

How Smart Networks are changing the Corporate WAN



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WAN SUMMIT
September 2017

About Vodafone Enterprise



Unified Comms



Cloud & Hosting



Internet of Things



Security



SD-WAN
Connect

SDN

NFV

Virtual CPE

Cloud

READY NETWORK

Extensive Fixed and Mobile Network

1M+ KM Fibre Assets

80 cable systems



75 country MPLS

182 total country reach

17 local markets



4G WAN in **13**

countries

Top 5 Global ISP

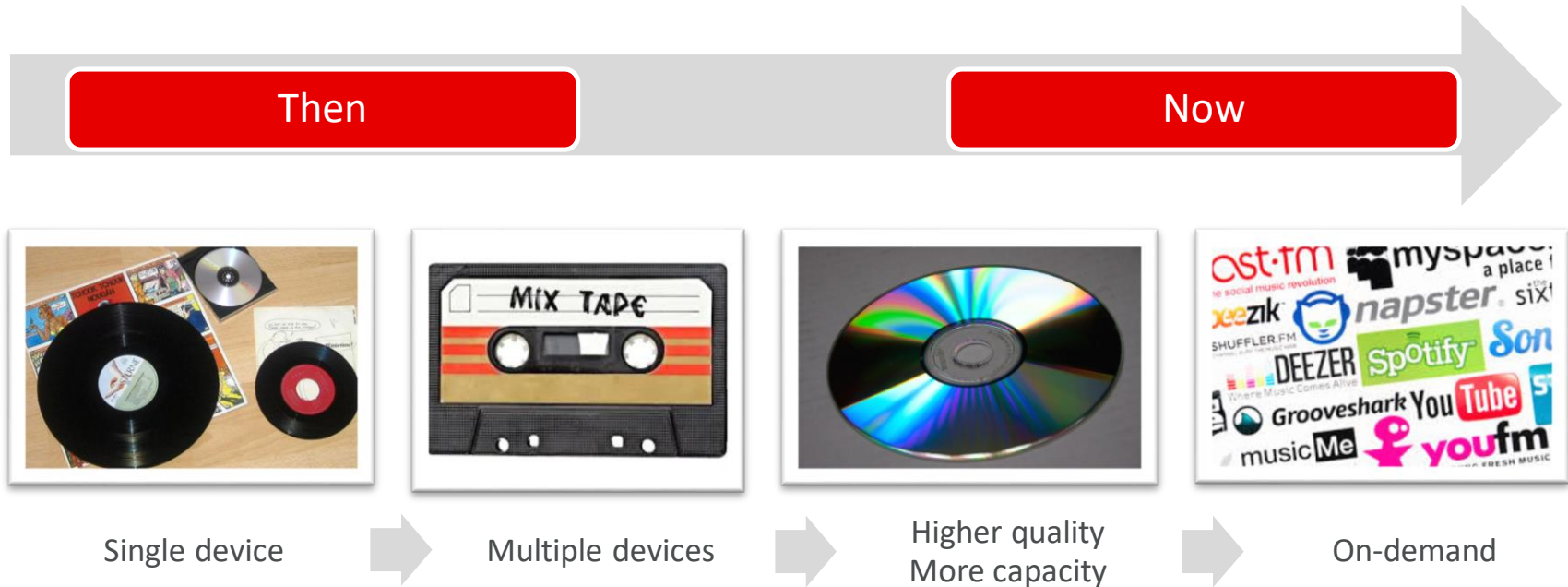


Vodafone Ready Network is a portfolio of dynamic, **on-demand software defined network** products for the digital ready business

OUR VISION: to be the world's leading total communications service provider for enterprises



Remember how we used to consume music?



