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Agenda:

- Intro to Vcinity
- Demonstration (500mbit, Multiple Latencies)
- Higher bandwidth Deployments
- Demonstration (25mbit)
- Lower Bandwidth Deployments
- Platform Options
- FAQ
- Questions?

Get to know Vcinity

Born out of advanced government innovation for success

- Deployed in mission-critical networks for over 10 years

- $90 million in funding from the DOD/IC

- Extensive patent portfolio

- COTS software-defined technology offerings

- Enterprise partnerships: OEMs, FSIs, VARs, Small businesses

Mission outcome:
Directly impact Time-to -Insight, -Decision, and -Action

Solving data mobility challenges

Edge to core to cloud and backhaul

	LEGACY CHALLENGE	VCINITY SOLUTION	OUTCOME
WAN EFFICIENCY	More distance = more latency = lower efficiency *(Mathis Formula)*	*Deterministic*, high performance and High efficiency at global distances	**Accelerated insight from global datasets for analytics, artificial intelligence, machine learning, and more**
DATASET DEPENDENCY	Performance dependent on dataset profiles	High performance with any data profile – large, mixed, and small datasets	
EDGE AVAILABILITY	Reliant on storage and/or compute infrastructure at the edge	Lightweight deployment at edge locations for fast data centralization	

Mathis formula: https://netcraftsmen.com/tcp-performance-and-the-mathis-equation/

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Easy to get started

Install Vcinity into your existing infrastructure

On-Prem, Core or Cloud Compute

Global WAN

On-Prem, Core or Cloud Data

ANY
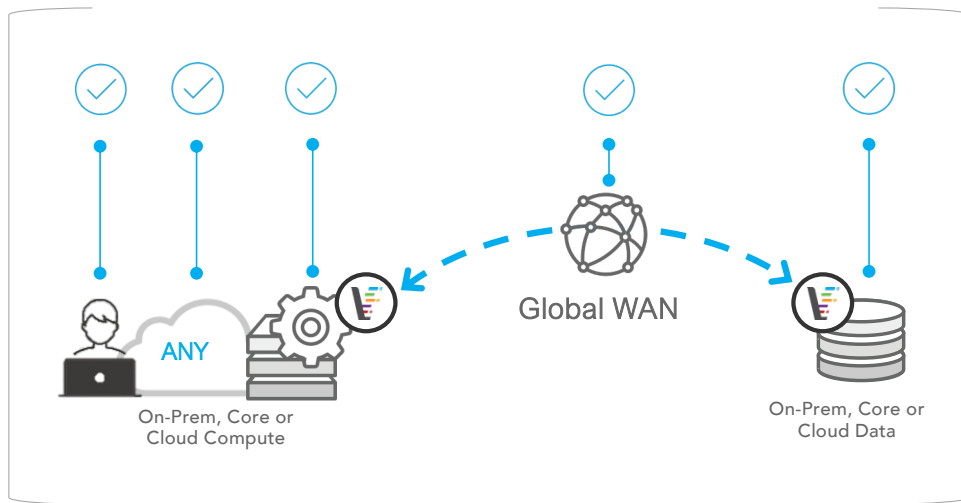
- Don't touch the data
- No changes in application
- No compression, no de-dup
- No software or agents to install
- No WAN accelerators
- No Edge Filers
- No caching appliances
- No changes on physical LAN
- No changes to the storage

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Vcinity solution
Software and Firmware

Deployable in any public/private/hybrid or multi cloud environment...

aws

Marketplace, Private License & Native to S3 Express One Zone

Azure

Marketplace & Private License

Google Cloud
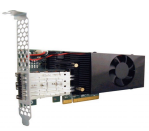
Private License

ORACLE CLOUD

Private License

... or in on prem/data center/colo/edge

ESX / KVM / Bare Metal

2 GBPS , 5 GBPS

Hardware Assist
(PCI Card)

50 GBPS , 100 GBPS

Enterprise and Tactical / Edge Kits certified partnerships

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Introduces Dramatic Improvement in Performance and Predictability to the Kill Web

