HP Rack Thermal Sensor Monitoring Solution

Presented by **HP IT Global Data Center Services: Tools & Automation**

Agenda

- Introduction
- Background: Rack Thermal Sensors
- Business & Technical Requirements
- PI System Architecture
- Monitoring & Visualizations
- Measuring Success

Introduction

Members

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Hewlett Packard

- HP-IT Global Data Center Services: Tools & Automation
- End-User Organizations:
  - Facilities
  - DC & IT Operations
  - Enterprise Services

Environment

- Six data centers and ten managed compute spaces
- Monitoring in nearly 2,000 racks with over 7,000 sensors

Background

Rack Thermal Sensors

Benefits

- Availability
  - Ensure delivery of power/cooling
- Detection
  - Early warning of potential hot/cold spots
- Risk Mitigation
  - Facility Outage Events and Unplanned Downtime
- Analytics

Leveraged Technology

- Legacy Cooling Solution
- Temperature/Humidity Sensors
- HP iPDU
- Door Contact Sensors

Business Requirements

Objective

- Gain real-time visibility to environmental information for data centers

Drivers

- Increase awareness of remote environments
- Reduce risk for unplanned downtime
- Integrate with formal monitoring and support tools/processes
- Observe and drive operational efficiencies with early warning and detection

Technical Requirements

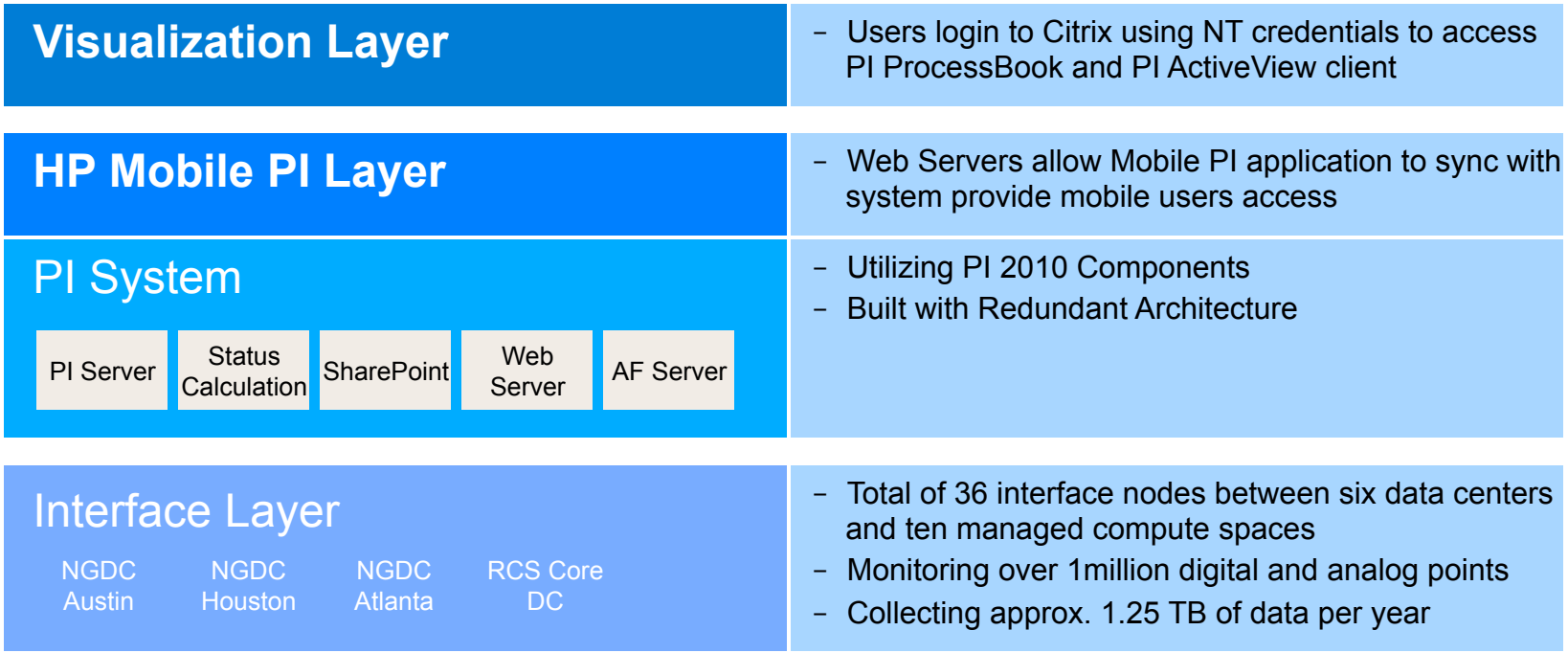
Objective

- Unify data across both the rack thermal sensor solution and existing legacy cooling solution

Drivers

- Provide reliable, stable, scalable technology
  - Sensors (info, communication)
  - HP iPDU (info, communication)
- Integrate with high availability architecture
  - Additional pair of interface nodes to existing solution
- Provide robust analytics and reporting
  - Custom Screens and KPI Calculation

