SD-WAN / Hybrid WAN : Leveraging SDN-NFV for Networks Agility

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Why Application Performance Management matters

Optimise user experience and reduce costs of operation and IT infrastructure

- **Proactivity**
  Improve user experience by analyzing anomalies

- **Agility**
  Quickly isolate faults by equipping operations with application aware tools

- **Control**
  Right-size network and server capacity and allocate optimal number of user licenses

- **Monitoring**
  Dashboards for all stakeholders: business, applications, systems, networks

### Key benefits

<table>
<thead>
<tr>
<th>Key benefits</th>
<th>Example metrics</th>
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<tbody>
<tr>
<td>Operations costs</td>
<td>Number of events, service desk calls, incidents and problems, time to isolate and time to fix</td>
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<tr>
<td>IT infrastructure costs</td>
<td>Network bandwidth capacity, server RAM and processing capacity, end user licenses</td>
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It matters even more with hybrid networks

Control your network cost and maintain business efficiency and user productivity

- Intelligent integration _ private and public networks services
- Smart
  Path selection based on performance and reliability requirements of the application/users
- Secure
  Detect anomalies and threats by supervising application and traffic behavior
- Consistent
  Manage QoS and WAN optimization policies

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<tr>
<td>Optimisation</td>
<td>MPLS vs. Internet providers</td>
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<tr>
<td>User experience</td>
<td>User satisfaction ratings</td>
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<td></td>
<td>Policy compliance levels</td>
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<td>Productivity gains</td>
<td>Faster business process cycle time</td>
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<td>reliability of data access</td>
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A next generation hybrid network

Better cloud application performance

Cost-effective connectivity

Security across a broader attack surface

Real-time management control

Eliminate slow Internet performance at branch offices and peak times to boost employee productivity

Launch new digital business workflows and customer interaction channels quickly

Size your network for actual rather than peak usage

Take a multi-layered approach to security to protect against multi-vector attacks
Orange Ambition

Experience
Orange Business Services has been working on Hybrid networks and SDN/NFV since 2012.

Standards
Orange is heavily involved in SDN/NFV standardization bodies.

5 billion / year
Orange is investing in network optimization.
InfoVista’s solution for SDWAN

Customer Benefits

- Improve Business Performance
- Minimize costs
- Maximize apps UX

InfoVista Differentiators

- Act per session
- Visibility + Control + WAN opt.

Application-aware

- Boost Hybrid
- DWS + WAN security + Cloud Acc.

Smart use of WAN resources

- Manage Globally
- SLA Management & Orchestration

Simple orchestration
SD-WAN features

- Centralized Orchestration
- Dyn WAN Select with Security
- WAN Optim. with Cloud Acceleration
- Control Objective-based
- Visibility DPI, HTTP, KPIs, AQS
- Routing - FW VPN Overlay, BGP
- Branch Connectivity

- SALSA
- DWS since 2009
- WAN Opt & Acceleration
- Flow level, Objective-based
- DPI, AQS
- Business VPN CPE

- This is the InfoVista Application Aware SD-WAN solution
- All those functions can run in a Virtual Machine using Linux containers, KVM, VMWare, etc.
- We will integrate our VNF into virtual CPE of OBS
SD-WAN / Hybrid WAN Orchestration Integration

Sense
Real-time view of the network performance and user demand

Respond
Dynamic and distributed computation with second by second optimal policies enforcement

InfoVista
Multi-tenant Central Orchestration

OBS SDN

Rest API

Hybrid WAN

SaaS

Hosted DC

Public Internet

Private DC

Google apps

Windows Azure

Amazon

Linkedin

YouTube

SAP

Oracle

SharePoint

Main Site HQ

Home Office

Branch Office

Branch Office

Cloud

Internet
Diverse form factors to manage large scale deployments:

- **Datacenters & main offices**
  - **ipe 1800ax**
    - 50,000 users
    - 2 Gbps / WAN Opt. up to 300 Mbps
    - Up to N+1 appliances in a “10G Stack”
  - **ipe 1000ax**
    - 20,000 users
    - 155 Mbps / WAN Opt. up to 50 Mbps
  - **ipe 400ax**
    - 5,000 users
    - 300 Mbps / WAN Opt. up to 100 Mbps

- **Branch Offices**
  - **ipe 40ax**
    - 300 users
    - 100 Mbps / WAN Opt. up to 20 Mbps
  - **ipe 40so**
    - 100 users
    - 100 Mbps
  - **nano 5**
    - 50 users
    - 20 Mbps
  - **nano 2**
    - 20 users
    - 4 Mbps

- **Virtual Branch**
  - **vije L & XL**
    - >300 Mbps
    - 4 to 8 vCPU, 8 to 16 GB RAM
  - **vije M**
    - > 100 Mbps
    - 2 to 4 vCPU, 4 to 8 GB RAM
  - **vije S**
    - > 20 Mbps
    - 1 vCPU, 2 GB RAM

VNF, One Box solution

Run Ipanema Agent in uCPE platform, support both KVM or
In a nutshell: OBS Network Boost solution

Network Boost brings you the best performance for your network and applications

- **Application Visibility**
  - **Understand** who is using what and for which performance

- **Application Control**
  - **Adjust** network behaviour and resources to the exact application traffic demand

- **Dynamic WAN Selection**
  - **Enable** dynamic hybrid WAN for multi-networked branch offices

- **WAN Optimization**
  - **Improve** end-user quality of experience by enabling application acceleration and data deduplication

- **Central Management**
  - More than 2000 sites centrally **organized**

- **WAN Security**
  - **Allows** you to secure your application over the Internet link

- **Cloud Acceleration**
  - **Optimize** performance of Saas/PaaS applications

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No 1 Need:
Globalisation:
Orchestration of 104 sites in 22 countries

No 2 Need:
Application Performance:
Guaranteeing Performance of Product lifecycle management Application [NOT social media]

No 3 Need:
Return on Networking Investment
Optimizing flows over Hybrid connections

Cloud Orchestration

Performance Guarantee

Dynamic WAN Selection
No 1 Need:
Globalisation:
800 Small to Large Sized Sites

No 2 Need:
Application Performance:
Guaranteeing success of Skype for Business Roll Out

No 3 Need:
Return on Networking Investment from activating disaster recovery links

Cloud Orchestration

Performance Guarantee to ensure migration

Dynamic WAN Selection to Monitorization of unused links
Take what you have today into tomorrow with Network as a Service

- **2016**: Enriched hybrid network
- **2017**: Agile connectivity (SDN/NFV)
- **2018**: On-demand connectivity, security, performance
- **2020+**: Self-adaptive connectivity

**MPLS and enhanced Internet**

**Global Orchestration**

**Enriched VNF and APIs**

**Big data and machine learning**