Network Evolution & Transformation at Cargill

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About Cargill

More than
150,000
employees

Over
150
years of experience

located in
70
countries

Our purpose: Committed to feeding the world in a safe, responsible and sustainable way

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Industries We Serve

Agriculture
- Farm services
- Grain and oilseed trading, processing and supply chain
- Sugar and Cotton
- Palm oil
- Animal nutrition

Industrial
- Ocean transportation
- Ferrous metals
- Industrial salt
- Bioindustrials & renewables

Financial
- Structured finance
- Trade finance
- Risk management services
- Asset management funds

Food
- Refined oils
- Vegetable oils
- Sweeteners
- Malt
- Chocolate
- Beef & poultry
- Eggs
- Texturizers & emulsifiers
- Dressings & sauces

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Cargill's Legacy Network back in 2015

Global WAN built on 2 global MPLS providers, with small pockets of local providers

**4 regions:
NA
LATAM
APAC
EMEA**

12 data centers globally

1,500 sites globally, many in remote and challenging locations

MPLS and Internet (provider-managed)

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Challenges

- High cost

- Complex environment to support

- Scalability issues in provider-managed Internet VPN

- Dependency on data centers

- Not scalable for cloud

Business Value – Why Change?

- Reduce cost
- Enable growth and application deployments
- Reduce complexity
- Agility – cloud and IoT

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Evolution

What changes are necessary to reduce cost and prepare for the future?

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Industry Trends - Shift in Network Focus

➢ From apps being centralized in Data Centers
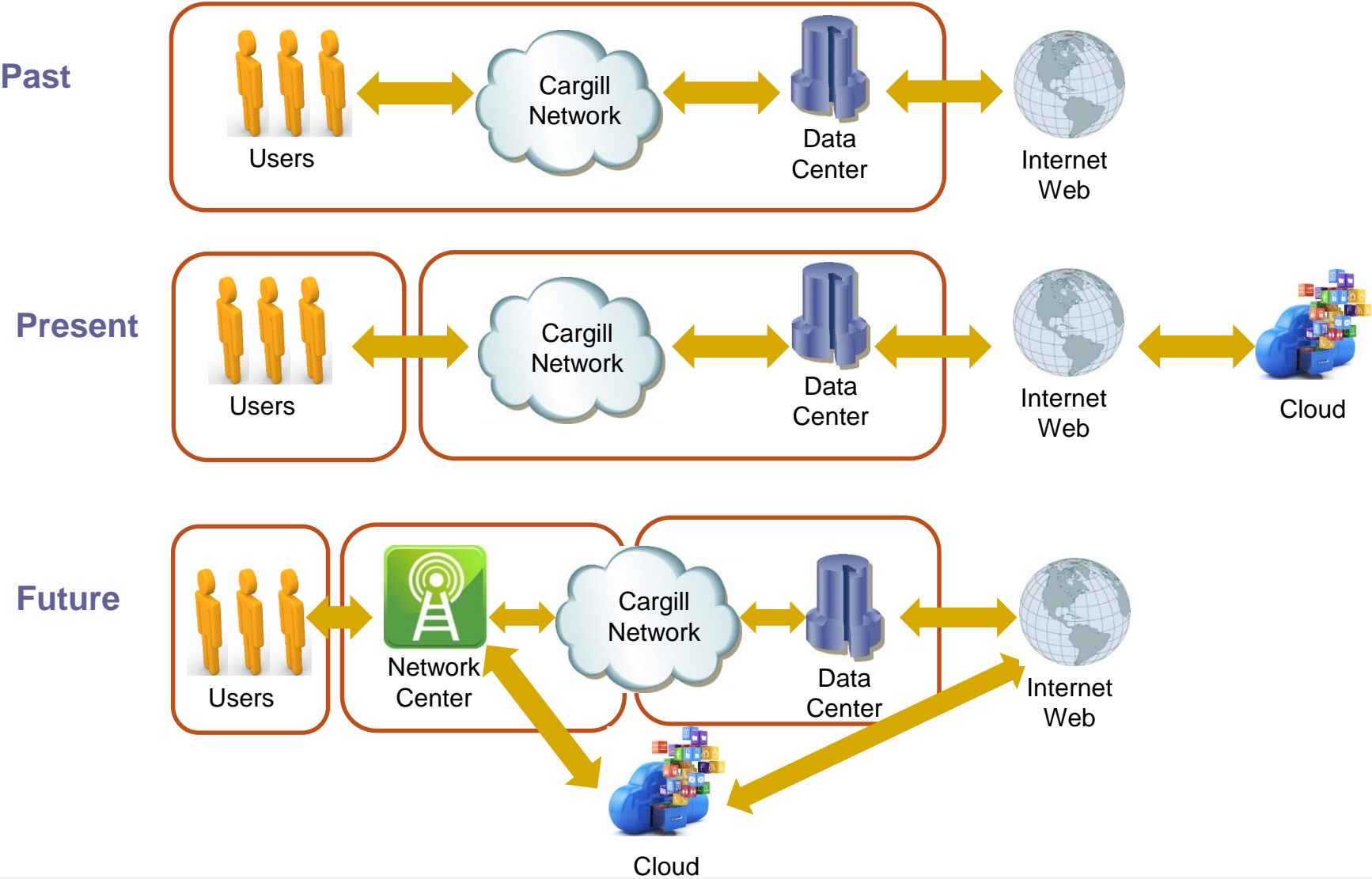
➢ To apps distributed anywhere

