HYBRID WAN

Proof of Value Journey

WAN Summit – Michael Becerra
Singapore, 12 September 2017

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IT Shared Services

DHL

DHL by the Numbers

We are the Logistics Company for the World

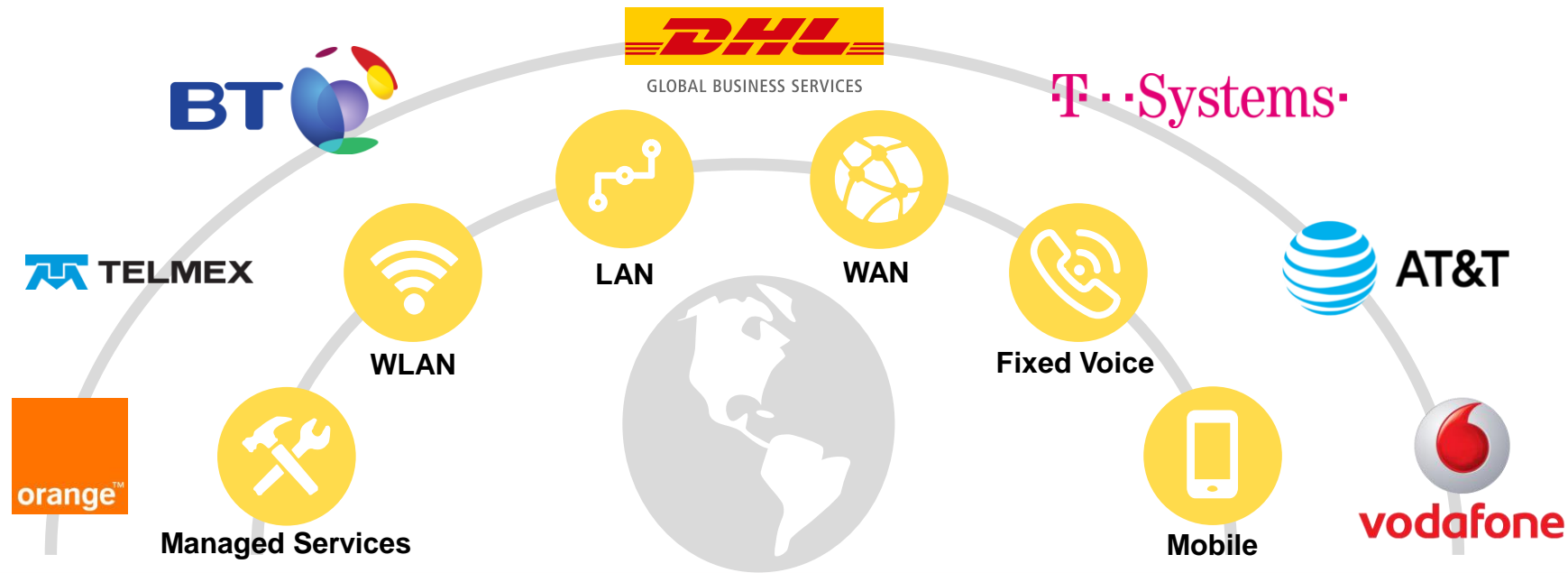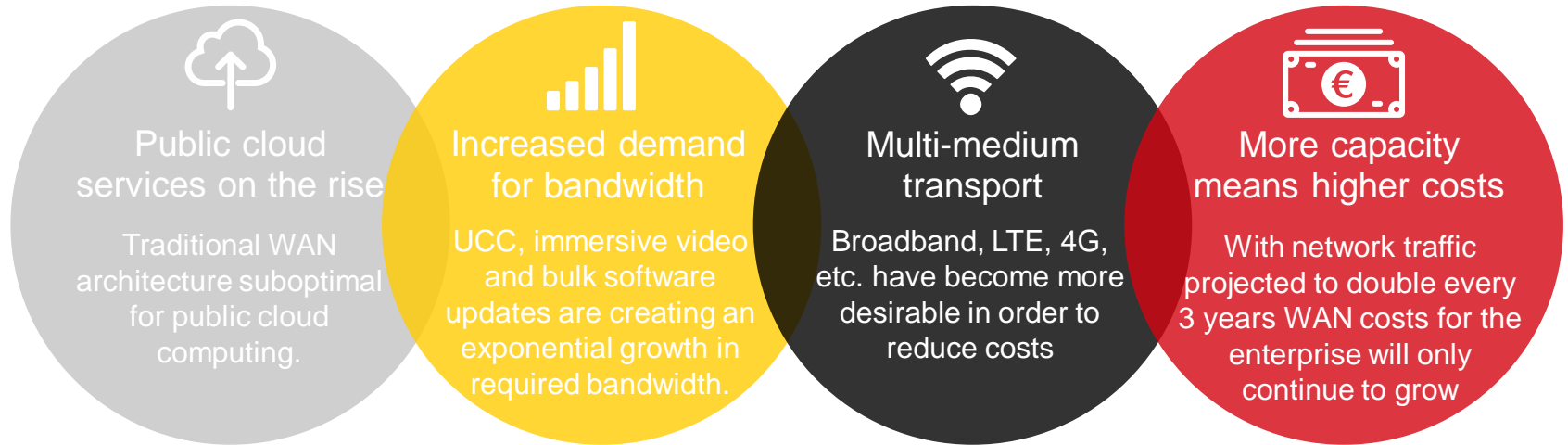|	
5 Business Units	**+10k Sites**
+200 Countries	**+500k Employees**

