

EQUINIX

**Build hybrid/multicloud  
architecture using private  
connection to Oracle Cloud**

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Architecture**

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Our **lack of flexibility** is hurting us more than we know, and the **pain is growing exponentially.**



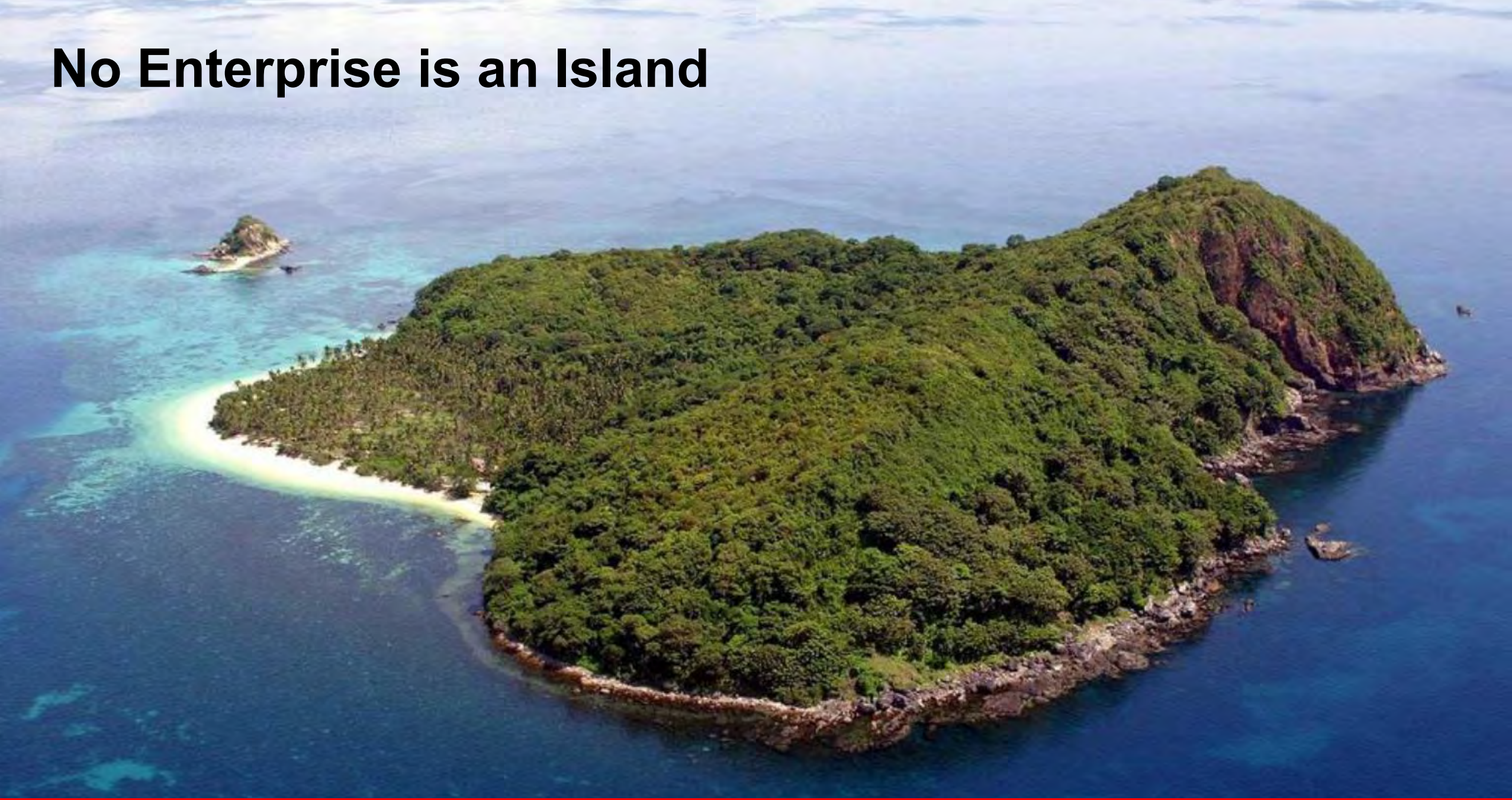
KODAK  
INSTAMATIC X-15

camera





# No Enterprise is an Island





# Interconnection is Essential



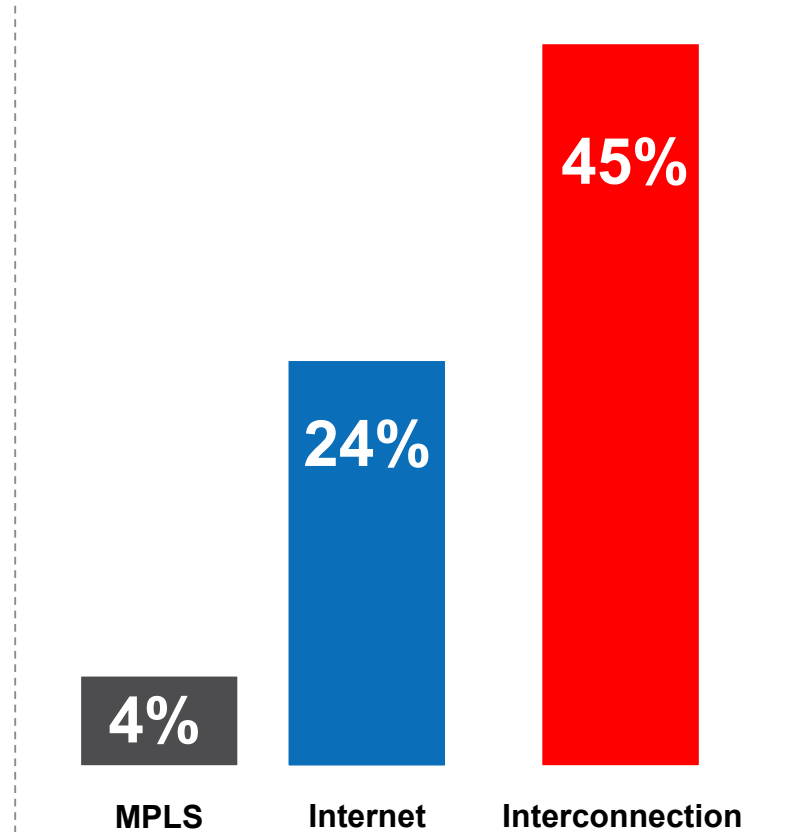
# By 2020, the Global Interconnection Index predicts Interconnection Bandwidth will outpace the growth of internet traffic by 2X and 6X the volume

INTERCONNECTION BANDWIDTH GROWTH...

