Driving Business Value through Enterprise Agreements and Partnering

Presented by Dwayne Kalma and Tyler Duncan

Agenda

- Introductions
  - The Partnership Team: eBay, Dell, and OSIsoft
    - Background on eBay
    - Background on Dell
- Challenge: Support Exponential Growth of eBay Business
- S^3 Solution: Standardize, Simplify and Shorten
- Results & Final Thoughts

Partnership Team

- eBay Project Team
  - Role: Commission MDC's as Quickly as Possible
  - Goal: Leverage Enterprise Agreement with OSIsoft to Solve Business Issues
- Dell MDC Team
  - Role: Design and Build MDC Solution to Meet eBay Requirements, Factory Test and Install On-Site
  - Goal: Own Customer's Risk and Provide End-to-End Solution
- OSIsoft EA Team
  - Role: Develop Scope of Concept and Provide Guidance on Best Practices for OSIsoft Products
  - Goal: Customer Delight

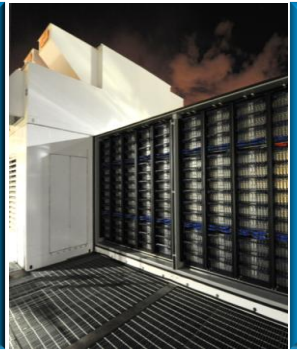
eBay Global Foundation Services (GFS)

Exponential Growth of eBay Business

Dell Data Center Solutions (DCS) Group Overview

Dell DCS

- Started in 2007
- Tailored server & infrastructure solutions for hyperscale customers
- #1 OEM hyperscale server provider (IDC, 2009 to present) [1]



Scale is our Specialty-

- 1.45M servers shipped
- 6.8M hard drives shipped (>13 Exabytes of storage)
- 7.5M DIMMs (>6.7PB of memory)

DCS Modular Data Center (MDC)

- MDCs help our customers deliver IT at a massive scale in the most cost-effective, efficient and rapid manner
- Solutions based on 100% Dell IP
- Over **200** MDC solutions deployed through end of 2014
- Over **90MW** of critical workload supported
- Outdoor air MDCs delivering **PUE's below 1.03** [2]

1: #1 in Density Optimized units from 2009-2014, which IDC started tracking in 2009;

2: Measured by 3rd party at customer site; PUE from input to transformers through IT

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MDC (Modular Data Center) Major Elements

100% free-air w/ evaporative cooling

Integrated switchboard

N+1, concurrently serviceable and maintainable

24-rack MDC

50kW/rack

Redundant power to rack

“Hot” removable racks for easy IT refreshes

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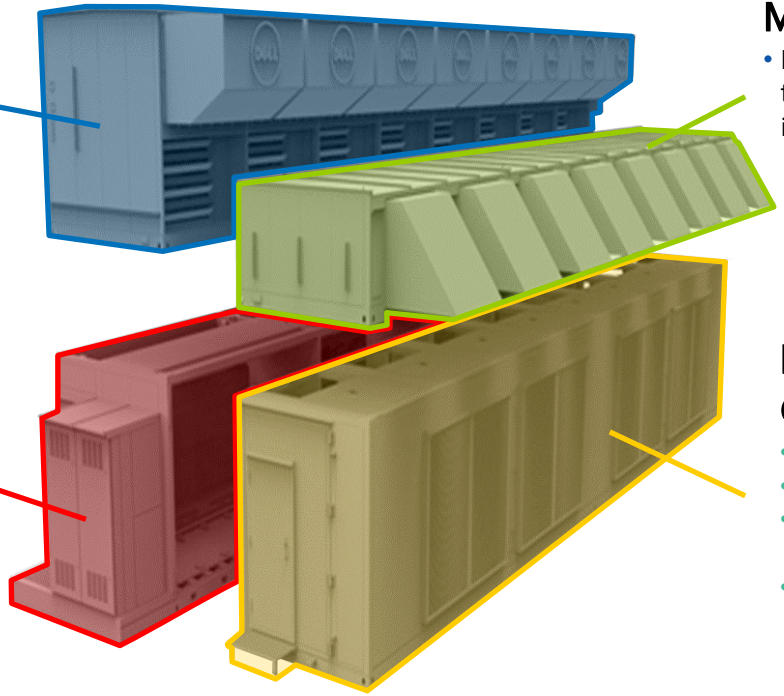
What is an MDC (Modular Data Center)

Air Handling Unit (AHU)

- Concurrently serviceable
- Houses all MDC fan units
- N+1 or 2N fans, controls and VFDs



Mixing Module

- Maintains required temperatures when outside air is too cold or too humid

IT Module

- Includes switchboards and power distribution
- Up to (24) 54U racks of capacity
- A/B Power feeds
- 50kW per rack redundant
- 'Rack-and-roll' allows for independent addition or removable of racks during operation

