



25 00 00 – Automation & Controls

DIVISION 25 – Integrated Automation

STATEMENT OF PURPOSE & BACKGROUND

- Scope:
 - The following pages contain the District Standards Reference for Niagara-Certified Technicians for SPPS Automation procedures.
 - Refer to Section 23 09 23 for Direct Digital Controls for HVAC systems.
 - Refer to Section 26 09 23 for Lighting Control Devices.
- Revision history of section:
 - 08/10/2018 (date of adoption)
 - 11/10/2022 (updated contacts)

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JACE User Login and Permissions Procedures

1. To coordinate all work below, and for other BAS questions, contact one of the following individuals with the SPPS Automation Department:
 - a. Adam Hanson, Lead Automation Electrician. 612-709-4987
 - b. Ryan Olson, Automation Electrician. 651-274-4353

2. For JACE device addressing strategy, refer to separate spreadsheet available from the district graphics homepage or contact one of the individuals above.

3. Per specification, the district is to be provided with all levels of login credentials for all provided software and hardware upon equipment being installed at a district facility.
 - a. The JACE passphrase shall be shared with the district at the start of the project. This passphrase will not be changed during construction or warranty period.
 - b. The district shall be provided with a platform account for each new JACE. The user shall have the credentials below. This password is temporary, and will be changed when the district initially logs into the account.
 - i. Username: SPPSAuto
 - ii. Password: XXXXXXXXXXXX

4. Per specification, contractor is to coordinate with district when setting up secure communication between new JACE controllers and district-wide Niagara-4 Supervisor.
 - a. The district has an established procedure for this process that must be followed. Refer to the “BAS Upgrade and Maintenance Procedure” section.
 - b. Supervisor network users will automatically be exported to JACE as part of this process.

5. For Supervisor access (station user account setup), coordinate with the district.
 - a. This applies for both contractor and commissioning agent.

BAS Upgrade and Maintenance Procedure

Goal:

To keep the BAS supervisor level and middle-level devices (Niagara level) current and maintainable. There are many devices within the BAS, and these procedures may cause temporary disruption to building occupants. The schedule listed here attempts to divide this effort evenly over the year, occurring during student breaks to cause minimal disruption.

<u>School Break</u>	<u>CAFM Building #</u>
MEA Break (October)	1000-1999
Winter Break	2000-3099
Spring Break	3100-4099
Summer Break (August)	4100-5999

Procedure:

1. Upgrade supervisor if not already at the latest version.
 - a. Confirm supervisor has all latest jar files. AxCommunity is one to watch for.
 - b. Keep copies of all required .jar files in this folder on the server for future use.
 - i. C:\Niagara_BackUp_Support_Files\

2. Confirm latest JACE backup is available at this location:
 - a. C:\ProgramData\Niagara4.4\vykon\stations\SPPSN4\provisioningNiagara\stationData\JACE#####_SchoolName\backups\

3. Survey all .jar file on JACE. Copy any that are not on the supervisor to the supervisor modules folder, and save a copy in this location:
 - a. C:\Niagara_BackUp_Support_Files\
 - b. Contact manufacturer to confirm compatibility of atypical .jar files.

4. Upgrade JACE to latest version.
5. Confirm supervisor public key is in JACE User Trust Store. If not, import from this location:
 - a. C:\Users\Administrator\Niagara4.4\vykon\certManagement\
6. Confirm the JACE public key is in the supervisor User Trust Store. If not, import from same location as above.
 - a. If JACE public key has not been created yet, refer to last page of this document for instructions.
7. Confirm local *SPPSAuto* user is in JACE, and server is connecting with this account.
8. Confirm JACE is connecting to the server with the same account.
9. Confirm all communication between JACE and server is using secure ports 4911 and 5011.

The screenshot shows a configuration window with the following settings:

- Fox Port:** 4911
- Use Foxs:** true
- Credential Store:** Username: SPPSAuto, Password: [masked]
- Enabled:** true
- Virtuals Enabled:** true
- Platform User:** SPPSAuto
- Platform Password:** [masked]
- Secure Platform:** true
- Platform Port:** 5011

10. Check that the JACE is set to sync users “In,” and the supervisor is set to sync users “out.”
 - a. Server: Config>Drivers>NiagaraNetwork>JACE#####_BldgName>Users>
 - i. Sync In Enabled: false
 - ii. Sync Out Enabled: true
 - iii. Sync Strategy: UseDefaultPrototype
 - b. JACE: Config>Drivers>NiagaraNetwork>SPPSN4>Users>
 - i. Sync In Enabled: true

- ii. Sync Out Enabled: **false**
- iii. Sync Strategy: UseDefaultPrototype
- c. Confirm that JACE default prototype has admin role selected.

11. Confirm JACE is automatically backing up to server.

Server: Config>Drivers>NiagaraNetwork>ProvisioningNwExt>BackUp_All_Stations

12. Confirm time sync.

- a. JACE: Config>Services>PlatformServices>NtpPlatformServiceQnx

Ntp Platform Service Editor Qnx

Settings

- Enabled** true
- Sync Local Clock to NTP** true
- Sync Time At Boot** true
- Use Local Clock as Backup** false
- Generate NTP Statistics** true

Time Servers

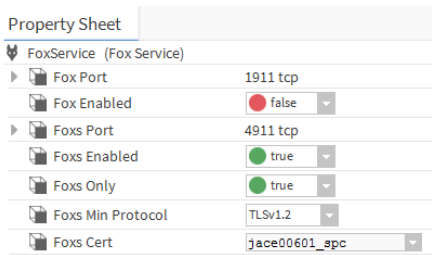
Address	Peer Mode	Burst	Preferred	Min. Poll Interval	Max. Poll Interval
205.215.222.4	server	<input type="checkbox"/> false	<input type="checkbox"/> false	6 log2 s [4 - 16]	10 log2 s [5 - 17]