...IS EXPECTED TO OUTPACE THE GROWTH OF INTERNET & MPLS TRAFFIC

5000 TBPS OF INTERCONNECTION BANDWIDTH IN ONE MINUTE COULD CONCURRENTLY PROCESS

IS EXPECTED TO GROW BY  
**45%**  
 TO  
**5000** TBPS  
 OF INSTALLED BANDWIDTH



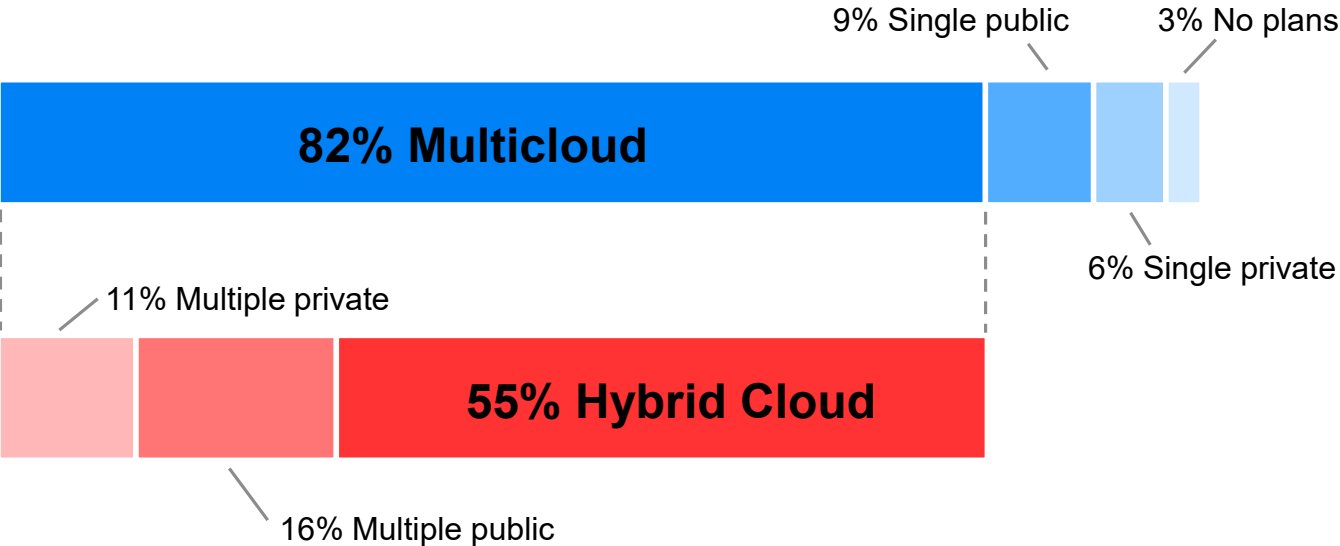
1.9B	PAYPAL TRANSACTIONS
4.5M	UBER DRIVER STREAMS
50B	IoT DEVICE STREAMS
18.8B	EMAILS WITH ATTACHMENTS
938K	CORPORATE TRAINING VIDEOS
837M	UCC CALLS
825M	DOCUMENT UPLOADS
35M	PRE-PRODUCTION 4K VIDEO STREAMS

Interconnection Bandwidth is defined as the total capacity provisioned to privately and directly exchange traffic with a diverse set of counterparties and providers at distributed IT exchange points

# Enterprises Continue to Adopt Hybrid and Multicloud

A majority of enterprises have hybrid and multicloud strategies already in place

## Enterprise Cloud Strategy



## Hybrid Cloud

- 55% of enterprises have a hybrid cloud strategy

## Multicloud

- 82% of enterprises have a multicloud strategy
- Cloud users leverage 6 clouds on average

