

# You Can't Manage What You Don't Monitor

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# Operational Challenge

- Qualcomm has numerous buildings scattered around the San Diego area.
- Many of these buildings have one or more critical data centers in them.
- The Backup Generators provide electrical load to the data centers during Utility outages.
- Managing and maintaining these generators while not affecting operational availability requires considerable coordination.
- Government regulations dictate maintenance restrictions and cause copious documentation.
- Up-time is paramount over efficiency and doing both is always a challenge.

# Manage vs. Monitor

- You can't manage what you don't monitor

San Diego  
Domestic

Quick Status

Generator (Select to See Detail)	Status	Critical	Warning	Alerts	RUN (min)
A	●	●	●	●	N/A
BB	●	●	●	●	N/A
BE	●	●	●	●	N/A
N	●	●	●	●	N/A
Q	●	●	●	●	N/A
P1	●	●	●	●	N/A
Q1	●	●	●	●	N/A
Q2	●	●	●	●	N/A
Q3	●	●	●	●	N/A
QRC1	●	●	●	●	N/A
QRC2	●	●	●	●	N/A
R1	●	●	●	●	N/A
R2	●	●	●	●	N/A
R3	●	●	●	●	N/A

Click to Manage Generator Alerting

A Generator

Generator Status

● Run

✕ On Load

✕ ATS Emergency Position

Critical Alarm Status

● Engine Failed to Start

● Battery Charger Fault

✕ Overcrank

✕ Over Speed Fault

✕ Breaker Open

● E-Stop

✕ Not Ready

● Not in Auto

Warning Alarm Status

● General Alarm

● Battery Low

✕ Battery High

● Fuel Level

● Fuel Leak

✕ Low Coolant Level

● Low Temp

● High Temp

✕ Pre-High Temp

● Low Oil Pressure

✕ Pre-Low Oil Pressure

OneIT  
Generator Dashboard

Condition Definitions

● = Lost Communications

✕ = N/A

● = Normal Condition

● = Abnormal Condition

Alerting

Enabled

Alerting Notes

0

8/24/2016 5:56:36 PM

Supported Areas and Functions

\* Building Fire/Life-Safety

Yes

\* Building IDFs

Yes

\* Supported Spaces

A-121, A141A, A-141B, A-106

# A picture is worth many words

- Grouping of PI Tags to Categories
- Multi-state image enables quick identification
- Link Asset to expanded view



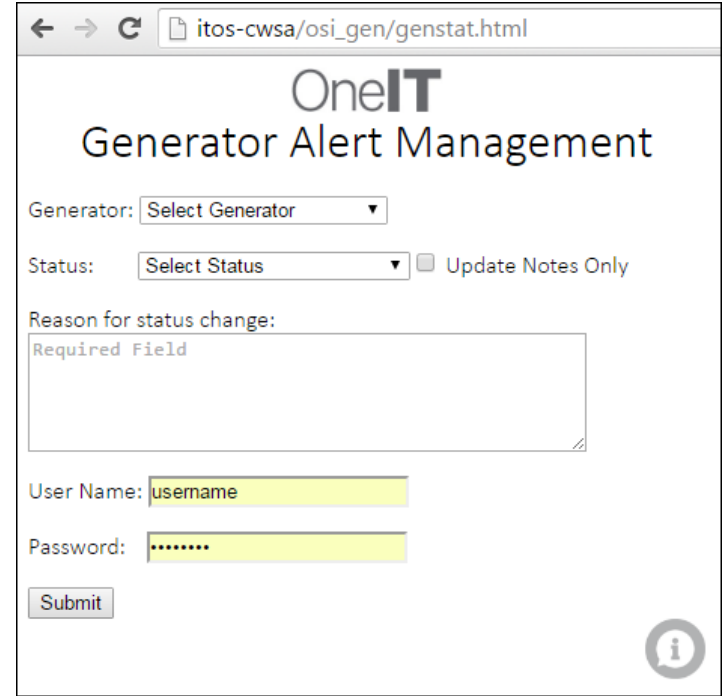
## Quick Status

Generator (Select to See Detail)	Status	Critical	Warning	Alerts	RUN (min)
<a href="#">A</a>					N/A
<a href="#">BB</a>					N/A
<a href="#">BF</a>					N/A
<a href="#">N</a>					N/A
<a href="#">Q</a>					N/A
<a href="#">P1</a>					N/A
<a href="#">Q1</a>					N/A
<a href="#">Q2</a>					N/A
<a href="#">Q3</a>					N/A
<a href="#">QRC1</a>					N/A
<a href="#">QRC2</a>					N/A
<a href="#">R1</a>					N/A
<a href="#">R2</a>					N/A
<a href="#">R3</a>					N/A