The model has changed **but** the content remains the same



Business communications are evolving at a rapid pace

Technology advances require fixed networks to be more agile, efficient and secure

Network demands

Cloud

Digitisation

Mobility



IoT

Next Big Thing

Robotics & AI



Security risks



Explosion of data



Service experience

Enterprise WANs are *evolving* from Fixed and 'Slow to Change' to

On-demand, programmable and virtualised



Introducing new Software Defined Network technologies

Enterprise benefits: lower cost, increased business agility, a network ready for cloud and digital



Software Defined Network (SDN)



Network Functions Virtualisation (NFV)

Enabling



Virtual Customer Premise Equipment (vCPE)



Software Defined WAN (SD-WAN)



On-demand services



Automated Service Delivery

In 10 years, 75% of the MPLS IP-VPNs will migrate to Software Defined Networks



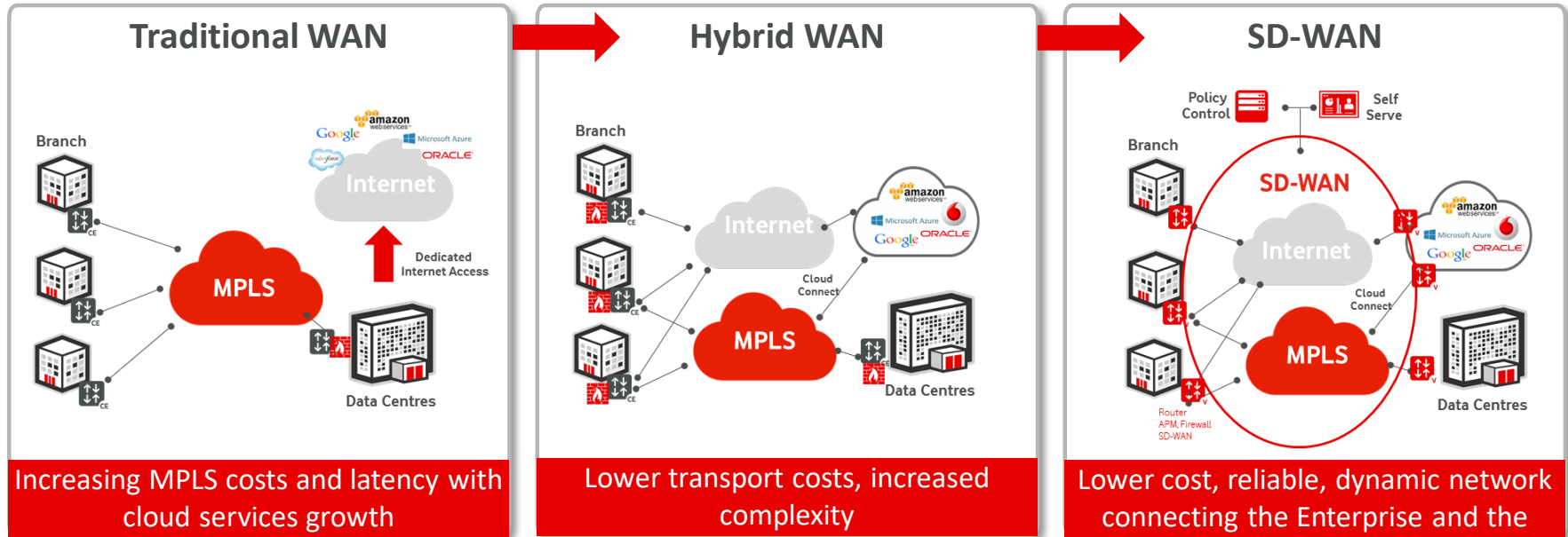
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Use cases