Source: RightScale 2016 State of the Cloud Report



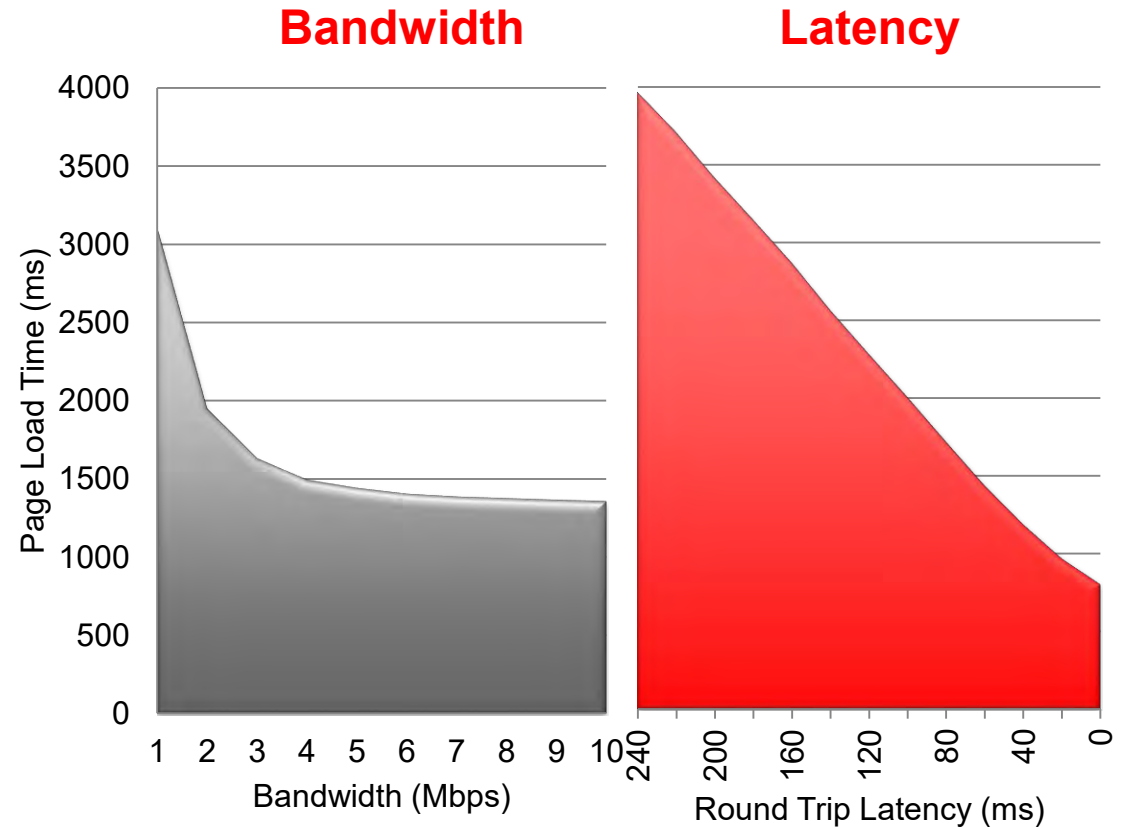




# Proximity Matters

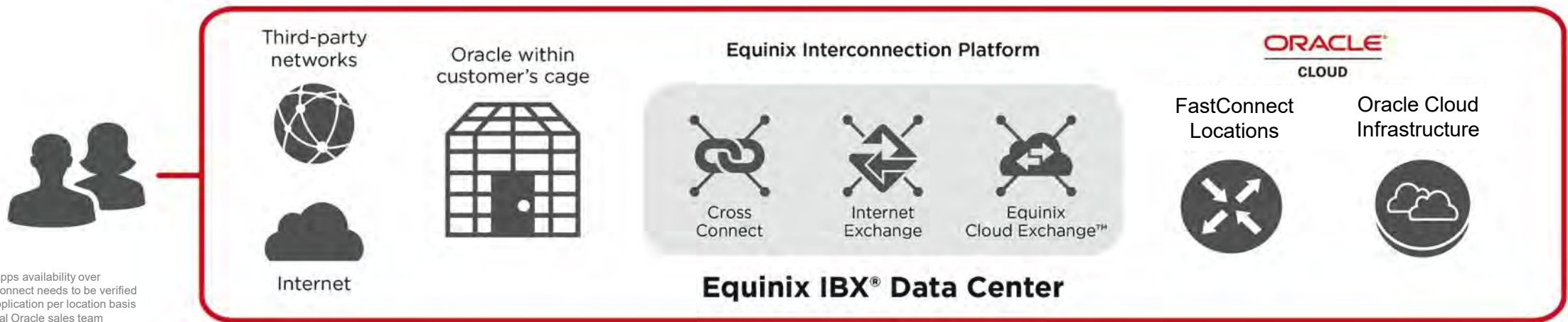
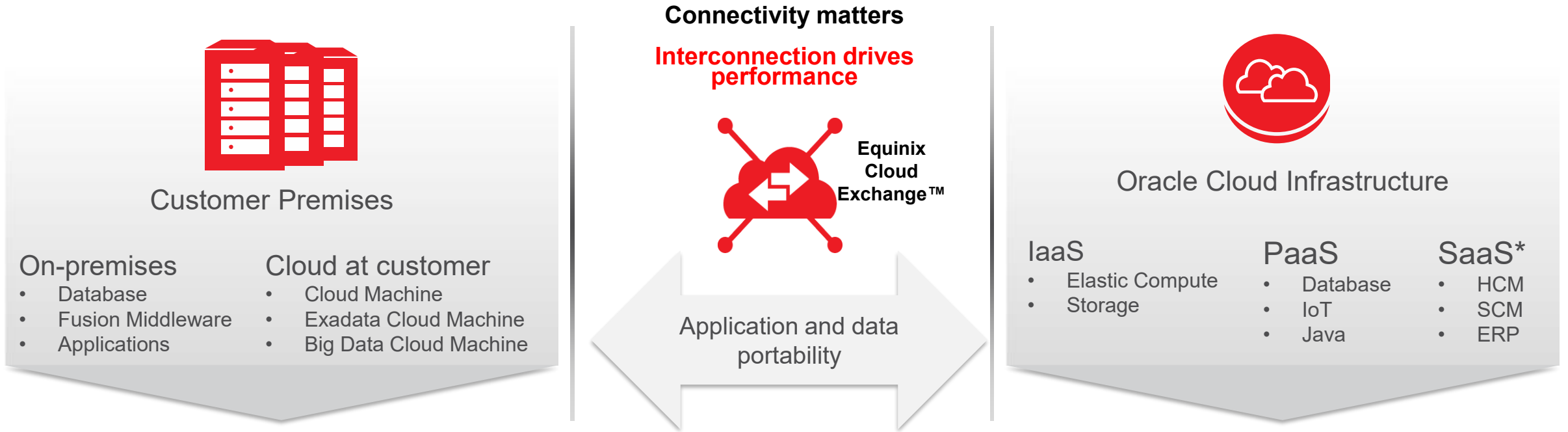
Distributed delivery improves performance

Globally distributed service delivery gets you closer to users



Source: Mike Belshe, Google, "More Bandwidth Doesn't Matter (much)"

# Oracle Cloud Infrastructure FastConnect at Equinix



\* SaaS apps availability over FastConnect needs to be verified per application per location basis by local Oracle sales team