The industry has shifted into peer-to-peer apps like Skype for
Business and cloud solutions like Office 365, AWS, MS Azure, etc.
To provide the best end-user experience, enterprises are beginning
to leverage purpose-built network centers called
Carrier Neutral Facilities (CNFs).

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Industry Trends - Carrier Neutral Facilities

CARRIER NEUTRAL FACILITIES CAN BENEFIT CARGILL BY:

- Cloud connectivity - Faster connectivity and better end-user experience via direct connections to strategic cloud providers

- Data Centers - Limit "pass through" traffic and reduce impact to WAN due to Data Center relocations

- Provisioning and upgrading key WAN circuits much faster

- Regional border – separating regions so provider selection can be independent

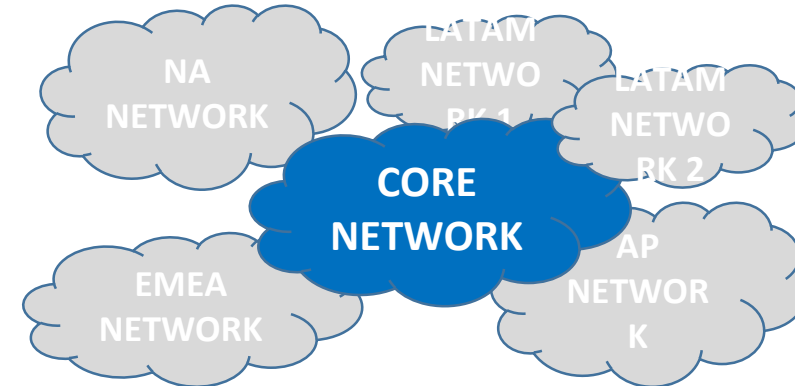- Agility – faster to bring on IoT, Internet and CDN capabilities