WAN

Edge/ On-Prem / Cloud Data

Edge/ On-Prem / Cloud Data

Approximate Data Transfer rates <24 hours

100 Mb/s – 1TB
1 Gb/s – 10 TB
10 Gb/s – 100 TB
100 Gb/s – 1 PB
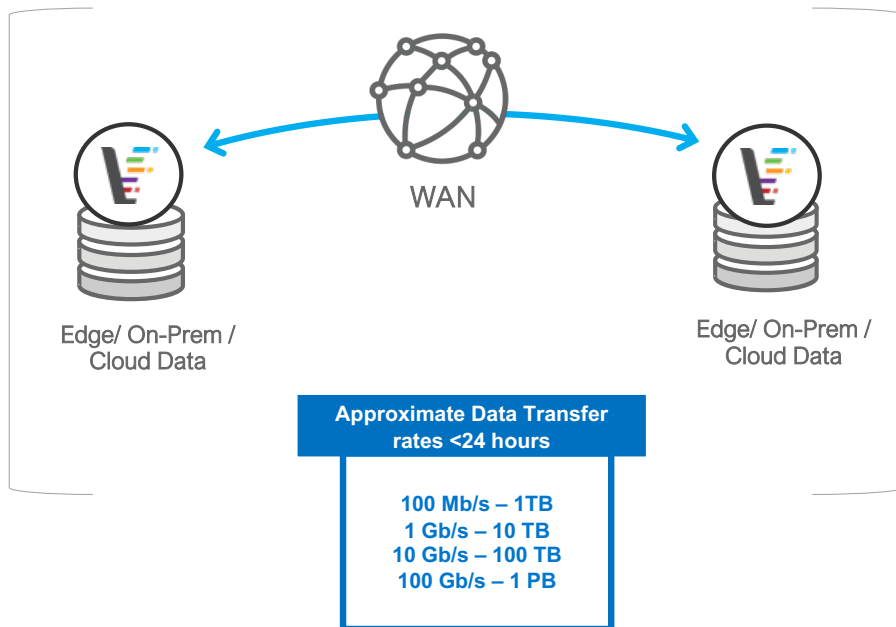
Benefits

- Increases Data Velocity
- Extend value of existing government infrastructures
- Works with Non-Compressible or Pre-Encrypted data
- Deterministic Performance (Predictable time to insights)
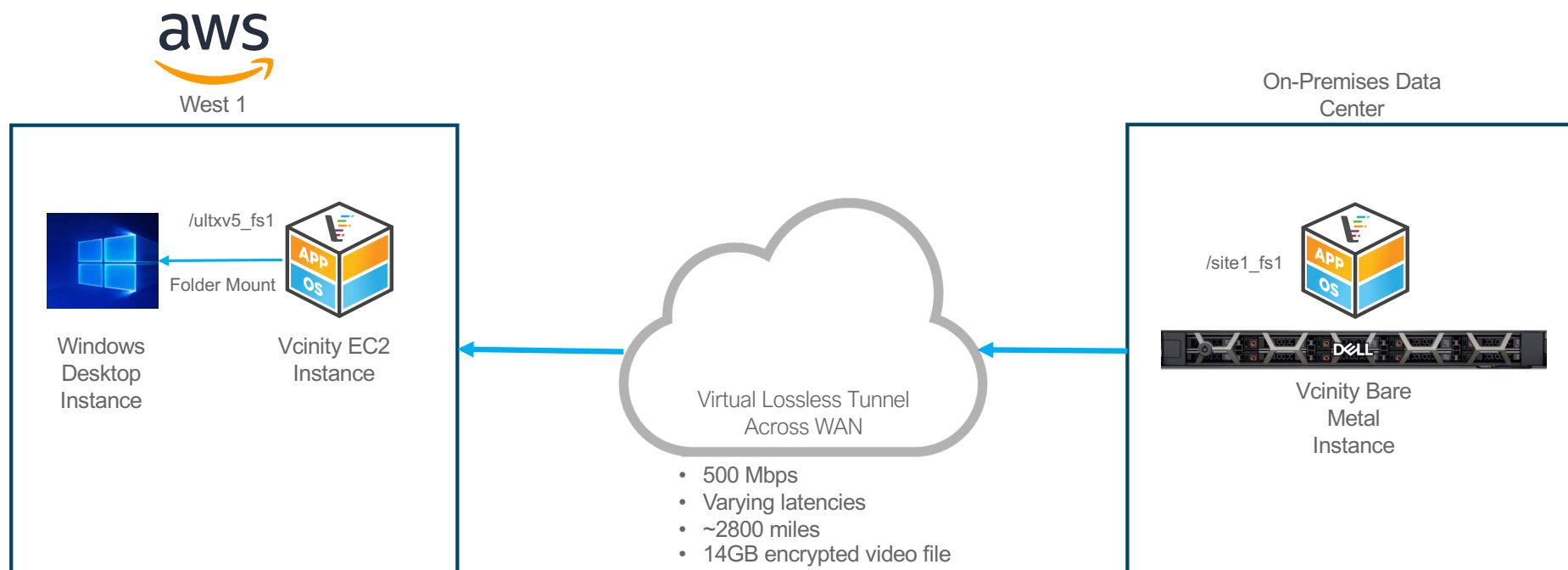- Optimized for use over Highly Secure Links (Type 1)