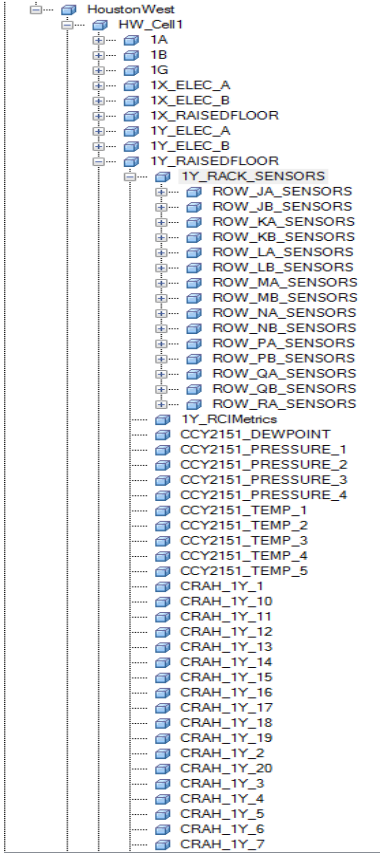
PI System Architecture Overview



AF Device Modeling

Template-Based Assets

Area centric Tree Structure



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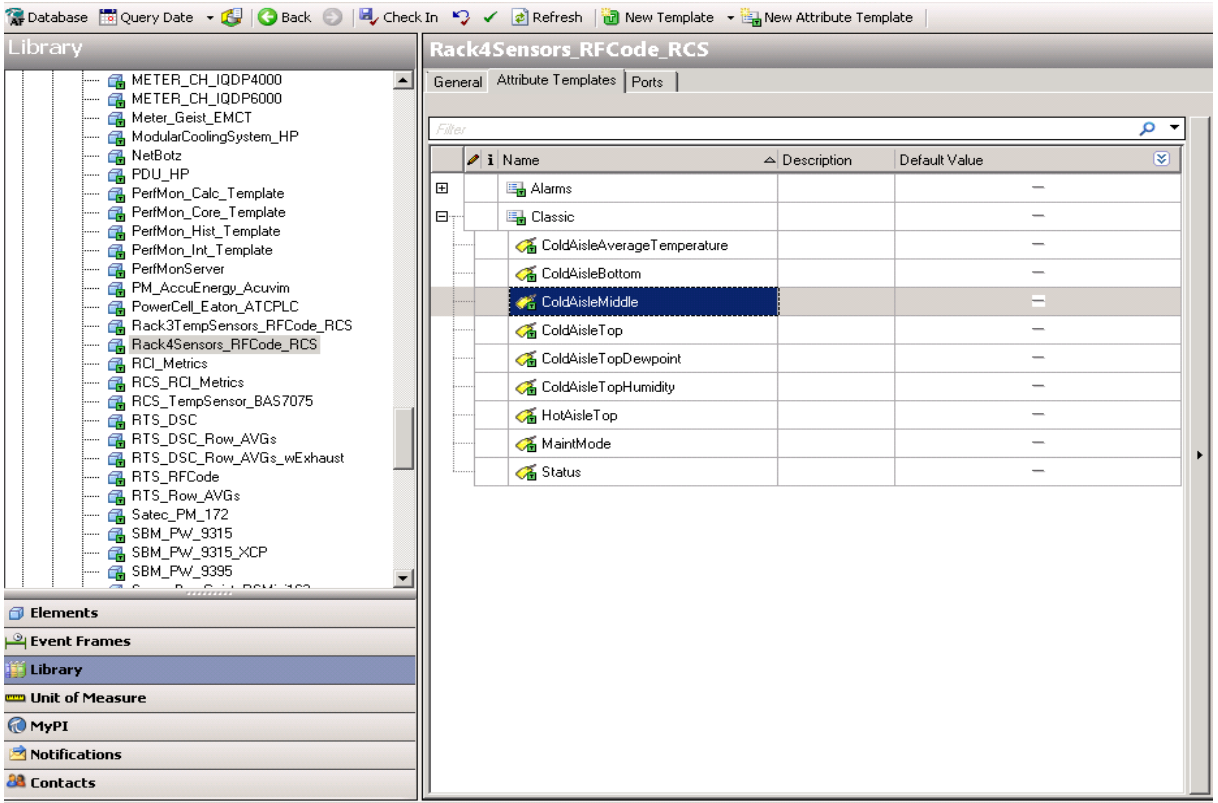
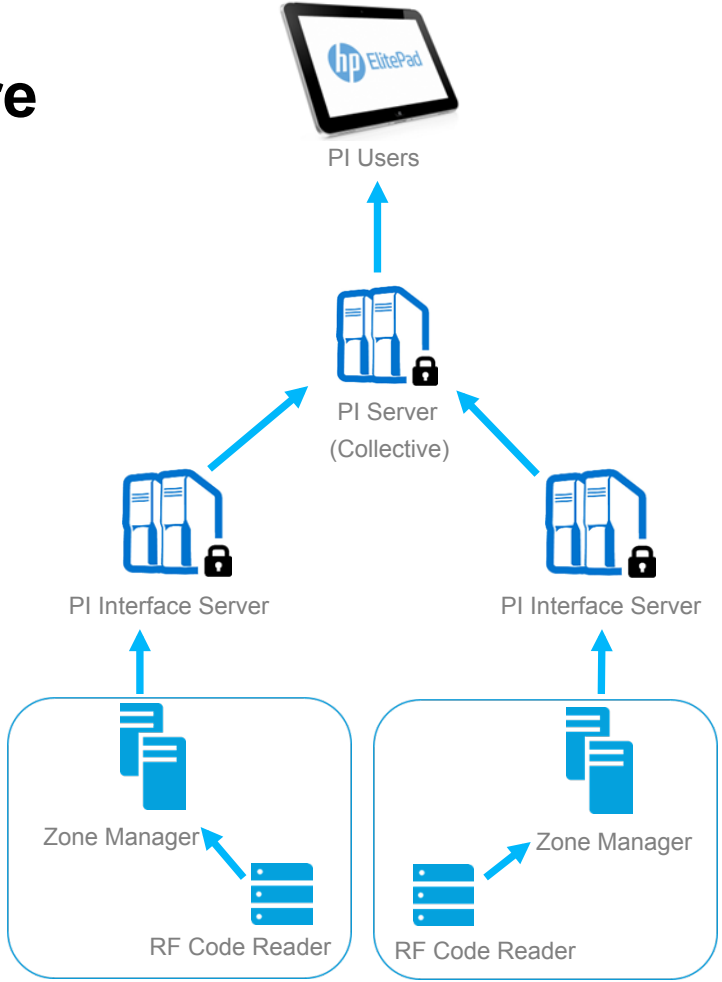


Rack Thermal Sensor Architecture

- Implement rack temperature monitoring in the DC using approximately 1,500 RF Code temperature monitoring devices.
- RF Code Readers
- RF Code Zone Manager
- OSIsoft PI Interface servers
  - PI OPC Interface



Monitoring the Compute Space

Monitoring Elements

- Power
- Cooling
- Door Contacts

Leveraged OSIsoft Components

- AF
- Visualization
- Custom Calculation Engine
  - PI SDK
  - AF SDK
  - PI API
- PI Notifications