DHL Telecoms Landscape

DHL has outsourced majority of its Telecommunications estate to regional suppliers.

Key Trends & Challenges

While our hosting and applications have moved to a hybrid platform the network has remained stable but will need to transform to meet current challenges and trends.

Public cloud services on the rise

Traditional WAN architecture suboptimal for public cloud computing.

Increased demand for bandwidth

UCC, immersive video and bulk software updates are creating an exponential growth in required bandwidth.

Multi-medium transport

Broadband, LTE, 4G, etc. have become more desirable in order to reduce costs

More capacity means higher costs

With network traffic projected to double every 3 years WAN costs for the enterprise will only continue to grow

So what is our direction?

SOURCE: 1) Cisco Global Cloud Index: Forecast and Methodology, 2015-2020, 2) Cisco The Zettabyte Era: Trends and Analysis, June 2017

Options

1

WAN Optimization

- Caching and compression of data at the edge to reduce WAN capacity
- Over 300 appliances deployed
- Seen as strategic in mature markets
- Adds complexity with limited benefit

2

Overbuilding WAN

- Adopt a strategy of overbuilding WAN capacity versus managing growth
- In mature markets capacity is affordable
- In emerging markets capacity is expensive
- "Upgrade" not always a solution

3

Quality of Service

- Prioritize apps which provide core business function over those which manage back office
- Prevents critical traffic from being impacted but doesn't solve the capacity need

4

Hybrid WAN

- Enable intelligent session routing to utilize multiple transport mediums
- Leverage Internet to reduce MPLS capacity requirements
- Simplifies day-to-day operations

While all of the above will play key roles in meeting today's challenges moving towards a hybrid WAN architecture is essential to keep pace with the trends

SOURCE: Gartner, The WAN is the New LAN, December 17, 2014

What is Hybrid WAN?

Hybrid WAN is a method of connecting a geographically dispersed Wide Area Network by sending traffic over two or more types of connections.

