

Energy ETC

Smart Systems ...
Smart Future!

Welcome to Your Smart Future

CASE STUDY



Project Type : INTEGRATION
 Facility Type : 5 Building Campus, Multiple Tenants
 Location : San Francisco Bay Area
 Management : Offsite Property Management

PREVIOUS SYSTEM ANALYSIS

Hardware : Jace, NCM-30's, UNT's, DX9100
 Software : Local Web Interface, Tenant Override Billing
 Type : Hybrid - Legacy
 Vintage : 2000
 Service Factor : 4 – Relatively High Cost
 Migration Plan : Keep JCI Hardware, Replace Failed JACE.

CURRENT SYSTEM ANALYSIS

Hardware : Dell 1U Server Class PC in Co-location Ctr.
 : Linksys VPN Routers
 : S4 Open: OPC-N2 Router, UNT's, DX9100
 Software : ASI WebLink Interface w/ LinkOPC – Hosted
 : ASI Zonedial Override Billing - Hosted
 Type : Hybrid - Legacy
 Vintage : 2009 Software / Hardware & 2000 JCI H/W
 Service Factor : 2 – Relatively Low Cost due to HOSTING
 Migration Plan : Replace JCI Field Devices with OPEN LON

OVERVIEW

This site consists of multiple single story buildings with multiple tenants. The previous automation system consisted of a JACE with a tenant override option, 2 JCI NCM's, 58 UNT controllers and 1 DX9100 controller. The UNTs were deployed across the N2 channels of NCMs.

The Tridium JACE failed after a power cycle which left the building running 24/7 and without onsite WEB access to control systems and tenant after-hours override and capability. This was probably due to the aged technology and installed environment. No data backups were available.

Energy ETC was contacted by the servicing mechanical contractor to see what solutions were available to resolve the issue.

CUSTOMER NEEDS / REQUIREMENTS

- INTERNET WEB GRAPHICAL PRESENTATION OF ALL SYSTEMS.
- TENANT AFTERHOURS TRACKING and INVOICING SOLUTION.
- STABLE and SUSTAINABLE HARDWARE DESIGN.
- ABILITY TO EXPAND to support DEMAND LIMITING / DEMAND RESPONSE.
- NEEDED to be COST EFFICIENT.



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THE APPROACH

There were several challenges in this integration:

- Integrate the N2 Devices without the need for the NCM's. This solution needed to support:
 - OPC Server Connectivity to all discovered devices.
 - Remote Terminal Access Support over IP.
 - Connecting Multiple N2 Channels into 1 common device.
 - Auto discovery of the N2 controllers and associated data points.
 - Virtual Addressing support for duplicate N2 controller addresses.
 - Auto building of the point tree under the controllers.
 - Auto association with N2 controller internal application type with appropriate point templates.
- Design a PC / network configuration solution that provides for a low cost, low maintenance reliable model.
 - Needed to be offsite. There is no local onsite management.
 - Needed to be remotely managed for all software updates.
 - Needed to have 99.999% uptime services. (Power & ISP).
 - Needed to be located in a controlled environment. Due to previous failure.
- Implement a User Friendly and sustainable Graphical User Interface
 - Must be accessible from the Internet 24/7 with a standard web browser.
 - Must email and text message alarms.
 - Must support long term data trending.
 - Must be easily expandable.
 - Needed to have Help Desk support for Tenant and Management Questions.
 - Needed to integrate a Web Based Tenant Override / Invoice solution.

THE SOLUTION

Energy ETC, as a Smart Building System Integrator, has several product relationships from which to choose the optimal configuration of software and hardware components to meet the customer requirements. All solutions we design and implement are based on sustainability. The system as a whole cannot become obsolete. There must always be a cost effective migration path for the various components that integrates into the existing configuration.

The key system components required were:

1. N2 connectivity over IP with OPC.
2. Provide a HOSTED or SaaS connection to the site from a secure co-location facility with Help Desk Support.
3. A 24/7 WEB based User Interface (UI) in a managed environment.
4. A WEB based Tenant Override / Invoice that would integrate to the UI and N2 devices.

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THE SOLUTION

- In order to meet the needs of item 1 we selected the **S4 Open: OPC-N2 ROUTER**. While other N2 connectivity options were available the OPC-N2 device provided optimal functionality and time saving implementation features such as:



- Auto discovery of the N2 controllers.
- Virtual Addressing support for duplicate N2 controller addresses.
- Auto building of the point tree under the controllers.
- Auto association with N2 controller internal application type with appropriate point templates.
- Remote connectivity via OPC through a VPN tunnel.

The S4 Interface Console software was easy to use and once installed on the PC server provided the required OPC Server “tunneling” connectivity of the N2 points from the S4 Open: OPC-N2 Router to the Web User Interface. Other solutions would not have been as clean to implement resulting in additional material and labor costs.

- To provide the requirements of Item 2 we selected a premier state-of- the-art internet data center located in the heart to of Silicon Valley. This center provides:



- AC power distributed via redundant MGE UPS (uninterrupted power supply) systems.
- 2 Megawatts of diesel generator backup power.
- In excess of 24 hours of generator fuel on-site; contracts with multiple fuel providers.
- 100% facilities uptime SLA.
- Power configured to meet customer specifications.
- Fully redundant dual A+B power distribution.
- Fully redundant chilled water system, chillers, pumps, and towers.
- N+1 redundant air handlers.
- Direct Connections to Third-Party Providers allowing for dedicated connectivity from a number of vendors in the facility.
- Speed connectivity options up to 10Gbit at the server points of connection.

A DELL® 1U class server running Microsoft® Business Class Server 2003 was installed at the data center to run the applications. The consistency of the operating system bundled with the server and integrity of the data center provided a low cost, low maintenance, high performance solution.

Enerav ETC's **HOSTED-HELPDESK™** provides account services for:



- Data integrity and offsite back-ups.
- Monitoring of system and network operations.
- Daily review of building operations and equipment conditions.
- Operational Q&A support to the HOSTED client and client customers.
- Changes to the system for site expansions and modifications.

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THE SOLUTION

3. For Item 3 we selected the **WebLink** software solution from **ASI Controls**. WebLink provides:



- A consistent User Interface to monitor and control the lower tier devices.
- Global site Operational Scheduling control.
- Alarm management, historical reporting and real-time email/ SMS annunciation.
- Integration into the Tenant Override / Invoicing System.
- Acceptable cost / performance pricing.

Other WEB based solutions were available yet WebLink was selected for its' straight forward integration into the tenant override / invoicing solution. Other solutions would have required an additional software driver layer which would have resulted in additional costs.

4. In selecting the Tenant Override / Invoicing system there are several available on the market at various price ranges but only one met the price / performance requirements and supported 3rd party connectivity through OPC. Our choice for this application was the **ZoneDial Energy Accounting and Invoicing** software solution from **ASI Controls**. This solution provides for:



- Schedule zone activation; invoice for energy costs.
- Web browser interface with phone option.
- Optional tenant self-administration.
- Tenants schedule, and pay for, energy use.
- Generate & print invoices.
- Pre-scheduled or immediate activation.
- Supports recurring overrides.
- Tracks every user interaction.
- Print instruction cards for each user.
- Fully customizable rates, schedules and holidays.

SUMMARY

All components of the solution continue to perform to the client's expectation. The HOSTED model has been solid and continues to emphasize the benefits of the solution compared to the legacy configuration of installing the components on a client site.

