Storage on the *Move*

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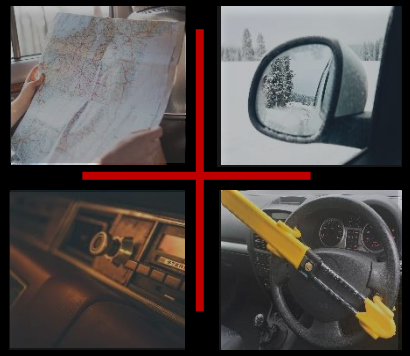
4.2 TBs

Per day, will be generated by a self driving car



A Level 1 Car

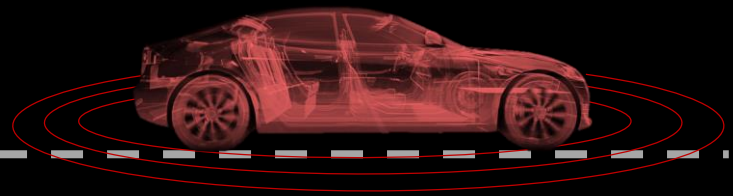
<1 TFLOPS of Compute	1-4 Cameras & Sensors
1K Resolution	<1Gb/s per Stream

A Level 2-3 Car

Today

80 TFLOPS of Compute	15 Cameras & Sensors
4K Resolution	8Gb/s per Stream

A Level 4-5 Car



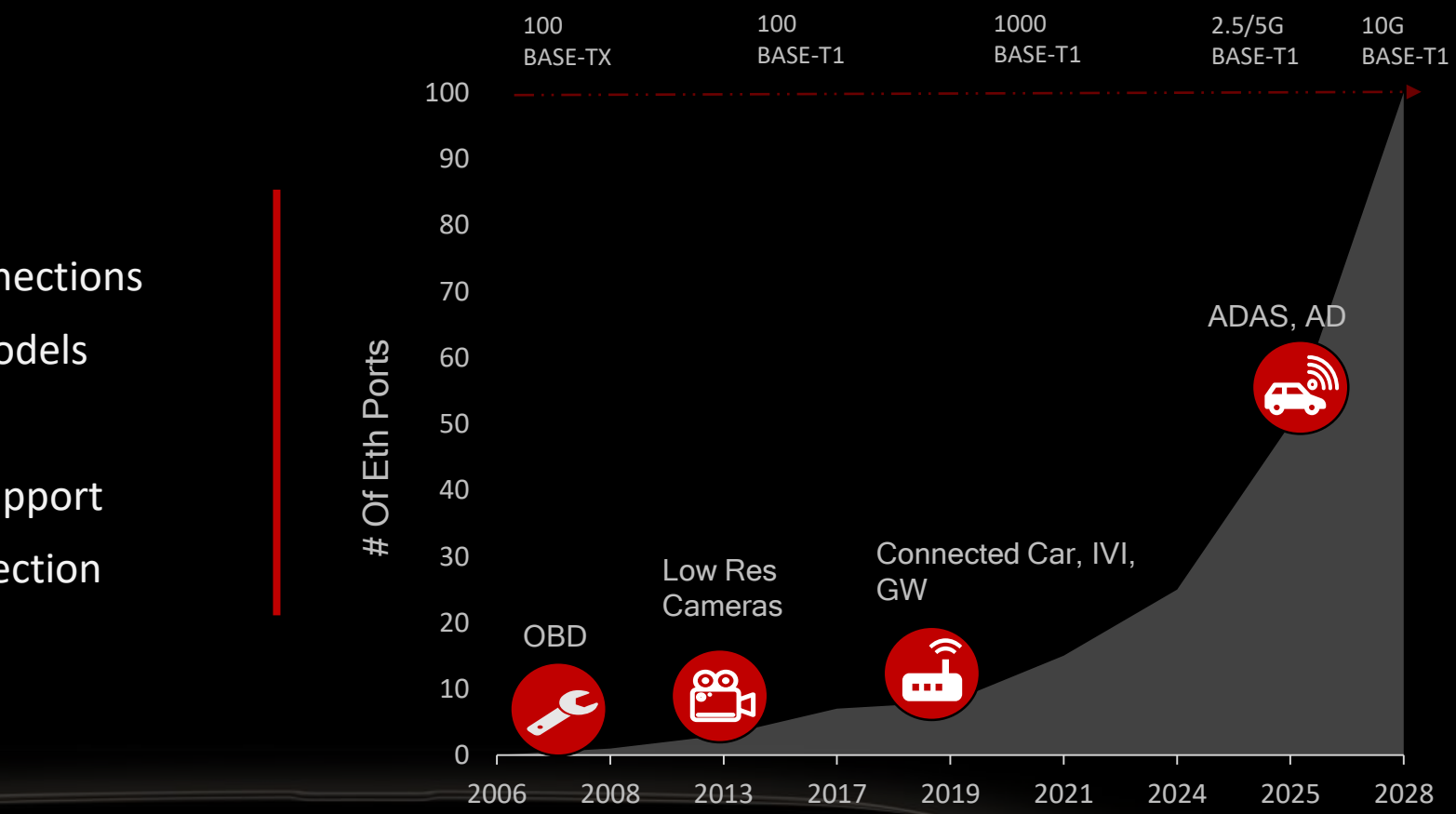
Next Generation Cars need a **Zonal Architecture**

Three Foundations

1. Centralized Compute
2. Centralized Storage
3. Ethernet Interconnect

Ethernet *Connects* it all

- Scalable
- Designed for large number of connections
- Real Time (TSN) and Best Effort models
- Built in Security
- Native Virtualization, Mng, QoS support
- Single standard – any to any connection



Centralized Storage?