[Click to Manage Generator Alerting](#)

# Mobile Alert Management





- Alert Management
  - Enable/Disable
- Authentication
- Notes are appended with user ID
- Mobile device friendly



The screenshot shows a web browser window with the address bar displaying "itos-cwsa/osi\_gen/genstat.html". The page title is "OneIT Generator Alert Management". The form includes a "Generator:" dropdown menu with "Select Generator" as the current selection. Below it is a "Status:" dropdown menu with "Select Status" as the current selection, followed by a checkbox labeled "Update Notes Only". A text area for "Reason for status change:" contains the text "Required Field". Below this are input fields for "User Name:" (containing "username") and "Password:" (containing "....."). A "Submit" button is located at the bottom left of the form. An information icon (a circle with an 'i') is located at the bottom right of the page.

# Change acknowledgement

- Group notification on change
- Reminder of Disabled Assets

	Success. Changes made.
	Failure to authenticate and or not in <u>Ogroup</u>
	Requirements not met. No changes made
	Information about the tool

# PI Asset Framework Data View

- History
- Date and time and duration with reason

(DROMERO-100) GEN-1		
General   Child Elements   Attributes   Ports   Analyses   Version		
Filter		
Name Value		
Category: Administration Information		
✓	Alerting	Enabled
✓	Alerting Notes	User: DROMERO changed status to "Enabled" on 07/05/2016 at 02:17:28 PM. Notes have been updated with: "Enabled".
	Element Type	Equipment
	Name	(DROMERO-100) GEN-1
	PT Audit	

# Consolidated View

- Legend
- Detailed Information
- Quick Status

San Diego  
Domestic

Generator (Select to See Detail)	Status	Critical	Warning	Alerts	RUN (min)
A	●	●	●	●	N/A
BB	●	●	●	●	N/A
BF	●	●	●	●	N/A
N	●	●	●	●	N/A
Q	●	●	●	●	N/A
P1	●	●	●	●	1.07
Q1	●	●	●	●	N/A
Q2	●	●	●	●	N/A
Q3	●	●	●	●	N/A
QRC1	●	●	●	●	N/A
QRC2	●	●	●	●	N/A
R1	●	●	●	●	N/A
R2	●	●	●	●	N/A
R3	●	●	●	●	N/A

### A Generator

**Generator Status**

- Run
- ⊗ On Load
- ⊗ ATS Emergency Position

**Critical Alarm Status**

- Engine Failed to Start
- Battery Charger Fault
- ⊗ Overcrank
- ⊗ Over Speed Fault
- ⊗ Breaker Open
- E-Stop
- ⊗ Not Ready
- Not in Auto

**Warning Alarm Status**

- General Alarm
- Battery Low
- ⊗ Battery High
- Fuel Level
- Fuel Leak
- ⊗ Low Coolant Level
- Low Temp
- High Temp
- ⊗ Pre-High Temp
- Low Oil Pressure
- ⊗ Pre-Low Oil Pressure

### OneIT

Generator Dashboard

**Condition Definitions**

- = Lost Communications
- ⊗ = N/A
- = Normal Condition
- = Abnormal Condition

**Alerting**

Enabled

**Alerting Notes**

0  
6/17/2016 10:19:12 AM

**Supported Areas and Functions**

- \* Building Fire/Life-Safety  
Yes
- \* Building IDFs  
Yes
- \* Supported Spaces  
A-121, A141A, A-141B, A-106



# Carbon Emission Report (Developing)

- Last Run Time and Date
- Current Year Total
- Last years total
- Automated Log Books
- Operational Allocation