Use for

- Core to Core/Edge/Cloud data exchange/Capture
- Tactical/remote edge-to-core data ingest
- Edge (or core)-to-cloud ingest
- Cloud repatriation/ datacenter consolidation
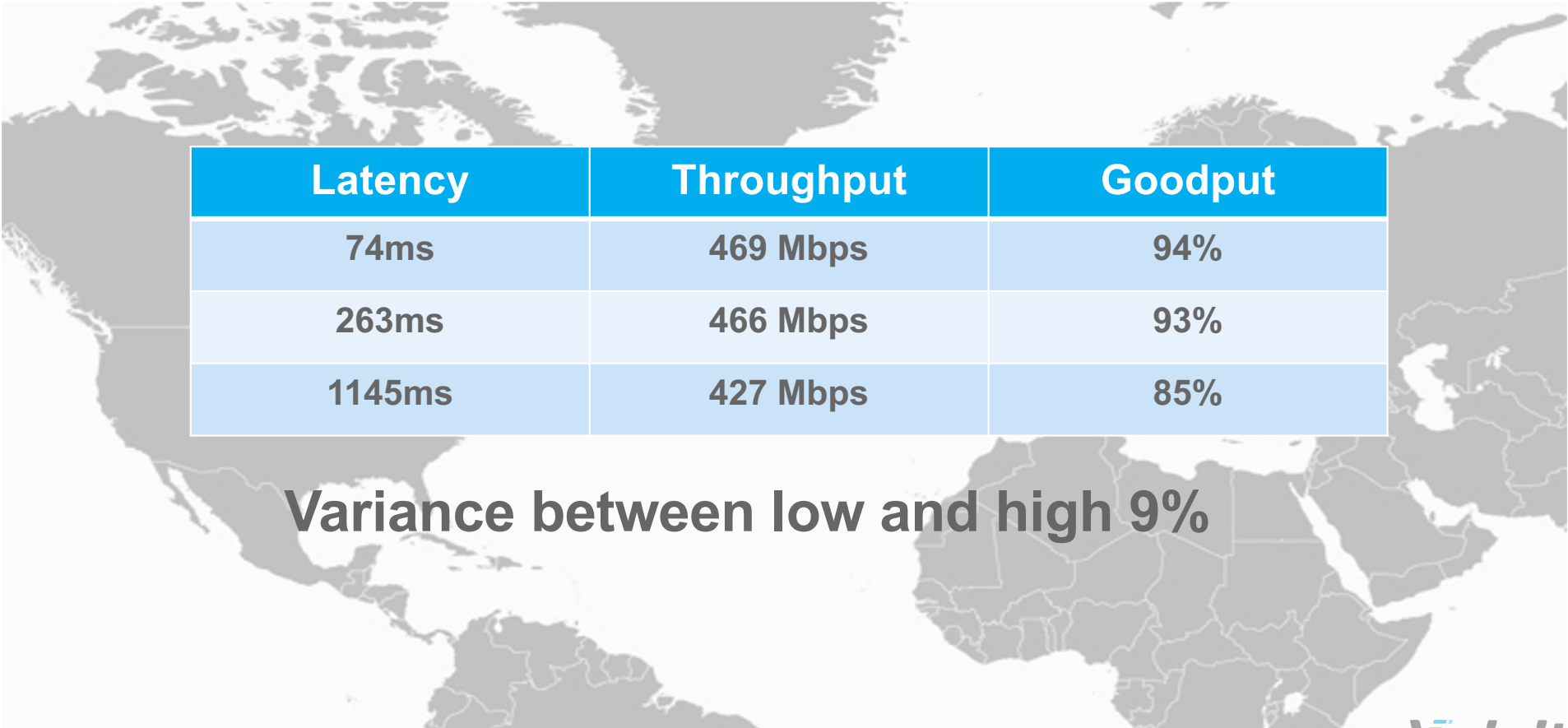- AI/ML training and advanced analytics

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Live Demonstration (500mbit)

Live Demonstration Configuration

aws

West 1

/ultxv5_fs1

Folder Mount

Windows Desktop Instance

Vcinity EC2 Instance

On-Premises Data Center

/site1_fs1

Vcinity Bare Metal Instance

Virtual Lossless Tunnel Across WAN

- 500 Mbps
- Varying latencies
- ~2800 miles
- 14GB encrypted video file

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Live Demonstration Results 500mbits

Latency	Throughput	Goodput
74ms	469 Mbps	94%
263ms	466 Mbps	93%
1145ms	427 Mbps	85%

Variance between low and high 9%

FSI – Air Superiority Improvements

Accelerate time from innovation to field deployment

SITUATION

Major FSI needed to streamline the test-to– dev–to operation timeline

SCENARIO

A significant and increasing amounts of flight/sensor data sent over various latencies in a classified environment with Type-1 encryptors. Must meet a requirement to move the data in 48 hours
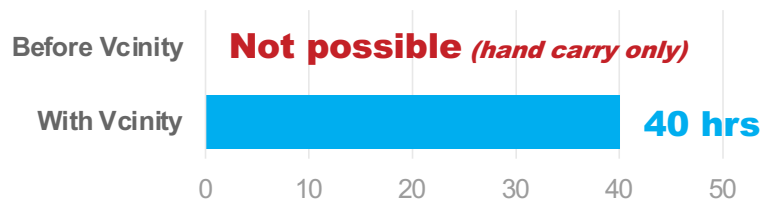
SOLUTION

