OSIsoft®

SUMMARY

eBay, Inc.

Industry

E-commerce

Partner

Dell DCS

Partner Industry

Modular Data Centers

Business Value

- Process Optimization
- Performance Monitoring
- Operations Management

PI System™ Components

- PI Server™
  - Data Archive
  - Asset Framework
- PI Vision™[1]

Dell Accelerates the Deployment of Hyperscale MDCs with Embedded PI Systems

At data centers in Utah and Arizona, e-commerce giant eBay has developed a data storage solution to ensure that data critical to their commercial operation is always available. However, with eBay's data growing exponentially, these data centers must scale as quickly as the data does. To meet eBay's requirements for data center scalability and data availability, eBay has partnered with Dell Data Center Solutions (DCS), the #1 OEM hyperscale server provider, and OSIsoft. In a presentation at OSIsoft's 2015 Users Conference, Dwayne Kalma, the Data Center and Network Software Engineer for eBay, and Tyler Duncan, the Principal Thermal and Controls Engineer for Dell, explained how "the combined partnership of eBay, Dell, and OSIsoft's EA team has given us the tools needed to revolutionize the industry for Modular Data Center deployments, incorporating specialty system knowledge from each group, which altogether lead us to a more efficient, scalable, rapidly deployable integration."

Proin Dell DCS supplies rack-and-roll MDCs that can be added and removed from eBay's data centers without interrupting data center operations. "The goal of [the Dell] team is to help our customers deploy IT at a massive scale in the most cost-effective, efficient and rapid manner," Duncan said, adding, that for eBay "the deployment of scale is quite frequent and is fast, and we have to be able to scale with that." Since signing an Enterprise Agreement (EA) in 2012 with OSIsoft, eBay has used the PI System to monitor the operations of its data centers to optimize efficiency and lower the costs of maintaining their data center facilities. Thus, when Dell DCS began supplying rack-and-roll MDCs to eBay, they decided to embed and deliver a pre-configured PI Server with each Dell MDC to streamline the deployment of new units.

However, the deployment of new MDCs still faced roadblocks that meant eBay was not able to capture data from a recently commissioned MDC until two weeks after deployment. One of the most significant obstacles was the different ways that various system integrators incorporated new MDCs into the existing data infrastructure. Kalma illustrated this difficulty with a metaphor. "You have an electrician that puts a box on a wall this way and the other electrician is going to put a box on the wall a little bit different. So the system integrators would do the same thing: they would integrate just a hair different… that created too many steps in the process," Kalma said, adding that it "lengthened our deployment time and turn-over time to the business units."

To accelerate new MDCs coming online, Dell and eBay developed the **S3 Solution** to standardize, simplify, and shorten the deployment process, while OSIsoft engineers supported the S3 Solution by teaching Dell best practices for integrating embedded PI Systems into eBay's operational data infrastructure.

Tenet #1 - Standardize naming conventions. For the first tenet, Dell's Duncan explained how they "took the AF framework and structure and we took the naming conventions that eBay had already put in place and we adapted that."

Tenet #2 - Simplify through automation. Once the naming conventions were standardized, Dell was able to simplify the steps for deploying an MDC. Duncan said, "we applied the knowledge that Dell has of our MDC in order to take each of our 800 tags per MDC and then apply each one of those tags and put it in the right location in the framework." He continued, "we used substitution variables to go in and take all of the key information for each deployment and put it in one location and then let it populate automatically down through the rest of the tags."

Standardize	• Repeatable Process in Alignment with eBay Standards • Allows scalable fleet-wide monitoring of multiple MDCs • Can contrast conditions (unit model/versions, weather, etc.) at each MDC within a fleet
Simplify	• Reduced Potential for Human Error • Removed Onsite/Manual Creation of AF Structure and PI Points • Reduced Required Testing/Validation • Automated analyses and calculations (live PUE and CUE, real-time notifications)
Shorten	• Reduced PI System Site Integration from 2 Weeks to 4 Hours • Reduced MDC Deployment Time by more than ½ • Streamlines the process from procurement to business turnover in order to support Exponential Growth
Additional Benefits	• Capture Data during Commissioning and the MDC lifetime (for Dell manufacturing) • Developed Process and Partnership that is Expandable to Future Deployments • Preventative maintenance (at all levels of the MDC: air, water, electricity, and IT), reduced downtime, guarding against SLA/warranty violations

ebay inc (DELL)

Tenet #3 - Shorten the integration process with preconfigured embedded PI Systems and a well-documented process. Finally, Duncan said, they shortened the process by ensuring that every single step for the PI to PI System transfer was documented and the embedded PI Systems were pre-configured, factory tested, and delivered ready to plug-in and capture operational data. Duncan concluded, "we now have something that's very repeatable. It takes the human variability out of the whole workings."

For eBay less human variability means fewer errors and less required testing, which enables pre-configured PUE conversions, CUE conversions, and WUE conversions, which in turn helps them optimize the overall energy use of their data centers.

The S3 Solution has also reduced the time to integrate **a new MDC into eBay's existing Production PI System from 2 weeks to 4 hours**, so eBay can analyze a unit's performance from startup rather than two weeks later. As eBay continues to scale out new data centers and new MDCs in line with its growing operations and operational data, the S3 Solution empowers them to compare and contrast between sites, because, as Kalma put it, "where we did everything in series, now it is in parallel amongst our sites."

> **"Now we're capturing data for commissioning [and] start-up of the Modular Data Center day 1 rather than 2 weeks later."**
>
> – Dwayne Kalma
>   Data Center and Network
>   Software Engineer, eBay

[1] PI Coresight was renamed to PI Vision in 2017.

Kalma, Dwayne and Tyler Duncan. *Driving Business Value through Enterprise Agreements and Partnering.* OSIsoft.com. April 2015. Web. 10 March 2016
<http://www.osisoft.com/Templates/item-abstract.aspx?id=11043>

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