Visualization

HP Private Cloud

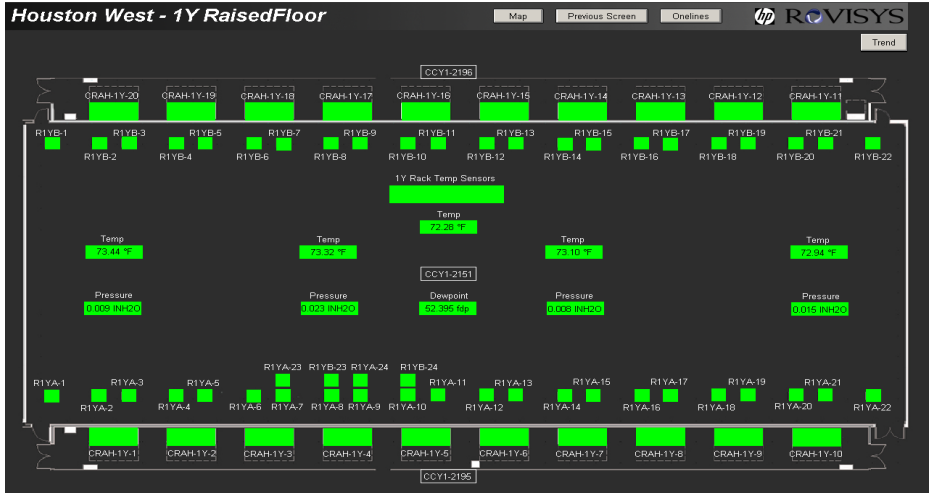
- HP Mobile PI

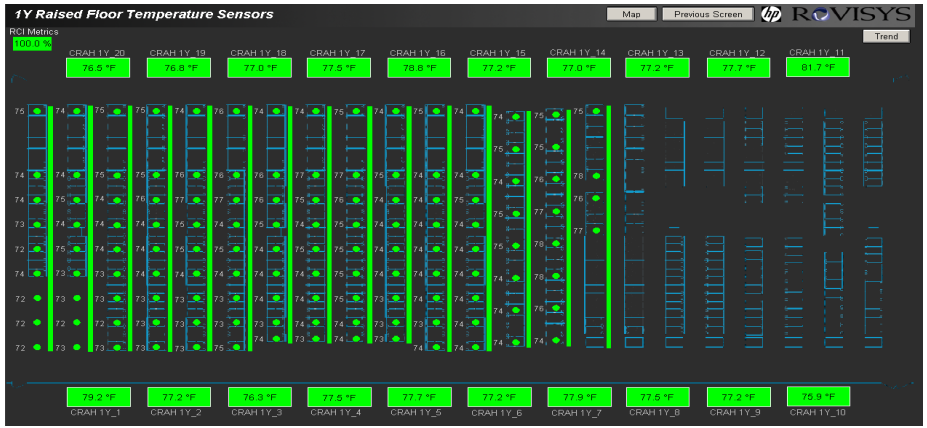
Citrix Server hosts visualization

  - PI ProcessBook
  - PI ActiveView

Rack/Row Based Screen Navigation

Real Time Data Trends





