

# The Future Value of Time

STAC Summits – Spring 2022

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# My Kids: Sam / Jack



## Their Future?

## The Value of Time!

# My Other Kids: PowerScale / ECS

## Their Future!

## The Value of Time?



# Isilon / PowerScale / ECS



High Performance Big  
Data Tick Analytics



Shorter Model  
Development Cycles



Endless Scale



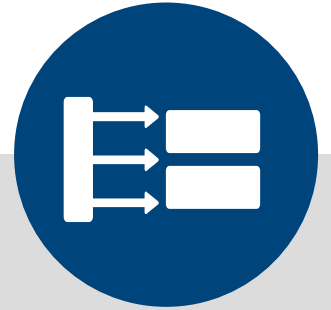
Score Models  
Faster



Extreme Concurrency



Deeper  
Analysis



Simplified Architecture



Lower TCO



# The Ideal Platforms for Tick Data Analytics



PowerEdge R640

**The Hot Edge**



PowerScale F200



**SUT ID KDB200914**

Outperformed  
single-user NBBO  
(STAC-  
M3.β1.1T.NBBO.TIME)

**Vs.**  
KDB200401



PowerEdge R940

**Massively Parallel IO  
Maximum Density**



Isilon F800



**SUT ID KDB190430**

Outperformed  
in 15 of 16  
mean-response time  
Kanaga benchmarks

**Vs.**  
KDB150528



PowerEdge R640

**Extreme Performance**

PowerScale F900



**SUT ID KDB210929**

Outperformed F800  
in 14 of 17  
mean-response time  
Antuco benchmarks

**Vs.**  
KDB190430

•High Performance Edge for Data Subsets

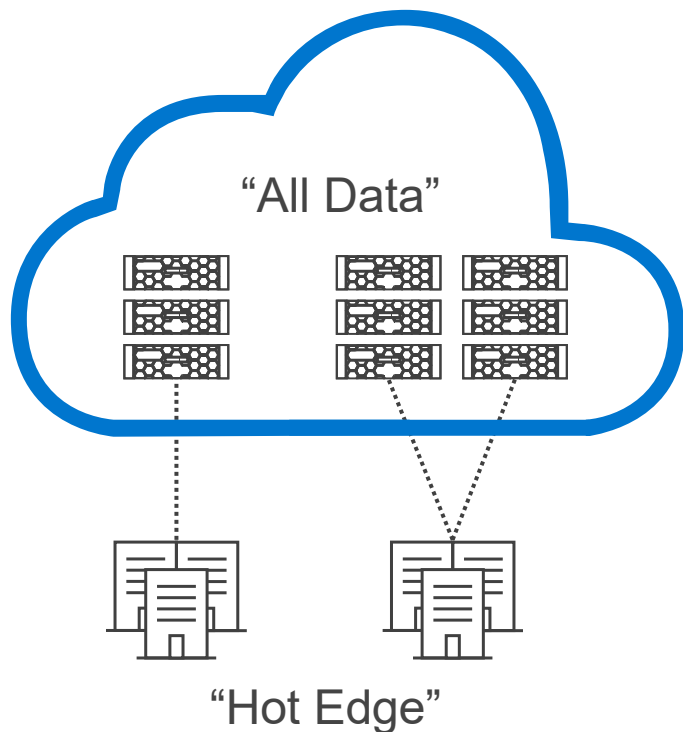
•Massive Parallel IO / Maximum Density

•Extreme Performance for the Entire Data Set

## STAC Benchmark: What does it mean?

The results showed the sweet spot for PowerScale based solutions to deliver real-time performance on smaller data sets (<10TB) and near real-time performance on large data sets (>10 TB) at high concurrency (100s into the millions).