A combination of Vcinity data movement and remote data access enables data to be moved within the time windows as well as more efficient data workflows
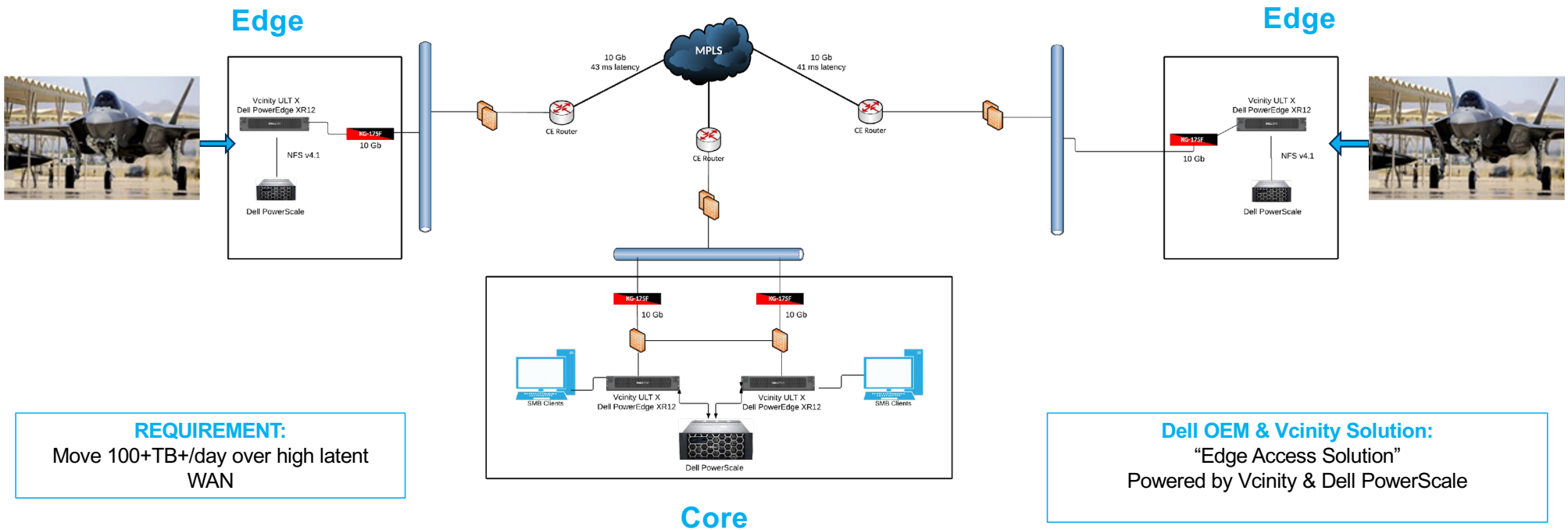
Before Vcinity	**Not possible** *(hand carry only)*
With Vcinity	▇▇▇▇▇▇▇ **40 hrs**

0   10   20   30   40   50

IMPACT

FSI able to meet/exceed Government requirement to move 128TB of data in under 48 hours

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Use case: DoD Aeronautics
Edge Data Transport

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Edge

Vcinity ULT X
Dell PowerEdge XR12

KG-175F
10 Gb

NFS v4.1

Dell PowerScale

MPLS

10 Gb
43 ms latency

CE Router

CE Router

10 Gb
41 ms latency

CE Router

Edge

Vcinity ULT X
Dell PowerEdge XR12

KG-175F
10 Gb

NFS v4.1

Dell PowerScale

KG-175F
10 Gb

KG-175F
10 Gb

SMB Clients

Vcinity ULT X
Dell PowerEdge XR12

Vcinity ULT X
Dell PowerEdge XR12

SMB Clients

Dell PowerScale

Core

REQUIREMENT:
Move 100+TB+/day over high latent WAN

Dell OEM & Vcinity Solution:
"Edge Access Solution"
Powered by Vcinity & Dell PowerScale

Other High Bandwidth Deployments (10-40gbit)

- ## Tier 1 Integrator:

  Using Vcinity to exchange data between divisions and internal HPC resources.

- ## NSCC Singapore:

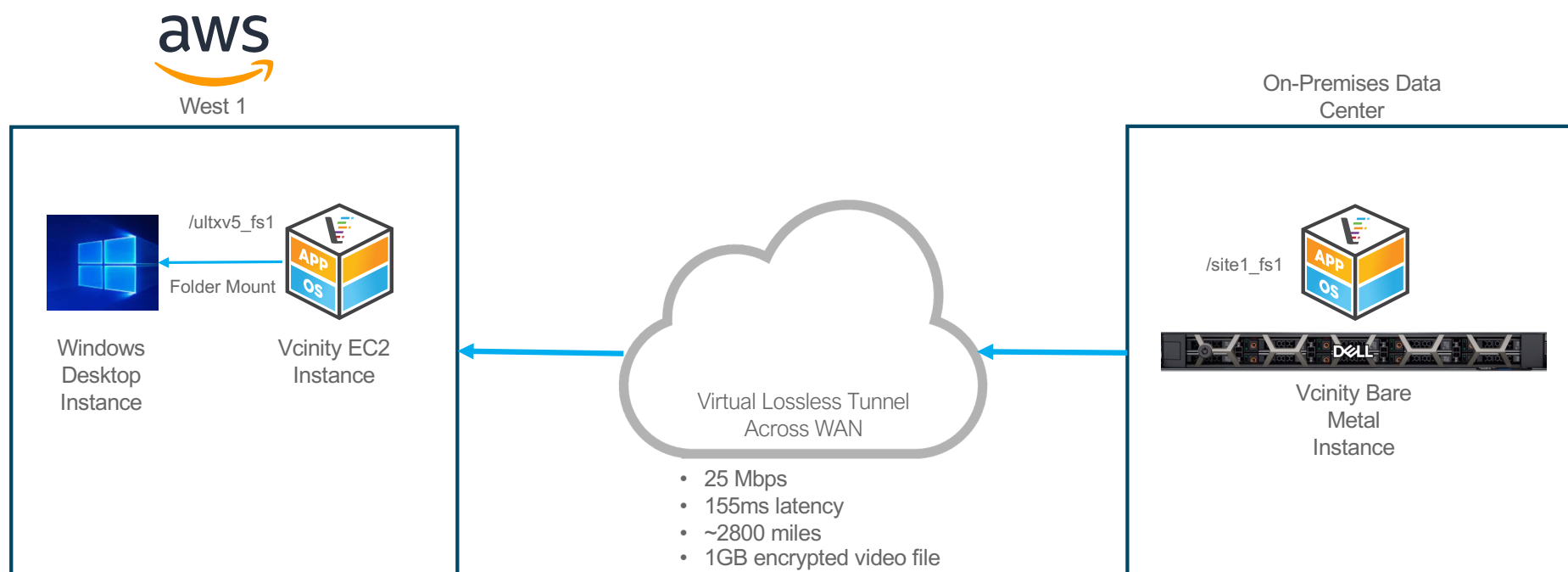 **High speed Interconnect between sites**