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Network Evolution

Network Evolution

GLOBAL NETWORK

TODAY - A one size fits all approach

LATAM NETWORK 1

NA NETWORK

LATAM NETWORK 2

CORE NETWORK

EMEA NETWORK

AP NETWORK

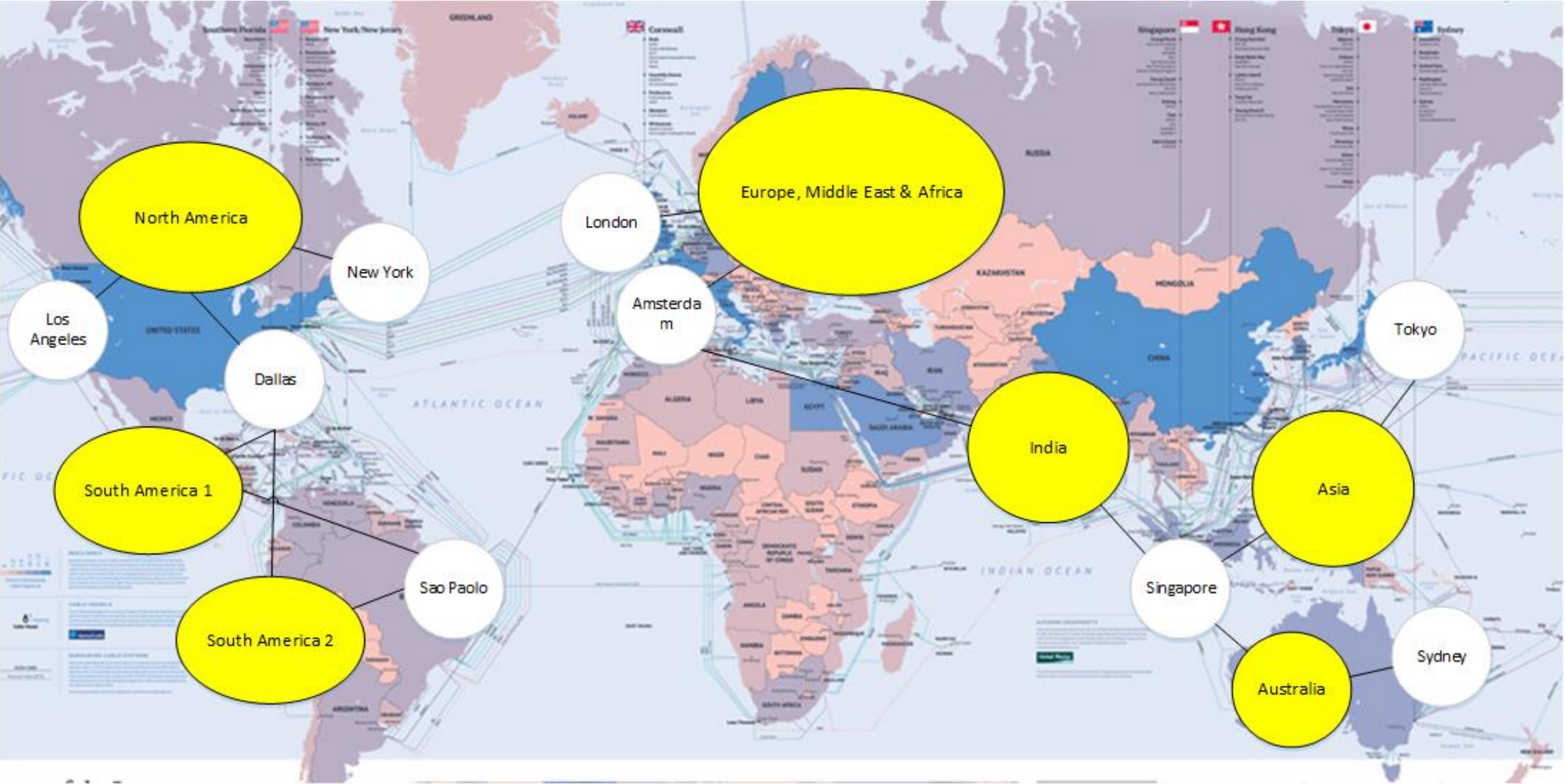**Tomorrow – Regional approach**

Value of New Architecture

- Divide and conquer – separate global network into regional networks connected via core network

- Leverage strengths of regional telecoms providers

- Abstraction from Data Center

- Foundation for future WAN transformation

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Implementation

- RFP for Carrier Neutral Facility (CNF)