For DHL "Hybrid WAN" is a method of leveraging public internet to offload user internet access, cloud services and back office applications in order to reduce WAN costs, while maintaining private circuits to ensure service quality and performance of core business functions.
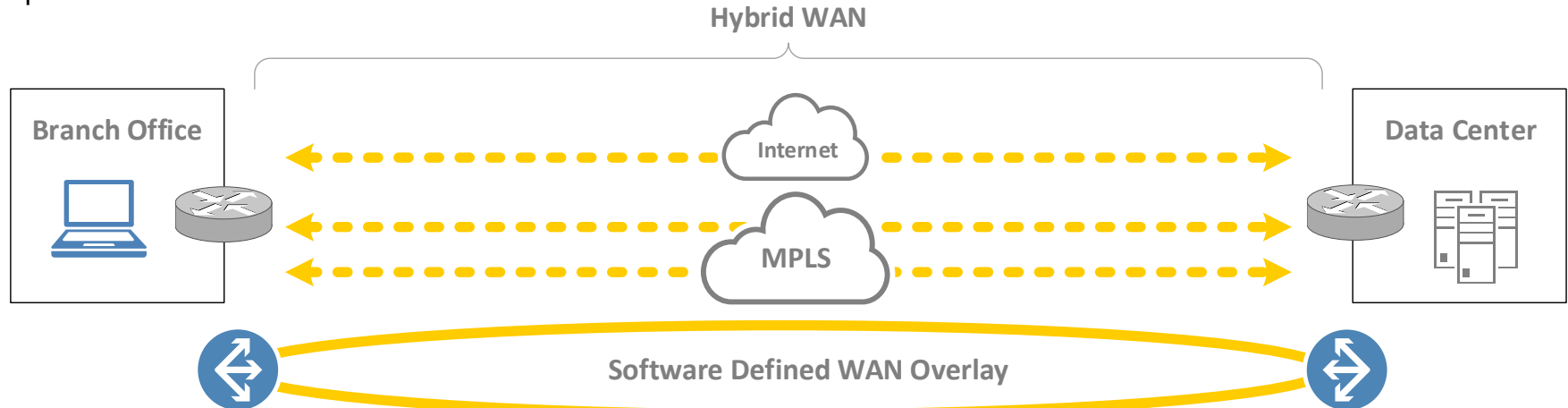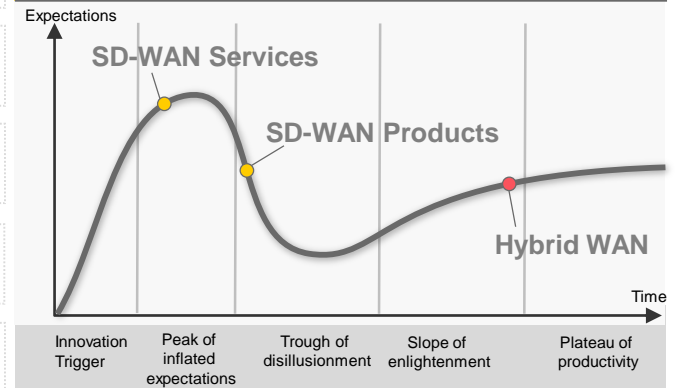
SD-WAN Concerns

While software defined technologies have enabled an intelligent hybrid WAN rollout there are still several questions that need to be answered.

Hybrid WAN	While hybrid WAN as a concept is mature SD-WAN technology is a complete unknown to most
Market Maturity	With more than 30 vendors claiming to have SD-WAN solutions the market needs time to mature
Managed Services	SD-WAN services are still being developed by most major telecoms suppliers
Operational Efficiencies	Optimizing operations is low hanging fruit to most but in an outsourced environment it has less value
Existing Service Levels	In-sourcing SD-WAN overlay service might impact current WAN managed services agreements
Security	While SD-WAN provides segmentation of traffic, pushing internet to the edge introduces new risks

Gartner Hype Cycle for Enterprise Networking & Communication (2017)