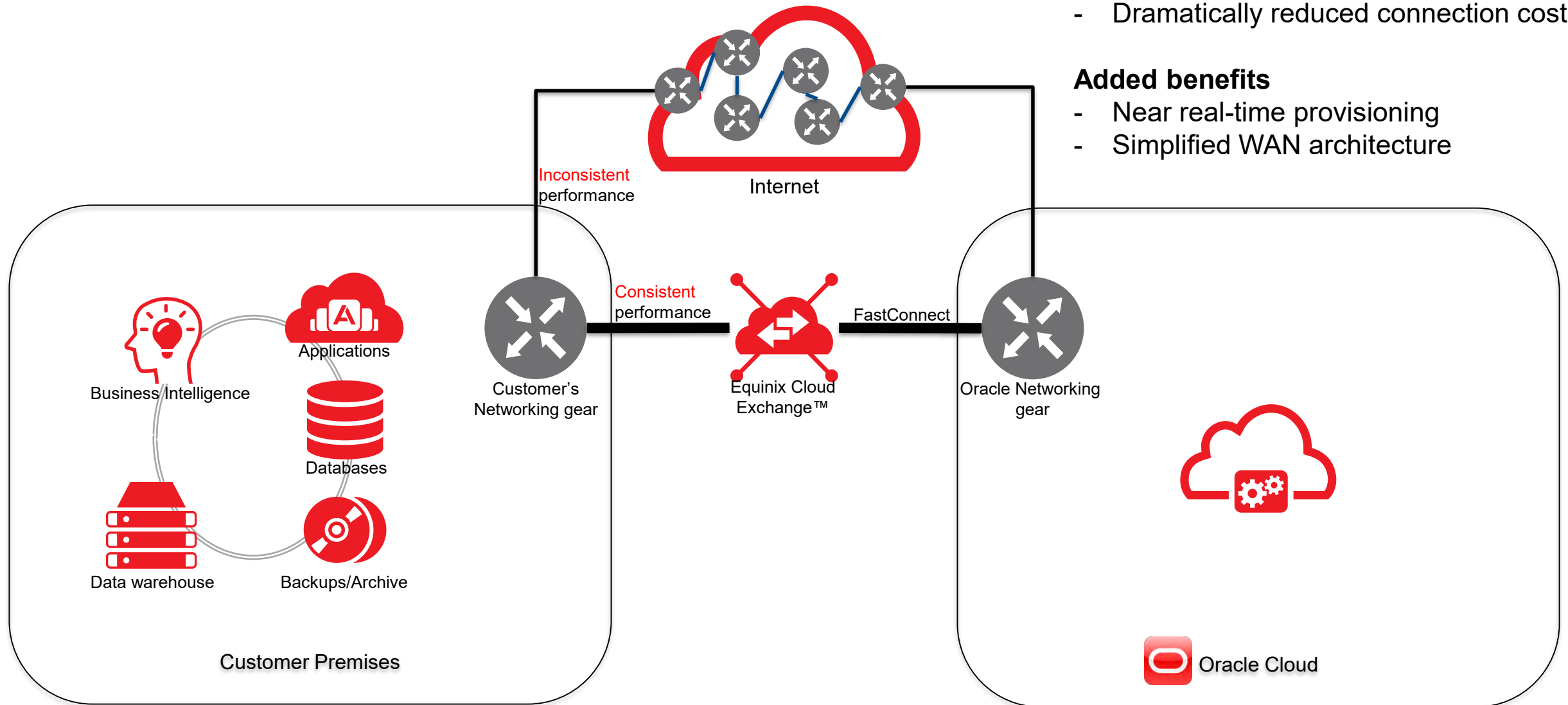
# Hybrid Cloud Solutions

## Bypass the public internet

- High throughput
- Low latency
- Dramatically reduced connection costs

## Added benefits

- Near real-time provisioning
- Simplified WAN architecture

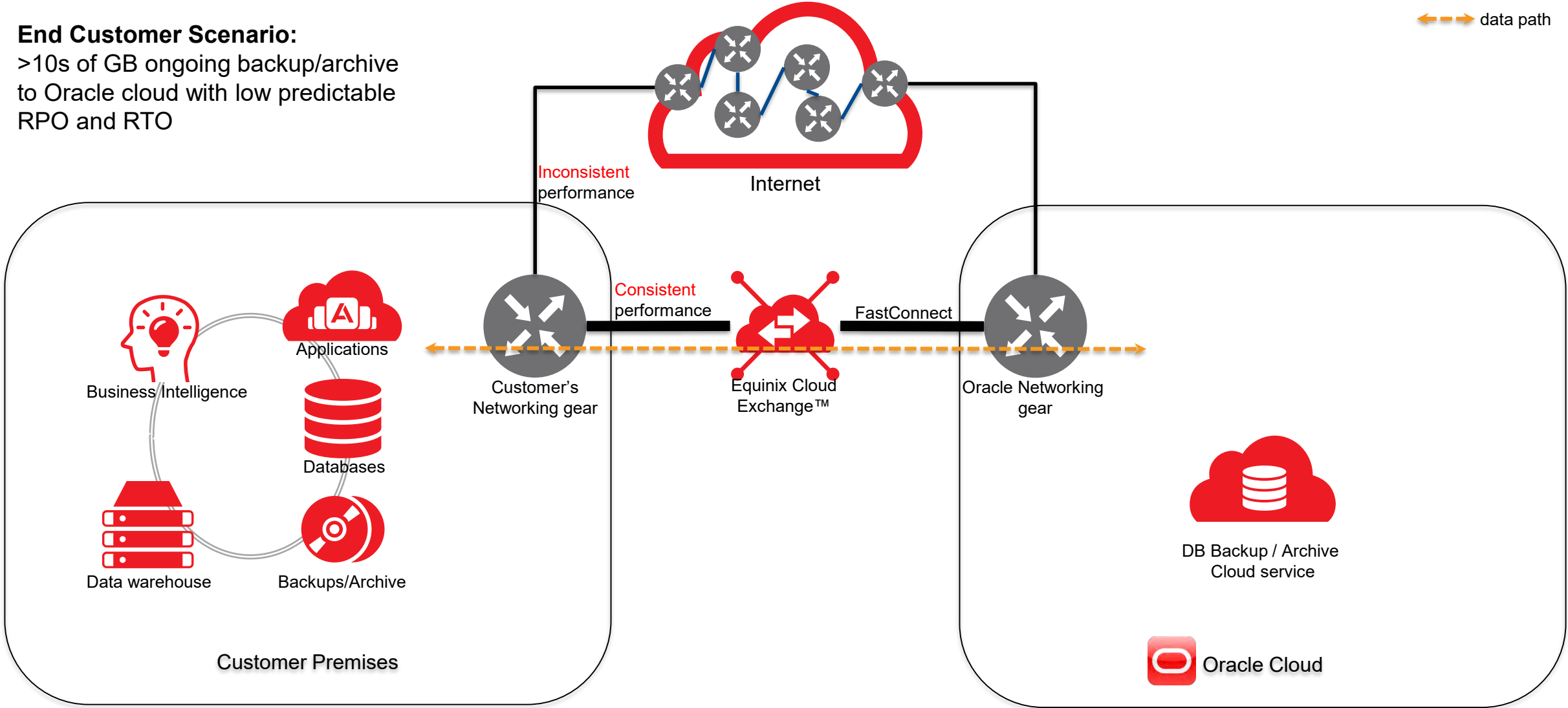


# High-throughput Use Case: DB Backup Cloud Service

## End Customer Scenario:

>10s of GB ongoing backup/archive to Oracle cloud with low predictable RPO and RTO