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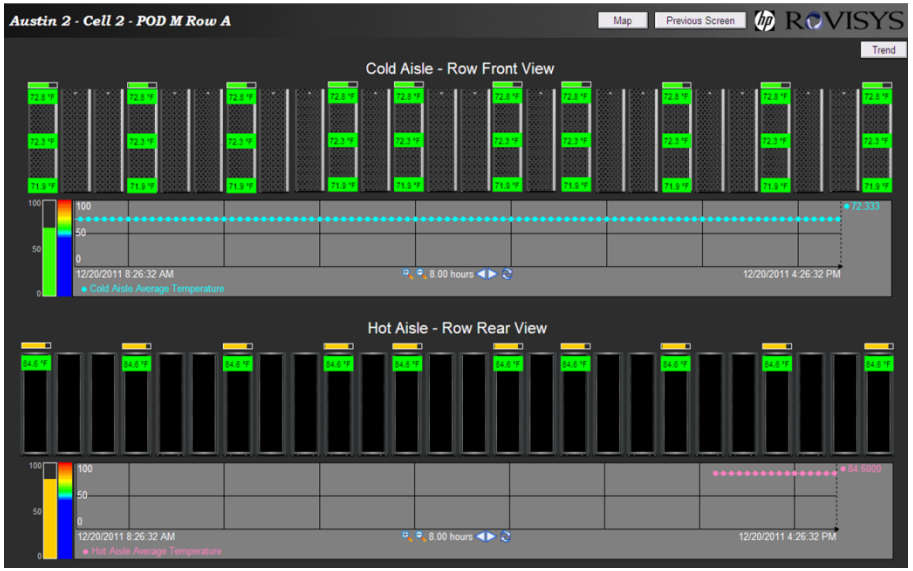

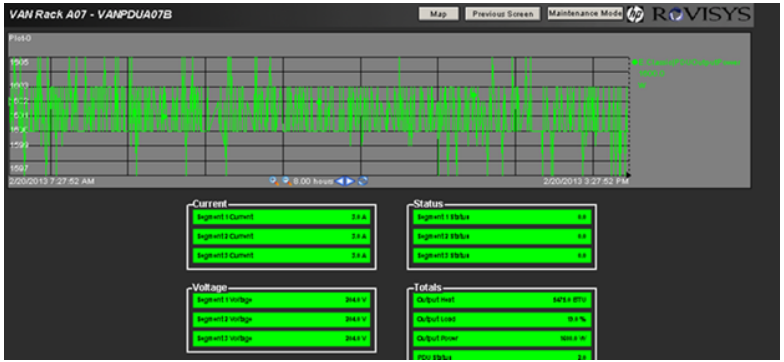

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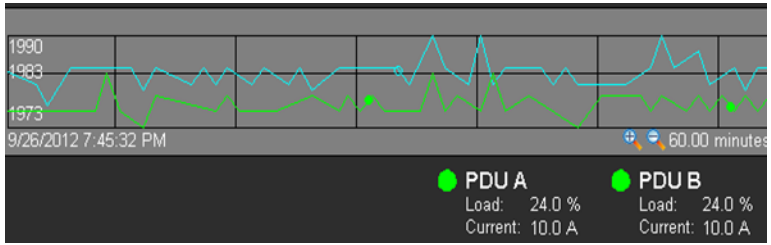
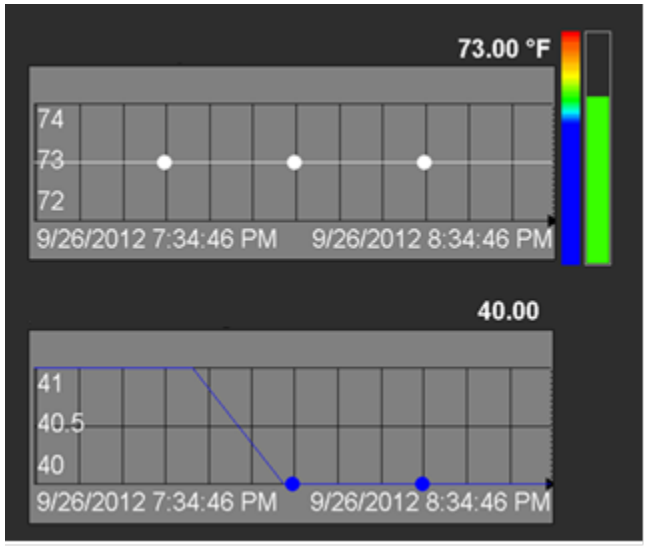
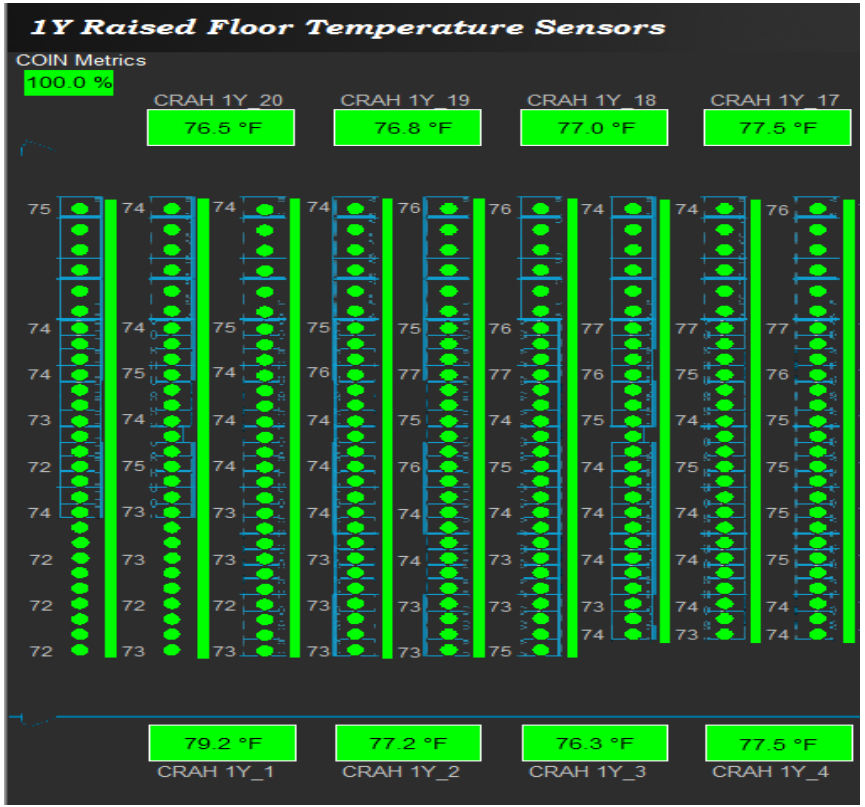




