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The *Metasys*® system is the industry-leading building automation system (BAS) and the foundation of modern building efficiency. It enhances occupant comfort, safety, security, and productivity, and it provides more system control and easier access to information than other building automation systems. It is a complete family of hardware and software control components designed to work together as one cohesive system. A time-tested industry leader, the *Metasys* system has proven reliable for the most demanding customer scenarios.

Johnson Controls® is pleased to announce a new release of the *Metasys*® system. Its substantial enhancements are designed to deliver better space utilization and planning, maximize operator efficiency, and enhance overall system performance and reliability. Features associated with this release include the following:

**Table 1: New features and enhancements at Metasys Release 10.0**

<table>
<thead>
<tr>
<th>Features and enhancements</th>
<th>Description</th>
</tr>
</thead>
</table>
| New and enhanced integrations capabilities       | Provide better facility awareness with the ability to see multiple building systems’ activities by building space. The enhanced capabilities also help deliver smarter building automation with detailed occupancy information from multiple building systems and faster responses to critical alarms with visibility from a common interface. New and improved integrations include the following:  
  • SIMPLEX® Fire System allowing *Metasys* BAS to serve as a secondary fire monitoring system  
  • C·CURE 9000 Access Control and victor Video Management systems to automate building outcomes during security badge events, and events captured from video analytics  
  • LED lighting and sensor networks from preferred partners to create better awareness of lighting systems to monitor and control all lights in a building  
  • NAE models of network engines that are upgraded to, or shipped with Release 10.0 software will include the MODBUS, M-Bus, and KNX Drivers as standard. You no longer need to order the more expensive NIE models to obtain these integrations. |
| Scheduled Reports in *Metasys* UI                | Provides the ability to schedule the email delivery of reports to up to 10 specified recipients. Report templates can be saved to reduce time spent running and configuring reports.                                    |
| Bulk Modify in *Metasys* UI                     | Provides the ability to modify multiple objects or attributes, such as alarm limits, in a single workflow.                                                                                                     |
| Priority Array in *Metasys* UI                  | Priority Array easily identifies the current command priorities for faster troubleshooting.                                                                                                                  |
Table 1: New features and enhancements at *Metasys* Release 10.0

<table>
<thead>
<tr>
<th>Features and enhancements</th>
<th>Description</th>
</tr>
</thead>
</table>
| Application Programming Interface (API)     | • REST-compliant *Metasys* Application Programming Interface (API) that enables *Metasys* data to be securely extracted and integrated with third-party data visualization tools and meet custom or sophisticated data analysis and reporting needs.  
• *Metasys* API for TeleHealth Engagement Application that facilitates reliable two-way communication between the TeleHealth patient engagement application and *Metasys* system to provide patients direct control over their healthcare space for increased comfort and satisfaction that no longer requires a third-party integrator or hardwired system interface.¹ |
| Two new Equipment Controllers              | A new General Purpose Application Controller and a VAV Box Equipment Controller with sleek and modern packaging, high memory capacity, fast processing power and removable screw terminal blocks for easy installs.                                          |
| Media Redundancy Protocol (MRP)-enabled Ring Topology support | Availability of MRP-enabled Ring Topology support for *Metasys* BACnet/IP field controllers, connected by Cisco® technology, to provide installation flexibility and reliability.                                                  |
| System Configuration Tool (SCT) updates     | A new SCT release with a new licensing model; a cloud-hosted online library of application files, modules, controller templates, and equipment definitions; the new SCT Pro, enhanced equipment controller file transfer options, an automated BACnet/IP ring manager configuration and simplified SIMPLEX panel integration into the *Metasys* UI. |
| Controller Configuration Tool (CCT) updates | A new CCT release with a new licensing model, enhanced equipment controller file transfer options and Finite State Machine Viewer.                                                                                 |
| Mobile Access Portal (MAP) updates          | A new MAP release with commissioning capabilities like improved trend viewer, tailored summary reports, commissioning process exit management, point-to-point input validation view improvements, and output step test improvements.       |

¹ The *Metasys* API for the TeleHealth Engagement Application is available in North America for the direct channel only.

**Features and benefits**

**Operational savings**

- Enhance productivity and effectiveness with the simple and intuitive user interface.
- Access your *Metasys* system anytime, anywhere with mobile device compatibility.
- Enable quick decision-making with data displayed through graphics.
- Reduce programming, commissioning, and troubleshooting time with Tailored Summaries.
- Collect, summarize, present, and report building data in relevant and usable ways with Advanced
Search and Reporting.
• Schedule the collection of historical data, including alarm, audit, and trend data with the Scheduled Reports feature and Export Utility.
• Extend building management capability with wireless sensors and controllers.
• Integrate with other systems in your facilities using both industry standard communication protocols and easy-to-use REST-based reporting APIs.
• Automate tasks for facility managers and staff.
• Increase effectiveness and lower operational costs with Alarm Management.

Energy savings
• Save energy using the Metasys Scheduling and occupancy detection features to operate equipment only when needed.
• Achieve more energy savings by using additional features such as Trend Summaries and Demand Limiting/Load Rolling.
• Convert building data into energy spent. Measure and validate savings with Energy Essentials.
• Get top performance from your energy and central plant equipment with Central Plant Optimization (CPO).
• Seamlessly integrate with cloud-based applications for peak building performance.
• Use Interlocks to automatically coordinate control between equipment and systems.

IT and platform security
• Utilization of standard IT messaging communication protocols to enable efficient transportation of massive amounts of data.
• Enhanced Metasys system security with password management processes to match best industry standard practices.
• Support for BACnet® Protocol Revision 15 (PR15).
• Compatibility with current operating system and platform technologies, including newer versions of Microsoft® operating systems, SQL Server® database system, and industry-leading web browsers.
• Secure, encrypted data exchange between your mail client and the Metasys server or network engine with a digital security certificate with HTTPS over a Transport Layer Security (TLS) 1.2 connection.

Comfort and security
• Monitor the HVAC, lighting, and security systems through a unified user interface.
• Alert the operators of facility problems by detecting problems before they become an issue.
• Perform a pre-defined action during an alarm event.
• Create action interlocks to occur within the Metasys system when granted access to the control system.
• Initiate a door-open command or trigger a security output point from a single seat operation through our improved unified user experience.
• Coordinate control with fire, security, lighting and other non-HVAC building systems.
• Use available options to achieve UL/cUL 864 UUKL 10th Edition Smoke Control listing.
• Support your remote monitoring services.

Diagnostics

• Summarize Potential Problem Areas to see all items in alarm, warning, overridden, out of service, and offline within a space in the Metasys UI.
• Perform ad-hoc analysis on spaces served by equipment or equipment, using the most effective diagnostics platform that leverages cohesive dashboards to point out root cause through graphics, trends, equipment activity, schedules, and more.

System architecture

The Metasys system comprises various hardware and software components that work closely together to provide coordinated control over a site’s HVAC and other building systems. For more details, see Figure 1.

Distributed

The Metasys system architecture is a distributed architecture. This means that the system components can be located as closely as possible to the equipment they are controlling, to provide optimum performance and reliability.

The distributed Metasys components with their data sources and the equipment they control are connected by:
• direct wiring
• network wiring
• wireless networking

The distributed Metasys components and various connection methods ensure system-wide data sharing, coordination, and remote access.

Scalable

The Metasys system architecture is scalable. This means that you can add components as required:
• control buildings and systems of varying complexity, size, and scope
• integrate third-party devices to unify their operation with the Metasys system
• integrate earlier generations of Metasys components to modernize and unify their operation
**Metasys system architecture**

For more variations of the *Metasys* system architecture, refer to the *Metasys System Configuration Guide* (LIT-12011832).

**System attributes**

**Open**

Because the *Metasys* system uses the standard data formats and communication protocols of the BAS and IT worlds, it is compatible with the networking infrastructure found in most buildings today. The *Metasys* system integrates building equipment and systems using BACnet/IP, BACnet MS/TP, N2, LonTalk®, MODBUS, M-Bus, KNX, and web services communication technology. At Release 10.0, the *Metasys* system added support for BACnet Protocol Revision 15. Johnson Controls BACnet devices and third-party BACnet devices can be connected directly to the IP Ethernet network or to the MS/TP Field Bus. At Release 10.0, BACnet/IP is also used to integrate SIMPLEX Fire Systems and lighting systems from preferred partners into the *Metasys* system.

LonWorks® controllers from Johnson Controls or LonMark® certified devices from other manufacturers can integrate into the *Metasys* system architecture. In a similar fashion, prior generations of N2-based *Metasys* components can integrate into the newer architecture, helping to modernize legacy *Metasys* installations. The *Metasys* system also communicates to third-party devices using MODBUS, M-Bus, and KNX integrations. Regardless of the protocols used, the data is available for display in the *Metasys* user interface, for archiving in application servers, and for transmission to other devices on the IP network.