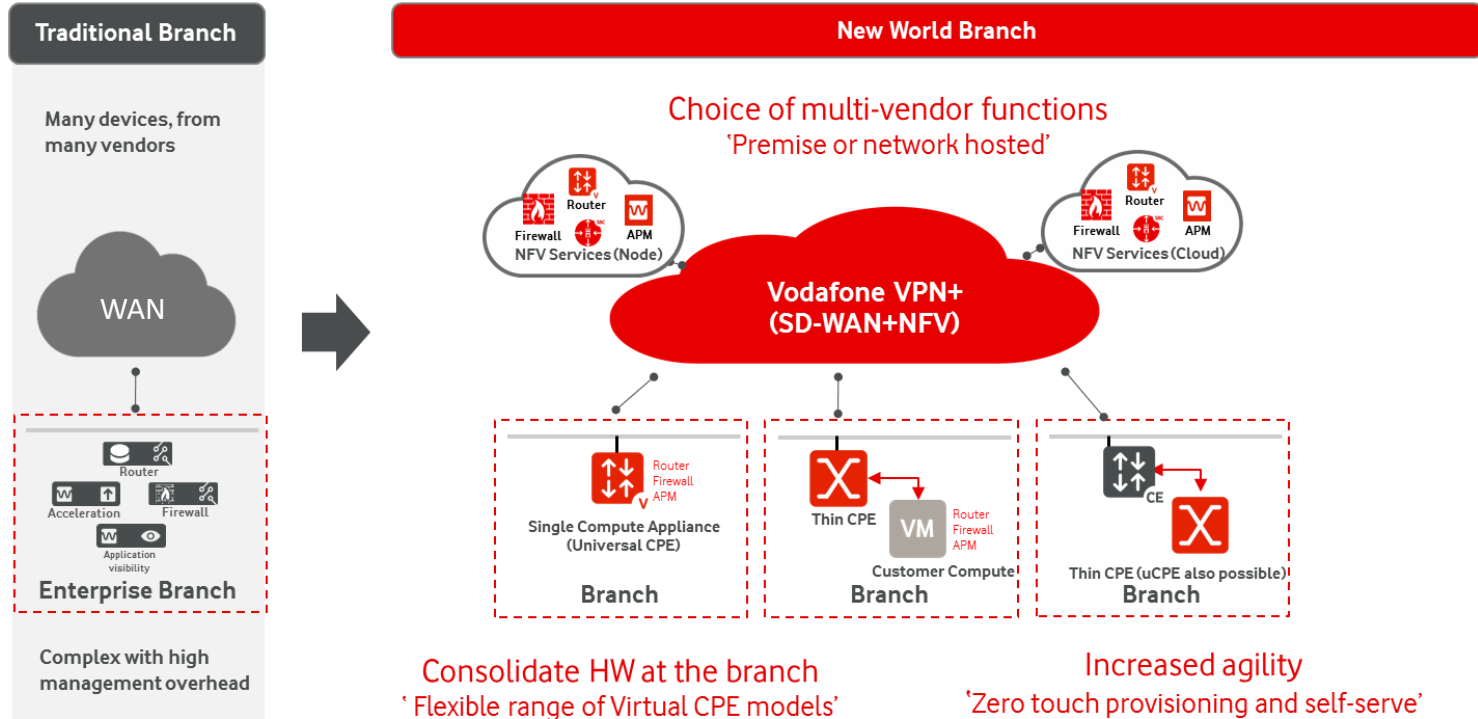
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Increasing cloud services adoption is driving the transition to software defined WAN



Business case: lower cost, improved experience, network ready for the cloud

Virtualisation of Branch networking equipment



Business case: reduced hardware and operational costs, innovate faster, business agility



Visibility, control and agility for the Network Team

Self-serve via portal and/or APIs

Traditional Network



Bandwidth and
Quality of Service

Limited Application Visibility

Fixed and Slow to Change



Application Visibility



Performance Management

- Real-time visibility of applications performance
- Set thresholds and alerts
- Pre-empt and prevent major issues

Application Policy Management



Centralised Policy Management

- Consistent user application experience
- Prioritise applications by business criticality
- Rapidly accommodate new applications

On-demand



Add, modify and control your
services

- Order, connect and authenticate new sites (vCPE) in days
- Turn up new services instantly
- Configure settings e.g. bandwidth or firewall policies, in minutes

Business case: consistent and reliable experience, consumption based network, agility



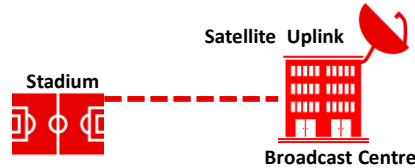
On-demand connectivity for Big Data and bandwidth intensive real time applications

Medical Imaging



- Transfer of a full body MRI files of 300GByte takes ~ 4 minutes with a 10 Gbps connection

Media Broadcast



Business Continuity



Software Defined Networking (SDN)



- Software programmability of the network
- Dynamically configure new connections, services, speeds and setting
- On-demand; consumption based
- Emerging product, enhancing SD-WAN

Increased self-control and business agility

- **Optical High Ethernet** services provide the solution for these applications **and SDN** enables them to be activated on-demand
- In time, SDN will enhance SD-WAN services via on-demand control of underlay transport bandwidth and analytics driven service assurance



SD-WAN changes the financial profile and metrics of the WAN

SD-WAN versus MPLS IP-VPN

Pricing Line Items	MPLS	VPN +
Access	✓	✓
Port / CIR	✓	✓
Flexible bandwidth on demand	✗	✓
QoS / CoS	✓	Inbuilt
Router / CPE	✓	✗
Virtual CPE	✗	✓
SD-WAN licences, management and self-serve	✗	✓
Virtual network functions	✗	✓