- RFP for 4 regions + core network

- Stand up core network based on L2 VPLS connecting CNFs

- Migrate from current global network to new regional networks

- Route summarization into core network

- Implement DMVPN to leverage Internet transport

Global CNF Locations & Regional WAN Connections

Inside Carrier Neutral Facility

Network Evolution and Transformation at Cargill

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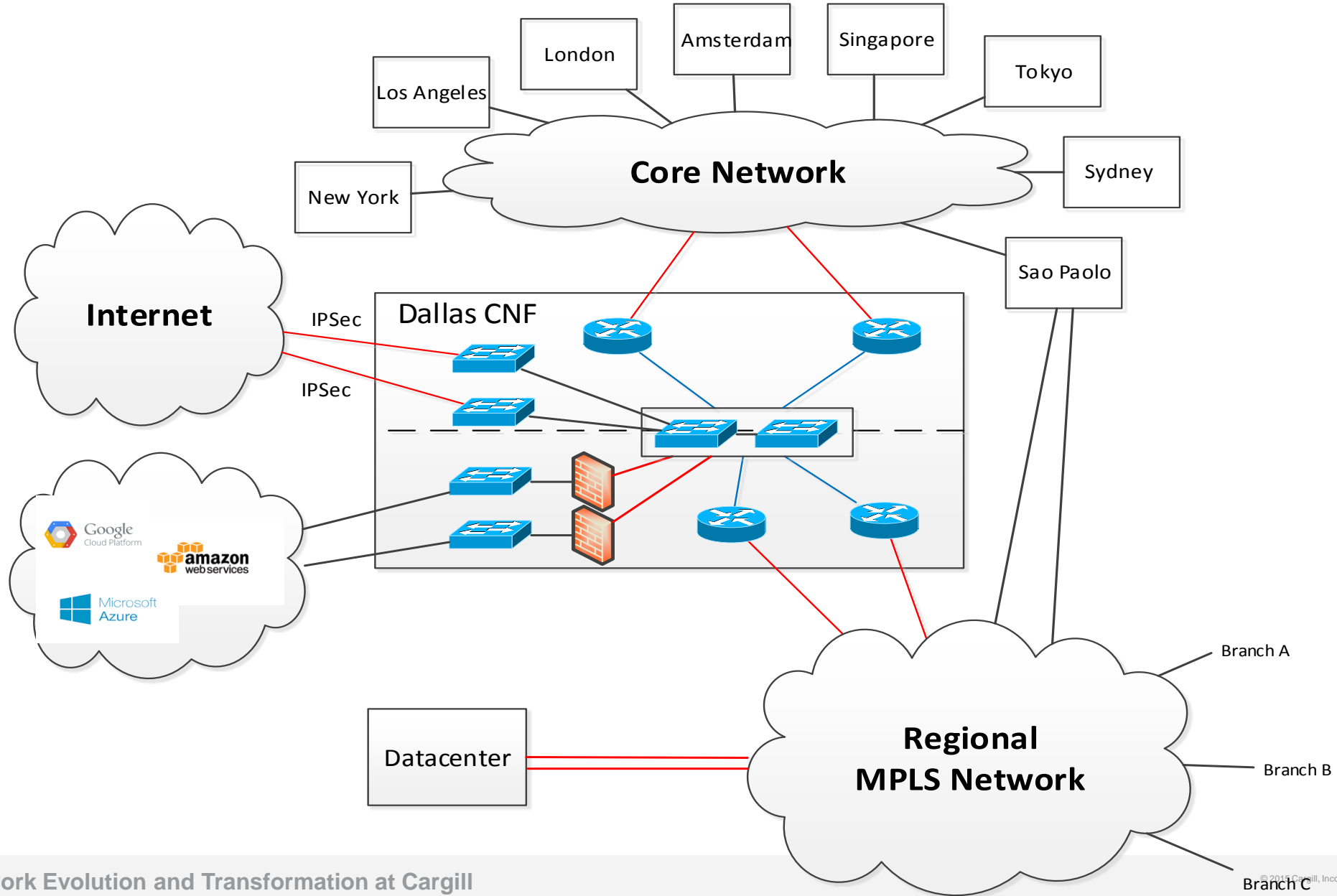
Transformation

How do we adapt to the world of cloud, IoT, BYOD and agility?

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Changes and More Challenges…

- More apps and data are moving out of data center and enterprise network:
  - Cloud hosting
  - Apps accessed from Internet
  - What about security?

- Boundary between enterprise private network and public Internet is blurring even more

- IoT – how does it fit into enterprise network?

