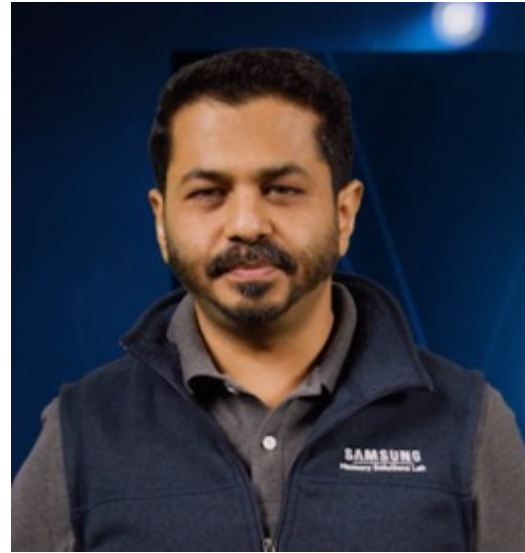# SNIA Legal Notice

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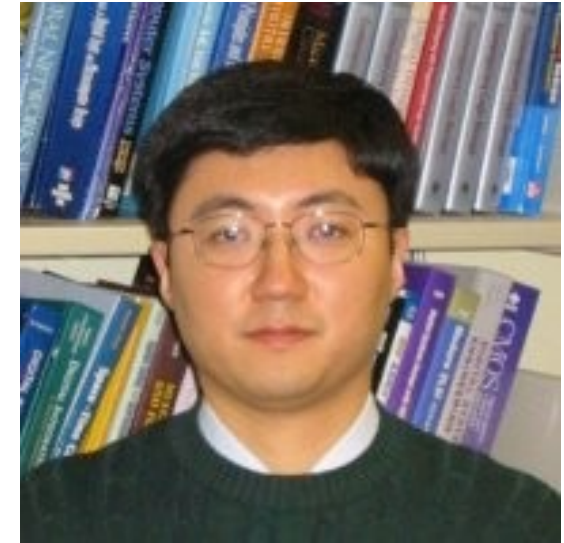 NO WARRANTIES, EXPRESS OR IMPLIED. USE AT YOUR OWN RISK.

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Today's Presenters

***Moderator*:**
Bill Martin
Chair, SNIA Compute, Memory, and Storage Initiative

Mayank Saxena
Sr. Director Engineering
Samsung

Stephen Bates
CTO
Eideticom

Tong Zhang
Chief Scientist
ScaleFlux

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Technologies We Cover

Ethernet, Fibre Channel, Infiniband

iSCSI, NVMe-oF, NFS, SMB

Virtualized, HCI, Software-Defined Storage

Storage Protocols (block, file, object)

Securing Data

Computational Storage Standards

Persistent Memory Programming

Smart Data Accelerator Interface

Solid State Drives, Solid State Performance

SSD Form Factors, NVMe SSD Classification, TCO Model for Storage

Agenda

- Storage Life on the Edge – A Recap
- Edge Use Cases
- Panel Discussion
- Next Up….

Storage Life on the Edge: Managing Data from the Edge to the Cloud and Back

- On January 26, 2022 we covered:
  - Data and compute pressure points: aggregation, near & far edge
  - Supporting edge workloads
  - Analytics and AI considerations
  - Understanding data lifecycle to generate insights
  - Governance, security & privacy overview
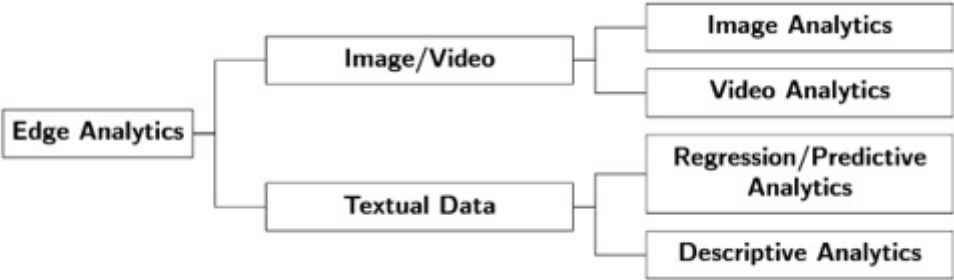 - Optimizing for CapEx & OpEx
- Available on-demand at https://bit.ly/StorageLifeEdge