Expectations

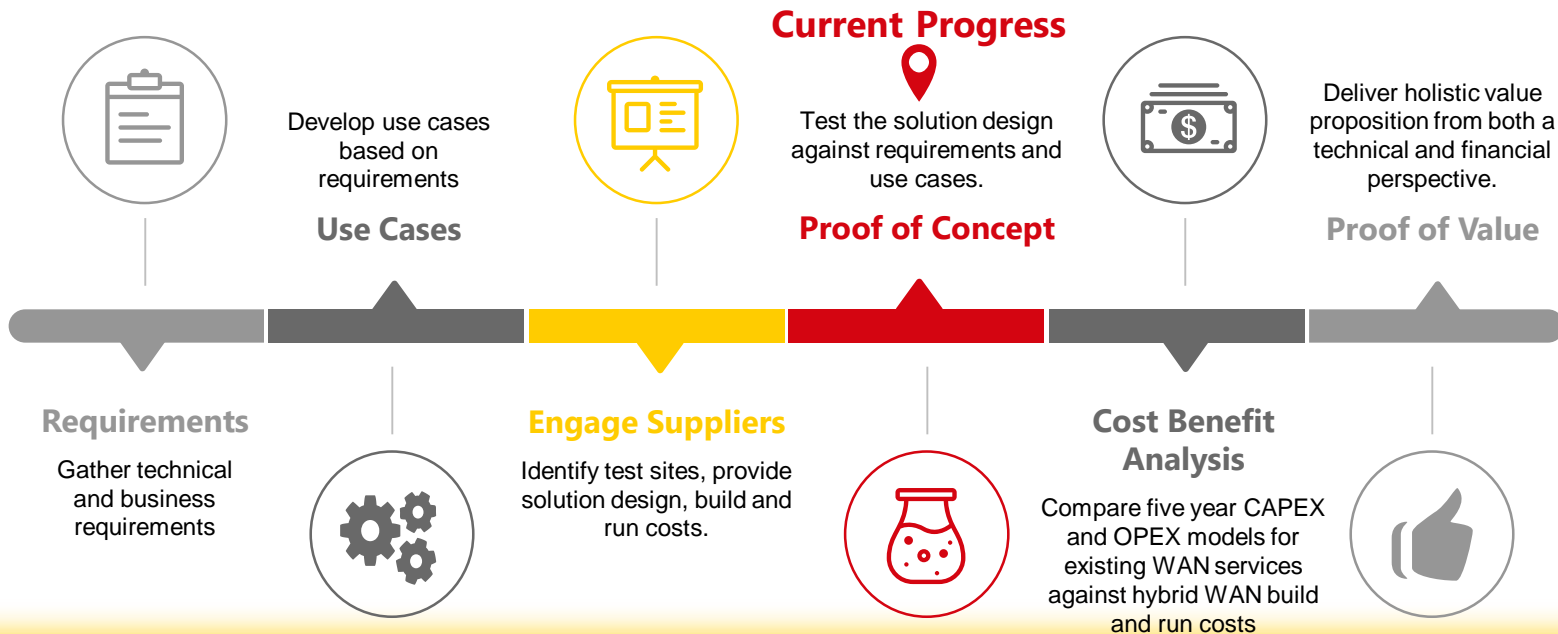SD-WAN Services

SD-WAN Products

Hybrid WAN

Time

Innovation Trigger	Peak of inflated expectations	Trough of disillusionment	Slope of enlightenment	Plateau of productivity

Plateau will be reached:
- Less than 2 years
- 2 to 5 years

SOURCE: 1) Gartner, Hype Cycle for Enterprise Networking and Communications 2017, 2) Gartner, SD-WAN Is Causing Disruption in the Enterprise WAN Edge, June 16, 2017
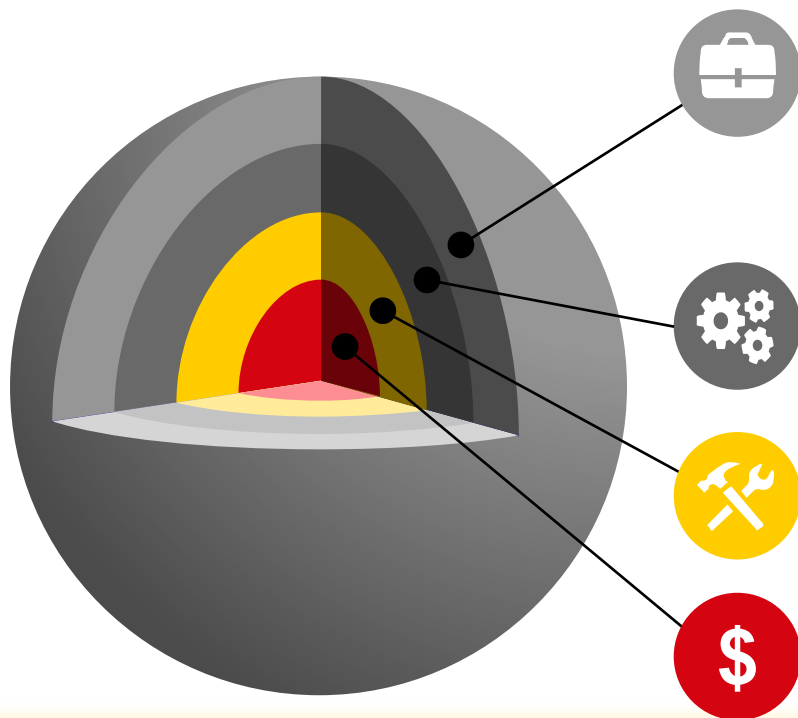
Objective & Approach

