

CRISTAL

Jasper

Installation Manual

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1 Overview

Jasper is the all-in-one, web-based lighting and energy control software from Cristal Controls. The Jasper master controller is used to observe and control equipment on a BACnet communication network, performing tasks such as sending scheduled events and energy peak control. With proper network configuration, the Jasper system can be accessed from anywhere over the Internet.

Lights and equipment can be controlled from a computer or from iPhone, iPad, and Android phones and tablets. Through a user-friendly web interface, users can reprogram and modify schedules as well as rename and group relays.

Compatible technologies: BACnet, DALI, DMX, EnOcean, XBee, and 0-10 Vdc.

1.1 Main features

- Weekly schedules and unlimited events
- Circadian rhythm
- Tunable white temperature control
- Astronomical clock
- Groups
- Energy peak demand control
- HTML5 graphics, web tables (HTML), and CSV and XML file exports
- Real and calculated consumption readings
- Internal alarm management
- Instant or periodic email notifications (for example, daily)
- BACnet writing (for example, to control a relay)
- Alarms classified into four types: hardware, software, security, and supervised readings
- [Tailscale](#) remote access

2 Introduction

The Cristal Controls Jasper building control system enables communication with network BACnet devices. You can use it to:

- send commands to relay groups on one or many Cristal Controls controllers for lighting, heating management and peak consumption.
- manage peak demand (load shedding).
- log BACnet activity.
- manage system alarms.
- schedule BACnet device activity.
- create and maintain a user interface for your building control system.

2.1 About the Jasper interface

Please read this important information about the Jasper interface.

2.1.1 Accessing Jasper

To access Jasper, you need to connect a device with a web browser to the same network your Jasper controller is connected to.

Enter <http://192.168.2.60> (or the address given by your installer) in the web browser address bar. A dialog box appears asking for the user name and password. (The default user name is “root” and the default password is “cristal”).

Note: The most recent versions of Mozilla Firefox, Google Chrome, Microsoft Edge or Apple Safari allow access to all features in Jasper. Jasper also works with Internet Explorer 11 or newer, but Explorer provides access to a more limited feature set and graphic elements may not always render correctly.

Jasper uses WebSocket for displaying dataserver values. The port used by WebSocket is 7681.

2.1.2 Adaptive design

Adaptive design was used to create the Jasper interface. This means the screens you see differ in appearance depending on whether you view them on a large screen (e.g. computer) or small screen (e.g. mobile phone).

If you change the width of a web browser window on your computer, the interface adapts to either “computer” view (when the browser window is wide) or “mobile” view (when the browser window is narrow).

This manual shows images of Jasper screens in “computer” view. For more information, refer to Setting display language and web interface behaviour.

2.1.3 Undoing and redoing changes in the Jasper interface

Most of the Jasper interface does not have the undo and redo features.

- On many pages, you can use your browser’s Back or Reload buttons to prevent Jasper from accepting your changes. If you use these buttons with unsaved changes on the page, Jasper prompts you to save these changes.
- Before you make substantial configuration changes, be sure to back up your configuration. For more information, refer to Backing up and restoring configuration files.

2.1.4 Menu organization

Features are organized into menus according to their use. For example:

- The Data menu offers access to control cards, variables and everything that has to do with these elements of your BACnet network.
- The Jasper menu offers access to core Jasper features and user interface configuration.

2.1.5 Controlling wireless BACnet devices

The CC-WiXBee version of Jasper serves to control wireless devices along with devices on a wired network. You can differentiate the wired-only from the wireless versions of Jasper by the logo:

Wired-
only



Wireless



2.2 About this manual

Several principles guided the creation of this manual:

2.2.1 Organization

We have organized this manual to follow, as closely as possible, the order of an installation.

2.2.2 Searchability

If you're using an electronic version of this manual, you can search it for terms that pertain to the topic you need to find.

2.2.3 On-screen objects

Items written in **bold type** indicate words visible on your screen (e.g. menu options).

2.2.4 Dialog images

The manual does not include images of simple dialogs. These include dialogs that ask you to enter a name for a new object, or to confirm deletion of an existing object.

