Getting the Most Out of Your Building Automation System

Presented by:
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Industry & Dude Terms

- BAS – Building Automation System
  - BMS – Building Management System
  - EMS – Energy Management System
  - HVAC Control(s) – Same as BAS, BMS or EMS

- DAA – Dude Automation Appliance
- FSA – Facility Scheduling Automation
- CAA – Critical Alarm Automation
**Why did SchoolDude venture down BAS path?**

Moore’s Law (1965)
- (Processors) Double in power or have reduced in manufacturing cost every 18 months

Moore’s Law in 20xx
- Speed and power may level off, but where inexpensive processing is being applied will exponentially expand over the next 10 years

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**Are high tech buildings here to stay?**

**Drivers**
- Energy Cost increasing
- Cost of technology decreasing
- Proven ROI in prior applications

**Benefits**
- Lower Operating Cost
- Better Diagnostics
- More efficient use of time with FM Staff
- Eases demand on current infrastructure
How do you interact with your BAS now?

- Alarm Acknowledgement
  - Room temperature
  - Boiler flame out
  - Supply or return water temp on chiller

- Review alarms in BAS software then perform work

- Conditioning Space on schedule basis
  - Gym Rental on Saturday Morning @ 9AM

- Manually override or program events into BAS software

SchoolDude’s First Step – Alarm Automation

- Utilize BAS alarm notifications and create work orders

- Cost, time and frequency of BAS alarms could now be tracked

- Expanding research into providing more information within work order to help technician isolate root cause

- Enhance implementation experience
**BAS Schedules or Schedule Overrides**

1. Schedule is requested
2. Schedule is entered into FSD & approved
3. Print Schedule
   - Some are entered into MD
   - Print
4. Schedule is sent to Maintenance / Energy Management Dept
5. BAS technician enters schedule into BAS
6. Equipment is turned on for requested space
7. Equipment is turned off after event

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Manual Process

Scheduling with FSA

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FS DIRECT

Facility Schedule Automation

Facility Masters
Achieving Excellence
SchoolDude Expands BAS integration with FSAutomation

- Integrates FSDirect and your BAS to coordinate facility events and BAS schedules
- Streamlines the BAS system programming for special schedules from 5-15 minutes per event to zero
- Supports BACnet compatible or NiagaraAX BAS systems
- Pre-start functionality enables HVAC to start early and ensures the correct room temperatures when an event begins
- Pre-stop functionality enables HVAC to coast to the end of the event providing substantial energy savings
- Last minute overrides can be managed and logged from one interface across multiple BAS manufacturers

Quantify Your Success

- Saves staff time 5-15 minutes per event by automating BAS overrides
- Enables event schedule changes in FSDirect to automatically reset the BAS

- A school district scheduling approximately 10,000 HVAC or lighting related events annually would also have approximately 2,000 changes to the original requested time or date. That would be 12,000 schedules to enter or changed in the BAS. Estimating 12,000 entries at 10 minutes each would be 2,000 man hours annually or approximately 40 hours per week.

- 2,000 hours estimated at $25 per hour is approximately $50,000 per year. Or one FTE to redistribute job responsibilities.
Quantify Your Success

- **Optimize after-hours schedules based on actual usage**
- **Cancelations in FS Direct are automatically passed to the BAS so HVAC doesn’t run for events that have been canceled**
  
  • Statistics show that notification of a canceled event is only communicated back to Energy Management department approximately 1-2 out of 5 times.

  ✓ Estimating 2 hours per event and $30 per hour for HVAC is $60 per event. A 5% estimate of cancelations on 10,000 events is 500 events. Failure to receive notification on 4 in 5 (400) events at $60 per event is **$24,000**

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Quantify Your Success

- **Improves customer service and community relations by assuring proper space conditions**
- **The human factor is removed from scheduling BAS for after-hours events**
  
  • A school district scheduling approximately 20,000 events annually using FS Direct would have HVAC or lighting associated with at least half of those events. The Energy Management department would have to create more than 10,000 manual schedules in the BAS annually.

  ✓ An estimated error factor of 2% on 10,000 events is **200** scheduling errors annually.
**Facility Scheduling & Building Automation Integration**

Schedules and calendars building use

Communicates scheduling information to Dude Automation Appliance (DAA)

Internet

FSD Event is made available to Building Automation System (BAS)

Building Automation System (BAS)

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Building Automation System (BAS)
FSAutomation Compatibility

Schedules and calendars building use

Communicates scheduling information to Dude Automation Appliance (DAA)

Internet

Firewall Port

Dude Automation Appliance

BACnet Compatible or NiagaraAX
Building Automation Systems

FSD Event is made available to Building Automation System (BAS)

Cost Efficient Building Conditioning!

Mapping FSA to BAS

Dude High School

Auditorium

Gymnasiums

Restrooms

Cafeteria

Classrooms 101

Classrooms 102

Classrooms 103

Dude High School

HVAC Zone 01

HVAC Zone 02

HVAC Zone 03

HVAC Zone 04

HVAC Zone 05

HVAC Zone 06
Mapping FSA to BAS

**Dude High School**
- Auditorium
- Gymnasiums
- Restrooms
- Cafeteria
- Classrooms 101
- Classrooms 102
- Classrooms 103

**FSDirect**
- Room or Area Names

**BAS System**
- Zones or Control Points

**HVAC Zones**
- HVAC Zone 01
- HVAC Zone 02
- HVAC Zone 03
- HVAC Zone 04
- HVAC Zone 05
- HVAC Zone 06
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Dude High School
- HVAC Zone 01
- HVAC Zone 02
- HVAC Zone 03
- HVAC Zone 04
- HVAC Zone 05
- HVAC Zone 06
**Pre-Start**

- **Pre-Start** is the ability to enter a number of minutes for the control zone/point to be activated PRIOR to the START the FSDirect Event.

**Pre-Stop**

- **Pre-Stop** is the ability to enter a number of minutes for the control zone/point to be released back to the BAS system PRIOR to the END of the FSDirect Event.

**Post-Stop**

- **Post-Stop** is the ability to enter a number of minutes for the control zone/point to be released back to the BAS system AFTER the END of the FSDirect Event.

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**FSDirect Event**

7:00pm to 9:00pm

- **HVAC Zone 02**
  - Start: 20 mins prior
  - Stop: 15 mins prior
  - 6:40pm
  - 8:45pm

- **HVAC Zone 03**
  - Start: 15 mins prior
  - Stop: 10 mins prior
  - 6:45pm
  - 8:50pm

- **HVAC Zone 04**
  - (Restrooms)
  - Start: 10 mins prior
  - Stop: 10 mins after
  - 6:50pm
  - 9:10pm

- **Parking Lot Lights**
  - Start: 15 mins prior
  - Stop: 30 mins after
  - 6:45pm
  - 9:30pm
QUESTIONS?

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