The *Metasys* system also supports:

- HTTPS with TLS 1.2 as the secure communication protocol between network engines, Application and Data Servers (ADS), Open Data Servers (ODS), and web browsers
• Simple Network Management Protocol (SNMP) for alarm traps and object queries in the Management Information Base (MIB)
• Simple Network Time Protocol (SNTP) for network time synchronization
• Simple Mail Transfer Protocol (SMTP) for email message transfer
• Dynamic Host Configuration Protocol (DHCP) and Domain Name System (DNS) for device naming and dynamic network addressing
• Simple Object Access Protocol (SOAP) and XML, which transfer data between components of the system and make the data available to enterprise applications through the use of published web services
• Wireless communication standards, including Wi-Fi (used in network communication) and ZigBee® (for field controller and sensormesh)
• The Microsoft® Active Directory® service, which provides a standard IT integration of the Metasys system into a customer’s existing Active Directory service infrastructure for Site Management Portal (SMP) UI and Metasys UI login authentication purposes

⚠️ Note: The Metasys UI is not available on sites with network engine Site Directors.

• The SQL database format, used by the ADS to store historical data, which facilitates the use of Microsoft SQL Server® software

Additional enhancements to the Metasys Server software at Release 10.0 include the following:
• A new REST-compliant Metasys Application Programming Interface (API) that enables data to be securely extracted from the Metasys system and integrated with third-party data visualization tools to meet robust data analysis and reporting needs.
• The Metasys API for the TeleHealth Engagement Application that facilitates reliable two-way communication between the TeleHealth patient engagement application and Metasys system to provide patients direct control over their healthcare space for increased comfort and satisfaction that no longer requires a third-party integrator or hardwired system interface. The Metasys API for the TeleHealth Engagement Application is available in North America for the direct channel only.

Secure

The Metasys system uses industry-standard system security and encoding protocols to protect against unauthorized access to data and control systems.

The Metasys system includes the following security features:
• Support for local users, Active Directory users, Microsoft® Office 365® users, and Remote Authentication Dial-In User Service (RADIUS) users.
• Obscures usernames and passwords.
• Enforces strong passwords and password phrases.
• Provides an optional capability of sending its configured audit log entries and alarm (events) notifications to an external, industry-standard Syslog server, conforming to Internet published RFC 3164.
• Provides dormant account settings for users and reports. Dormant User Account Reports are available in the Site Management Portal (SMP). These reports can be scheduled on a daily basis. Dormant user account events are also included in the Audit Viewer and the Event Viewer.
• HTTPS with TLS 1.2 between Metasys components, including the ADS/ADX, ODS, Metasys UI, System Configuration Tool (SCT), and network engines. This enhancement ensures the highest

Metasys® System Product Bulletin
level of security to protect your building automation system from unauthorized users and computer hackers.

- Self-signed certificates are installed on supported products, with the option of configuring trusted certificates.
- One of three security shield icons are displayed in the Site Management Portal (SMP), SCT, and ODS UIs to indicate the current level of a connection: trusted, self-signed, or untrusted.
- SCT 13.0 offers improved security by forcing users to change default passwords as part of the workflow when interacting with NxEs.
- Updated software licensing technology ensures only licensed, authorized and released software is running on customer’s networks.
- Users have to log into SCT with a Metasys local, Active Directory, or RADIUS user account.

**System components**

A typical Metasys system architecture comprises three tiers of components:

- **Equipment Controllers**
- **Network Engines**
- **Application and Data Servers/Extended Application and Data Servers**

![Figure 2: Metasys system components](image)

**Equipment Controllers**

Metasys equipment controllers directly monitor and operate the HVAC and other building system equipment using onboard inputs and outputs and locally processed control logic.
Metasys Equipment Controllers include multiple families of controllers:

- CGx, CVx Equipment Controller family (Figure 4)
- Field Equipment Controller (FEC) family
- TEC Thermostat Controller family (Figure 5)
- LN Series LonWorks® Controller family

Equipment Controller families

The Equipment Controller families consist of fully programmable, high-performance devices designed specifically for controlling a wide range of mechanical and electrical equipment found in commercial buildings.

The Equipment Controller families include the following controller types:

- CGx, CVx Equipment Controller Family:
  - General Purpose Application Controllers (CGMs)
  - VAV Box Equipment Controllers (CVMs)
- FEC Field Equipment Controller Family:
  - Advanced Application Field Equipment Controllers (FACs)
  - Field Equipment Controllers (FECs)
  - Variable Air Volume Modular Assemblies (VMAs)
  - Input/Output Modules (IOMs)

See General Purpose Application Controllers (CGMs) and VAV Box Equipment Controllers (CVMs) for more information about the new controllers introduced at Release 10.0. See Table 4 for a comparison of the FEC family controllers.
Onboard inputs and outputs

The Equipment Controllers feature onboard inputs to receive information such as temperature, pressure, humidity, CO$_2$, energy consumption, occupancy detection, and equipment status. Equipment Controllers feature onboard outputs to control valve and damper actuators, sequence staged equipment, and turn equipment and lights on and off.

Different Equipment Controller models are available with different input/output (I/O) mixes, letting you select the most appropriate controller and I/O for the target equipment. Equipment Controllers also offer universal inputs and configurable outputs, providing great flexibility.

Onboard control logic

The control logic in the Equipment Controllers is fully programmable, making these controllers well-suited for controlling a wide variety of equipment. The Equipment Controllers feature advanced logic capabilities including:

- **State-Based Control Logic**: ensures the execution of only the specific control logic for any given state. State-based logic prevents energy-wasting control situations such as simultaneous heating and cooling.

- **Continuous Adaptive Control Algorithms**: provide better control over time by automatically adjusting tuning parameters in response to seasonal and other load changes.

Controller Configuration Tool (CCT) and Mobile Access Portal (MAP)

The Controller Configuration Tool (CCT) is the interface to the Equipment Controllers' control logic, and provides visually intuitive screens for programming, simulating, and commissioning. CCT is well-suited for programmers of any skill level and provides multiple programming interfaces, including:

- **System Selection Wizard**: programmers can choose from a list of application programs and select their specific control options by using a check-the-box interface.

- **Sideloop Wizard**: programmers can easily add additional custom control logic to the main control application by using a check-the-box interface.

- **Logic Interface**: programmers can create unique, custom programs by selecting and connecting functional logic blocks. The Logic interface also allows programmers to add or modify the control logic of applications created by the System Selection and Sideloop Wizards and also to view the logic and data flow for troubleshooting.

The Mobile Access Portal (MAP) Gateway provides a full suite of simple commissioning tools that compliment the detailed commissioning found in CCT.

Field Controller (FC) Bus

The Equipment Controller families feature a Field Controller (FC) Bus to share information peer-to-peer and with other components of the Metasys system. The FC Bus also allows network engines to supervise the Equipment Controllers. The networking protocol options supported by the Equipment Controller families include:

- **BACnet MS/TP**: support for installations where a high-speed, industry-standard, open communication protocol is preferred

- **BACnet/IP**: applies to installations that prefer Ethernet cabling in addition to a high-speed, industry-standard open communication protocol. This communication protocol is available with the Metasys IP FAC4911 and IP VMA1930 controllers.
• **MRP ring-enabled support**: is available for the Metasys IP FAC4911 and IP VMA1930 controllers, which are connected by Cisco technology. The controllers can be configured in a ring network and continue to communicate even if one controller or network segment within the ring network stops communicating. This provides network reliability by mitigating a single point of failure in the IP/Ethernet network wiring.

• **Wireless ZFR**: applies to installations where a less invasive, more flexible networking alternative to hardwiring is preferred or is more affordable

• **N2**: applies to legacy Metasys system installations that have Equipment Controllers added, where they can share the same N2 bus as legacy Metasys controllers, such as UNTs, VMA14xx, and DX-9100s

Sensor/Actuator (SA) Bus

In addition to their onboard I/O interfaces, the Equipment Controllers feature a Sensor/Actuator (SA) Bus to gain additional input and output interfaces and to connect to networked end devices. SA Bus devices include:

• **Input/Output Modules (IOMs)**: add additional input and output interfaces to an Equipment Controller to aid in operating large or complex equipment (such as central plants or large air handlers).

• **Network Sensors**: measure temperature, humidity, CO₂, and occupancy, and transmit this information to the Equipment Controller. Various mounting options are available, including wall-mountable and duct-mountable sensors.

• **Variable Speed Drives (VSDs)**: control fan and pump speed, and can be controlled directly by the Equipment Controller over the SA Bus.
At Release 10.0, we are expanding and enhancing the already extensive portfolio of *Metasys* Equipment Controllers. We are introducing the first two models of a new, modernized family of Equipment Controllers.