State regulations require recording at least the last 30 seconds from all the vehicle functions *(and a few seconds after)*

Reduce weight and packaging

Minimize duplications

Simplify the edges

Easier to secure, protect and manage

Not everything is latency sensitive (but some is…)

Storage Requirements

- **01** **TBs** of capacity
- **02** **Virtualized and Shared** by 100's
- **03** **Dozens** simultaneous accesses
- **04** **Available and Reliable** Storage
- **05** **µs' s** low latency
- **06** **Scalable** grow upon need over time

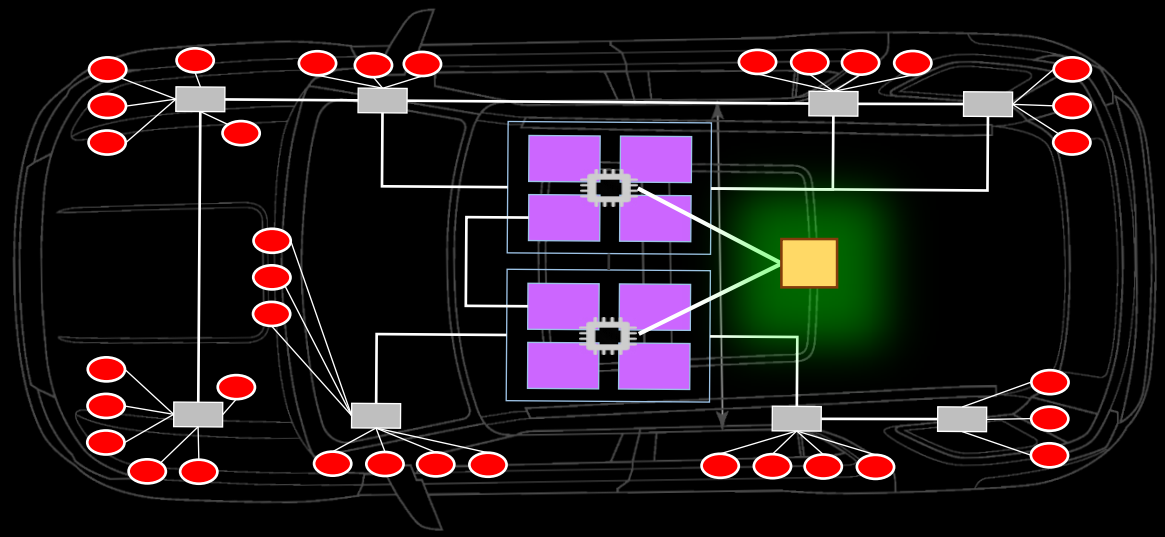
Introducing the concept of

AUTOMOTIVE STORAGE OVER FABRICS

Centralized, seamless NVMeoF / NVMeTCP
connectivity for in car storage communication
over Ethernet backbone

Centralized Automotive Storage over Fabrics

- Native NVMeoF / NVMeTCP connectivity
- Direct access to all (simultaneously)
  - No single point of failure
  - Complete virtualization of storage
- Reliable connection:
  - Built in redundancy ports
  - RDMA, TCP
- Scalable architecture
  - Add more storage capacity when needed behind the Ethernet switch
  - Native service protocols
- Low latency access time



AUTOMOTIVE NATIVE NVMeoF/TCP SSD

Present any NVMe SSD as native NVMeoF / NVMeTCP

Standalone device or integrated into the SSD

Most Efficient

750 KIOPS / 25Gbps Eth

Low Latency <1us TAT

Shared and Accessible

100's of parallel service queues (QPs) to support 100's of VMs

SSDs & Queues

Management

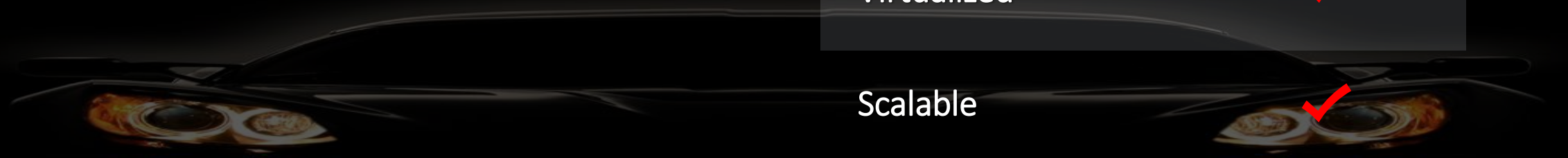
Configuration

Diagnostics

Reliability

Built in dual ports for redundancy

Come and discuss more about *Automotive Storage Over Fabrics* at the Marvell booth



Requirements	Automotive Storage Over Fabrics
Capacity	✓
Simultaneous Access by dozens of VMs	✓
Low Latency	✓
Availability and Reliability	✓
Virtualized	✓
Scalable	✓