Key Performance Indicator

Cooling
Optimization
Index
Number

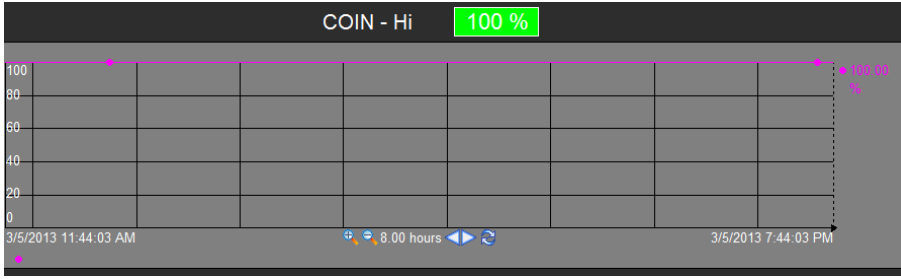
A computation that measures the number of racks within the acceptable levels of safe temperature readings.



Key Performance Indicator

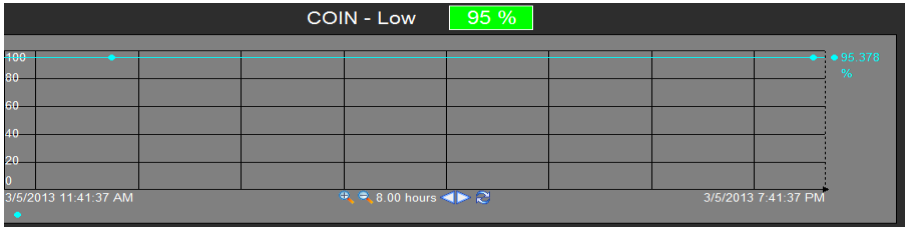
COIN High

Percentage of racks that are below 81 F



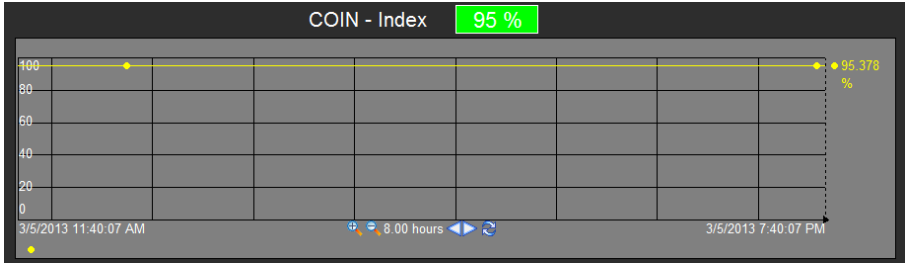
COIN Low