**Table 2: New Equipment Controller details**

<table>
<thead>
<tr>
<th>Description</th>
<th>M4-CGM09090-0</th>
<th>M4-CVM03050-0</th>
<th>M4-CVM03050-0P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inputs/Outputs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Purpose Application Controller</td>
<td>18 total inputs and outputs: 7 UI, 2 BI, 4 CO, 2 AO, and 3 BO</td>
<td>8 total inputs and outputs: 3 UI, 2 CO, and 3 BO</td>
<td>8 total inputs and outputs: 3 UI, 2 CO, and 3 BO</td>
</tr>
<tr>
<td>VAV Box Controller</td>
<td></td>
<td>8 total inputs and outputs: 3 UI, 2 CO, and 3 BO</td>
<td>8 total inputs and outputs: 3 UI, 2 CO, and 3 BO</td>
</tr>
<tr>
<td>VAV Box Controller with position feedback</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Field Bus Networking and Tools</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BACnet MS/TP</td>
<td></td>
<td></td>
<td>BACnet MS/TP</td>
</tr>
<tr>
<td>N2</td>
<td></td>
<td></td>
<td>N2</td>
</tr>
<tr>
<td>ZigBee for ZFR Pro Wireless Field Bus (add-on modules)</td>
<td></td>
<td></td>
<td>ZigBee for ZFR Pro Wireless Field Bus (add-on modules)</td>
</tr>
<tr>
<td>CCT 13, Release Mode 10.4</td>
<td></td>
<td></td>
<td>CCT 13, Release Mode 10.4</td>
</tr>
<tr>
<td><strong>Field Bus Networking and Tools</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BACnet MS/TP</td>
<td></td>
<td></td>
<td>BACnet MS/TP</td>
</tr>
<tr>
<td>N2</td>
<td></td>
<td></td>
<td>N2</td>
</tr>
<tr>
<td>ZigBee for ZFR Pro Wireless Field Bus (add-on modules)</td>
<td></td>
<td></td>
<td>ZigBee for ZFR Pro Wireless Field Bus (add-on modules)</td>
</tr>
<tr>
<td>CCT 13, Release Mode 10.4</td>
<td></td>
<td></td>
<td>CCT 13, Release Mode 10.4</td>
</tr>
</tbody>
</table>
### Table 2: New Equipment Controller details

<table>
<thead>
<tr>
<th></th>
<th>M4-CGM09090-0</th>
<th>M4-CVM03050-0</th>
<th>M4-CVM03050-0P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Firmware package files</strong></td>
<td>New Metasys field controller firmware package files for CCT (MS-FCP-0) are available for the latest field controllers from the central installation server that allow Johnson Controls employees, channel partners and end customers to source and license the use of their field controller packages.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 3: New Equipment Controller family features and benefits

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>New packaging and styling</strong></td>
<td>New equipment controller models are packaged in black enclosures with rounded corners.</td>
<td>Provides a modern, aesthetically pleasing industrial design.</td>
</tr>
<tr>
<td><strong>Removable screw terminal blocks</strong></td>
<td>Pluggable input/output wiring terminal blocks that can be removed from the controller.</td>
<td>Provides electrical installers and field technicians the ability to quickly and easily install and service a controller without the need to disconnect and reconnect the input/output wiring.</td>
</tr>
<tr>
<td><strong>Decimal MS/TP address set with three rotary switches</strong></td>
<td>Three rotary switches are used to set the MS/TP address in a decimal format (x100, x10, x1).</td>
<td>Easy-to-use rotary switches set the MS/TP address in decimal format.</td>
</tr>
<tr>
<td><strong>High memory capacity and fast processing power</strong></td>
<td>New 16MB flash memory (formerly 640KB-2MB); new 8MB SRAM/DRAM memory (formerly 128KB-1MB); new 120 MHz processor speed (formerly 32 MHz)</td>
<td>Provides application engineers with more horsepower to meet more sophisticated control requirements.</td>
</tr>
<tr>
<td><strong>Background transfer</strong></td>
<td>Enables downloading of firmware and controller application files that can be applied at a later, predetermined time and in the background while field controllers are still operating. This can be done on multiple controllers at the same time for further efficiency. Once firmware and controller application files are applied, you can decide when to enable the logic of applications in a device using the Enable Logic/Disable Logic options in CCT.</td>
<td>Saves field technicians’ time, enables productivity and minimizes equipment disruption, since the controllers are operating while file updates take place in the background and the application can be left disabled until the system is ready to run.</td>
</tr>
<tr>
<td>Feature</td>
<td>Description</td>
<td>Benefits</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Improved SA Bus commissioning</strong></td>
<td>Enables a field controller to transfer and apply firmware files to all the SA Bus devices connected to it at the same time.</td>
<td>Saves field technicians time when commissioning SA Bus devices.</td>
</tr>
</tbody>
</table>
| **Common release mode**          | CCT programming and commissioning for new and recently-released controller models can be performed in the same CCT release mode. | • Improves the productivity of controls technicians and reduces their frustrations by mitigating the need to switch between multiple CCT release modes.  
• Provides configuration consistency, simplicity, and efficiency through CCT during configuration and commissioning. |
| **BACNet MS/TP support**         | New controller models have been BTL-listed at Protocol Revision 15 as BACnet Advanced Application Controllers (B-AAC). | Ensures openness and interoperability with other BACnet devices and systems.                  |
| **Wireless ZFR and ZFR Pro support** | Provides wireless connectivity between field controllers and network engines over the Field Controller (FC) bus. | • Provides a wireless alternative to hard-wired MS/TP networking, offering application flexibility and mobility with minimal disruption to building occupants.  
• Simplifies and speeds up replacements. |
| **N2 support**                   | Enables a field controller to be installed in an existing N2-based system. | Provides a cost-effective migration path for customers with legacy, N2-based offerings with a single controller model (rather than multiple models for BACnet MS/TP and N2 support). |
| **Auto-detection of communication protocol** | Controller auto-detects the protocol that is connected to it. | Enables the same controller to support multiple communication protocols without the need to purchase a special model per protocol, and without extra manual setup. |
**Table 3: New Equipment Controller family features and benefits**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optional integrated feedback potentiometer on VAV</td>
<td>Provides feedback of the VAV box damper’s actual position.</td>
<td>Reassures users and field technicians of the VAV box damper’s actual position and enables them to easily confirm and troubleshoot VAV controller operations, confirm actuator is at the desired position and track damper position.</td>
</tr>
</tbody>
</table>

**FEC comparison**

**Table 4: Field Equipment Controller Family Comparison**

<table>
<thead>
<tr>
<th>Field Equipment Controllers (FECs)</th>
<th>Advanced Application Field Equipment Controllers (FACs)</th>
<th>Variable Air Volume Modular Assemblies (VMAs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical Applications</td>
<td>Controlling:</td>
<td>Controlling:</td>
</tr>
<tr>
<td></td>
<td>• Rooftop Units</td>
<td>• Pressure independent VAV boxes</td>
</tr>
<tr>
<td></td>
<td>• Heat Pumps</td>
<td>• Pressure dependent VAV boxes</td>
</tr>
<tr>
<td></td>
<td>• Unit Ventilators</td>
<td>• Zone Dampers</td>
</tr>
<tr>
<td></td>
<td>• Air Handling Equipment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Central Plant Equipment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Exhaust Fans</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Supplemental Heating Equipment</td>
<td></td>
</tr>
<tr>
<td>Processor</td>
<td>32-bit</td>
<td>32-bit</td>
</tr>
<tr>
<td>Onboard Real Time Clock</td>
<td>No</td>
<td>Yes - on IP VMA1930 model only</td>
</tr>
<tr>
<td>Communication Protocol</td>
<td>• BACnet MS/TP (B-ASC) or N2 (field switchable)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• ZigBee Wireless (with an add-on module)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• BACnet/IP (B-AAC) or N2 (field switchable)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• BACnet/IP (B-AAC) (model IP FAC4911 only)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• ZigBee Wireless (with an add-on module)</td>
<td></td>
</tr>
<tr>
<td>Expandable via SA Bus</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Programmable Control Logic</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Programming Tool</td>
<td>CCT</td>
<td>CCT</td>
</tr>
</tbody>
</table>
### Table 4: Field Equipment Controller Family Comparison

<table>
<thead>
<tr>
<th>Commissioning Tool</th>
<th>Field Equipment Controllers (FECs)</th>
<th>Advanced Application Field Equipment Controllers (FACs)</th>
<th>Variable Air Volume Modular Assemblies (VMAs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAP</td>
<td>MAP</td>
<td>MAP</td>
<td>MAP</td>
</tr>
</tbody>
</table>

**TEC3x00 Networked Thermostat Controllers**

TEC3x00 Networked Thermostat Controllers are specifically designed for controlling common commercial heating and cooling equipment. TEC3x00s are packaged in enclosures that are designed for mounting on a wall in the controlled space.

![Figure 5: TEC3x00 Networked Thermostat Controller](image)

The TEC3x00 Series Networked Thermostat Controllers provide on/off, floating, and proportional control of:

- local hydronic reheat valves
- pressure-dependent VAV equipment with or without local reheat
- two- or four-pipe fan coils
- cabinet unit heaters
- other zoning equipment using an on/off, floating, or 0 to 10 VDC proportional control input

Models also provide single- or two-stage control of unitary rooftop units (RTUs) with or without economizers and heat pumps. TEC3600 models feature field-selectable BACnet MS/TP or N2 communication capabilities for integration into the *Metasys* system. New TEC3000 models are available that feature embedded wireless field bus capabilities for wireless network integration into the *Metasys* system. All models include a USB port configuration that reduces installation time. The USB port allows simple backup and restore features, which enables rapid cloning of configuration between like units.

Some models have occupancy sensing capability built into the device. These thermostat controllers helps yield up to 30% energy savings in high-energy usage commercial buildings, such as schools and hotels, during occupied times by using additional standby setpoints.

All models feature an intuitive UI with backlit display that makes setup and operation quick and easy. Multiple fan configurations are supported for fan coil equipment types:

- single-speed
- multi-speed (two or three discrete speeds)
- variable-speed/EC motors (0 to 10 VDC control)

Some models support dehumidification on two-pipe fan coil units with reheat, and four-pipe fan coil units with or without reheat. When no heating is required, the thermostat controller monitors space humidity and activates dehumidification control as necessary. Heat and reheat are used as required to maintain the space temperature. For optimal dehumidification performance, use a fan coil unit that has a multi-speed or variable-speed fan (VSF).
For more information on TEC3x00s, refer to the *TEC3000 Series Stand-Alone and Field Selectable BACnet MS/TP or N2 Networked Thermostat Controllers Product Bulletin* (LIT-12011954).

