



## SUMMARY

### Dell EMC

### Industry

Critical Facilities, Data Centers, IT

### Business Value

- Business Intelligence
- Operational Insight
- Performance Optimization

### PI System™ Components

- PI Server™
  - Data Archive
  - Asset Framework
- PI Connector for Redfish
- PI Interface for Modbus
- PI Vision™

## Think Small: How Dell Leverages the PI System to Manage Micro Data Centers

Dell EMC's Extreme Scale Infrastructure (ESI) division has been developing Modular Data Centers (MDCs) solutions since 2008. Dell's micro MDCs are part of a broader effort to change data center architecture by bringing computational equipment to the edge of the network and reducing the amount of IoT data traveling to a centralized data center. But how do you monitor thousands, if not more, data centers across a geographic area? During a presentation at OSIsoft's 2017 Users Conference, Tyler Duncan, Technical Staff at Dell EMC, explained how his company uses the OSIsoft PI System as a "single pane of glass" to monitor its latest micro MDCs for edge computing. With the help of the PI System, Dell EMC created the MDCi platform to apply data visualization and business intelligence to its data center operations across the globe.

Dell EMC's Extreme Scale Infrastructure (ESI) division is using its new micro Modular Data Centers (MDCs) to bring data centers closer to the end user at the "edge" of the network. The micro data center is a radically scaled down version of its hyperscale MDC, complete with local computers, storage, and networking, as well as integrated power and cooling. While the new nimble-sized data center has a footprint smaller than half of a parking spot, the minified unit is a big step for Dell EMC's IoT initiative. The MDC can store from half-a-rack to three racks of computational equipment and can be deployed anywhere, while delivering massive performance improvements through edge computing.

However, with potentially thousands of micro MDCs spread out across the world – and no room to fit an operator inside the unit – Dell EMC sought out a better way to manage and monitor its highly complex system of resources. "At a bigger data center, I would have people that would be there to manage the solution," said Tyler Duncan, Technical Staff, adding that for a micro MDC, "we don't have the people."

To overcome the challenges of monitoring the health of its micro MDCs, Dell EMC developed the MDCi platform that combines OT and IT data from the OSIsoft PI System with geographical data in the cloud. The MDCi platform acts as a "single pane of glass" for monitoring Dell EMC's entire data center infrastructure. Dell EMC engineers can now use the MDCi platform, which relies on PI Vision<sup>1</sup>, OSIsoft's web-based visualization application, to view and analyze their data on any device.

Users can drill down from a geographical map of a service area to a specific micro MDC unit, visualize a group of servers inside the unit, and monitor the server itself while being able to look at the unit's power and cooling performance. PI Vision's user management options permit customers and third-party vendors to see only the data from assets they own or manage, while restricting access to other information.

## Dell's MDCi Single Pane of Glass – IT and Facility Infrastructure



**“The OSISOFT connector allows us to be able to search for all the servers that are on a particular network, automatically bring them in and have the data populated in an automated way.”**

– Tyler Duncan  
Technical Staff

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Dell EMC chose OSISOFT's PI Connector for Redfish as the most effective means of getting data from its micro MDCs into the PI System. As Duncan pointed out, “the OSISOFT connector allows us to be able to search for all the servers that are on a particular network, automatically bring them in and have the data populated in an automated way.” The PI Connector for Redfish is designed specifically for Redfish, a RESTful API that reads data off of the servers. A Dell IoT gateway is mounted inside the micro MDC unit and is loaded with the PI Server and relevant PI System Connectors and Interfaces such as Redfish and Modbus.

Using PI Vision as its mobile-enabled visualization tool, Dell EMC is now able to identify underutilized servers inside its micro MDCs. This allows the company to conserve its data centers' batteries in the event of a power outage. By capping power to underutilized servers, Dell EMC has already begun to achieve big savings in its smallest of MDCs.

OSISOFT and Dell EMC have worked together since 2013. The PI Server, for instance, is integrated into Dell's hyperscale MDCs deployed by eBay. By integrating PI System technology into the modules before shipping, eBay was able to cut the time required to configure individual assets from two weeks to four hours. Additionally, the time needed for commissioning new data modules – from the date of delivery to powering them up for use in eBay's operation – dropped by approximately 50%.

<sup>1</sup> PI Coresight was renamed to PI Vision in 2017.