"Investigate whether the technology is fit for purpose and determine where the value lies for the organization so a decision on how to proceed can be achieved."

Current Progress

Develop use cases based on requirements

Use Cases

Test the solution design against requirements and use cases.

Proof of Concept

Deliver holistic value proposition from both a technical and financial perspective.

Proof of Value

Requirements

Gather technical and business requirements

Engage Suppliers

Identify test sites, provide solution design, build and run costs.

Cost Benefit Analysis

Compare five year CAPEX and OPEX models for existing WAN services against hybrid WAN build and run costs

Requirements

Business

- Solution should provide cost savings for short-term ROI in regions where bandwidth is a premium
- Focus must be on countries where the most benefit can be realized (South/Central America, Africa and Asia Pacific)
- The service should also provide long-term cost avoidance by minimizing the need to upgrade costly MPLS circuits

Functional

- Intelligent routing based on user, app and/or session
- Multiple transport mediums providing optimal traffic flow
- Secure connectivity via public transport mediums
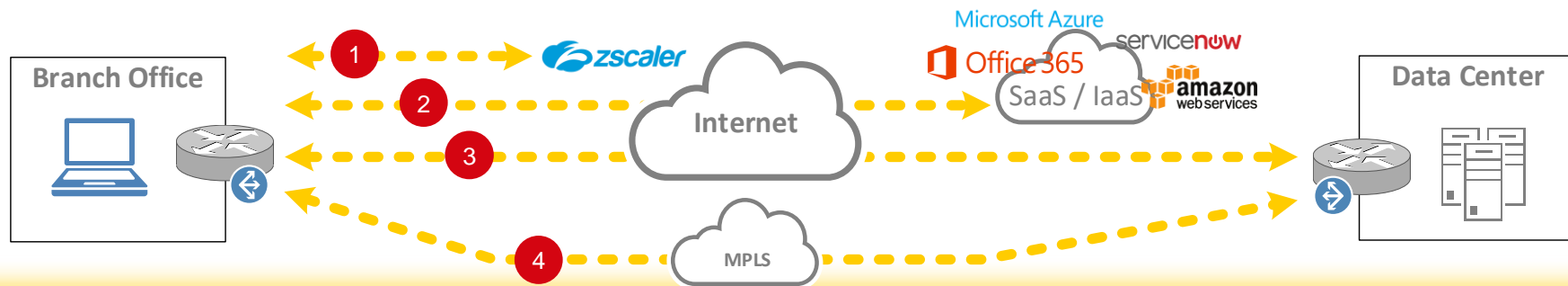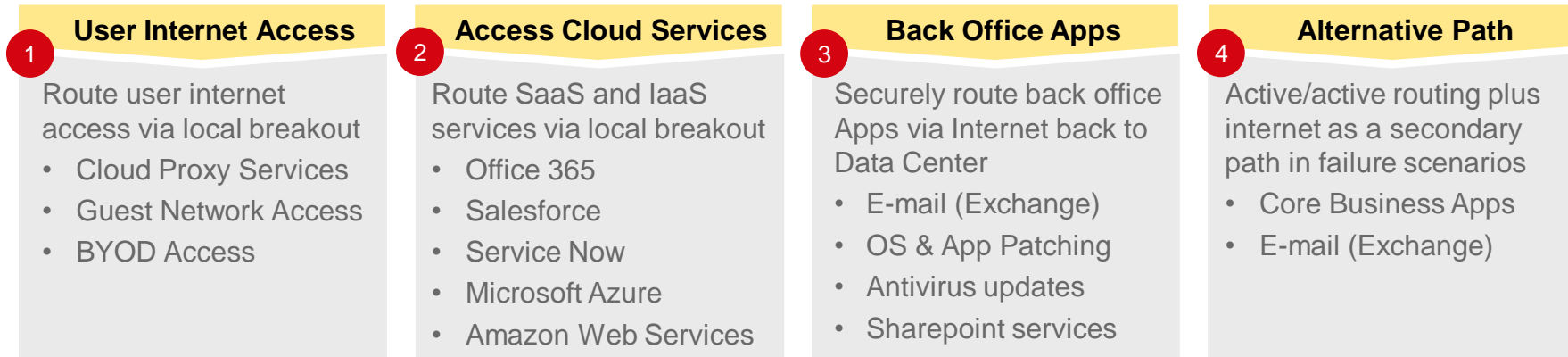- Offload load internet back office application traffic (OS updates)