**LN Series LonWorks Controllers**

The *Metasys* system LN Series controllers use the LonWorks communication protocol and can be programmed using any compliant software, such as LN Builder. The plug-in for these devices features a graphical control logic interface that is custom-made to suit various control requirements.

LN Series controllers are available either in fully programmable or LonMark® Profile-compliant configurable models. LN Series application-specific controllers let you control equipment such as rooftop units, fan coils, heat pumps, unit ventilators, VAV boxes, and other terminal units. LN Series programmable controllers apply to multistage air handling units, chillers, boilers, and refrigeration systems.

For more information, refer to the *LN Series Controllers Overview Product Bulletin* (LIT-1201979).

**Network Engines**

*Metasys* network engines provide network management and system-wide control coordination over one or more networks of Equipment Controllers, including *Metasys* CGM, CVM, FAC, FEC, VMA, TEC, and LN type Equipment Controllers; legacy *Metasys* controllers, such as UNTs, VMA14xx, and DX-9100s; and third-party Equipment Controllers.

*Metasys* network engines may also be networked together for scaling up on large projects, and they may be networked with an ADS/ADX for additional functionality and site unification.

The *Metasys* system includes three types of Network Engines:

- Network Automation Engines (NAEs)
- Network Control Engines (NCEs)
- Network Integration Engines (NIEs)
See Table 5 and Table 6 for a comparison of engines. Also refer to the *Network Engines Product Bulletin (LIT-12012138)* for more information.

## Network Engine comparison

### Table 5: Network Engine Release support comparison

<table>
<thead>
<tr>
<th>Model</th>
<th>Release 9.0</th>
<th>Release 9.0.7</th>
<th>Release 10.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCE25</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>NAE35, NAE45</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>NAE55</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>NAE85</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>NIE29, NIE39, NIE49</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>NIE59</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>NIE89</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NIE55, NIE85</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Important:** All NIE\text{X}9 models, with the exception of the NIE59 model, are no longer offered at *Metasys* system Release 10.0 because NAEs at Release 10.0 now include the integration functionality from Release 9.0.x.

### Table 6: Network Engine integrations available by *Metasys* Release

<table>
<thead>
<tr>
<th>Integration</th>
<th>Release 9.0</th>
<th>Release 9.0.7</th>
<th>Release 10.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>BACnet/IP</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>BACnet MS/TP</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Legacy N1 LAN</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Legacy N2 Bus</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>LonWorks</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Modbus RTU and TCP</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>M-Bus Serial and IP</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>KNX IP</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>C-CURE 9000 and victor</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Simplex Fire (secondary monitoring only)</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Preferred Vendor Lighting Systems</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

## Network Engine features and integrations

*Metasys* network engines provide network management over one or more networks of Equipment Controllers and other field devices. *Metasys* network engines feature several optional communication port and protocol selections for integrating not only *Metasys* Equipment Controllers, but also hundreds of types of non-*Metasys* devices and third-party devices typically found in commercial buildings.

- **BACnet MS/TP:** for managing networks of *Metasys* CGM, CVM, FAC, FEC, VMA, IOM, and TEC
Equipment Controllers, non-

- **Metasys IP-based FEC family controllers (models FAC4911 and VMA1930) as well as third-party BACnet/IP devices.**

- **Remote Field Bus**: for connecting remote BACnet MS/TP devices such as CGMs, CVMs, FACs, FEs, VMA16s, IOMs, TEC3600 series thermostats, and other BACnet MS/TP field devices using a BACnet/IP to MS/TP router.

- **SIMPLEX® Fire System**: The SIMPLEX Fire System is enhanced at Release 10.0 to include a BACnet/IP integration with the Metasys system to automate building conditions when triggered by a fire event.

- **C-CURE 9000 Access Control and victor Video Management Systems**: Vendor (VND) integration drivers are added to the Metasys system at Release 10.0 to provide data from C-CURE 9000 Access Control and victor Video Management Systems from Tyco Security Products.

- **Lighting systems integrations**: LED lighting and sensor networks from preferred partners – Cree® and Molex® – are tightly integrated with the Metasys system for coordinated lighting behavior to alert occupants to critical building scenarios like fire, intruder alert, lockdown and code blue events.

- **ZFR and ZFR Pro Wireless Field Bus**: for wirelessly managing networks of Metasys CGM, CVM, FEC family and TEC3000 Equipment Controllers.

- **N2**: for managing networks of legacy Metasys Equipment Controllers, such as UNTs, VMA14xx, and DX-9100s and third-party N2 Open devices.

- **LonWorks**: for managing networks of Metasys LN LonWorks controllers, legacy LonWorks Equipment Controllers, such as DX-9200s and TCUs, as well as third-party LonWorks devices.

- **Modbus**: for managing networks of third-party Modbus devices, such as energy meters and process controllers.

- **M-Bus (EN 13757-3)**: for managing networks of M-Bus devices, such as heat meters.

- **KNX (formerly EIB)**: for managing networks of KNX devices, such as window blinds and shading controls, lights, and meters.

- **Legacy Metasys N1**: for managing legacy Metasys N1 devices (NCMs) (Release 9.0 or earlier).

  - **Important**: Support for N1 ends at Release 9.0.

The Metasys network engine software normalizes data retrieved from these networked field devices into BACnet objects, so a common set of control processes and services can be applied to all devices in a unified manner.

**Wireless Field Bus system**

The Wireless Field Bus system provides a wireless platform across multiple levels of a Metasys building automation system (BAS), from network engines to field controllers and room sensors. Network engines require a Wireless Network Coordinator to interface to the wireless field controllers. Equipment Controllers require only simple, add-on hardware to function wirelessly, and new models of TEC3000 network thermostats come with embedded wireless networking capabilities.

Wireless-enabled devices can coexist with hard-wired devices on the same Metasys network engine, providing a high degree of flexibility in installation design.

The Wireless Field Bus System provides a wireless alternative to hard-wired counterparts and facilitates easy initial location and relocation with minimal disruption to building occupants. The Wireless Field Bus System cost-effectively extends Metasys systems to applications where building aesthetics (such as solid walls or ceilings, temporary walls, or decorative surfaces) normally hinder hardwiring.
Automated system-wide control and coordination

Metasys network engines provide automated system-wide control and coordination over multiple field devices under one or more field device networks. Some examples of the system-wide control coordination capabilities include:

• **Scheduling**: enables network engines to automatically command any equipment or system integrated with Metasys to a desired operational state (such as On/Off, Occupied/Unoccupied, Economy/Comfort, or Heating/Cooling/Economizer/Auto) based on a user-defined schedule. Operating parameters can be set according to time of day, days of the week, holidays, or calendar dates.

• **Alarm and Event Management**: enables the network engines to generate alarms based on user-defined criteria; to send alarm and event messages to web browsers, email servers, Network Management Systems, and serial printers; and to store and view alarm and event logs on the network engine and transfer the data to an ADS/ADX.

• **Network-Wide System Interlocking**: enables network engines to collect data from field devices, make logical comparisons between the data, and issue relevant commands to other field equipment or systems, anywhere on the network.

• **Transaction Recording**: audits and logs all user actions performed through the network engine. Operators can review these logs to understand what changes have been made to the system, who made them, and when.

• **Historical Data**: can be collected and stored by network engines for any monitored data point value based on user-defined intervals or on a change of value. Network engines can transfer the data logs to the Application and Data Server at defined intervals or when the network engine logs are full.

• **Optimal Start**: enables network engines to automatically determine the best time to start heating and cooling systems to ensure that the facility is conditioned for occupancy. It adjusts to seasonal variations and reduces energy use.

• **Demand Limiting Load Rolling (DLLR)**: enables network engines to monitor energy (electricity, gas, steam, or water) meters and automatically shed equipment loads according to user-defined levels. Demand Limiting helps manage utility demand charges, and Load Rolling controls equipment operating levels to reduce total energy consumption. Comfort overrides prioritize equipment shedding.

**Scalable**

Different network engine models are available, each with different field device capacities, so you can select the model that best meets the size, complexity, and scope of your specific project.