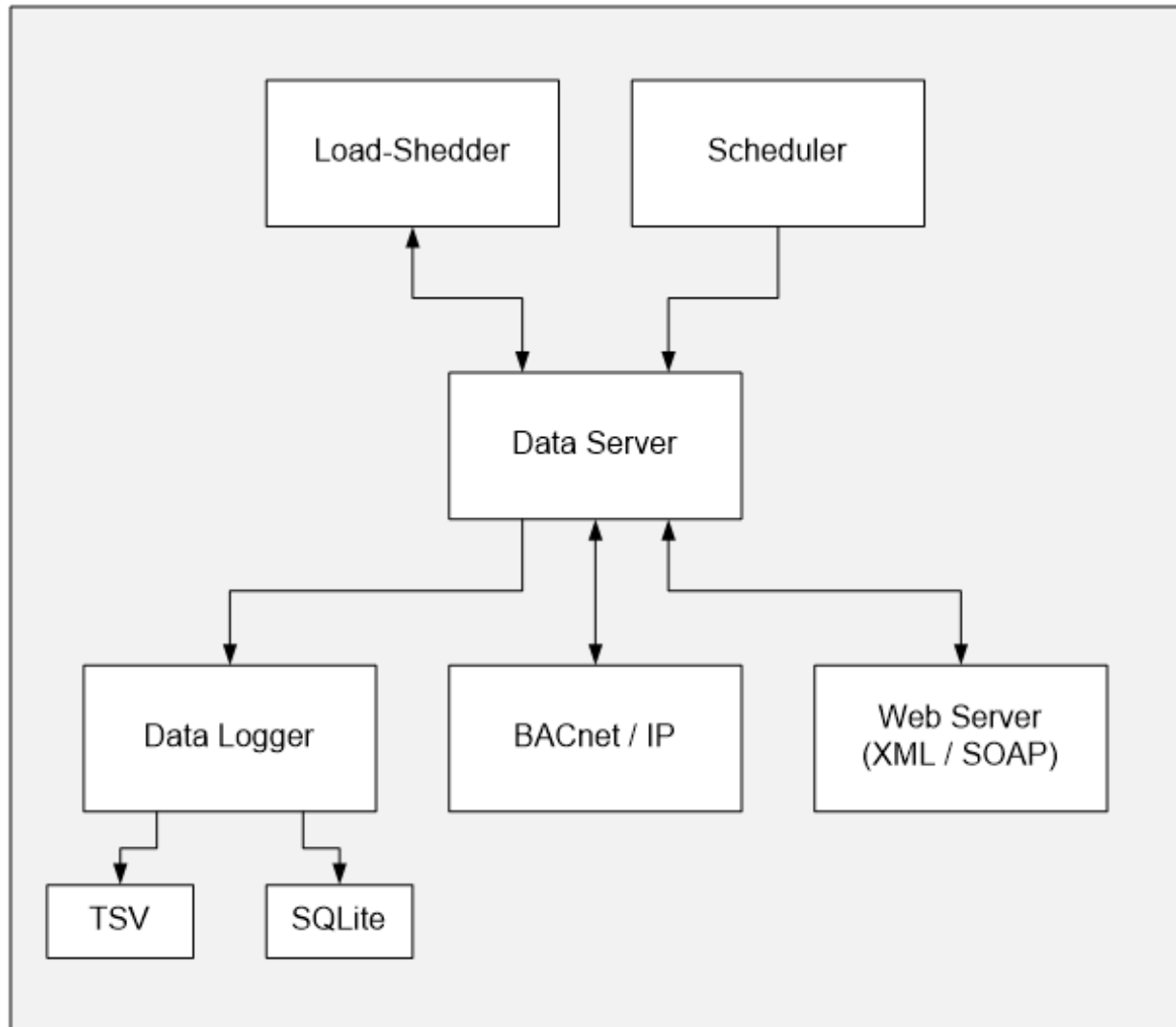
2.3 Questions

If you have questions or feedback about this manual, please email it to service@cristalcontrols.com.

3 Components of Your Jasper System

The Jasper building control system consists of several components that must be configured separately.