STORAGE LIFE ON THE EDGE

Mayank Saxena
Samsung

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Edge Data Needs

Type of Edge Analytics

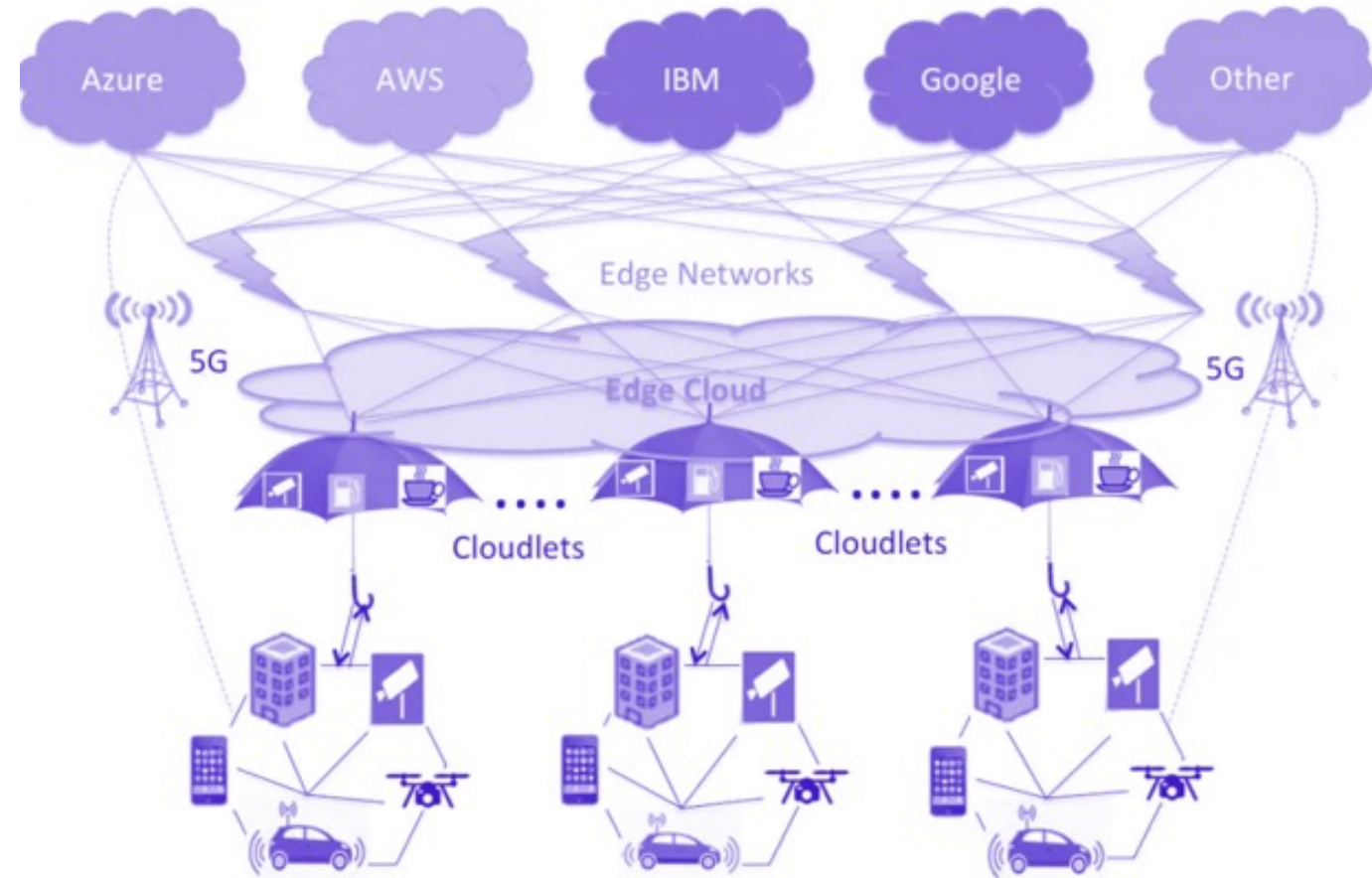| Parameters	Cloud Analytics	Edge Analytics
Deployed	Datacenter	Edge Device (e.g., Routers, Sensors)
Age	Older	**Younger**
Development	Matured	**Fragmented**
Size of data	Big data	Small
Application	Advanced and sophisticated	Not advanced and unsophisticated
Storage	Distributed System	**Small memory of Edge device**
QoS dependence	None	Cloud
Performance	Varied	**Near real time**