For projects that exceed the capacity of a single engine, Metasys network engines may be networked together, and they may be networked with an ADS/ADX for additional functionality and site unification. Also, a network engine, connected to a small number of other network engines, can act as a Metasys Site Director without the need for an ADS/ADX.
The ADS/ADX is an optional component that can be added to the Metasys system. The ADS/ADX manages the collection and presentation of large amounts of trend data, event messages, operator transactions, and system configuration data, and provides one or more of the following:

- Site unification
- Long-term, large-scale storage of historical data
- Advanced reporting
- Metasys user interface, an intuitive user interface
- Site Management Portal (SMP) user interface, which provides advanced operation and system navigation tree to show a hierarchical network view of the entire system for all connected devices

See Table 7 for a comparison of Metasys servers.
## Server comparison

### Table 7: Application and Data Server Family Comparison

<table>
<thead>
<tr>
<th>Feature</th>
<th>Application and Data Server (ADS)</th>
<th>Extended Application and Data Server (ADX)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host Platform</td>
<td>Desktop computer platform:</td>
<td>Server platform:</td>
</tr>
<tr>
<td></td>
<td>• Microsoft Windows® operating system</td>
<td>• Microsoft® Windows Server® operating system</td>
</tr>
<tr>
<td></td>
<td>• Microsoft SQL Server Express database</td>
<td>• Microsoft SQL Server database</td>
</tr>
<tr>
<td></td>
<td>• Open Database Connectivity (ODBC) compliant database package</td>
<td></td>
</tr>
<tr>
<td>Supported Simultaneous Users</td>
<td>Up to 5 users</td>
<td>Up to 10, 25, 50, or 100 users (license specific)</td>
</tr>
<tr>
<td>Network Engine Management</td>
<td>Up to 14 engines</td>
<td>Up to 1,000 engines (support for engines varies depending on size of server hardware)</td>
</tr>
<tr>
<td>Archival of Historical Data</td>
<td>Manual, scheduled, or automatic</td>
<td>Manual, scheduled, or automatic</td>
</tr>
<tr>
<td>User Interface</td>
<td>Metasys UI, SMP</td>
<td>Metasys UI</td>
</tr>
<tr>
<td>Supports Export Utility</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Supports Metasys Advanced Reporting</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Supports Energy Essentials</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Support for Split Configuration</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Supports Metasys for Validated Environments (MVE)</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Five Years of Historical Data</td>
<td>Metasys UI, Metasys UI</td>
<td>Metasys UI</td>
</tr>
</tbody>
</table>

For more information, refer to the Application and Data Server (ADS) and Extended Application and Data Server (ADX) Product Bulletin (LIT-1201525).

### Server features

**Metasys API and Metasys API for TeleHealth Engagement Application**

Additional enhancements to the Metasys Server software at Release 10.0 include:

- A new REST-compliant Metasys Application Programming Interface (API) that enables data to be securely extracted from the Metasys system and integrated with third-party data visualization
tools to meet robust data analysis and reporting needs

- **Metasys** API for the TeleHealth Engagement Application facilitates reliable two-way communication between the Metasys system and the TeleHealth patient engagement application, supported by APIs used to tie points to spaces in Metasys UI. This provides patients direct control over their healthcare space - lights, blinds, temperature, and ventilation - for increased comfort and satisfaction, all without the use of a costly and risky third-party integration or hardwired system interface. The Metasys API for TeleHealth Engagement Application is available in North America for the direct channel only.

**Site unification**

Metasys network engines can network together for scaling up on large projects. When the number of Network Engines becomes larger than a single network engine can efficiently handle as the Site Director, you can add an ADS/ADX as the Site Director to unify the system.

The ADS/ADX connects to the network engines over the Ethernet IP network and coordinates access to the system for all users. You can use a VPN over a WAN for communication to devices in other buildings or on remote sites; access remote sites over the Internet and an ISP, or by leased line or dial-up service using Remote Access Service (RAS) or the Point-to-Point Protocol (PPP).

**Historical data storage and management**

An ADS/ADX can be added to the Metasys system when the long-term historical data storage needs exceed the capacity of a network engine. The ADS/ADX connects to the network engines over the Ethernet IP network and offers manual, scheduled, and automatic archiving of historical data, including trend data, event messages, operator transactions, and system configuration data. See Table 7 to understand the archiving capabilities of each Application and Data Server type.

Starting at Release 10.0, Metasys operators can view up to five years' worth of data within Metasys UI. This feature helps operators identify opportunities for system performance improvements and energy savings by providing year-over-year energy reporting.

**Software Licensing**

Release 10.0 introduces updated Metasys licensing technology and software delivery. Updates include software downloads, comprehensive licensing and entitlement management, and 24-hour, self-service licensing over the internet. These enhancements help streamline software management for field technicians and customers, and protect customers' buildings and networks from cybersecurity threats by preventing unlicensed, unauthorized use of Metasys software products.

**Metasys Export Utility**

The Metasys Export Utility extracts historical trend, alarm, and audit data from the Network Engine or ADS/ADX. This data is then provided in several file formats, such as Microsoft Excel® spreadsheet (.xls) and Access® database (.mdb). You can instantly extract the selected data or schedule an extraction at a convenient time or interval.

**Advanced Reporting**

The Metasys Advanced Reporting System is an optional feature of the ADX that provides historical and configuration data reporting capabilities separate from those available in the Site Management Portal.

Metasys Advanced Reporting System allows authorized users to run reports to review the configuration and performance of the Metasys system. Users can easily view these reports in a web browser.
The following reports are available for the points included in the reporting system user views:

- Configuration Setup Review
- System Behavior
- Trend Report—statistical calculations and Mean Kinetic Temperature (MKT)
- Trend Detail Report—summary data

You can export a report and save it in a variety of formats, such as Microsoft Excel or PDF, for later use.

For information about the reporting capabilities offered by the Metasys UI, see Advanced Search and Reporting.

**Energy Essentials**

Energy Essentials is an add-on to the Metasys Advanced Reporting System and provides reports that transform stored energy data into meaningful information within the Metasys system. Energy Essentials offers the following seven reports:

- **Big Picture Energy**: a single high-level report that includes normalized source energy use.
- **Consumption**: similar to Big Picture Energy, a report that offers another level of detail on energy use in the default units of each energy type.
- **Electrical Energy**: a report focused on electrical energy information, including usage, peak demand, reactive power, and power factor.
- **Production**: a report focused on the energy that your site produces, including efficiency. For example, this report lets you see the true efficiency of your natural gas generator.
- **Simple Energy Cost**: a cost-based report, offering an easy-to-configure, high-level view of energy costs.
- **Load Profile**: a report focused on the daily demand profile, containing key information for developing strategies to minimize and defer peaks.
- **Equipment Runtime**: a report dedicated to the hours of runtime for equipment that typically
represents a large percentage of overall usage. This report also includes the number of equipment starts for the reporting period.

**Metasys Database Management**

The *Metasys* Database Manager interacts with and monitors the trend, alarm (event), audit, and annotation databases on your ADS/ADX. It provides both managing and monitoring database functions, handled in two separate windows:

- **Managing**: includes summarized information on methods for restoring *Metasys* system ADS/ADX trend, alarm (event), audit, annotation, and reporting databases.
- **Monitoring**: continually reads database information and alerts you, using the taskbar icon, email, or both, based on user-configurable warning and alarm levels.

**User Interface**

*Metasys UI*

The *Metasys UI* is an HTML5-compliant web interface that provides device-agnostic access to *Metasys* from smartphones, tablets, and computers. The *Metasys UI* is an intuitive interface that reduces learning time, maximizes productivity of operators, and provides a seamless user experience no matter what type of client device is used to access the system. The client device does not require any additional software installation—no Java™, Microsoft Silverlight®, or Adobe® Flash® or other software from an online app store. The *Metasys UI* is included with any *Metasys* server: ADS, ADX (unified and split), and ADS-Lite.

**Note:** The server software must be licensed in order to log in to the *Metasys UI*. 

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26  
*Metasys® System Product Bulletin*
Dashboards and widgets

A dashboard organizes data in the Metasys UI to help operators see a complete picture of what is happening in a space, with a piece of equipment, or within a system such as a central plant. Within each dashboard, widgets provide specific operator interaction features. Operators can customize dashboards to suit specific needs, by allowing the selection of viewable widgets, widget order, and widget appearance, as well as being assigned by client device type.

The **Space Dashboard** provides a cohesive summary of the selected space, including the equipment that serves the space and potential problem areas in the space. The widgets shown in the Space Dashboard include the following:

- **Graphics** provide a visual representation of the selected space, enabling operators to quickly check the status of that space, uncover unusual system conditions, make relational comparisons between nearby spaces at-a-glance, and issue commands to improve performance or restore order. The Graphics widget displays digital representations of equipment or systems, with graphical symbols and animations created using the Graphics Manager.

- **Equipment Serving Space** identifies the equipment serving the selected space and then provides details about that equipment, including other equipment or systems that may be affecting that piece of equipment.

- **Potential Problem Areas** provides a single display showing all items that are in alarm, warning, overridden, out of service, and offline statuses within a space. This display also enables operators to filter and view data that is important to them. Operators can use the Potential Problem Areas widget as a daily punch list to manage buildings more efficiently.

- **Equipment Summary** is a table view listing all similar equipment that directly serves the selected space, and any downstream spaces. The Equipment Summary shows the most important information for each equipment and provides links to the equipment for even more detailed information. At Release 10.0, users can define which data to include in an Equipment Summary with the new custom columns selection feature.

- **Schedule** widget lists all schedules affecting the selected space, and displays if the schedules are...
enabled or disabled. Operators can then select, view, and edit specific schedules associated with a space. The Schedule widget summarizes how a space is affected by a scheduling strategy so that operators can understand the complete picture. The Schedule widget also provides a way to view effective schedule information for a specific date in the future, so that you can ensure it is set up correctly. Furthermore, the bulk scheduling feature allows operators to add exceptions to several schedules at once and to assign weekly schedules in bulk.