This section explains these components and how they interact with one another. This knowledge makes it easier to configure each component.



3.1 Dataserver

Jasper's dataserver:

- stores information for controllers and devices.
- stores the network communication type.

- transmits and updates values for variables that other Jasper components read and update. These values determine the behaviour of BACnet components.

While new commands are sent instantly, large volumes of dataserver polling can delay the refresh of panels run by the dataserver.

3.1.1 Network notes

- The dataserver mainly uses the BACnet/IP type of network.
- It is possible to access other types of networks, such as BACnet MS/TP, using IP to MS/TP routers.
- The dataserver can access defined points in an Echelon iLon-100 using the XML/SOAP protocol. This makes it possible to exchange information between networks. However, limitations in speed, memory, and i.LON message size prevent connection of a complex LonWorks network to Jasper.
- Certain groups of variables are defined in the dataserver. These definitions make it possible to apply values to each member of those groups.

3.1.2 About Jasper variables

In Jasper's user interface, *variables* may refer to several different types of components:

- BACnet objects internal to Jasper
- BACnet objects managed by other controllers
- groups of variables

Jasper interfaces with these different types of components in the same ways.

Note: in this manual, the terms "variable" and "object" are used interchangeably.

3.1.3 Writing variable values

When the dataserver scans variables, the controller prioritizes writing over reading. Jasper also uses the sequence described below to reduce latency if, for instance, a control card does not reply right away or its network is not responsive.

When Jasper first addresses a control card, it sends write commands. Then it waits for acknowledgement that the write command was successful before it sends the next command.

The next write command is done on the next control card, not the next variable of the same card. Jasper continues with this sequence, jumping from one card to the next, updating one variable on each card, before writing the next variable value on the first card in the sequence.

Jasper continues this process until it has updated all variables for a given operation. Consider this example:

Card Variables to update

- | | |
|---|------------|
| 1 | A, B |
| 2 | C, D, E, F |
| 3 | G |

Jasper updates the variables in this sequence:

1. Card 1, Variable A
2. Card 2, Variable C
3. Card 3, Variable G
4. Card 1, Variable B
5. Card 2, Variable D
6. Card 2, Variable E
7. Card 2, Variable F

3.1.4 Reading variable values

The dataserver reads all variables in sequence. When possible, it reads multiple values at once on the same control card to improve response time.

You can:

- disable read operations on variables when you write to them.
- adjust time between variable readings according to the use of each variable. Setting this delay properly helps you avoid network congestion. When a value cannot be read for a set interval, it becomes invalid.

Other Jasper components query variables on the dataserver instead of sending their queries to the BACnet devices. This makes the system faster since the dataserver returns current values more quickly.

3.2 Data Logger

The dataserver calls the data logger when a network value is updated. The data logger receives these updates and records them if:

- they vary enough from their previous value.
- the logger has not recorded any changes during a set amount of time.

The output can be saved in either a:

- SQLite database (for generating reports and graphics within Jasper)
- tab-separated values (.tsv) file (if you need to export values from Jasper)

3.3 Web Server

The web server's configuration pages modify Jasper's configuration files. To have the changes take effect, you need to restart Jasper. For more information, refer to System status.

To enable the connection between the web server and the dataserver, you can use one of these interfaces:

- XML / SOAP
- JSON / WebSocket

3.4 Scheduler

The scheduler lets you:

- schedule the transmission of new values to variables in the dataserver at a preset time of day. For example, the scheduler can scan "ON" and "OFF" lighting periods, or "Occupied" and "Unoccupied" for thermostats.
- set events triggered by sunrise and sunset times (astronomic configuration). For more information, refer to the *Jasper Building Control User Manual*.
- send analog values such as temperatures or percentages.

3.5 BACnet objects

Certain BACnet objects (e.g. Load Shedder) are Jasper-specific functions. You can view these objects on the BACnet network as BACnet standard objects.

When writing a value to a BACnet object, the new value can be propagated to the dataserver and elsewhere on the network if there is a binding using this BACnet object as a source.