Cloud to Edge: Need for Speed
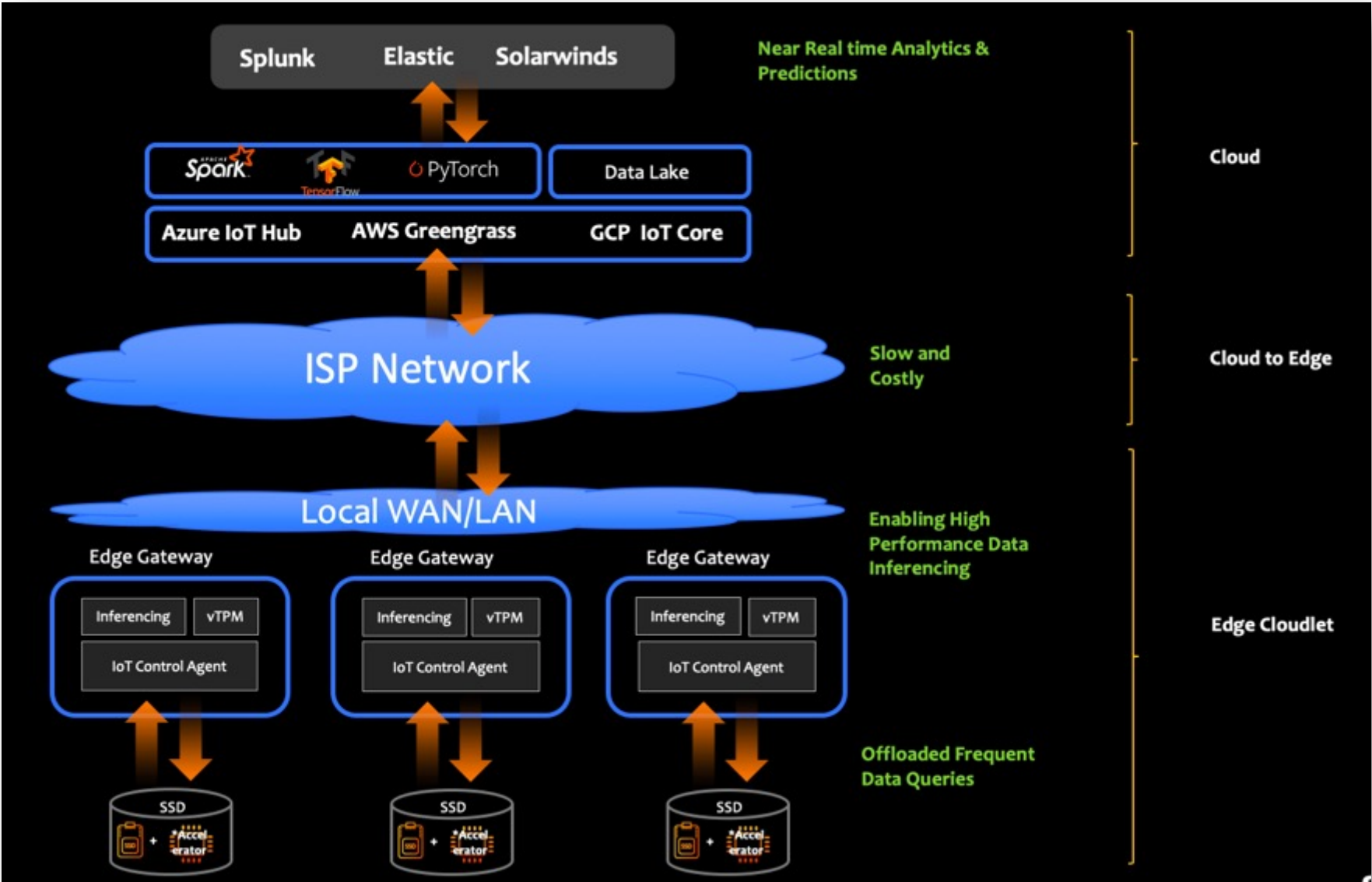
- ## Use Cases
  - Distributed Analytics at Edge Cloud
  - Federated AI
  - Near Real Time Anomaly detections

