**Eglin AFB**

**EMCS (DDC) System Requirements for New Facilities:** **12 Feb 2020**

1. Provide building level supervisory controllers based on Eglin’s existing Niagara 4.0 Framework or later. The building level supervisory controllers shall include point-2-point (P2P), Secure Socket Layer SSL, Web server and embedded WorkBench (WB). The building level supervisory controllers shall contain all building logic, graphics and local controller backups.
2. All graphics and points shall be duplicated in the existing Niagara 4.0 Framework ENS (Enterprise Network Server) using existing workbench software located in building 696, which shall serve as the Web Server for the system. All trended points shall be transferred via P2P to the server for history trending of points.
3. One - laptop computer with a CD ROM writer, the latest operating system to Air Force standard, CPU, and technology as it relates to laptops. Provide software and USB adapters for each type of DDC field controllers, to include factory installed DDC controllers. (This laptop will be used/verified during the training).
4. The system shall allow CE technicians to connect to all controllers with all available software in all modes available from the manufacturer from building 696 via the local area network (LAN) to program, backup, download, configure and perform all functions necessary to maintain the system as if onsite and direct connected to the device.
5. All hardware and software administrator level passwords shall be provided to the government to access all levels of all controllers including the new Niagara Framework controllers as well as copies of the system’s topology, hardware/ software inventory, and configuration. The password shall allow complete access to everything the manufacture has access to.
6. All field controllers shall use Building Automation and Control network (BACnet) **IP** protocol.
7. Provide a LAN drop within three feet of each building level supervisory controller and provide a patch cable between the LAN drop and the building level supervisory controller.
8. When the BACnet communication buss leaves and enters a building, use fiber optic cable and provide media converter pairs (i.e. between buildings or out to chillers) and provide DB testing results.
9. The BACnet communication buss shall be daisy chained to the JACE. No additional switches or routers shall be used.

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**EMCS (DDC) System Requirements for Current Facility Remods:** **13 Jan 2020**

1. Modifications to an existing Building’s Control System (CS) **must** be compatible with the current CS in that facility if the new controls are connecting to existing JACE. (Whenever possible, the same brand controls should be used.) If a new JACE is to be installed, the requirements for (New Facilities) will apply.
2. All graphics (including floor plans) must be updated in the existing ENS (Enterprise Network Server) located in building 696 which shall serve as the Web Server for the system, as well as in the JACE.
3. The system shall allow CE technicians to connect to all controllers with all available software in all modes available from the manufacturer from building 696 via the local area network (LAN) to program, backup, download, configure and perform all functions necessary to maintain the system as if onsite and direct connected to the device.
4. Provide all Controls software necessary for project (to be loaded onto an AF provided Laptop with current SDC). Provide latest software and USB adapters for each type of DDC field controllers, to include factory installed DDC controllers. (This laptop will be used/verified during the training).
5. All hardware and software administrator level passwords shall be provided to the government to access all levels of all controllers including the new Niagara Framework controllers as well as copies of the system’s topology, hardware/ software inventory, and configuration. The password shall allow complete access to everything the manufacture has access to.
6. All field controllers shall use BACnet **IP** protocol.
7. The BACnet communication buss shall be daisy chained to the JACE. No additional switches or routers shall be used. Ensure not to damage/cut existing Buss Line for the remainder of the Facility.

*Graphics sh*all be in the existing ENS (Enterprise Network Server) located in building 696 which shall serve as the Web Server for the system, as well as in the JACE.

Include date and time on all graphic screens.

**Main Map Graphic**- This screen will have a list and link to all of the buildings on the entire Eglin complex.

**Building Graphic**- This screen will have a 3rd graphic of the front of the building and a building number. *The following links are required on this page:* Back to Main Map, floor plans, alarms, reports, schedules, history, and user service.

**Floor Plan Graphic**

The floor plan will be 3D with color coded zones, room numbers, and as- built sensor and equipment locations.

*The following points are required on this page*: room temp, room humidity, occupancy status

*The following links are required on this page*: back to building graphic, all equipment (Click on sensor or equipment shown on the floor plan and the link will go to the corresponding equipment).

**Typical VAV Table Graphic**

The VAV table should include the following info:

Box #, Zone Temp, Set Points (Heat & Cool), SP Source, Flow SP, Flow, Damper position, Heating %, SAT

**Typical Equipment Graphic**

*Include a header with equipment type and number, room numbers and area served.*

*Include all points on the equipment graphic.*

The following points will be animated: fans, dampers, coils, pumps, boilers.

*All set points will have the capability of being changed from the graphic.*

*The following links are required on this page*: back to floor, provide a hidden link over each point to show an hourly 3rd day trend, provide a hidden link over each point to override all outputs. Provide a link to a spreadsheet with manufacture and part numbers and warranty dates for all parts on the equipment graphic.

**Communication Bus Graphic**

Include an as-built wiring diagram of the communication buss between all controllers.

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**Energy Management Control System (EMCS) Network Requirements for New Facilities**

1. Comm Squadron shall Install/Identify 2 fiber strands dedicated for DDC connectivity.
2. Contractor installs a wall mounted lockable network enclosure (LNE) with surge protector [for an 8 port switch--**provided by AF** (see attached LNE Detail)] in the **main Communications room.**
3. Contractor installs a 20A/125V duplex receptacle within 3’ of the LNE for connection of the surge protector. This receptacle shall be connected to the emergency power panel if the building is, or will be, equipped with an emergency generator.
4. Contractor installs a single port LAN connection inside the LNE and inside each building level supervisory controller.
5. Contractor installs a 2” EMT conduit from the LNE to each building level supervisory controller in the building.
6. Contractor installs a 1 ¼” pliable raceway, w/pull string, from the LNE to a height approximately 12” above the Communications room rack. [DDC shop personnel shall install a fiber jumper from the LNE to the installed fiber patch panel].
7. Contractor installs purple Cat 5E cable from the LNE to each building level supervisory controller. **Note**: If the distance exceeds 100 meters between the LNE and the building level supervisory controller, the building level supervisory controller shall be moved or fiber w/media converters must be used.