Direct Evaporative Cooling (DEC) Module

- Creates the "cold aisle"
- Includes multi-layered filtration
- Direct-evaporative technology provides all the cooling required
- ~6ft of front access to IT

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Deploy at Scale

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Challenge

Problem Statement:

PI System Integration Process not Consistent or Streamlined for MDC Deployments

Key Factors

- System Integrators not Consistent between Persons on Integration Tasks
- System Integrators not Experts on MDCs
- Too many steps in process
- Human Error Causing Repeated Work and Additional Required Testing
- Integration Tasks being Performed in Series and Creating Schedule Delays

- Standardize
- Simplify
- Shorten

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S³ Solution

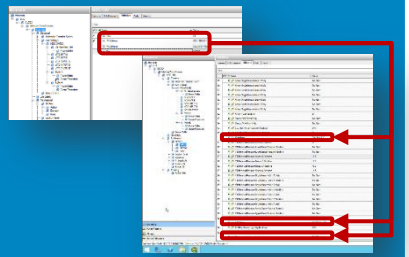
Partnership

Standardize

- Reduced costly (time and $) errors and inconsistencies
- AF Structure and Naming Convention Standards
- Process Documentation

Simplify

- Common AF XML Template Minimized Required Validation
- Utilized Substitution Parameters to Customize Deployment Specific Attributes



Shorten

- Drastically reduced integration time
- XML Template Preconfigured, Factory Tested and Delivered with the MDC
- Site Integration Reduced to a simple PI System copy

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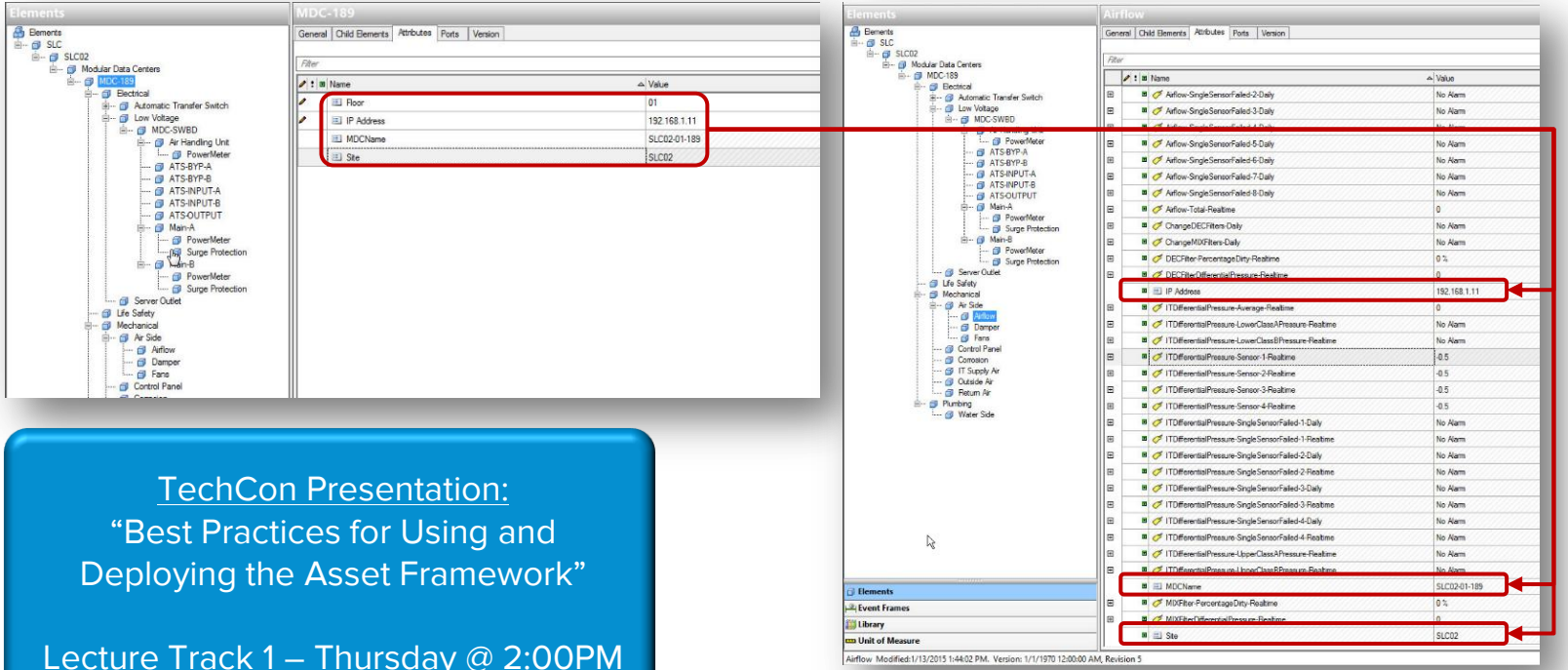
Substitution Parameters in the PI Asset Framework



