Digital Transformation through Open Software Defined Infrastructure

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Digital Transformation Through Open Software-Defined Infrastructure

Open Networking Summit 2017

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Outline

- Who Is Visa?
- Transformation Vision, Drivers & Architectural Principles
- Software-Defined Data Center & WAN
- Migration Considerations
Who Is Visa?
Visa’s Role as Payments Network

- **Account Holders**
  - Individuals & businesses that conduct transactions to pay for goods and services

- **Issuing Banks**
  - Issue cards
  - Assume cardholders’ credit risk
  - Set and collect card fees and interest rates
  - Provide customer service for consumers

- **VisaNet**
  - Provides processing and operational systems
  - Develops products
  - Provides risk management
  - Builds and manages global brand
  - Develops new market opportunities (acceptance)

- **Acquiring Banks**
  - Sign up retailers
  - Provide processing
  - Manage authorization, capture and settlement
  - Generate recurring reports/statements
  - Provide customer service for retailers

- ** Merchants**
  - Retailers, billers and others who accept electronic payments as a method of payment for their goods or services
Visa By Numbers
One of the World’s Largest Retail Electronic Payments Networks (1)

- 16,800 financial institution clients
- 44.0 million merchant locations
- 3.1 billion Visa cards
- US$8.2 trillion total volume (2)
- US$5.8 trillion payments volume
- 2.6 million ATMs (3)
- 129.1 billion total transactions (4)
- 65,000 transaction messages per second (capacity)
- 176 currencies

Figures are rounded, include the Europe region, effective with the quarter ended September 30, 2016 unless otherwise noted. Figures from the latest operational performance data except number of financial institutions and ATMs.

(1) Based on payments volume, total volume, number of transactions and number of cards in circulation.
(2) Includes payments and cash transactions.
(3) As reported by client financial institutions and therefore may be subject to change; includes ATMs in the Europe territory. As of June 30, 2016.
(4) Includes payments and cash transactions.
Continued Growth of Electronic Payments
Driven by Technology, Innovation & Shift of Consumer Habits

- **E-commerce** accelerated growth
- **Mobile** payments
  - mVisa: mobile phone push payment
- **IoT** (any connected device = potential point of sale)
  - Watch, ring, connected car, appliance, etc.
- **Tokenization**
- **Blockchain**
  - Visa B2B Connect
Transformation Vision, Drivers & Architectural Principles
Vision & Drivers

- Make electronic payments accessible to everyone worldwide
- Global infrastructure with highest security & availability for billions of users and connected devices
- From closed & physical infrastructure components to open & software-based technologies
- On-demand infrastructure & network
- Open digital platform to drive innovation for payments
Architectural Principles

Highlights

- **Highest availability**
  - “Zero-service-outage network resiliency”
  - No failure of a single network component should cause a service impact

- **Separation of hardware & software**
  - Commoditized/simplified hardware with minimal standard features
  - Open, standard interfaces & technologies for maximum vendor choice

- **Real-time end-to-end visibility independently of scale**
  - Vendor-neutral monitoring, management & control capabilities

- **Maximize asset utilization**
  - Network simplification & consolidation across WAN (simple core, smart edge) & datacenter
Software-Defined Data Center & WAN
Applications

Network Orchestration, Control & Monitoring

Network Switching & Virtualization

Out-of-Band Management Fabric

Non-Virtualized Workloads

Virtualized / Containerized Workloads

Security Monitoring

SDN Controller

(Virtualized) Network Functions

Network Virtualization

Physical Network Fabric

 Packet Capture Fabric

DC Network Component

Users of DC Network

Data & Monitoring Network

Management Network

SDN Control API

Open
Example Enterprise WAN
Limited WAN Visibility & Control for the Enterprise
Carrier SD-WAN (Virtual CPE Use Case)
Simpler Operations through Software at the Edge

External Users → Internet → Carrier MPLS, Internet

Carrier Edge Controller
vCPE

Carrier Edge Controller
vCPE

DC
Backbone

Public Cloud

REMOTE WAN DATA CENTER
Enterprise-Managed SD-WAN Overlay
Enhanced Automation & Traffic Management

External Users → Internet → Carrier MPLS, Internet → SD-WAN Router → DC Controller → DATA CENTER

REMOTE WAN DATA CENTER
SD-WAN + Enterprise Backbone
Maximized WAN Visibility & Control for the Enterprise
SD-WAN + Enterprise Backbone
Maximized WAN Visibility & Control for the Enterprise

Manageability
- Open, Standard Interfaces
- Ops Integration & Automation
- Infrastructure as Code (CI/CD)

Flexibility
- No Vendor Lock-In
- Hardware Independence
- Unbundling of SD-WAN and Carrier Transport

Reliability
- Hardware & Software
- Global Support
- Security Hardening
Migration Considerations
Migration: Not Just for the Birds (*)

**STARTING INFRASTRUCTURE**
- Assessment & Preparation
- Pre-Migration Planning
- Gap Analysis
- Back-out Procedures
- Feature Set Analysis

**PHASED MIGRATION**
- Monitoring Tools
- Provisioning Tools
- Continuous Availability
- Troubleshooting Tools

**TARGET INFRASTRUCTURE**
- Post-Migration Validation
- SLAs
- Playbooks

(*) Open Networking Foundation Blog
https://www.opennetworking.org/?p=1099&option=com_wordpress&Itemid=248
Call for Action

Accelerating Industry Adoption of Open Software-Defined Infrastructure

- Help drive shift from hardware-centric to software-defined
- Enable vendor-neutral / multi-vendor solutions
- Support smooth integration with customer’s operational tools
- Help drive innovation by offering developer APIs
- Enable migration and coexistence with legacy environments
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