Managed Service

- End-to-end integrated and fully managed service
- Flexibility to change technologies as market matures
- Provide enhanced monitoring and reporting

Financial

- CAPEX and OPEX comparisons of existing WAN service against new Hybrid WAN service

Use Cases

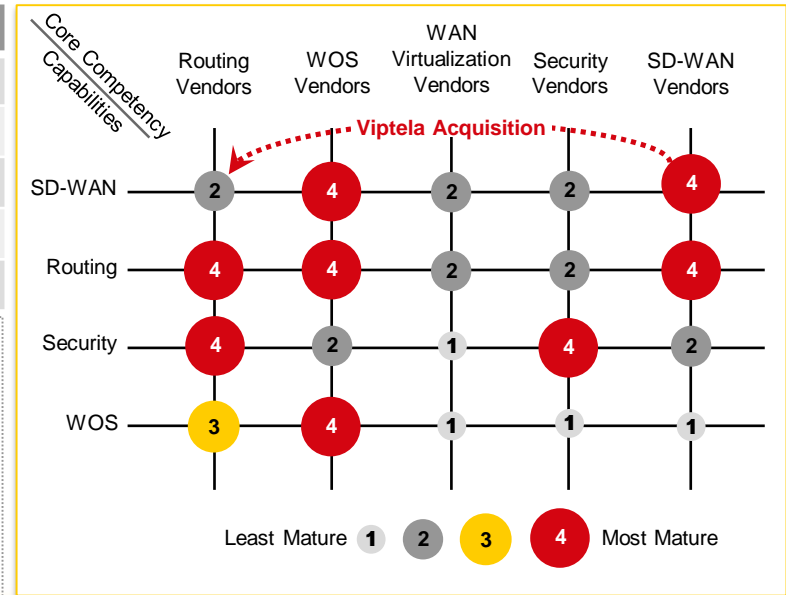| ① **User Internet Access**	② **Access Cloud Services**	③ **Back Office Apps**	④ **Alternative Path**
Route user internet access via local breakout	Route SaaS and IaaS services via local breakout	Securely route back office Apps via Internet back to Data Center	Active/active routing plus internet as a secondary path in failure scenarios
• Cloud Proxy Services	• Office 365	• E-mail (Exchange)	• Core Business Apps
• Guest Network Access	• Salesforce	• OS & App Patching	• E-mail (Exchange)
• BYOD Access	• Service Now	• Antivirus updates	
	• Microsoft Azure	• Sharepoint services	
	• Amazon Web Services		

Vendor Technologies

When procuring a managed service you shouldn't put too much emphasis on vendor feature sets but instead you want to focus on capabilities and performance.

Core Competency	Vendors
Routing	**Cisco**, **Huawei**
WAN Optimization (WOS)	Citrix, Silver Peak, **Riverbed**, FatPipe, InfoVista
WAN Virtualization	Talari, Ecessa, Peplink
Security	**Cisco**, **Huawei**, Fortinet, Barracuda
SD-WAN (pure-play)	CloudGenix, **VeloCloud**, **Viptela**, Vera, **Nuage**

- Vendor selection for short-term gain should be tactical (3 year refresh plan)
- Leverage vendors with virtualization capabilities to make vendor transition easier as the market matures
- Solutions without routing capabilities would require maintaining both router and SD-WAN overlay infrastructure at the branch
- Pure-play vendors with routing capabilities still need to be proven to be capable of replacing incumbent branch router vendor
- Non-core routing competency vendors lack services like IP Telephony, etc.