- ## Challenges with Edge Cloud
  - Cloudlets – cluster of edge gateways with storage and complete constraints
  - Slow mesh network for Cloudlets

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High Performance Edge Data

Stephen Bates
Eideticom

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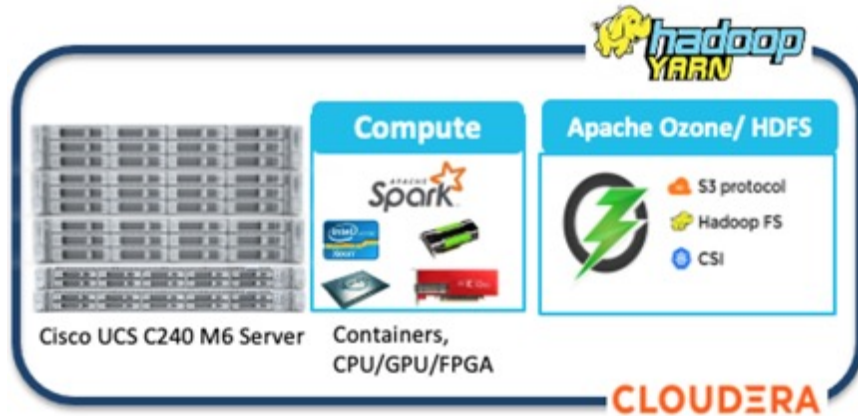
NoLoad Transparent Compression - Spark Acceleration

Cisco Data Intelligence Platform

NoLoad Benefits:

- **Zero** application changes

- **3x** increased capacity

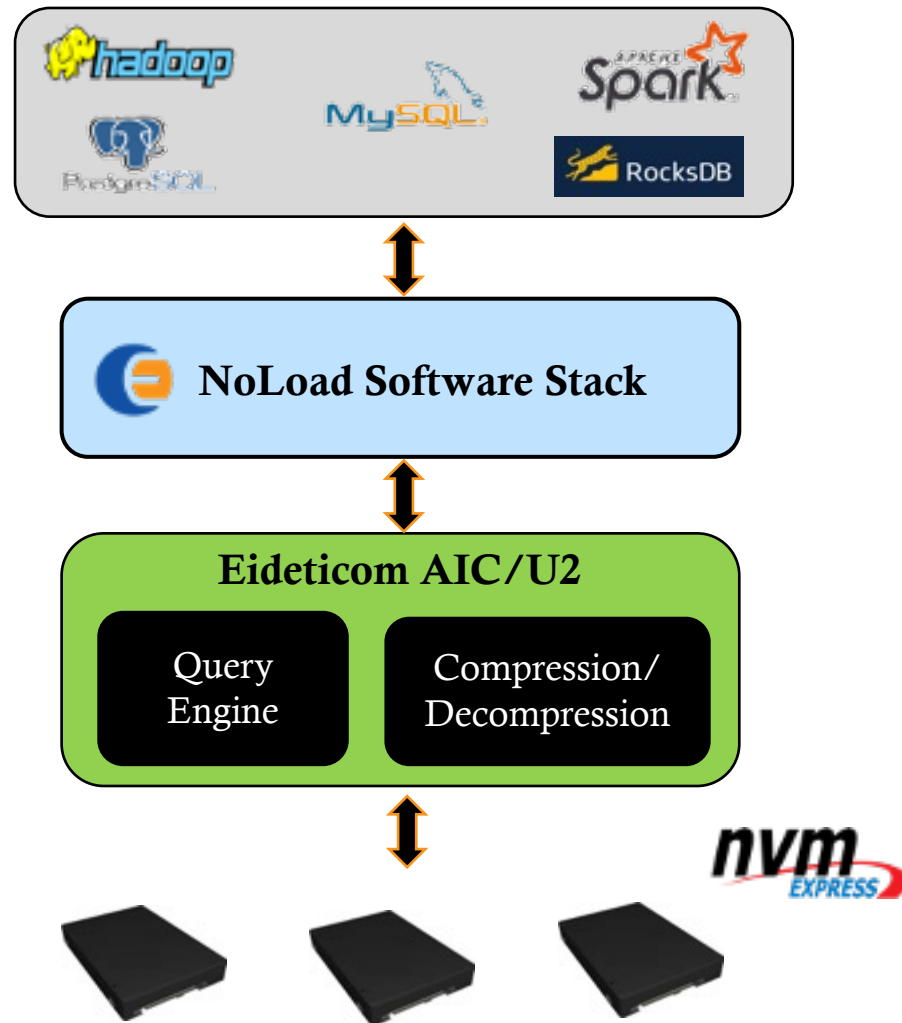- **Deployment flexibility** in compute, storage and cloud