Percentage of racks that are above 65 F



COIN Index

Percentage of racks that are within 65 and 81 degrees F



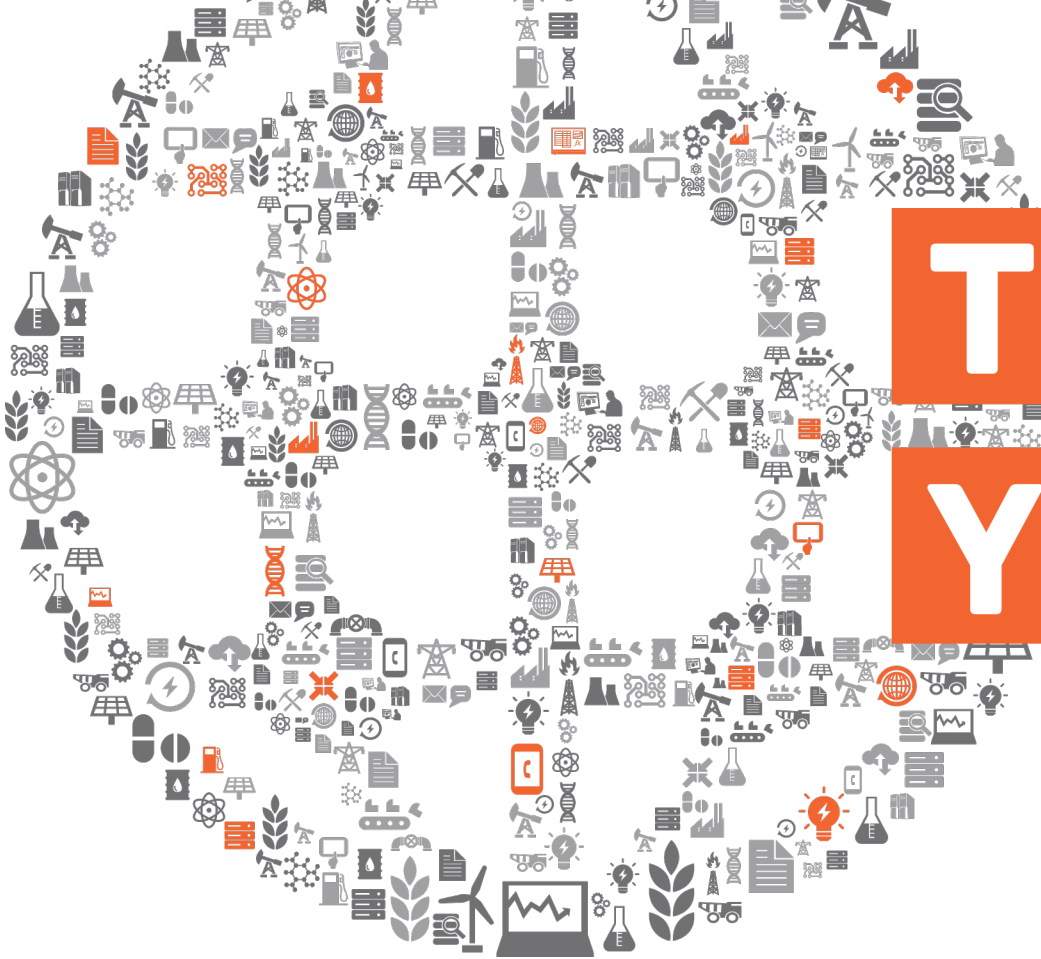
Conclusion/Benefits

- One single version of the truth
- Repurpose legacy solution
- Proactive maintenance
- Increased detail of environment

Contact Info

Hewlett-Packard

GDCSToolsAutomation@hp.com



THANK YOU

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