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AGENDA

Defining Edge Computing

Key Drivers & Challenges

Adoption Patterns
Defining Edge Computing
The Open Hybrid Cloud Vision

A consistent application platform and experience for:

ANY WORKLOAD

ANY FOOTPRINT

APP

APP

APP

APP

PHYSICAL

VIRTUAL

PRIVATE CLOUD

PUBLIC CLOUD

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The Vision with Edge

Edge is a deployment target of Open Hybrid Cloud.
What Is Edge Computing?
What Is Edge Computing?
“Edge Computing refers to the concept of bringing computing services closer either to service consumers or data sources, giving companies the flexibility and simplicity of cloud computing for a distributed pool of resources across a large number of locations.”
Edge Tiers
Centralization vs. Distribution

**EDGE**
- many small sites (scale-out)
- better economies-of-scale and resource sharing efficiency

**CORE**
- few, large sites (scale-up)
- Better bandwidth, latency, resiliency, data sovereignty

“Centralize where you can, distribute where you must.”
Key Drivers
Motivation

Latency
Place processing power closer to the data source

Bandwidth
Reduce the amount of traffic that needs to travel back to the data center core

Resilience
Continuous operations of edge sites in event link drop

Regulations
Meet standards and compliance requirements
Challenges

Scale
Architecture requires horizontal scale

Environmental
Potential inconsistent connectivity, dust, heat, and space constraints

Expertise
Limited to no IT expertise in remote sites

All while controlling **costs** to ensure budget goals are met.
Emerging Use Cases

- Telecommunications
- Manufacturing
- Health - Life Science
- Transportation

+ Retail, Public Sector, and others
Adoption Patterns
Deployment Configurations

There are three main deployment configurations.

- Device edge
- Distributed nodes
- Standalone cluster(s)
Device Edge

- Located at customer premises
- Connected to downstream devices
- Offline capabilities

**Benefits**
- Reduce data velocity/volume
- ML/Analytics at Edge

**Complications**
- Lack of standardization
- Adverse environment
Distributed Nodes

- Single cluster deployment
- Primary site has shared control plane (and resource nodes)
- Remote sites have only resource nodes

Benefits
- Smaller footprint at the remote sites
- Faster to scale to new location (resource scale out)
- Easier operational management (single cluster, single config)

Complications
- Control plane is still a single point of failure
- Network drop affects management of workloads
Standalone Cluster(s)

- Multi-cluster deployment
- Each site has its own standalone deployment
- Complete cluster at each site (control + resource)

Benefits
- Full isolation (in case of disaster)
- High redundancy and availability
- Very low impact in case of network drop out

Complications
- Bigger hardware footprint (need for control plane)
- More complex management (versioning)
Edge & Open Source

- Interoperable solutions
- Cross-industry collaboration
- Open standards
- Upstream first
- Verified trusted solutions
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