- BYOD – current network may not meet requirements

Future Capabilities

EXPAND CORE IN CNF:

- **INTERNET DMZ**

- **EXTRANETS**

- **VDI GATEWAYS**

- **REMOTE ACCESS**

- **CDN**

- **IOT GATEWAY**
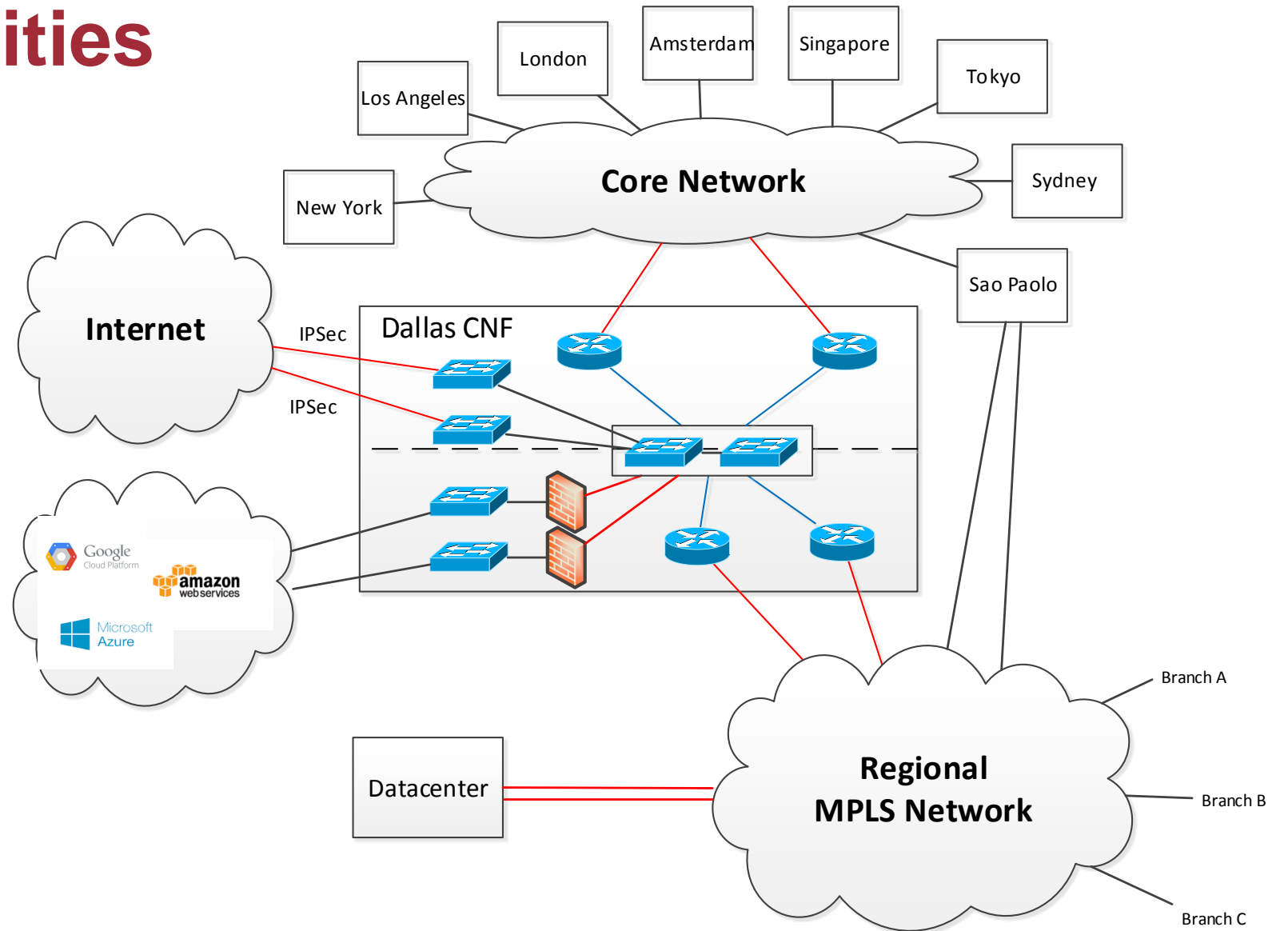
And Beyond…

- SD-WAN architecture and pilot

- Core network transport - leveraging alternative transports

- Internet only

- Programmability – how can network operations be automated?

- Analytics & machine learning – extracting value from the data in the network

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150 years of helping the world *thrive*