The **Equipment Dashboard** provides a cohesive summary of a selected piece of equipment. The widgets shown in the Equipment Dashboard include the following:

- **Graphics** provide a visual representation of the selected space, enabling operators to quickly check the status of that space, uncover unusual system conditions, make relational comparisons between nearby spaces at-a-glance, and issue commands to improve performance or restore order. The Graphics widget displays digital representations of equipment or systems, with graphical symbols and animations created using the Graphics Manager.

- **Trend** widget is a chart showing up to ten points of historical data for a single piece of equipment at the same time. This widget enables operators to view historical equipment data, compare performance changes over time, and easily create PDF or CSV reports. Operators can identify patterns in equipment operation, including performance outliers using an intuitive candlestick chart that displays min, max, and averages. At Release 10.0, the user can view trended data points on up to three different charts at once. This helps operators visualize trended points of drastically different ranges by enabling them to be placed on separate charts.

- **Equipment Activity** enables operators to view alarm activity, network controller offline events, user changes, and annotations made within a date range of up to one year within the last five years for the selected piece of equipment. This widget enables operators to easily see and understand the correlation between disparate activities occurring within the system.

- **Equipment Relationships** identifies all relationships a piece of equipment has with other equipment, spaces, and network field controllers.

- **Equipment Data** lists all points and their real-time values for the selected piece of equipment, providing operators with detailed information about the operational status of the equipment.

- **Schedule** widget lists all schedules affecting the selected equipment, and displays if the schedules are enabled or disabled. Operators can then select, view, and edit specific schedules associated with a piece of equipment. The Schedule widget summarizes how a scheduling strategy affects the equipment so that operators can understand the complete picture. The Schedule widget also provides a way to view effective schedule information for a specific date in the future, so that you can ensure it is set up correctly. Furthermore, the bulk scheduling feature allows operators to add exceptions to several schedules at once and to assign weekly schedules in bulk.

Additional **Metasys UI** features are available that are not specifically located in the Space or Equipment Dashboard, including:

- **Alarm Manager** enables operators to view and take action on Metasys system alarms. The Alarm Manager rolls up occurrences of alarms to help operators prioritize the most important alarms and manage all occurrences of alarms in one operation. The Alarm Manager also displays an Alarm Summary that indicates how well the alarms are being managed. The Alarm Manager is accessible through the Metasys UI and full screen view, with a separate URL, well-suited for 24/7 operations centers. Spaces and equipment do not need to be configured for users to take advantage of the Alarm Manager. At Release 10.0, users can navigate directly from the Alarm Manager to the Building Network through a link, without having to manually search the network tree after finding the root cause of an alarm.

- **Alarm Monitor** provides a similar view as the Alarm Manager, but does not require the user to
log into the Metasys system. The Alarm Monitor is well-suited for the types of users who do not require or do not have authorization for full Metasys access, but who are responsible for viewing alarms from multiple integrated building systems. Spaces and equipment do not need to be configured for users to take advantage of the Alarm Monitor.

- **Custom Trend Viewer** is a chart showing up to ten points of historical data from multiple pieces of equipment at the same time. This widget enables operators to see and compare performance changes over time. Operators can identify patterns in equipment operation, including performance outliers using an intuitive candlestick chart that displays min, max, and averages.

At Release 10.0, certain widgets are connected with Advanced Search and Reporting, which enables users to quickly create even more powerful reports by leveraging the power of the dashboard with the Advanced Search feature. The widgets connected with Advanced Search include the Equipment Summary widget, Equipment Serving Space widget, Equipment Data widget, Graphics widget, and the Summary View widget. See also Advanced Search and Reporting.

**Building Network**

Metasys users with appropriate access can visualize the configuration of the Metasys network using the All Items tree in the Building Network feature. Global status indicators enable users to visually identify network and operational issues for any item in the Metasys network. Spaces and equipment do not need to be configured for users to take advantage of the Building Network feature in Metasys UI.

Each item integrated into the Metasys system has a dashboard, where users can diagnose issues with the building network by viewing and editing detailed item information, as well as viewing historical trend data. The widgets shown in the Building Network dashboard include the following:

- **Detail** shows the user the current value and status of the item being viewed and allows the user to issue commands. The Detail widget contains the focus, diagnostic, and network views that allow the user to view and edit detailed information for each item integrated into Metasys.

- **Summary** widget allows the user to quickly identify operational issues with the network item by displaying a tabular rollup of data under the current network item. For instance, a listing of data points' present value and status under a network field controller.

- **Relationships** allows the user to identify which space or equipment the network item serves.

- **Trend** widget is a chart showing up to ten points of historical data being collected on the Metasys network item at the same time. This widget enables users to view historical data, compare changes over time, and easily create PDF or CSV reports. Users can identify patterns including outliers, using the intuitive candlestick chart that displays min, max, and averages. At Release 10.0, the user can view trended data points on up to three different charts at once. This helps operators visualize trended points of drastically different ranges by enabling them to be placed on separate charts.

Some network dashboards, such as Schedules and Graphics, display the associated schedule summary or graphic widget, in addition to other widgets available in the Building Network dashboard.

**Intuitive navigation**

The Metasys UI provides the following methods for operators to easily and quickly find information about their system:

- **Spaces Tree** is a set of links to each Space Dashboard. These links are intuitively organized by the site's physical hierarchy.

- **Bookmarking** provides a way for operators to quickly access favorite or most-frequently visited dashboards simply by bookmarking each location in the browser.
• **Search Bar** enables operators to quickly access specific dashboards by entering the first few letters of the name of the space or equipment.

**Advanced Search and Reporting**

The Advanced Search and Reporting feature brings powerful insights to all *Metasys* users by providing an intuitive and easy method to gather and analyze data. Users can quickly search for data across the Building Network tree or by spaces or equipment. Using a series of filters, including wildcards, you can refine your search results. For example, you can search for all zone temperature points in a specific space.

With the Advanced Search results, you can:

• create reports showing historical activity, alarms, audits, and trend data based on a defined time range.
• export report data to CSV or PDF file formats on an ad hoc basis or by scheduling a report.
• issue bulk commands to selected points.
• perform bulk modify of multiple objects or attributes on a single object

**Table 8: New Advanced Search and Reporting features at Release 10.0**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scheduled Reports</td>
<td>Provides the ability to schedule the email delivery of reports to up to 10 specified recipients. Report templates can be saved and be executed &quot;on-demand&quot; in the future.</td>
</tr>
<tr>
<td>Advanced Search filter by Equipment Definition short names</td>
<td>Enables the filtering down of an Advanced Search to only include specific Equipment Definition short names.</td>
</tr>
<tr>
<td>Time Picker</td>
<td>Enables the initiation of reporting and filtering for a specified time range, including for ranges less than one day.</td>
</tr>
<tr>
<td>Bulk Modify</td>
<td>Enables the modification of multiple objects or multiple attributes on a single object.</td>
</tr>
</tbody>
</table>
| Smart Filtering                  | Enables launching directly from certain widgets into a pre-populated Advanced Search. The filters are populated based on the equipment, space, and object information included in the widget. Users can launch Advanced Search from the following widgets:  
  • Equipment Summary widget  
  • Equipment Serving Space widget  
  • Equipment Data widget  
  • Graphics widget  
  • Summary View widget |

**Important:** Spaces and equipment do not need to be configured for users to take advantage of the Advanced Search and Reporting feature. Advanced Search is available on computer and tablet platforms, but it is not available on phone platforms. Additionally, the Reporting, Bulk Commanding, and Bulk Modifying features of Advanced Search are not available on tablet or phone platforms.
User Authorization

Users can assign user access permissions to specific spaces and the equipment serving those spaces with User Authorization. This allows for segmented user access by physical space within the building or campus.

Usage Analytics

Release 10.0 also includes a new usage statistics feature that collects information on how building operators use Metasys UI and what types of devices they use to access it. This helps improve the Metasys experience by providing insights to Metasys developers on how operators navigate and interact with Metasys software.

Enhanced Commanding

The Metasys UI includes the following features that enhance the practice of commanding or changing values, enabling operators to restore order quickly and efficiently and avoid unplanned rework.

- Timed Operator Commands enable operators to easily set time limits on the manual commands, such as issuing an override or taking a point out of service, to ensure the system reverts to automatic control. This can help reduce energy costs and reduce comfort complaints caused by the system staying in manual control for too long.

- The Annotations on Commands feature provides a means for operators to add a note when issuing a command, such as issuing an override or taking a point out of service. The note appears in the Equipment Activity widget to help operators trace system behavior back to manual commands and why they were issued.

- At Release 10.0, an updated commanding dialog view with integrated Priority Array identifies the current command priorities. This helps operators troubleshoot issues faster by making it easier for them to determine what command priority is currently active on a point object.

- Also at Release 10.0, users can navigate directly from the Commanding Dialog to the Building Network through a link, without having to manually search the network tree after finding the root cause of an alarm or other issue.

Metasys UI tools

Several tools are available to help you create the Metasys UI. The System Configuration Tool (SCT) allows you to quickly define the spaces hierarchy, equipment definitions, and serving relationships. The Rapid Archive Creation streamlines the generation of the entire Metasys database for new or retrofit Metasys installations.