3.6 Load Shedder

The load-shedder handles power management. Jasper can run several load shedders at the same time. Each load shedder works independently and has its own BACnet objects.

The dataserver manages most load-shedder interactions. These include:

- writing load-shedding settings.
- reading load-shedding state feedback, such as consumption or temperatures.

You can use Jasper's BACnet objects to access certain load-shedder information like:

- the power setpoint.
- the number of steps allowed by the load-shedder.

4 Connecting Jasper to the BACnet network

The first step in an installation involves configuration of the network Jasper uses to communicate with BACnet devices.

4.1 Configuring general network settings

Use this page to connect Jasper to the IP network. If you have more than one network, connect Jasper to the IP network that BACnet resides on.

To connect Jasper to your network, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **System** menu and choose **Network**.

The page's appearance depends on whether the **Protocol** is set to Static or Dynamic.

4.1.1 Static

System Network Configuration and DHCP Server.

4.1.2 Dynamic

System Network Configuration only. The dialog features only one setting (Hostname), explained below.

4.1.3 Network Configuration dialog

System Network Configuration	
Protocol	Static
IPv4 Address	192.168.2.60
Netmask	255.255.255.0
Gateway	192.168.2.1
DNS	192.168.2.1
Hostname	Jasper
Save	

4.1.3.1 Protocol

Use a static protocol in production or test environments. Qualified technicians may use DHCP. See subsequent sections for details.

4.1.3.2 IPv4 Address

Ask your network manager for this setting.

4.1.3.3 Netmask

Ask your network manager for this setting.

4.1.3.4 Gateway

Ask your network manager for this setting.

4.1.3.5 DNS

Ask your network manager for this setting.

4.1.3.6 Hostname

Ask your network manager for this setting.

4.1.4 DHCP Server dialog

If you choose *DHCP Server* from the **Protocol** drop list in the Network Configuration dialog, Jasper displays the DHCP Server dialog.

DHCP Server		
Enable	☒	?
Start address / 192.168.2.	200	?
Limit	25	?
Lease time	120	?
Save		

You can enable Jasper's DHCP server if Jasper occupies a standalone network. The server enables devices connected to Jasper's network to automatically receive IP addresses.

Don't enable the DHCP server if Jasper is connected to a LAN that has a DHCP server.

4.1.4.1 Enable

Click this check box to enter DHCP settings.

4.1.4.2 Start Address / 192.168.2.200

Choose the address with the lowest number that Jasper can use. In the example above, this address is 192.168.2.200.

You may need to ask your network manager for this setting.

4.1.4.3 Limit

Choose a range of addresses “above” the Start Address that you can assign to Jasper components. Using the number “25” in the example above, Jasper components can be assigned an IP address between 192.168.2.200 and 192.168.2.224.

You may need to ask your network manager for this setting.

4.1.4.4 Lease time

Time, in hours, that a Jasper-connected device can keep the same IP address. This value must be an integer.

To have your changes take effect, click the **Save** button. Jasper may tell you to reboot the system to have the changes take effect. For more information, refer to System status.

4.1.5 SSH Server dialog

Allows disabling and modifying the port of the network SSH server.



The image shows a dialog box titled "SSH Server". It contains two settings: "Enable" with a checked checkbox and a help icon, and "Port" with a text input field containing "22" and a help icon. A "Save" button is located at the bottom center of the dialog.

4.1.5.1 Enable

Click this check box to enable the SSH server.

4.1.5.2 Port

The port of the SSH server.

To have your changes take effect, click the **Save** button. Jasper may tell you to reboot the system to have the changes take effect. For more information, refer to System status.

4.1.6 FTP Server dialog

Allows disabling and modifying the port of the network FTP server.

FTP Server	
Enable	☒ ?
Port	21 ?
Save	

4.1.6.1 Enable

Click this check box to enable the FTP server.

4.1.6.2 Port

The port of the FTP server.

To have your changes take effect, click the Save button. Jasper may tell you to reboot the system to have the changes take effect. For more information, refer to System status.

4.1.7 Web Server Configuration

Controls how the Jasper web interface is served over HTTP and HTTPS. This dialog is available on OS 24.10 devices.