←→ data path

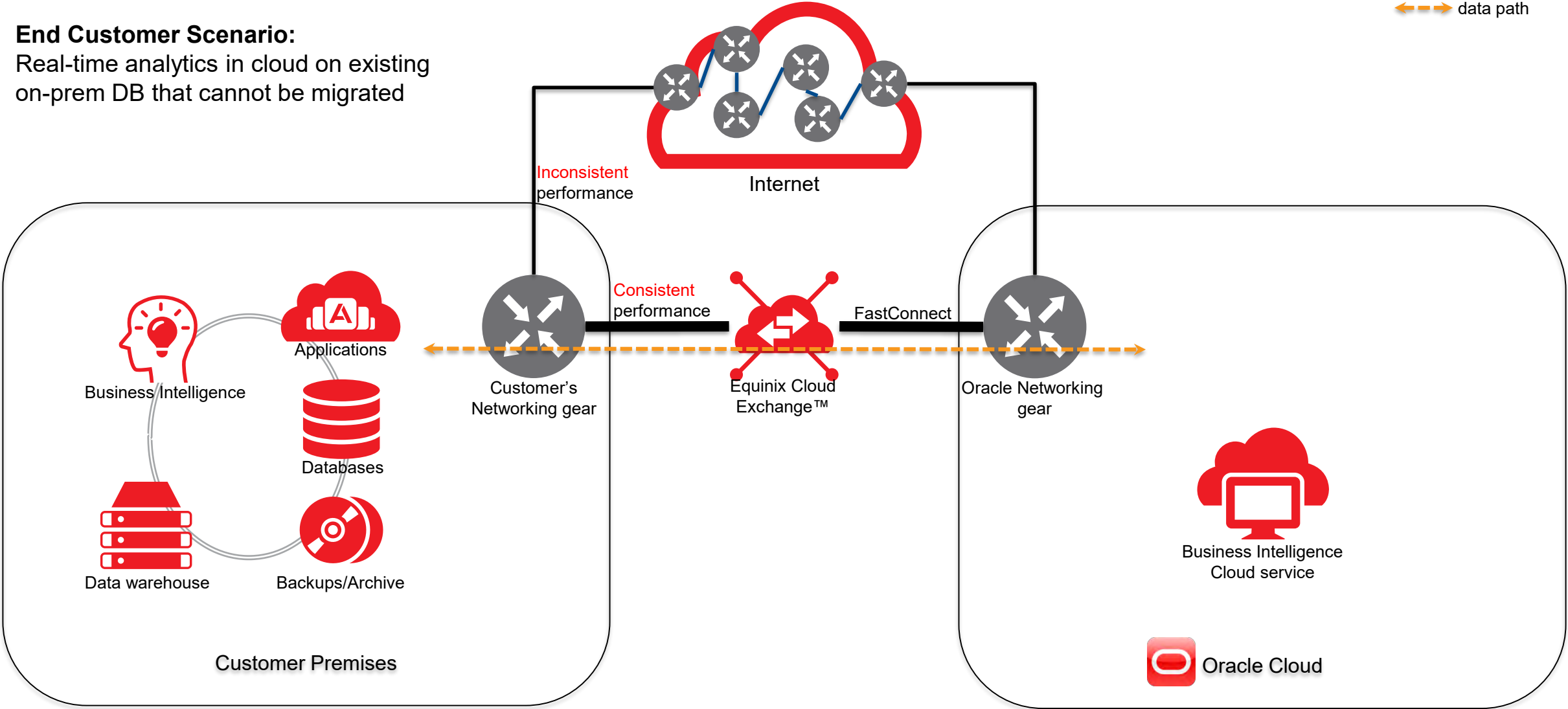




# Low Predictable Latency Real-time Analytics

←→ data path

**End Customer Scenario:**  
Real-time analytics in cloud on existing on-prem DB that cannot be migrated

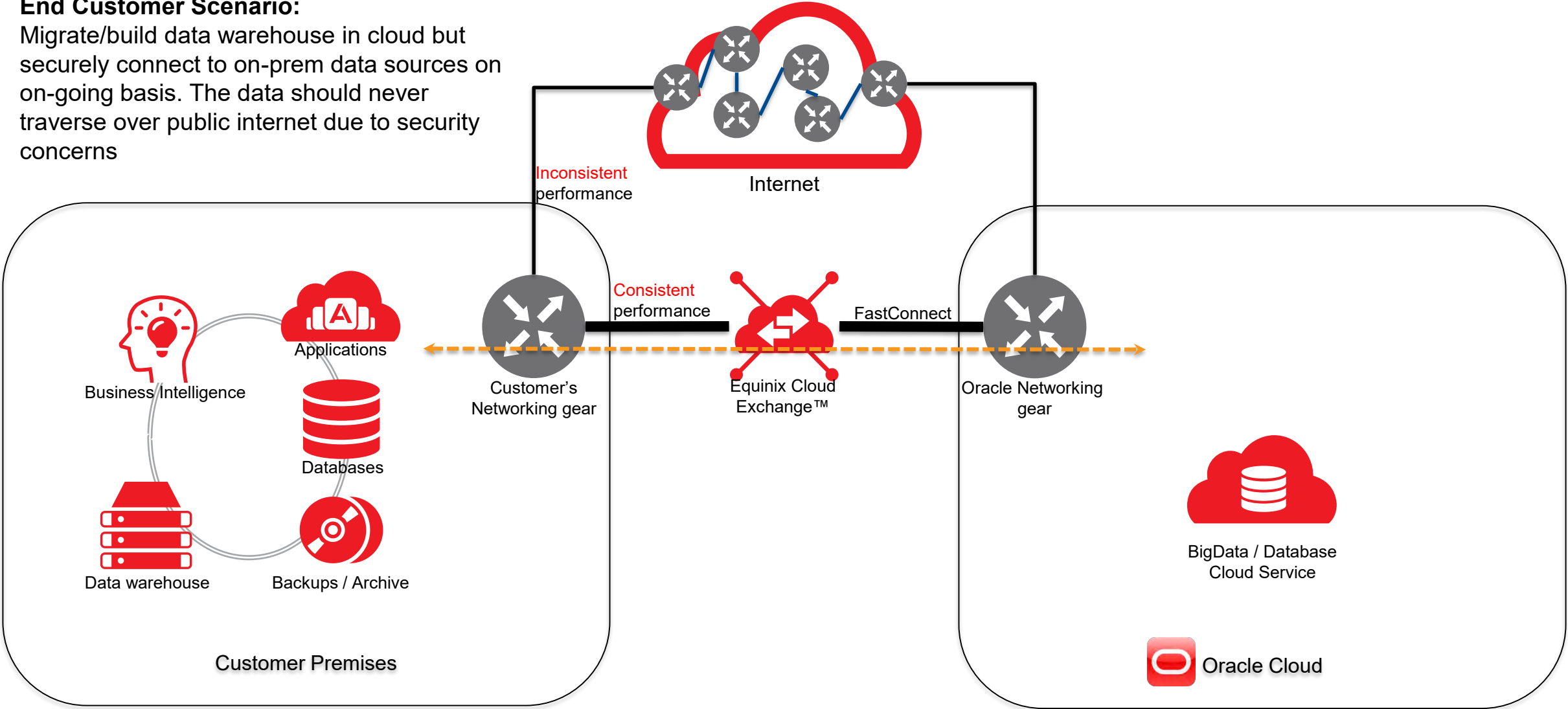


# Security Use Case: Big Data/DBCS

←→ data path

## End Customer Scenario:

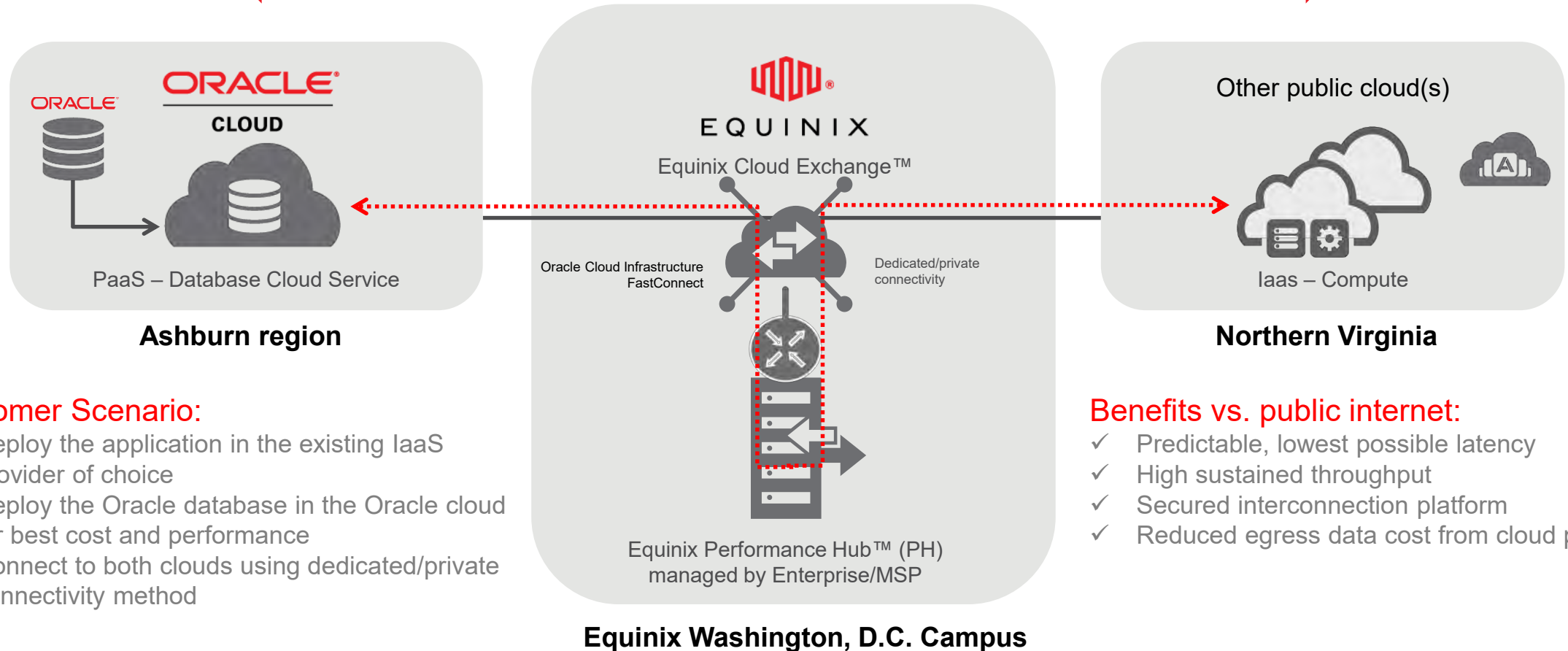
Migrate/build data warehouse in cloud but securely connect to on-prem data sources on on-going basis. The data should never traverse over public internet due to security concerns





# Multicloud Case Study: Database in Oracle® Public Cloud; Application in Another Public Cloud

Customer observed a network latency of sub 2ms round trip between the Oracle Cloud and the other IaaS provider



## Customer Scenario:

- ✓ Deploy the application in the existing IaaS provider of choice
- ✓ Deploy the Oracle database in the Oracle cloud for best cost and performance
- ✓ Connect to both clouds using dedicated/private connectivity method