- ## NRO:

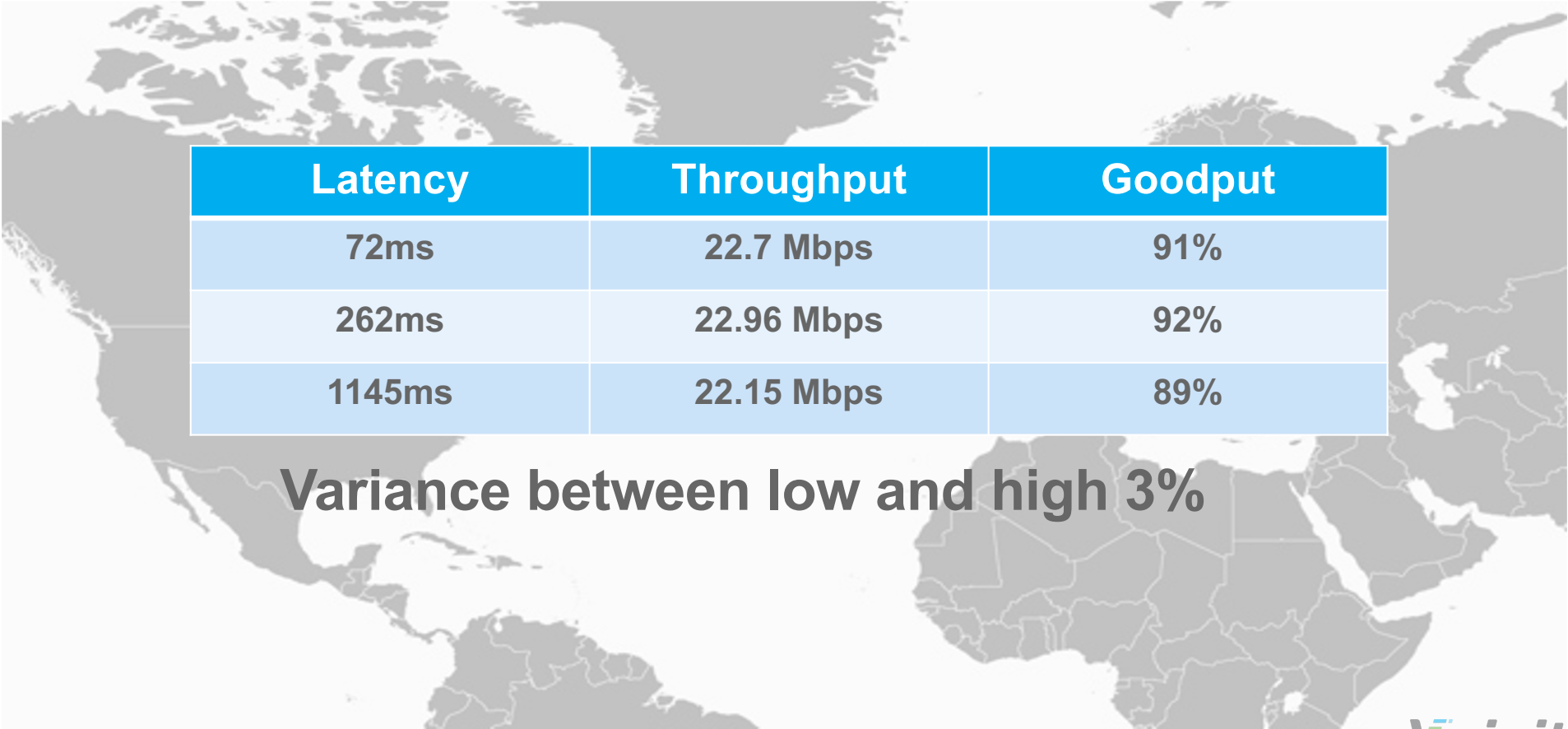 **High speed data exchange between distant sights.**

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Live Demonstration (25mbit)

Live Demonstration Configuration

aws

West 1

On-Premises Data Center

/ultxv5_fs1

Folder Mount

Windows Desktop Instance

Vcinity EC2 Instance

/site1_fs1

Vcinity Bare Metal Instance

Virtual Lossless Tunnel Across WAN

- 25 Mbps
- 155ms latency
- ~2800 miles
- 1GB encrypted video file

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Live Demonstration Results 25mbits

Latency	Throughput	Goodput
72ms	22.7 Mbps	91%
262ms	22.96 Mbps	92%
1145ms	22.15 Mbps	89%

Variance between low and high 3%

Army Deployment (Vcinity VM's)

20 mbit Link on the GAIT network
165Msec Round Trip Latency
Type 1 Encryption

3.3GB OVA Moved Pre-Vcinity 5.1hours
3.3GB OVA Moved with Vcinity 24.2 Minutes
(Vcinity move measured with Linux nload at 19.77mbits/sec)