Core Competency Capabilities

Core Competency Capabilities	Routing Vendors	WOS Vendors	WAN Virtualization Vendors	Security Vendors	SD-WAN Vendors
Viptela Acquisition					
SD-WAN	2	4	2	2	4
Routing	4	4	2	2	4
Security	4	2	1	4	2
WOS	3	4	1	1	1

Least Mature **1** **2** **3** **4** Most Mature

Proof of Concept Results

While we're still in the early stages of the initiative we've already started to see some positive outcomes.

Offloading of back office and user internet traffic has seen significant decreases in MPLS capacity.

40% to 50%

Improved Application Response

The absence of queuing and ample internet capacity resulted in improved back office application performance.

Cost Benefit Analysis

Existing WAN Service	Hybrid WAN Service
• **Existing** WAN MPLS **costs**	**Cost reduction** due to **bandwidth downgrades** of existing MPLS circuits. (potential contract penalties)
• Projected MPLS circuit costs over **5 years at 20%** growth per year	• Projected MPLS circuit costs **over 5 years at 10%** growth rate per year (based on POC results)
• Cost of **existing internet circuits**	• Cost of **new internet circuits and additional capacity** (firewalls, on premise proxy infra)
• Cost of **current WAN managed service**	• Current **WAN and/or new Hybrid WAN** managed services charges
• Cost to **refresh** to **existing branch routers**	• Cost to **refresh** to **SD-WAN infrastructure**

Sourcing Strategy

Cost

- Cheaper due to lack of managed service charges

End-to-End SLA

- Unable to guarantee without managing WAN transport

Support

- Knowledge of core business apps

Cohesive Service

- Single vendor and service globally

In-Source

Management of SD-WAN overlay service only. WAN transport still supported by supplier.

Out-Source

Full end-to-end Hybrid WAN managed service.

Differentiators

Neg	Cost	Pos	Neg	Cost	Pos
	End-to-End SLA			End-to-End SLA	
	Support			Support	
	Cohesive Service			Cohesive Service	

Cost

- Due to fully managed service, charges are typically higher

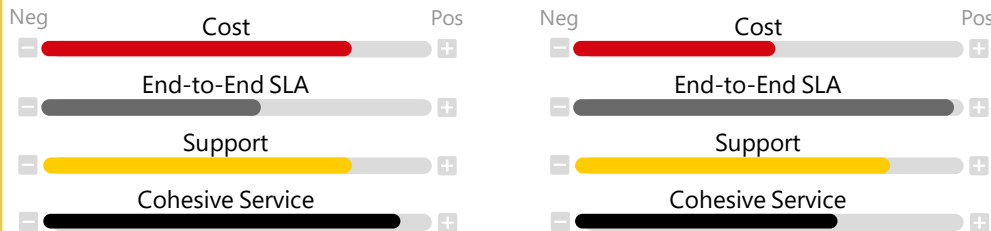## End-to-End SLA

- Manages SD-WAN overlay and WAN transport

Support

- Has reach to provide on-site support

Cohesive Service

- Multi-vendor and regional services

Hybrid WAN: Proof of Value Journey | Singapore | 12 Sep 2017   14

Next Steps…

Even though we are only partially through the exercise we have already learned a great deal but there is still more work to be done.

Complete the proof of concept evaluations

- While significant benefits have been realized there is still further proof of solution to be conducted
- Need to test overlay-to-underlay capabilities for transition period

$ Continue to develop cost benefit analysis

- It is still unknown if the Hybrid WAN service is more cost effective
- Will need to identify subset of countries and sites to estimate costs and savings

Evaluate Sourcing Strategy

- Ensure contract terms guarantee change in vendor
- Investigate impact of multi-vendor service across regions

Decision forward

- Deliver proof of value consisting of technical and financial outcomes

Thank you…Questions?