Web Server Configuration	
HTTP Server	
Port	80 ?
HTTPS Server	
Enable HTTPS	☒ ?
Port	443 ?
Redirect HTTP to HTTPS	☐ ?
Manage HTTPS Certificate	
Save	

4.1.7.1 HTTP Port

The port used to serve the web interface over HTTP. The default is 80.

4.1.7.2 Enable HTTPS

Click this check box to serve the web interface over an encrypted HTTPS connection.

4.1.7.3 HTTPS Port

The port used to serve the web interface over HTTPS. The default is 443.

4.1.7.4 Redirect HTTP to HTTPS

Click this check box to automatically redirect plain HTTP requests to HTTPS.

4.1.7.5 Manage HTTPS Certificate

Click this link to open the HTTPS certificate page, where you can create a self-signed certificate, import your own certificate, export the installed certificate, or reset to the default certificate.

To have your changes take effect, click the **Save** button.

4.2 Configuring BACnet network settings

To connect Jasper to your network, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Data** menu and choose **BACnet** under the **Configuration** heading.

The following three dialogs appear.

- Network (described below)
- Device Object (described)
- Time Synchronization (described)

4.2.1 Network

Network	
Name	Cristal ?
Network Interface	br-lan ?
BIP Port	47808 ?
BBMD Address	?
BBMD Port	?
BBMD TimeToLive (s)	?
RPM Service	Enable ?
Write Priority	8 ?
Remote Network TSM Size	?

Save

CRISTAL

4.2.1.1 Name

Network identity. This is an arbitrary name included in the configuration file.

4.2.1.2 Network Interface

Defines the network interface used for the BACnet protocol communication. The default value is “br-lan”.

4.2.1.3 BIP Port

(BACnet IP) defines the IP port number for the BACnet communication. The default value is “47808”; sometimes it is displayed as the hexadecimal value “BAC0”. This value can be changed to use another independent BACnet network, example “47809” or “BAC1”.

4.2.1.4 BBMD Address

To set a connection to a BACnet Broadcast Management Device. This is a connection to a server device allowing communication to remote BACnet devices. You must provide the IPV4 address of the BBMD server.

4.2.1.5 BBMD Port

To set a port configuration for the BBMD server.

4.2.1.6 BBMD Time To Live

Set time in seconds used to renew the BBMD server connection.

4.2.1.7 RPM Service

(Read Property Multiple) set Jasper using multiple readings in a single read request.

4.2.1.8 Write Priority

Set the BACnet priority used by Jasper when writing to the device’s objects.

4.2.1.9 Remote Network TSM Size

(Transaction State Machine) the number of messages that can be added to the TSM for write operations on a remote network. Default value is 1.

For more information, refer to Transaction state machine (TSM) table.

4.2.2 Device Object

Device Object	
Name	2025 Jasper Conference ?
Device Id	1000200 ?
Location	Cristal Controls head office ?
APDU Timeout (ms)	3000 ?
APDU Retries	3 ?
Save	

The first three parameters in this dialog are part of the “Device” object and are visible to any BACnet device. (Note: in Jasper, “objects” and “variables” are the same thing.)

4.2.2.1 Name

A unique network identity for Jasper.

4.2.2.2 Device ID

Jasper’s unique numerical identifier on the BACnet network.

4.2.2.3 Location

A value used by an operator’s workstation to identify Jasper.

4.2.2.4 APDU Timeout (ms)

(Application Protocol Data Unit) The delay, in milliseconds, before Jasper retransmits a request for acknowledgement of a message. The default value is 3000 (3 seconds).

4.2.2.5 APDU Retries

The number of times Jasper tries to get acknowledgement for a BACnet message. The default value is 3 retries.

4.2.3 Time Synchronization

This section enables Jasper with BACnet date and time transmissions on its network in local or UTC time.

Time Synchronization	
Enable	☐ ?
Interval (m)	?
UTC Enable	☐ ?
UTC Interval (m)	?
Save	

4.2.3.1 Enable

Select this check box to enable time synchronization.

4.2.3.2 Interval (m)

Interval between subsequent transmissions of the time from Jasper to all connected devices.