Ship to shore impacts via satellite

Continuous data pipeline capability over high latency networks

SITUATION
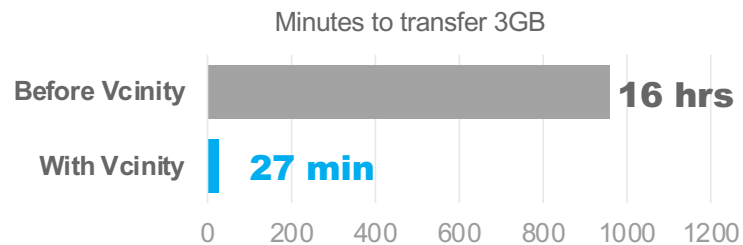
Process for tactical deployments to transfer data created at the edge to either core data centers or into the cloud was slow and unpredictable

SCENARIO

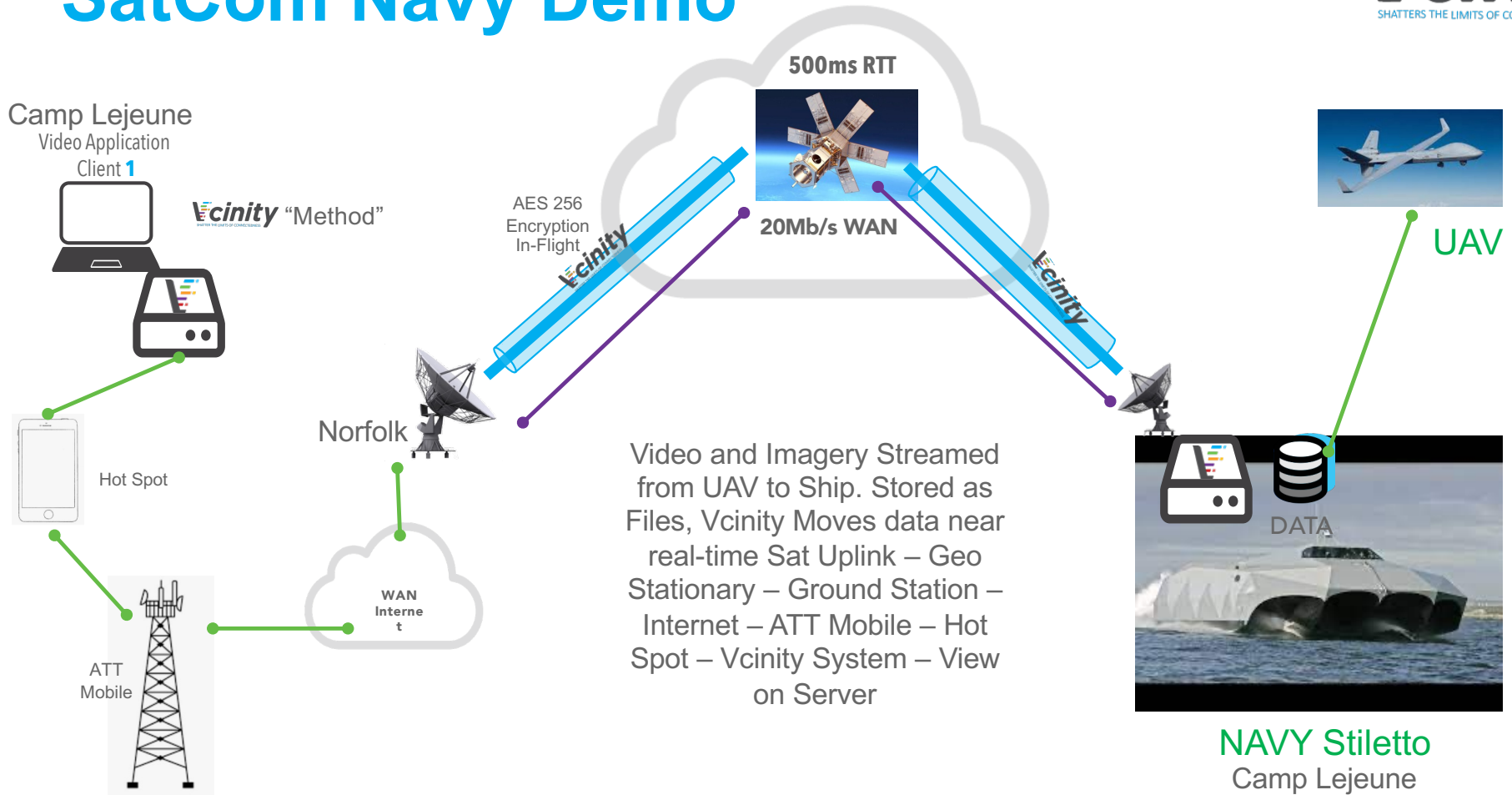3GB file sent via 20Mb/s bandwidth with 250 ms latency