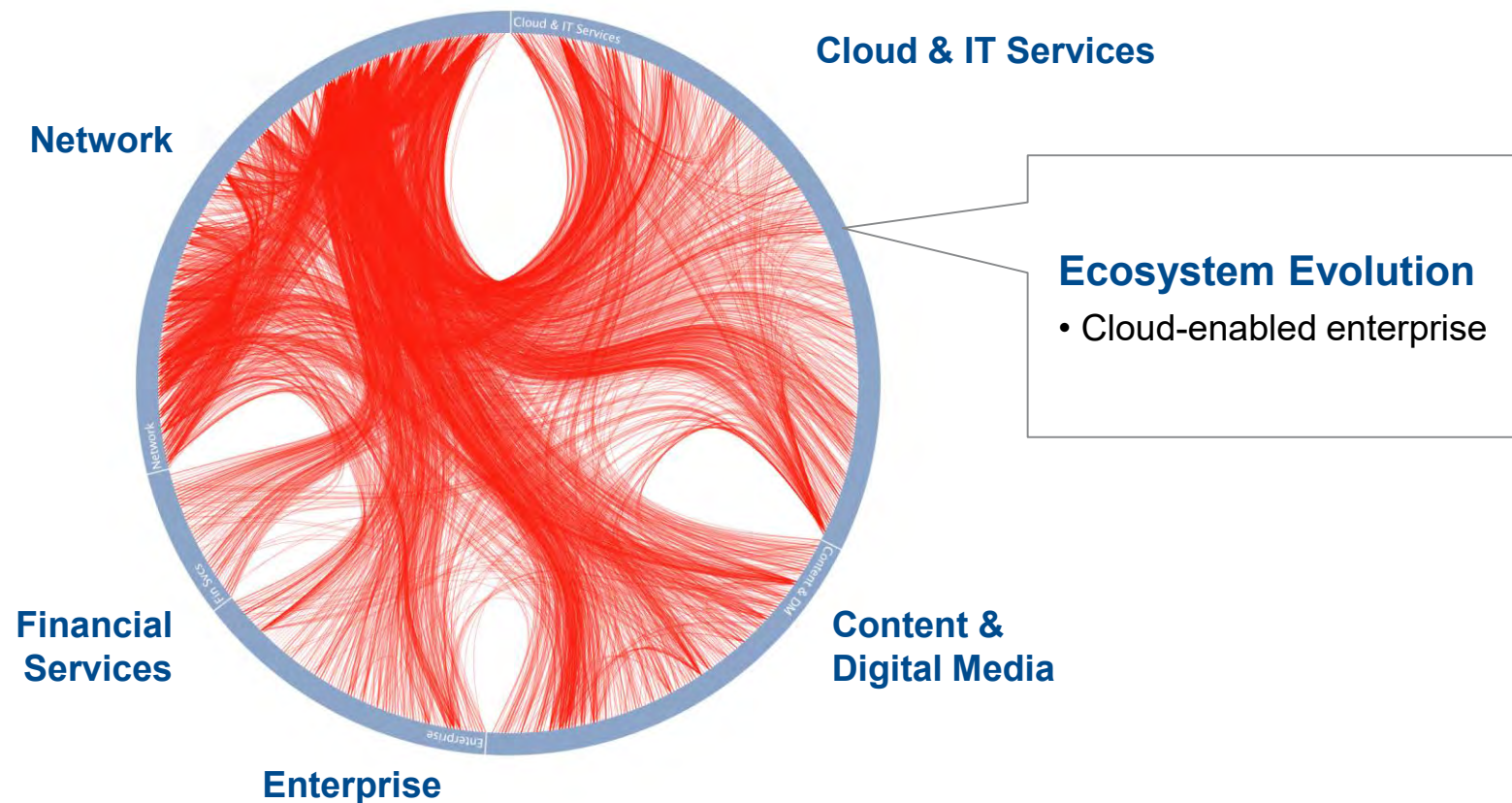
## Benefits vs. public internet:

- ✓ Predictable, lowest possible latency
- ✓ High sustained throughput
- ✓ Secured interconnection platform
- ✓ Reduced egress data cost from cloud provider

# Ecosystems: Silicon Valley

Rich, cross-vertical connectivity: network, content, financial, cloud and enterprise

## Silicon Valley 2010 – Current





# Hybrid Cloud Models

Combination of select services leads to hybrid cloud deployment using Equinix Interconnection Platform



Lift & shift



DB upgrades



Data marts & analytical apps



Dev/test & mobile app dev



Cloud native & containers



iPaaS integration



Big data



Multicloud



IoT

Customer Cage in Equinix

Equinix Interconnection Platform

Oracle Services accessed via Oracle® FastConnect



On premises



Cloud at customer



Oracle® Public Cloud

Database
Fusion Middleware
Oracle Applications
Engineered Systems
Exadata Database Machine
Big Data Machine
Enterprise Management

Oracle® Cloud Machine
Exadata Cloud Machine
Big Data Cloud Machine



Cross Connects



Cloud Exchange™



Internet Exchange

IaaS	PaaS	SaaS
Compute—Elastic Compute	Data—Database	ERP
Compute—Container Service	Data—DB backup	Human Capital Management
Compute—Ravello	Big Data/BD preparation	Data
Compute—Dedicated	Management Cloud	Analytics
Compute—Engineered System	Golden Gate	Customer Experience
Storage—NVMe	IoT	Industry Solutions
Storage—Object	API Platform	Supply Chain
Storage—Archive	Business Intelligence	EPM
Cloud Load Balancing	Mobile	Social

# IOA™ Knowledge Base & Community

IOAKB.COM

IOA™ Knowledge Base About Knowledge Base Community

## Welcome to the IOA™ Knowledge Base

Architect the Digital Edge  
Remove traditional architectural constraints, optimize connectivity, leverage ecosystems and place IT back in control — in the center of an Interconnection Oriented Architecture.

Get the IOA Playbook Get the IOA Roadmap

### USE KNOWLEDGE BASE

A collection of detailed blueprints, design patterns, use cases and more to help architects map their journey to becoming a digital enterprise.

### JOIN THE COMMUNITY

Currently in BETA  
Take advantage of technical resources and connect with peers and experts.

### ASK THE IOA EXPERTS

Currently in BETA  
Knowledgeable and experienced IOA architects dedicated to answering your questions about all things IOA and interconnection.