4.2.3.3 UTC Enable

Select this check box to enable coordinated universal time (UTC) time synchronization.

4.2.3.4 UTC Interval (m)

Interval between subsequent transmissions of UTC time from Jasper to all connected devices.

4.3 Configuring System Date and Time

Use this page to set system date and time.

To configure system date and time, follow these steps.

1. Sign in to Jasper.

You can set the time and date as either an administrator or a user with fewer rights (known as ViewEdit). For more information on types of users, refer to Understanding user permissions.

2. Open the **System** menu and choose **Time**.

The System Time dialog appears. (If Time Source is set to NTP, the NTP Time Synchronisation dialog also appears.)

System Time	
System Time Configuration	
Time Source	NTP
Current system time	2016-06-29 12:50:08
Time zone	America/Montreal
Save	

4.3.1 Time Source

You can choose from Manual, NTP (Network Time Protocol) or BACnet. If you choose NTP, the NTP Time Synchronisation dialog appears below.

If you choose BACnet time source, Jasper accepts TimeSynchronisation and UTCTimeSynchronisation services from your BACnet network.

4.3.2 Current system time

If you choose Manual in Time Source, you can type the date (yyyy-mm-dd) and time (hh:mm:ss - use 24-hour time only) in this field.

4.3.3 Time zone

Choose the correct time zone from the list.

To have your changes take effect, click the **Save** button.

4.3.4 NTP (Network Time Protocol) Time Synchronisation dialog

If you chose NTP from the Time Source drop list in the System Time dialog, the NTP Time Synchronization dialog appears. You can use this option to periodically correct clock drift.

NTP Time Synchronisation	
Options	
Update Interval (minutes)	60 ?
Server	
Server 1	
Hostname	ntp.cristalcontrols.com ?
Port	123 ?
Server 2	
Hostname	time.nrc.ca ?
Port	123 ?
Server 3	
Hostname	?
Port	?
Save	

You can choose up to three servers that Jasper can use to set the time and date. If Jasper loses contact with the first server in this list, it will check the second server or the third if you have configured them here.

4.3.4.1 Server 1 Hostname

Type the name of the default timeserver.

4.3.4.2 (optional) Server 2 Hostname

Type the name of a secondary timeserver.

4.3.4.3 (optional) Server 3 Hostname

Type the name of a tertiary timeserver.

To have your changes take effect, click the **Save** button. Jasper may tell you to reboot the system to have the changes take effect.

4.4 Email configuration

Jasper can email notifications to those responsible for it when it detects issues.

To configure Jasper's email, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **System** menu and choose **Email**.

The Email Configuration dialog appears.

Email Configuration

Email Configuration	
Server Address	smtp.cristalcontrols.local ?
Port	25 ?
User	?
Password	?
Source Email address	jasper-demo@cristalcontrols.com ?
Use SSL / TLS	☐ ?
Save	

You may need to ask your network manager for some or all of these settings. None of these settings accept spaces.

4.4.1 Server Address

Type your organization's mail server domain.

4.4.2 Port

Type the port used by the mail server.

4.4.3 User

Type the user name assigned to the Jasper server.

4.4.4 Password

Type the password associated with the user name.

4.4.5 Source Email address

Type the full email address for the Jasper server.

4.4.6 Use SSL / TLS

Check this box to enable secure sockets layer (SSL) or transport layer security (TLS). Once you complete these settings, you can test the email using the **Email Test** tool.

Email Test	
Destination Email:	Send test Email

4.5 HTTPS Certificate Configuration

Jasper can serve its web interface over HTTPS using a TLS certificate. This page lets you view the installed certificate, create a new certificate, or import one from a certificate authority. It is available on OS 24.10 devices.

To reach this page, open the **System** menu and choose **HTTPS Certificate**. You can also open it from the **Manage HTTPS Certificate** link in the Web Server Configuration dialog.

The page has three tabs: Installed Certificate, Create a Certificate, and Import Certificate.