SOLUTION

Vcinity data movement enables efficient data transfer

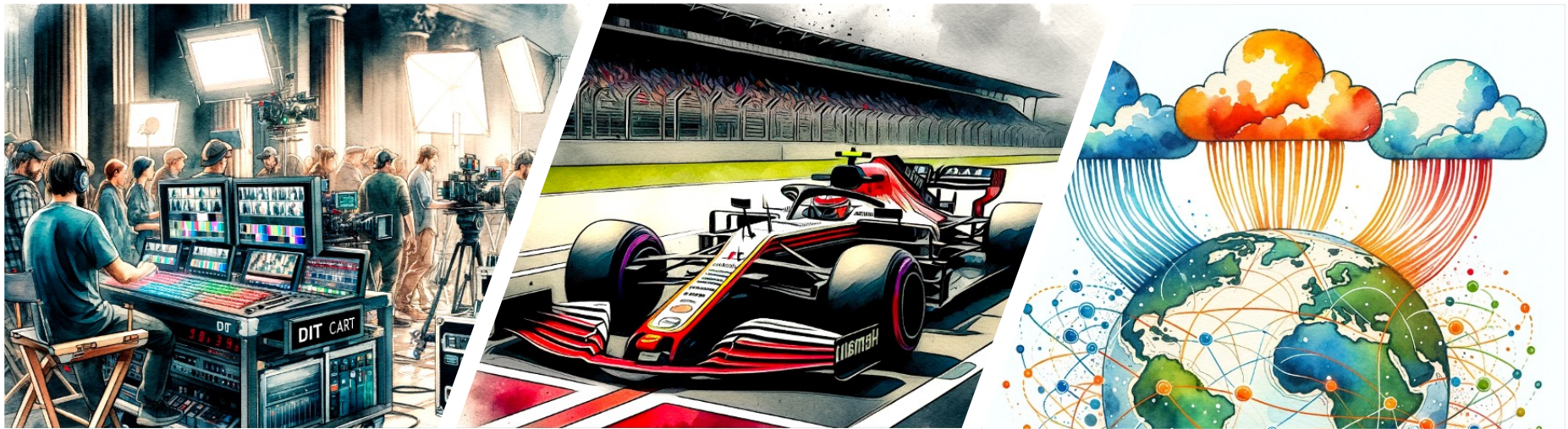**Minutes to transfer 3GB**

Before Vcinity	**16 hrs**
With Vcinity	**27 min**

0   200   400   600   800   1000   1200

IMPACT

Faster time-to-insight from data pipeline

FEDERAL CASE STUDY

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SatCom Navy Demo

500ms RTT

Camp Lejeune
Video Application
Client **1**

Vcinity "Method"

AES 256
Encryption
In-Flight

20Mb/s WAN

Norfolk

Hot Spot

WAN Internet

ATT Mobile

UAV

DATA

Video and Imagery Streamed from UAV to Ship. Stored as Files, Vcinity Moves data near real-time Sat Uplink – Geo Stationary – Ground Station – Internet – ATT Mobile – Hot Spot – Vcinity System – View on Server

NAVY Stiletto
Camp Lejeune

Commercial consequential outcomes

Real-world impact

Video production studio
- Production at remote edges with consistent, predictable performance for data centralization processes
- 100 Mb/s - 2.5 Gb/s, 10-250ms RTT – 85-90% network efficiency
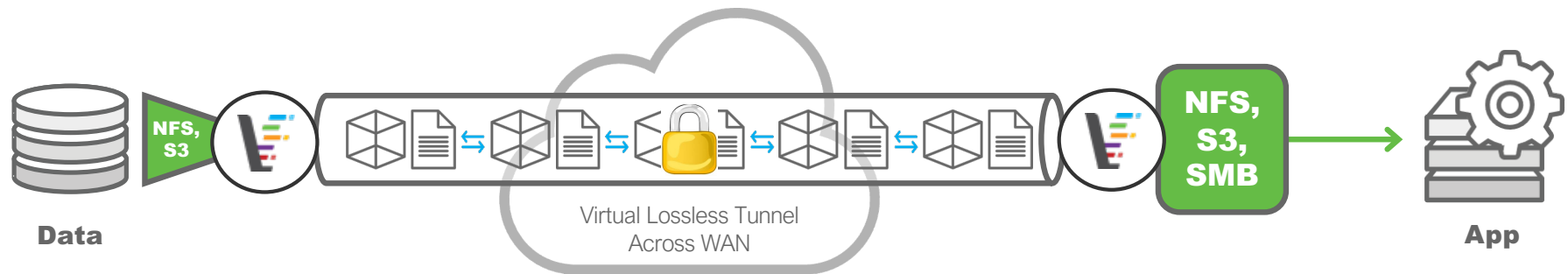
Formula 1 racing team
- Quickly run computational fluid dynamics analysis, update software packages across intercontinental locations
- 1.7 Gb/s WAN, 90ms RTT – 16x faster than existing capabilities

Cloud data ingest
- Maximum efficiency of network services enables fast-as-possible movement of strategic datasets into cloud environments for analytics and other workloads
- 4.3 Gb/s WAN, 85ms RTT – (average 18x faster) data ingest across multiple scenarios

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A powerful and secure data pipeline