13. Review error log for SEVERE items.

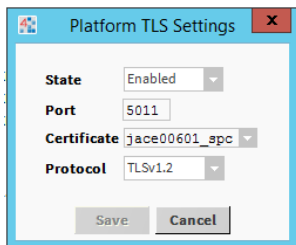
- A. Stop station prior to creating certificate.
- B. Add new certificate to User Key Store
(Config>Services>PlatformServices>CertManagerService)

Alias: Station Name (*JACE#####_BldgName*)
 Common Name: IP Address (*10.xx.26.xx*)
 Organizational Unit: Facilities Department
 Organization: SPPS ISD625
 Locality: Saint Paul
 State: MN
 Country: US
 Not Before: Current Date/Time
 Not After: 4/3/2033
 Key Size: 2048 bits
 Certificate Usage: Server
 Alternate Server Name: Hostname (*JACE#####*)
 Email Address: communications@spps.org

- C. Once created, export public key and save to this location:
 - a. C:\Users\Administrator\Niagara4.4\vykon\certManagement\
- D. Import JACE public key to User Trust Store on supervisor.
- E. Configure Fox communication (Config>Services>FoxService) to use new certificate, TLS 1.2, and only Foxs port.



- F. Configure platform communication (PlatformAdministration>ChangeTLSSettings) to use new certificate, TLS 1.2, and 5011 port.



BAS Commissioning – New Building Checklist

The checklist below will be used to confirm that all new building control systems conform to district standards, and is required to be filled out by the contractor, prior to substantial completion, for all FMP projects.

Item #:	Item Description	Contractor		SPPS
		Date Validated	Validated By	Date Verified
1	Confirm that all requirements laid out in the Direct Digital Controls (DDC) Systems for HVAC specification were followed.			
2	JACE(s) are named and assigned IP addresses based on district BACNet Device Addressing Strategy.			
3	JACE(s) and supervisor are communicating via Niagara network, with certificates generated and imported into user trust store.			
4	If there are multiple JACEs at a site, all JACEs are in a folder in the supervisor. Refer to Washington Tech Magnet School for example.			
5	JACE(s) are commissioned, and all appropriate modules are installed. No excess modules, documentation, etc... are installed.			
6	All users are synchronized from supervisor down to JACE, and "default prototype" on JACE sets users as admin. Refer to maintenance checklist.			
7	Networks are configured appropriately. Parameters are modified such that robust communication is maintained. Frequent communication drops are not acceptable.			
8	Server status shall be linked to appropriate logic in JACE such that a drop in communications between server and JACE for two (2) hours will cause all equipment to be written to an occupied state. Refer to security folders on existing JACEs.			
9	Time sync is completed between JACE(s)/supervisor and district NTP server.			
10	New site is reporting correctly on district-wide summary reports. Boiler plant, cooler/freezer, photocell, etc..			
11	New site graphics are linked to from district graphics home page, both from the map and from the dropdown menu.			
12	Local user and .nav file are created for building engineer to utilize.			
13	New alarm class folder is created on supervisor and linked to district-wide alarm console.			
14	All necessary alarm extensions are added and enabled. All alarms are named appropriately based on the building they generate from, hyperlink properly, and route alarms to the correct alarm class.			

15	New graphics folder is created, and all building graphics are in this folder. Graphics that are not utilized are deleted. This includes schedules graphic and reset popup graphics. Refer to existing buildings for example.			
16	Folder depth structure MUST follow district standards, such that alarm and history extensions are consistent and can be freely duplicated. Refer to existing buildings.			
17	All zone units are grouped in folders. For example, all VAVs served by "AHU_01" would be in a folder called "AHU_01_VAVs". Refer to existing buildings.			
18	All links, bindings, hyperlinks, histories, etc... for graphics are functional and display the correct information based on the building they are associated with.			
19	All override menus accessible from the graphics display only "On, Off, Auto," "Override, Auto," or the appropriate enumerated list or editable string.			
20	All unit valves, fans, and dampers properly respond to setpoint changes, schedule changes, and manual overrides.			
21	All relevant loop resets and resets for each piece of equipment are shown on the graphics, including a popup window that displays a visual of the reset/loop and the relevant setpoints.			
22	All equipment summary pages properly display all equipment in each category, including links to individual equipment pages.			
23	Floor plans properly display all radiation, reheats, VAVs, dual duct boxes, etc... located in the zone they serve and include zone temps and logic such that zones will change color (red or blue) if they drift too far from occupied setpoints.			
24	Lighting floor plans properly display all lighting zones, following the method used in previous buildings. Zones shall indicate light status, as well as the region of the building that each lighting zone corresponds to.			
25	All schedules (in the supervisor) including unit schedules, building sched 1, and building sched 2, are updated with the exceptions (school breaks and events) that correspond with the new building.			
26	All schedules folders in supervisor follow the structure of existing buildings, including links to unit master sched point, building sched 1 and 2, security key status, outside temp, corresponding zone temp(s) and heating/cooling plant status as necessary.			
27	All facets for every point are correctly displayed on the graphics.			
28	All equipment pages display which type of controller they are operated by.			
29	All control sequences are included on the equipment graphics.			

30	Building documentation, including MEP plans, control sequences, etc... are accessible via the documentation graphic. Refer to existing buildings for example.			
31	All lead/lag logic is fully functional.			
32	For all AHUs with corresponding zone units, graphics shall follow district standard for linking between AHUs and zone unit graphics. Refer to existing projects.			
33	On-site facility staff have been trained in on new graphics interface.			
34	Submit completed validation test checklist and schedule final review date per the DDC controls specification.			
35	Participate in final review and commissioning with the District as described in the DDC controls specification.			