Access

MPLS access for critical applications, Internet for the rest.
Increasing role for 4G

\$/Mbps reduction



Port

Bandwidth on demand (SDN enabled)

Pay for peak bandwidth you need, when you need it



CPE Functions

Virtual CPE
Multi-vendor virtual functions

Lower cost CPE, operational costs, HW consolidation



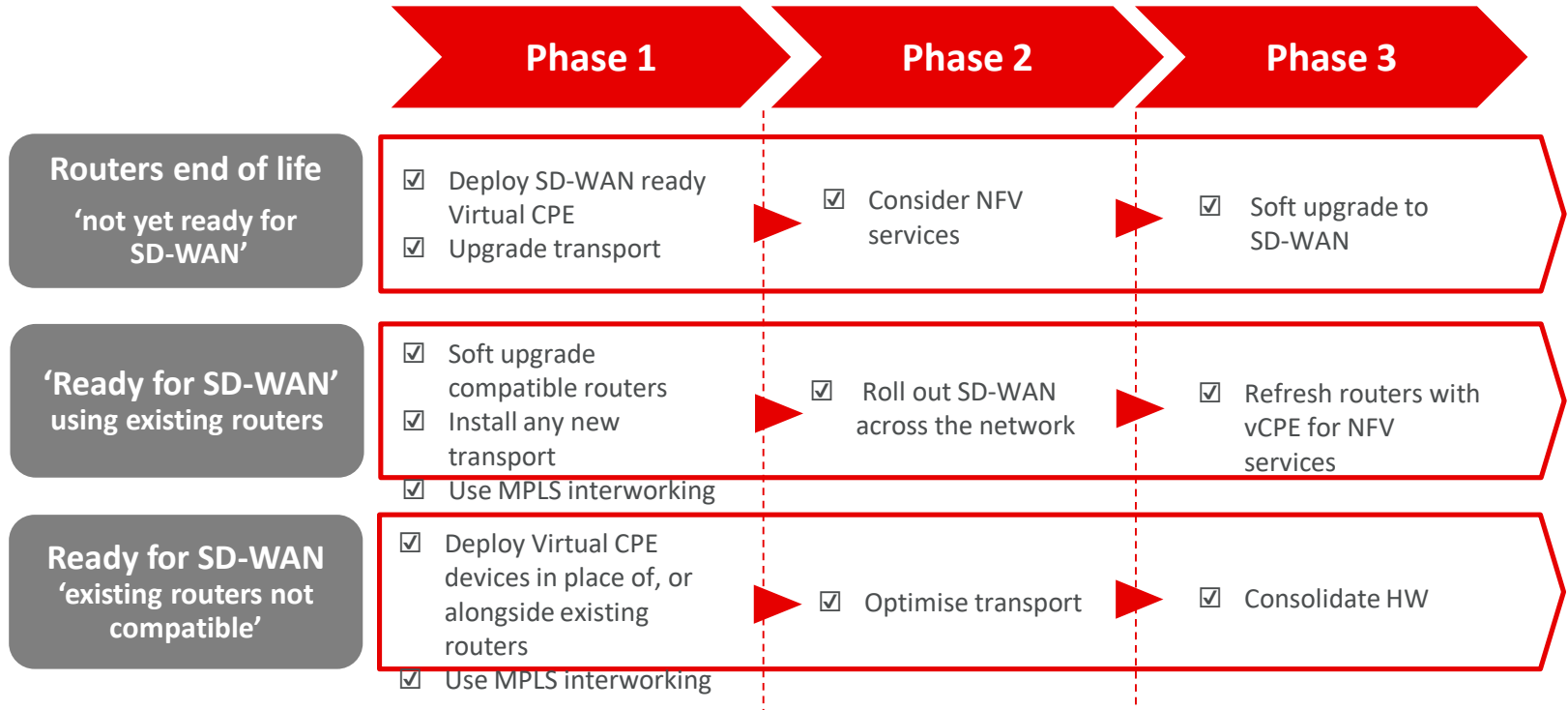
SD-WAN

SD-WAN licenses and management

Agility, reliability, security



Software Defined WAN | transition scenarios



Considerations: re-use existing infrastructure, minimising truck rolls, future proofing, ROI



Smart networks are changing the corporate WAN

A key consideration for enterprises in their digital transition

Next steps for enterprises?