# Performance Dynamics: 'The Hot Edge'



- Deeper and richer data sets are being kept for longer. This is an ever increasing trend with longer history and richer data.
- Subset environments (or 'hot edge') are being created with smaller data sets (~1-2PB) with the large performance characteristics (e.g., TB/sec network throughput) and scalability (millions of open files)
- The 'hot edge' can be in the cloud or in data centers
- Reason for Dell's F200 STAC M3 Announcement was (1) increasing interest in high performance bandwidth with limited storage capacity, and (2) a reasonable cost entry solution with exceptional \$ / GB of bandwidth ratio on your premise or in the Cloud. Google offering with MPS connections to GCP Compute resources



# Performance Dynamics: ‘Extreme Performance’



**SUT ID = KDB210929**

**“Extreme Performance”**



The stack under test was KX's kdb+ 4.0 DBMS running on 9 Dell EMC PowerEdge R640 servers, each with 2 x 18 core Intel® Xeon® Gold 6254 CPU @ 3.10GHz and 384GiB DRAM. Data was accessed via NFS 3 and stored in a Dell EMC PowerScale F900 All-Flash Scale-Out NAS 3-node cluster with 251TiB total physical storage capacity. Dell chose to highlight that this solution was:

•Faster than a solution involving 4 database servers accessing an earlier generation of Dell EMC's flash storage appliance with kdb+ 3.6 (SUT ID KDB190430) in 14 of 17 mean-response time STAC-M3 Antuco benchmarks, including:

- 5.3x speed-up in the 10-user market snapshot (STAC-M3.β1.10T.MKTSNAP.TIME)
- 4.9x speed-up in the 10-user volume curve (STAC-M3.β1.10T.VOLCURV.TIME)
- 2.9x speed-up in the 100-user 12-day VWAB (STAC-M3.v1.100T.VWAB-12D-NO.TIME)
- 2.7x speed-up in the 100-user unpredictable interval stats (STAC-M3.β1.100T.STATS-UI.TIME)

•Faster than a solution involving a parallel filesystem with 14 database servers and 18 storage servers with kdb+3.6 (SUT ID KDB200401) in 3 of 17 mean-response time STAC-M3 Antuco benchmarks:

- 9.8x speed-up in the single-user NBBO (STAC-M3.β1.1T.NBBO.TIME)
- 3.6x speed-up in the 10-user volume curve (STAC-M3.β1.10T.VOLCURV.TIME)
- 17% faster in the single-user VWAB (STAC-M3.v1.1T.VWAB-D.TIME)

# Solutions built for the modern digital organization

## Unstructured data solutions

Enable innovation anywhere

Cost effective & sustainable storage

Deliver performance & scale

Meet the broadest use case needs

Eliminate burden on end users & simplify their workflows

Provide coverage across edge, core & cloud



# And simplifies your essential data needs

Match storage costs to your data's business value

Intelligent, automated data access, protection & retention

Policy-based, automated tiering

Asynchronous replication for DR

Flexible data reduction options

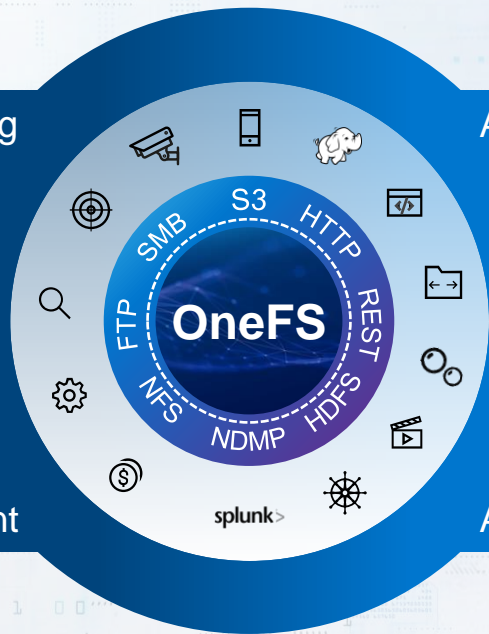
Fast backup and recovery

Cloud tiering, on or off-prem

Policy-based compliance

Granular quota management

Automated load balancing



Any client

Any user

**DELL**Technologies