Metasys UI comes with an embedded graphics package to enable system designers to create the Graphics widgets using photo-realistic graphical representations of equipment and spaces. No separate software or license is required to use the Graphics Manager and Editor. An extensive library of graphic templates, symbols, and controls is provided with the Metasys UI, simplifying the task of graphic creation. Customized graphics symbols can be created using the Custom Behaviors feature. The following Graphics features are new at Release 10.0:

<table>
<thead>
<tr>
<th>Table 9: New Graphics features at Release 10.0</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Feature</strong></td>
</tr>
<tr>
<td>Custom Symbols Library</td>
</tr>
<tr>
<td>Building Network Tree in Graphics Editor</td>
</tr>
<tr>
<td>Feature</td>
</tr>
<tr>
<td>---------</td>
</tr>
<tr>
<td>Context-sensitive Binding Tree</td>
</tr>
<tr>
<td>Path Tool Editing</td>
</tr>
<tr>
<td>Graphics Association Manager for Aliased Graphics</td>
</tr>
</tbody>
</table>

The *Metasys* UI also supports viewing of graphics that were created with earlier versions of *Metasys* graphics tools. Standard graphics created with the User Graphics Tool (UGT) and Graphics+ graphics created with the Graphics+ Generation Tool (GGT) can be associated with spaces, equipment, and field controllers and be viewable in the *Metasys* UI without manual conversion.

The *Metasys* UI Offline offers the ability to view how the *Metasys* UI looks in order to validate the UI's configuration. You can view the spaces and equipment configuration and view the graphics associated with the space and equipment. The *Metasys* UI Offline leverages the SCT archives instead of the live site. The *Metasys* UI Offline is automatically installed along with the SCT.

### Site Management Portal

![Site Management Portal UI](image)

**Site Management Portal (SMP)**

Network engines and ADS/ADX configurations include an embedded user interface called the Site Management Portal (SMP), which operators can access for system navigation and operation. The SMP does not require any special workstation software—only a web browser and a Johnson Controls specific Java® plug-in. Authorized users simply log in to the network engine or ADS/ADX using a web browser to access the Site Management Portal. This embedded user interface is ideal...
for smaller networks and remote locations where a dedicated computer platform to support a user interface is not required, and also for sites where a Metasys network view and advanced operations are desired.

**Note:** The ADS/ADX must be licensed in order to log in to the SMP UI.

Some of the key features of the SMP include the following:

**Table 10: Key features of the SMP**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>System Security</strong></td>
<td>Enables network engines to recognize users with valid user names and passwords at the Site Management Portal user interface. User access data is encrypted in transmission and in the Network Engine database. To indicate the active security level, a shield icon appears on the SMP login and UI screens: green (encrypted and trusted), orange (encrypted), or red (untrusted). The system administrator manages user profiles, authorization levels, user names, passwords, and network engine data access privileges in each user account.</td>
</tr>
<tr>
<td><strong>Standard System Navigation tree</strong></td>
<td>Shows a hierarchal network view of the entire system for all connected devices.</td>
</tr>
<tr>
<td><strong>Monitoring and control</strong></td>
<td>Work with all the mechanical and electrical systems in a typical building by collecting data from field devices. The required commands are then coordinated and sent to the controlled equipment at the required priority.</td>
</tr>
<tr>
<td><strong>Global Search</strong></td>
<td>Enables Site Management Portal operators to search the Metasys system and manage lists of objects, which can be used by other features for commanding, trending, reporting, and object selection.</td>
</tr>
<tr>
<td><strong>Global Command</strong></td>
<td>Allows Site Management Portal operators to send a single command to multiple objects and view a log of the command results.</td>
</tr>
<tr>
<td><strong>Trend Studies</strong></td>
<td>Show the historical data records of one or more data points in a single view for analyzing building system performance and quickly locating system problems.</td>
</tr>
<tr>
<td><strong>Reports</strong></td>
<td>Offer a snapshot view of the current exception situations and summary data in the entire site or in a selected area of the site, and enable you to locate points that need attention.</td>
</tr>
</tbody>
</table>

The SMP also provides online system configuration to efficiently streamline the process of setting up or reconfiguring one or more network engines, including:

- automatic discovery of field devices on a network engine's BACnet, LonWorks, and N2 buses to accelerate the configuration process
- automatic discovery of Metasys N1 networks through NIEs (Release 9.0 or earlier)
- simple creation of customized user navigation trees and powerful tabular summaries
- custom graphics configuration
- setting of user access rights and permissions
- point naming and setting of operating parameters
• alarm and event message routing
• graphical Logic Connector Tool (LCT) for custom programming
• downloading, uploading, and archiving network engine databases
• support of the configuration and commissioning tools for controllers on the N2 bus, BACnet MS/TP bus, ZFR and ZFR Pro wireless mesh networks
• demand limiting and load rolling configurations

System Configuration Tool (SCT)

The System Configuration Tool (SCT) provides an offline mechanism for a project design engineer to configure the network engines and ADS/ADX along with the Space and Equipment relationships for the Metasys UI. The SCT can be integrated with the site to provide database loading and scheduled backups of the entire site. In addition to installing the SCT software, the SCT installer has been improved to install the required third-party software components, all with a single click of the mouse.

Note: SCT must be licensed in order to log in.

With the new SCT Pro, introduced at Release 10.0, users can quickly and easily provision new, out-of-the-box Network Engines. Users can complete any of the following tasks:
• Provision a new Network Engine
• Upload and download a site
• Perform a backup of a site
• Schedule automatic recurring backups
• Restore a site from a backup
• Upgrade a device

SCT Pro is installed during the installation of SCT Release 13.0 and later. Users can launch the new HTML user interface from SCT or from a URL on any client device type (workstation, tablet, or phone).

The following table outlines the SCT enhancements at SCT Release 13.0:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCT licensing</td>
<td>Provides a centralized host server for downloading the SCT and CCT installation images. After the base SCT and CCT installs are completed, users are required to license their instance of the tool to have all features accessible.</td>
<td>• Enables operations teams to use one licensed instance of CCT to manage their complete portfolio of devices. • Enables technicians to upgrade or service mixed-brand sites without the need to source different tools.</td>
</tr>
<tr>
<td>Feature</td>
<td>Description</td>
<td>Benefit</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
<td>---------</td>
</tr>
<tr>
<td>Cloud-hosted online library</td>
<td>Provides a central repository of application files, modules, controller templates, and equipment definitions that can be shared between branch, area, and India Engineering Center (IEC) teams.</td>
<td>Makes it easier for system engineering teams to manage sharing and reusing custom application files, modules, controller templates, and equipment definitions that were created for specific projects, engineering firms, and vertical markets.</td>
</tr>
</tbody>
</table>
| Enhanced Controller file transfer options | New MS/TP and IP Controllers support enhanced SCT, CCT and MAP workflow functionality to improve initial installation and commissioning stages. New functions include:  
• Background transfer of the package files to eliminate field controllers from going offline during the transfer process  
• Options to apply the transferred package files immediately or from a command at a later time  
• Options to switch off controller logic after the package files are applied  
• Helps System Engineers or Lead System Specialists quickly prepare the SCT archive for MS/TP or IP integrations with all the .caf files using the existing Rapid Archive Creation (RAC) workflow process. Once the Archive is created, technicians can utilize the archive to transfer the files from SCT to the MSTP or IP devices and choose if the files should be applied immediately or at a later time. | The new workflow provides:  
• Less disruption for the technicians during the package file transfer process.  
• Better coordination between the technicians and the installers. The installers will be able to verify wiring without worrying about the devices running the logic.  
• Technicians utilizing the MAP to perform the package transfer functions will be more productive continuing to use their laptops to work on other tasks. |
### Table 11: SCT 13.0 features and benefits

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhanced Rapid Archive Creation process (RAC)</td>
<td>The RAC spreadsheet and SCT Facility Menu Options are updated to support enhanced workflow steps for both new and existing <em>Metasys</em> UI site creation.</td>
<td>Allows field system and service engineers on new construction projects to completely manage the creation of the site from the RAC spreadsheet and the new re-labeling spreadsheet extracts.</td>
</tr>
</tbody>
</table>
| Automated network design and switch configuration for IP Ring Manager | Provides a simple configuration utility to streamline the process of designing the IP network and creating the switch configuration files for Cisco Industrial Ethernet (IE) managed switches. The input worksheets help the system engineer gather necessary input data. The outputs include a bill of materials, configuration files for all switches and an installation sheet that lists network settings and connections for the site manager, network engines, IP controllers and network switches. It also guides the user through the creation of SD cards that can be loaded into the switches at the time of installation so that switches can be configured and started without having to log on (referred to as zero-touch deployment). | • Enables system engineers to efficiently plan the layout of the IP network per subnet and switch.  
• Eliminates days of effort spent by system engineers creating the network switch configuration files, by enabling them to prepare the files directly from the data they have entered into RAC. |
| Simplified SIMPLEX Panel integration into *Metasys* UI | Process of creating the *Metasys* Network, Equipment and Space integrations for SIMPLEX Fire Panels has been automated through an updated Mass Change Tool utility.                                                      | • Reduces time to integrate SIMPLEX panel devices and equipment into the SCT archive from days to hours.  
• Reduces time to add fire system equipment to a layer on a floorplan graphic.  
• Helps consolidate user experiences for building operators by enabling them to view fire equipment, trouble points and status from SIMPLEX System within *Metasys* UI. |
Table 11: SCT 13.0 features and benefits

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The cloud-hosted online library feature is available for the direct channel only.</td>
<td></td>
</tr>
</tbody>
</table>

Mobile Access Portal (MAP) Gateway

At Release 10.0, we are adding workflow improvements to the MAP Gateway.