TechCon Presentation:
"Best Practices for Using and Deploying the Asset Framework"

Lecture Track 1 – Thursday @ 2:00PM

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Automation Improves Delivery

- Factory pre-configured PI System Data is utilized during MDC deployments
  - Examples are:
    - MDC Start-Up and Commissioning
    - Point-to-Point Verification
    - Notification Alerting

Note: In all of these cases, MDC data is not only collected in the PI System, but furthermore, the PI System is used to prove out system testing through a verification process

S^3 Solution

Partnership

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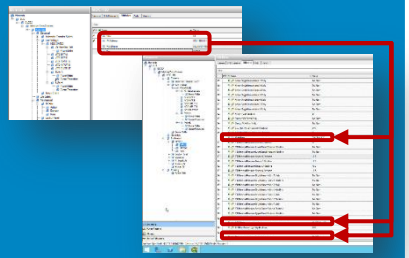

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Results & Future Benefits

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

Final Thought

Today's "Exponential Growth" requires us to be more creative and innovative in how we deploy data centers

- To Quantify this requires "Partnerships"
  - 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

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Questions

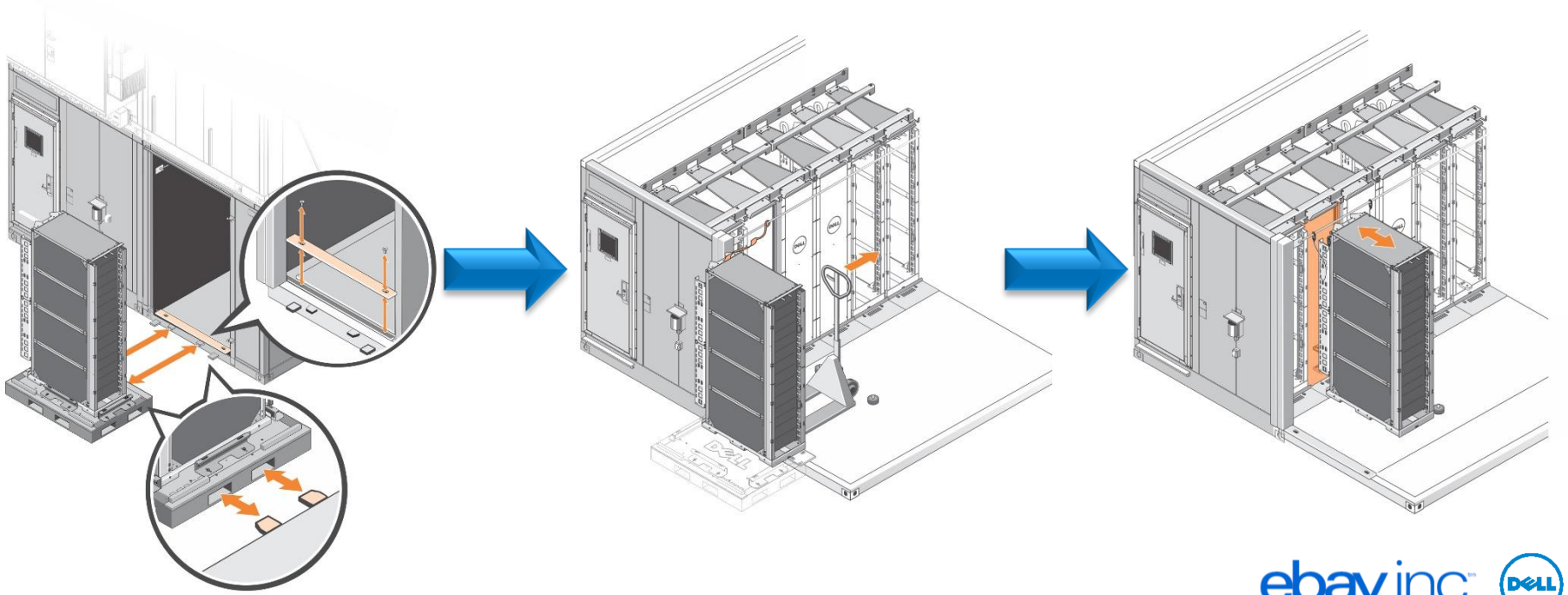
Please wait for the microphone before asking your questions

State your
name & company

THANK YOU

For more, see our TechCon Presentation: “Best Practices for Using and Deploying the Asset Framework”, during Lecture Track 1 (Thursday @ 2:00PM)

What is “Rack-N-Roll”



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eBay Typical “Rack-N-Roll” Cabinet

Design Elements

- eBay Designed Rack
- 30” W by 40” D
- 96+ Nodes
- 4000 Lbs. Rated Rack
- Pre Installed Servers
- Pre Cabled

Key Points

- Delivery Time Reduced
- Deployment Cost Savings
- Eliminate Single Server Deployments
- Improved Asset Tracking
- Utilize RU Space Efficiently
- Higher Densities