### Digital Edge Blueprints & Design Patterns

SEE ALL KNOWLEDGE BASE >

Network Blueprint Network Design Patterns	Security Blueprint Security Design Patterns	Data Blueprint Data Design Patterns	Applications Blueprint Applications Design Patterns
Ecosystems Blueprint Ecosystem Design Patterns	Analytics Blueprint Analytics Design Patterns	Content Delivery Blueprint Content Delivery Design Patterns	Collaboration Blueprint Collaboration Design Patterns
Hybrid Multicloud Blueprint Hybrid Multicloud Design Patterns	IoT Blueprint IoT Design Patterns		

# Designs & best practices available as blueprints and steps in the IOA Knowledge Base



## Network Blueprint

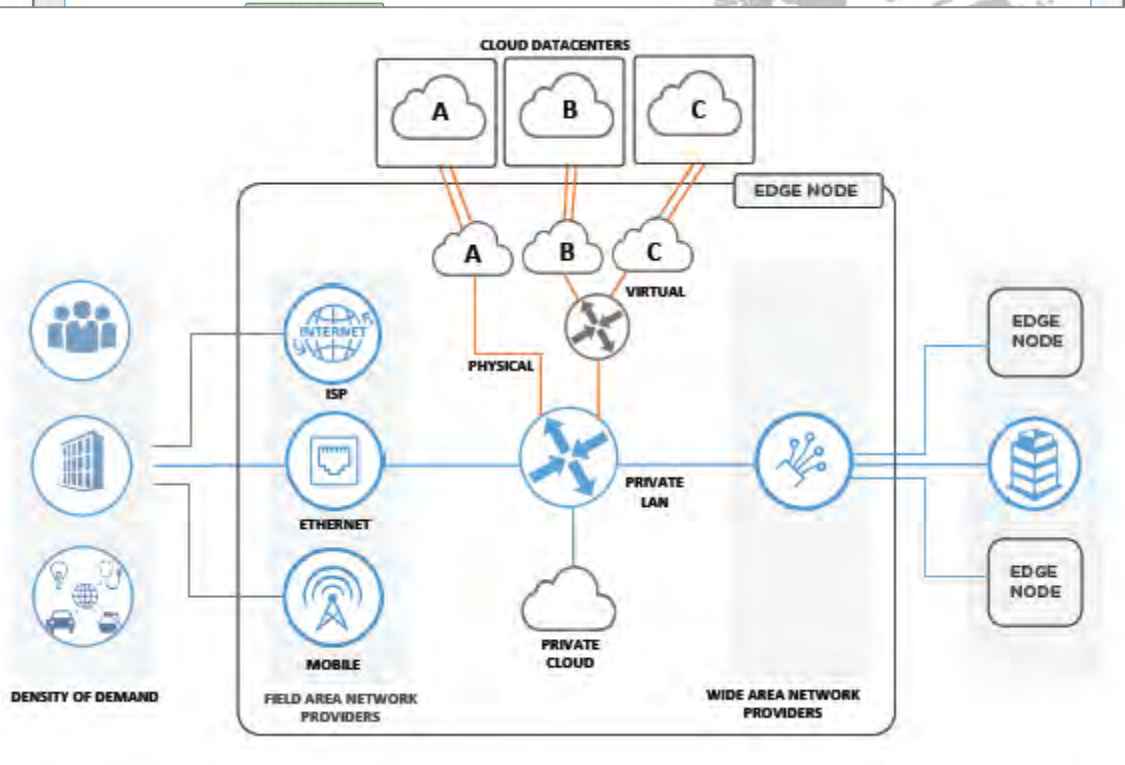
### Design Principles

- Performance (Quality of User Experience)
- Resilience (Amid Frequent Change)
- Scalability (Cost Effective Throughput)
- Sustainability (Design for Growth)
- Minimize Geographical Distance
- Place Intersection Points in Areas of Density (Users, Traffic and Data)
- Change Topology to adapt to Business Change
- Vendor Neutrality (Maximize Competitive Choice & Innovation)

To architect for the digital edge you need to bring the WAN and LAN together and create a digital edge node. Each digital edge node is tailored for network and traffic types that have to be localized, segmented and optimized — at specific geographic locations. Build the nodes in step function and deploy them in metro-based zones where there is density in users, traffic and data. Directly connect the nodes to reduce topological distance and optimize bandwidth



### Simplify the Topology



### Edge Node Component

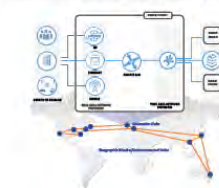
SD-WAN & MPLS	Broadband & Local links	Cellular & Mobile	Internet & ISP
Traffic Management	WAN Acceleration	Load Balancing	SDN/NFV

### DESIGN PATTERNS

#### 1 STEP 1

Redefine the edge by establishing a node in a metro area closer to customers and where business is conducted

#### Pattern: Localize & Optimize Traffic



### Capabilities

- Low-Latency Intersection Points of Ecosystem Density (clouds, partners)
- Shortest Path from Mobile, Broadband and Internet to Edge
- Localized and Segmented Traffic
- Multicloud Connectivity Options
- Resilient Mesh of Geographic Edge Nodes with E2E SLA Control
- Bandwidth and Traffic Are Optimized and Globally Load Balanced
- Scale Customers and Markets Globally by Adding Interconnected Digital Edge Nodes connected to the mesh.
- Control Bandwidth Anywhere
- Interconnection at the Center of the Architecture, With IT in Control of Digital's Biggest Differentiator

### Edge Node Deployment

Implementation is a mix of physical devices and virtual (NFV) appliances.  
Plan for half a cabinet in your edge node design

#### STEP 5

Cross connect to business partners and ecosystems for digital commerce and/or data changes

#### Pattern: Connect to Digital Ecosystems





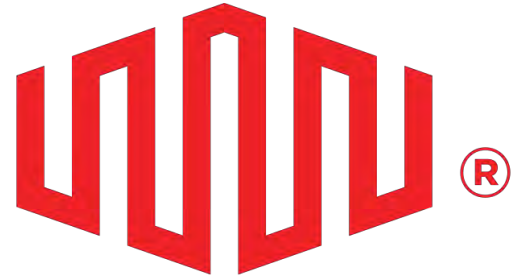
# Questions?

Learn more about these architectures  
via the IOA Knowledge Base

@ <https://www.ioakb.com/>

Visit Equinix Booth #4217 and  
Equinix Partner Lounge #2313





EQUINIX

WHERE OPPORTUNITY CONNECTS

# Cloud Exchange Locations

Available in 20+ top metros globally