That's simple to use and deploy

Data

Virtual Lossless Tunnel
Across WAN

NFS, S3

NFS, S3, SMB

App
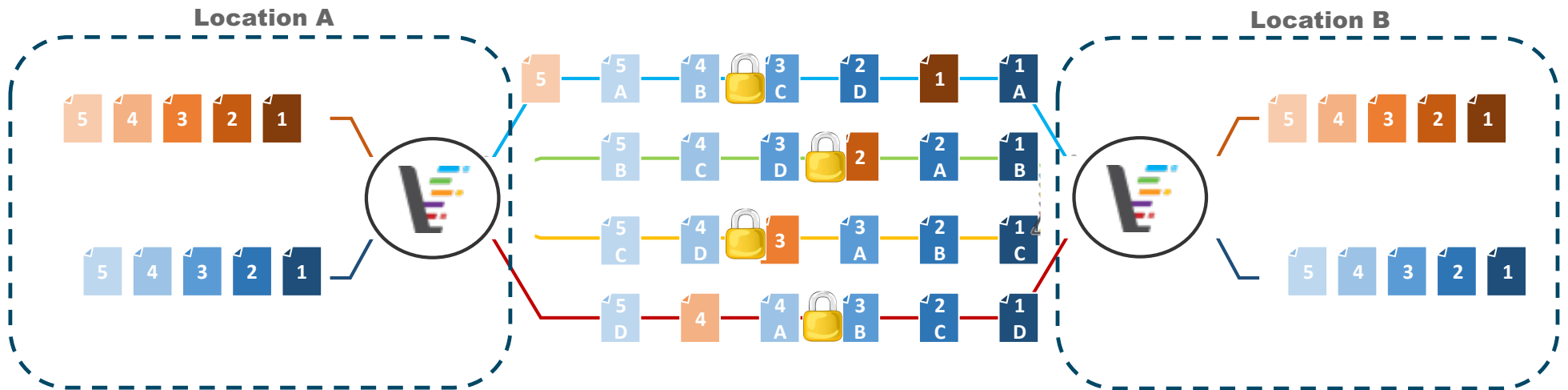
1 **No** WAN, LAN, Storage, or App **changes**

2 Advanced flow controls leveraging **HPC protocols**

3 **Secure connection** between nodes

4 No compression or de-dupe – **not manipulating the data**
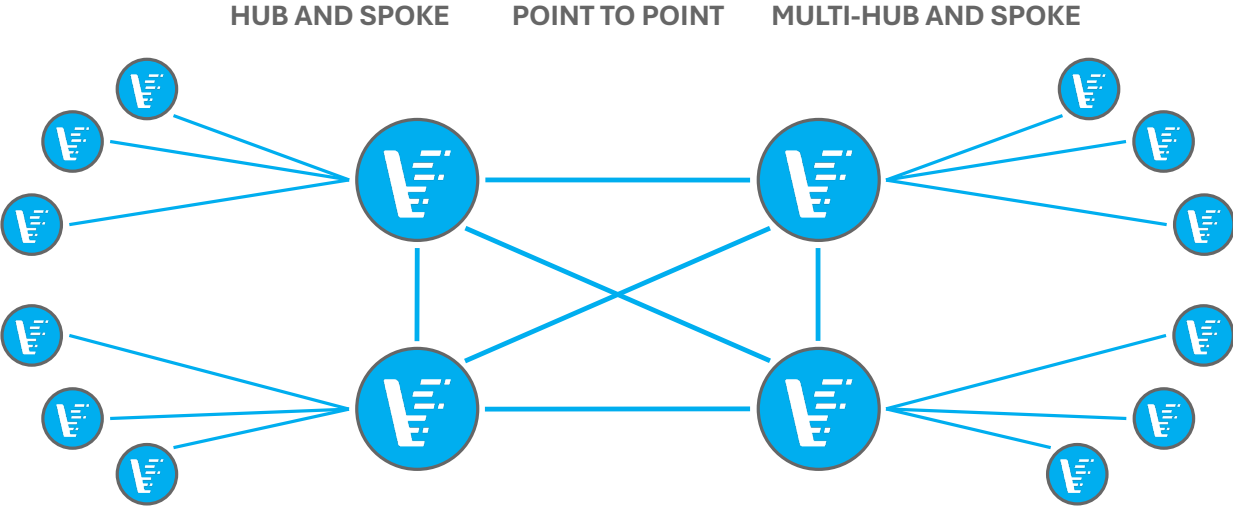
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Advanced encryption and obfuscation

…blending and bonding

1 **Bond** multiple networks together

2 Apply unique encryption **encryption** per link

3 **Spread data** across multiple links

4 Put the data back **in order**

Built to Suit

HUB AND SPOKE   POINT TO POINT   MULTI-HUB AND SPOKE

Extraordinary Results

More data options = More powerful outcomes

Let's start with the basics

The Scenario

- 1 Gb/s Network
- US East coast to US West coast

Time to move 1TB of data

Without Vcinity	With Vcinity
10.15 Hrs	**2.4 Hrs**

Data moved per month (at the same rate)

Without Vcinity	With Vcinity
71 TB	**300 TB**

Now let's push the limits!

The Scenario

- 100 Gb/s Network
- US East coast to US West coast

Time to move 1PB of data

Without Vcinity	With Vcinity
4.3 Days	**24 Hrs**

Data moved per month (at same rate)

Without Vcinity	With Vcinity
7.1 PB	**30 PB**

420% acceleration in time to ingest data

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FAQ

- Does Vcinity have a Facilities Clearance? **Yes**
- Is all development done in the US? **Yes**
- Is Vcinity a US Based Company? **Yes**
- Does Vcinity have an ATO? **We are part of several solutions ATO's and are working on both Common Criteria and a specific solution ATO**
- Does Vcinity Work with Partners? **Yes, we have partnerships with several resellers, integrators and Hyperscalers, as well as an OEM agreement with Dell.**

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Thank you for your time.

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