KPIs:**

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<th></th>
<th>Before</th>
<th>After</th>
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<tbody>
<tr>
<td># of steps in the process</td>
<td></td>
<td></td>
</tr>
<tr>
<td># of tasks automated</td>
<td></td>
<td></td>
</tr>
<tr>
<td># of published milestones</td>
<td></td>
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Front-Loading & Shift in Responsibilities

As more tasks become automated, less effort is required on the back-end but more effort is required on the front end – sales and product/technical specialists.

The old way

Customer  Sales  Engineers

Sales  Service Delivery

The new way

Customer  Sales  Engineers

Sales  Service Delivery

automation
Strong Partnerships

Became part of the NTT Communications Family in 2013

Goal – create synergy and provide the best service that is relevant to our customers by integrating the best of both companies, be profitable and prepare us for the challenges and opportunities that lie ahead...
A cross-functional team is required to drive such a transformation – a cross-functional TASKFORCE was formed.

Cross-Functional TASKFORCE

- Product Managers
- Systems
- Sales
- Service Delivery
- Operations
The concept we are aiming for...

Elastic Service Infrastructure

- Automatically discover and assess infrastructure and appliances
- Complete visibility to the whole infrastructure and systems
- Automatic provisioning of new services

Our transformation continues!
Summary...

- NTT was able to provide a full-line up of next-generation Cloud Based Network services globally within one year – the product is transforming our enterprise customers expectation to the WAN
- As a Service provider, we are transforming ourselves to prepare for the next next-generation services
  - Standardization & discipline to stay within the framework are key
- Transformation of the organization has also been key to support these new services
Thank you

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