## GENERATOR APCD REPORT

GENERATOR	Last Year Total Runtime (Hours)	Year to Date Runtime (Hours)	Last Run	Last Run Time (min)
(A-EXT) GEN-1	13.7	10	9/6/2016 8:00:20.019012 AM	30
(BB-EXT) GEN-1	14.92	11	9/6/2016 9:00:40.028015 AM	29.98
(BF-EXT) GEN-1	14.51	10	8/9/2016 8:27:06.423004 AM	28.25
(N-EXT) GEN-1	8.17	8	9/6/2016 7:58:59.254013 AM	32.05
(O-EXT) GEN-1	6.37	7	9/6/2016 4:01:56.236007 PM	28.98
(P-EXT) GEN-1	4.79	12	9/12/2016 2:07:16.031006 PM	30.98
(Q-EXT) GEN-2	2.75	16	9/7/2016 8:06:17.057007 AM	29.98
(Q-EXT) GEN-3	10.78	10	9/7/2016 7:33:48.166 AM	26.92
(QRC-EXT) GEN-1	7.16	10	8/25/2016 8:01:16.011002 AM	30
(QRC-EXT) GEN-2	7.12	10	8/25/2016 8:02:11.012008 AM	28.98
(R-EXT) GEN-1	10.34	10	9/7/2016 8:40:00.539001 AM	29.98
(R-EXT) GEN-2	10.69	6	9/7/2016 9:16:14.030014 AM	29.98
(R-EXT) GEN-3	13.11	11	9/7/2016 9:17:32.030014 AM	28.98
(A-EXT) GEN-1	13.7	10	9/6/2016 8:00:20.019012 AM	30

# Larger Status Board (Future)

Generator (Select to See Detail)	Status	Critical	Warning	Alerts
A				
BB				
BF				
N				
Q				
P1				
Q1				
Q2				
Q3				
QRC1				
QRC2				
R1				
R2				
R3				
AUS B GEN1				
BLDR E GEN2				
BOX A GEN1				
BQFA GEN1				
CANAD K GEN1				
LV1 GEN1				
LV1 GEN2				
RAL A GEN1				
RAL B GEN1				
SCLA GEN1				

Condition Definitions	
	= Lost Communications
	= N/A
	= Normal Condition
	= Abnormal Condition



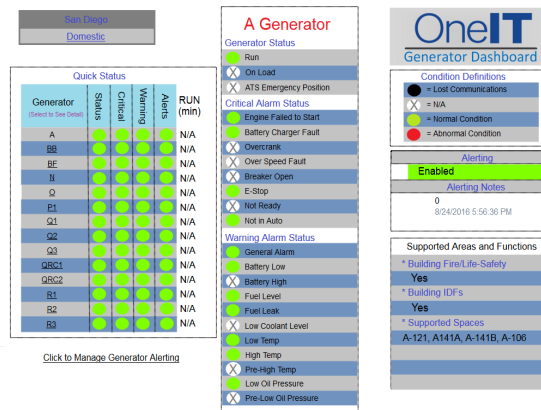
ROOM	Q-132	Q-146	QP-200	QRC-004	R-007	R-009A	R-009C	R-012
EPO								
UPS	(Q-111A) A	(Q-146) A	(QP-200B) BLUE1	(QRC-004) D01	(R-007) U02	(R-009A) B01	(R-009C) G07	(R-012) MGE
Alerts								
Warning								
Critical								
Status								

ROOM	R-014A	R-014B	R-015
UPS	(R-014A) K02	(R-014B) P01	(R-015) 1
Alerts			
Warning			
Critical			
Status			

# Managing Backup Generators

## COMPANY and GOAL

Save time, money, and reduce errors while improving quality



## CHALLENGE

Multiple interested parties with differing requirements

- Diverse skill level
- Hesitation towards dependence on technology

## SOLUTION

Integration and use of many tools and capabilities

- OSIssoft PI System
- PI Coresight
- PI Web API

## RESULTS

Real-time data availability through dashboard and email

- Automating Logbook entries
- Centralized Monitoring
- Simple recognition of issues
- Diversity of use

# Contact Information

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Sr. Staff IT Engineer

Qualcomm



# Questions

Please wait for the  
**microphone** before asking  
your questions



State your  
**name & company**

# Please don't forget to...

Complete the Survey  
for this session



The **Power of Data**

DECISION READY IN REAL-TIME

## Evaluation Form (Seminar Location - Date)

Name: \_\_\_\_\_

Company: \_\_\_\_\_

Email: \_\_\_\_\_

### Quality and content of the presentations

Poor Good Excellent N/A

Welcome	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Journey To Real-Time Operational Intelligence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Power of Connection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tank Level Management System	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using the PI System to Aid in Troubleshooting Operational Aspects of Oil and Gas Well Drilling and Completion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unleash your Infrastructure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Information on the Spot	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wrap-up/Seminar Conclusion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### Quality and organization of the seminar

Choice of date	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Time allowed for lunch/breaks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Choice of presentations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Break and time allowed for the presentation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

감사합니다

谢谢

Danke

Merci

Gracias

**Thank You**

ありがとう

Спасибо

Obrigado