1

Identify WAN impacting network projects:
Cloud, Digital ...

2

Network audits and application discovery

3

Plan your network strategy and transition

4

Self-serve, operational and commercial
requirements

5

Deep dive providers' network products and wider
portfolios



Vodafone Ready Network for the Digital Ready Business

**Most extensive
Software Defined
Network**



Best cost & end-to-end
SLAs over fixed and
mobile
(4G and future 5G)

**Enable your cloud
strategy**



Secure & reliable cloud
connectivity, every time

On-demand



Driven by business
policies and powered by
analytics

Innovate at speed



Future-ready
Multi-vendor
Network-as-a-Service for
total comms

Fast and Agile



More efficient network
with high levels of self-
control
Easy transition

A new portfolio of on-demand networking products for the Digital Enterprise
Combining Vodafone's extensive fixed and mobile networks with agility and efficiency of SDN/NFV



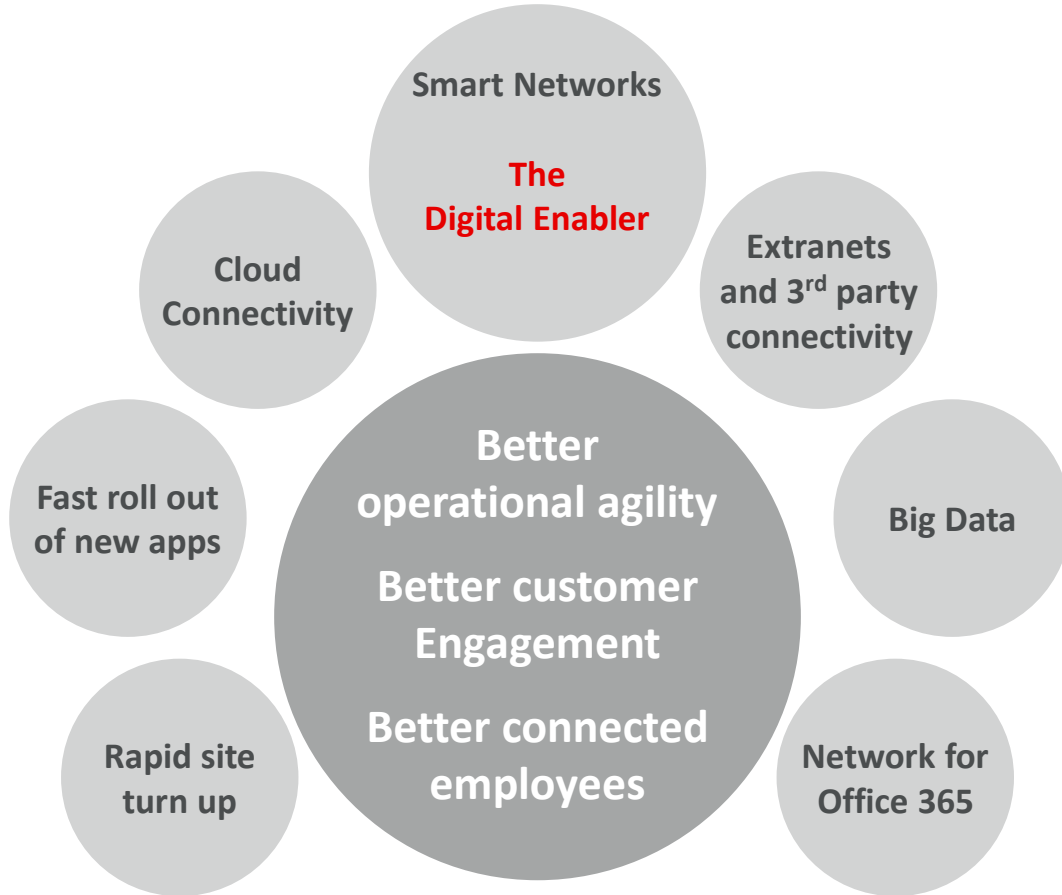
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Thank you

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Businesses are demanding smarter networks



In an increasingly Digital age



Capabilities that are enabled and future proofed with **SDN and NFV technologies**