NoLoad Acceleration

1x Capacity

3x Capacity

NoLoad Query Analytics – Database Acceleration

Highlights:

- NoLoad Query Engine **accelerates** data queries

- **Implements** CSV/JSON/Parquet parsing and query execution

- **70-80%** Improved CPU Offload with **5-10x** Increased Performance

- NVMe driver achieves **low latency high throughput** data transfers

- **Deployment flexibility** in compute, storage and cloud

- **NoLoad Query Engine** can be paired with NoLoad compression and decompression engines

Tong Zhang
ScaleFlux

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Far Edge: Retail Chain Example

Essential applications with tight latency requirements	Running in 100s or 1000s of locations	With minimal or no on-site IT Staff

Challenges

- ❑ No true on-site data center
    - ❑ Limited environmental controls & floorspace
    - ❑ Low-power Servers to help with thermals
    - ❑ Low cost per Server to scale to 1000s of locations
- ❑ Software suite for centralized management

Solutions

- ➤ Computational Storage Drives
- ➤ Low-overhead Edge Computing SW

Results

- ✓ CSDs expand Server functionality
    - ✓ **Low-power & low-cost capacity expansion** via CSD hardware compute engines (HCE)
    - ✓ **Improved thermal management** from distributed computing
    - ✓ **No added physical footprint** since the HCE is integrated directly into the SSD
- ✓ Optimized Edge SW addresses system constraints & management
    - ✓ Brings **HCI** capabilities to the Edge
    - ✓ **Remote management** of 1000s of sites
    - ✓ **Reduced CPU power** to meet SLAs
    - ✓ **Reduced Server costs** via lower-grade CPUs, less DRAM, and smaller form factors

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Far Edge / Near Edge: Data Security Example

Companies must protect against mis-use of data	Generated in 10s, 100s, or 1000s of Edge locations	And transferred to the Core or Cloud for processing

Challenges

❑ Each movement of data creates an exposure opportunity
   ❑ Man-in-the-middle intercept
   ❑ Unintended inferencing / model training

Solutions

➢ Computational Storage Drives

➢ Data Transformation Application

PROTOPIA

Results

✓ Original data never leaves the drive, **only a representation** of the data is transferred

✓ CSDs running Data Transformation enhance data security
   ✓ **Original data protected** from man-in-the-middle malicious actors
   ✓ **Transformations minimize the potential for mis-use** of data for unintended inference/ model training while enabling the intended task to be performed

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Panel Discussion and Q&A

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Storage Life on the Edge is a Series! Next Up:

"Storage Life on the Edge: Security Challenges"

April 27, 2022

10:00 am PT / 1:00 pm ET

Register here: https://bit.ly/SNIAEdgeLifeSecurity

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