Table 12: MAP Gateway 5.0 features and benefits

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved Trend Viewer</td>
<td>The Commissioning Trend Feature has (optional) ability to support multiple graphs.</td>
<td>Helps field technicians troubleshoot issues faster by enabling them to easily customize their trend viewer setup to provide better visibility.</td>
</tr>
<tr>
<td>Tailored Summary reports</td>
<td>Snapshots of MAP Tailored Summary Views can be saved as reports to show before and after summaries of key data after a user performs an adjustment or override.</td>
<td>Decreases the time required by technicians to verify and create commissioning reports for multiple terminal unit applications.</td>
</tr>
<tr>
<td>Commissioning Process Exit Management</td>
<td>Enables user to release all overrides that were made with one simple command.</td>
<td>Saves technicians time at the end of a commissioning session by providing them a single command to release all overrides and leave an integration trunk in an operational state.</td>
</tr>
<tr>
<td>Point to Point Input Validation view improvements</td>
<td>Supports the validation of two related points at one time.</td>
<td>Decreases the time spent by field technicians or electrical installers when verifying related sets of Inputs and Outputs.</td>
</tr>
<tr>
<td>Output Step Test improvements</td>
<td>Adds more setup options when performing step tests.</td>
<td>Provides technicians with more flexibility when setting up their testing strategy for output devices.</td>
</tr>
<tr>
<td>CSV report option</td>
<td>Standard .pdf reports available in Chinese and Japanese.</td>
<td>Allow users to gain access to report views in their native languages.</td>
</tr>
</tbody>
</table>
Table 12: MAP Gateway 5.0 features and benefits

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Template Manager</td>
<td>Can create and modify Summary Templates while using MAP, allowing technicians to create new templates and/or adjust point attributes the template uses.</td>
<td>Streamlines the process of collecting commissioning data to reduce time on task for technicians.</td>
</tr>
<tr>
<td>Site Import improvements</td>
<td>Can merge site files for a more complete report, allowing technicians to merge multiple site files into one site file (for sites where multiple technicians are using MAP to capture verification data). Allows all data to be presented in the report when running a Site report.</td>
<td>Streamlines the process of reporting commissioning data to reduce time on task for technicians.</td>
</tr>
<tr>
<td>Controller Punch List</td>
<td>Can use MAP’s notes to capture punch list items. When adding a note, the note can be added to the MAP’s Punch List. The Punch List is managed using the Punch List Tailored Summary and can be included in the site report.</td>
<td>Streamlines the process of collecting and documenting verification and commissioning data to re-work faulty installations and finish installation process.</td>
</tr>
</tbody>
</table>

As part of the MAP Gateway 5.0 Release, two new market models will be introduced. TL-MAP1810-0PL will support specific countries within Latin America (LAT) region while the TL-MAP1810-0PM will support specific countries within the Middle East and Africa region.

System configurations for special applications

Metasys Open Data Server (ODS)

**Important:** ODS is supported at Release 9.0 but not upgradable to Release 10.0.

The Metasys ODS is a BTL Listed BACnet Operator Workstation with B-OWS profile. The ODS is intended for job sites that require a BACnet workstation. The ODS runs on either a Windows desktop or Windows Server operating system, and it supports up to 5 users connected to the SMP UI.

The ODS offers the flexibility to be configured in any of the following ways:

- The ODS in a **BACnet Workstation** configuration is an operator interface used for monitoring and operator actions. The ODS uses the BACnet protocol to communicate with networked BACnet devices. BACnet integration maps BACnet devices into the ODS. Network engines and FEC family devices are treated the same as all other BACnet devices.

- The ODS in a **Site Manager Workstation** configuration is similar to the ADS/ADX. The ODS uses web services to communicate with network engines. Other BACnet devices are mapped into the Metasys system through the network engine using BACnet integration. The ODS serves as the Site...
Director for up to 100 network engines.

- The ODS in a Combined Workstation configuration uses both BACnet Workstation and Site Manager Workstation at the same time. This configuration offers a good migration path from BACnet devices to a Metasys system.

LonWorks Control Server (LCS)

The LCS85 is a high-capacity server that allows the integration of large LonWorks network systems. The LCS85 uses an open-architecture flat LonWorks system to monitor and supervise HVAC equipment, lighting, security, fire, and access control. The LCS85 supports a comprehensive set of supervisory features and functions for large facilities and technologically advanced buildings and complexes. When configured as the Site Director, the LCS85 can support up to four Metasys network engines.

A single LCS85 within a building provides monitoring and control, alarm and event management, data exchange, trending, energy management, scheduling, and data storage. For more information refer to LonWorks Control Server (LCS) 85 Product Bulletin (LIT-12011549).

Metasys for Validated Environments (MVE)

- **Important:** MVE is supported at Release 9.0 but not upgradable to Release 10.0.

Metasys for Validated Environments (MVE) is designed for facilities that require regulatory compliance for their environmental control systems. MVE controls environmental conditions and audits user management for critical environments, such as hospitals, research facilities, food production centers, and other production environments where tight control is crucial to product success.

MVE provides traceable electronic records, signatures, and time-stamped audit trails for facilities, helping customers comply with:

- Food and Drug Administration (FDA) Title 21, Code of Federal Regulations Part 11
- Agency regulations around the world that deal with electronic records and electronic signature requirements

The MVE feature operates on an ADX and communicates to validated Network Engine models.

UL/864 Smoke Listed systems

The Metasys system at Release 8.1 can be configured to provide a UL/cUL 864 UUKL 10th Edition Smoke Control Listed system. The system integrates a fire alarm system, such as the Intelligent Fire Controller (IFC) fire alarm panel, the Firefighter's Smoke Control Station, and damper and fan control points throughout the facility using BACnet MS/TP and legacy N2 Bus devices.

The Metasys Smoke Control System includes a set of UL/cUL 864 UUKL 10th Edition Smoke Control hardware components Listed for indoor, dry environments. The smoke control applications are targeted to be run in specific models (designated with a -U suffix) within the network engine and Field Equipment Controller (FEC) families.

Summary

Today's Metasys system is our most advanced system ever. Johnson Controls continuously strives to find new ways to make Metasys work harder for you and help you work smarter. We are constantly innovating to make sure our software, user interface, monitoring, and analytics are the best available.

Related documentation

Refer to the following literature for technical specifications and information on operating and performance characteristics of the Metasys system.

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<th>For information about</th>
<th>Refer to document</th>
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<td><em>Metasys® System Configuration Guide</em> (LIT-12011832)</td>
</tr>
<tr>
<td>General Purpose Application Controllers (CGMs) and VAV Box Equipment Controllers (CVMs)</td>
<td><em>Metasys® CGx, CVx Equipment Controllers Product Bulletin</em> (LIT-12013105)</td>
</tr>
<tr>
<td><em>Metasys</em> system FEC family controllers and related products</td>
<td><em>Metasys® System Field Equipment Controllers and Related Products Product Bulletin</em> (LIT-12011042)</td>
</tr>
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<td>Controller Configuration Tool (CCT) Catalog Page (LIT-1900386)</td>
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<td>LonWorks®-based products for integration into Metasys system</td>
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<td>NAE Commissioning for M-Bus Vendor Integration (LIT-12013149)</td>
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<td>NAE commissioning for C-CURE 9000 Access Control and victor Video Management integration</td>
<td>NAE Commissioning for C-CURE 9000 Access Control and victor Video Management Integration (LIT-12013151)</td>
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<td>NAE commissioning for Molex® and Cree® Digital Lighting Systems Integration</td>
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<td>Open Data Server</td>
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<tr>
<td><em>Metasys</em> UI Help and overview</td>
<td><em>Metasys® UI Help</em> (LIT-12011953)</td>
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<tr>
<td>For information about</td>
<td>Refer to document</td>
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<td>Export Utility</td>
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</tr>
<tr>
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<td>System Configuration Tool (SCT) Pro</td>
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<td>LonWorks® Control Server (LCS) 85</td>
<td>LCS85 Product Bulletin (LIT-12011549)</td>
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<td>Metasys for Validated Environments (MVE)</td>
<td>Metasys® for Validated Environments, Extended Architecture Product Bulletin (LIT-12011326)</td>
</tr>
<tr>
<td>Metasys Release 8.1 Smoke Control System</td>
<td>Metasys System UL 864 10th Edition UUKL/ORD-C100-13 UUKLC Smoke Control System Product Bulletin (LIT-12012487)</td>
</tr>
<tr>
<td>Commissioning a Metasys Release 8.1 Smoke Control System</td>
<td>Metasys® System UL 864 10th Edition UUKL/ORD-C100-13 UUKLC Smoke Control System (LIT-12012487)</td>
</tr>
<tr>
<td>Software licensing</td>
<td>Software Activation Manager Help (LIT-12012389)</td>
</tr>
<tr>
<td>Metasys API documentation</td>
<td>Includes a Quick Start Guide, REST API documentation, Frequently Asked Questions section, and Example Applications.</td>
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<tr>
<td>Metasys API for the TeleHealth Patient Engagement Application</td>
<td>Metasys® API for the TeleHealth Patient Engagement Application Installation Instructions (LIT-12013144)</td>
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