4.5.1 Installed Certificate

HTTPS Certificate Configuration

Installed Certificate

Create a Certificate

Import Certificate

Common Name (CN)	192.168.2.60
Organization (O)	Cristal Controles Ltee
Organizational Unit (OU)	CRISTAL
Country	CA
State / Province	QC
Locality / City	Quebec
Subject Alternative Names	IP Address:192.168.2.60
Key	rsaEncryption (2048 bit)
Valid From	Sep 11 12:02:54 2026 GMT
Valid To	Sep 11 12:02:54 2036 GMT
Issuer	OU=CRISTAL,O=Cristal Controles Ltee,L=Quebec,ST=QC,C=CA,CN=192.168.2.60
Serial Number	277BF6E94D8B1FD6207AA401746A9F6FEDF2DCC6
SHA-256 Fingerprint	0E:DC:AC:D8:07:E7:05:25:F6:BD:CA:B8:45:14:B5:E3:D5:D7:F8:4E:01:73:8A:96:92:CF:91:3B:50:01:BB:C2
SHA-1 Fingerprint	D7:E4:59:70:9B:F9:54:5E:56:51:78:9B:5B:FA:88:48:7B:DA:A9:C3
MD5 Fingerprint	82:EC:31:7E:59:15:D8:C5:A7:CE:98:20:DD:CC:DD:0B

Reset Certificate

Export Certificate

This tab shows the details of the certificate currently in use.

If the certificate has expired, a warning appears prompting you to create or import a new one.

4.5.1.1 Export Certificate

Click this button to download the installed certificate.

4.5.1.2 Reset Certificate

Click this button to replace the current certificate with a new default self-signed certificate.

4.5.2 Create a Certificate

HTTPS Certificate Configuration

Installed Certificate

Create a Certificate

Import Certificate

Create a Certificate

Certificate Type	Self-signed certificate	?
Key Type	RSA 2048	?
Common Name (CN)	192.168.2.60	?
Subject Alternative Names	192.168.2.60	?
Organization (O)		?
Organizational Unit (OU)		?
Country (C)		?
State / Province		?
Locality / City		?
Expiration Date	2036 - September - 11	?

Create Certificate

Use this tab to generate a new certificate. Fill in the fields, then click the button at the bottom.

4.5.2.1 Certificate Type

Choose Self-signed certificate or Certificate Signing Request (CSR). A CSR is sent to a certificate authority for signing, then imported from the Import Certificate tab.

4.5.2.2 Key Type

The type and size of the key.

4.5.2.3 Common Name (CN)

The primary name of the device, usually its IP address or host name.

4.5.2.4 Subject Alternative Names

IP addresses or host names separated by commas.

4.5.2.5 Organization (O)

The legal name of the organization. This field is optional.

4.5.2.6 Organizational Unit (OU)

The department or division within the organization. This field is optional.

4.5.2.7 Country (C)

The country where the organization is located. This field is optional.

4.5.2.8 State / Province

The state or province where the organization is located. This field is optional.

4.5.2.9 Locality / City

The city where the organization is located. This field is optional.

4.5.2.10 Expiration Date

The date the certificate expires. The certificate becomes valid today. The default is ten years from today.

When you finish, click **Create Certificate** for a self-signed certificate, or **Create Certificate Request** for a CSR.

4.5.3 Import Certificate

HTTPS Certificate Configuration

Installed Certificate

Create a Certificate

Import Certificate

Certificate File

Choisir un fichier

Aucun fichier choisi

Private Key File

Choisir un fichier

Aucun fichier choisi

Chain / CA Bundle (optional)

Choisir un fichier

Aucun fichier choisi

Key Passphrase (if encrypted)

Import

Use this tab to install a certificate that you obtained from a certificate authority.

4.5.3.1 Certificate File

The signed certificate file.

4.5.3.2 Private Key File

The private key file that matches the certificate.

4.5.3.3 Chain / CA Bundle (optional)

An intermediate chain or CA bundle file, if your certificate authority provides one.

4.5.3.4 Key Passphrase (if encrypted)

The passphrase for the private key, if the key is encrypted.

Click **Import** to install the certificate.

5 Configuring wireless network components (CC-WiXBee)

If you use the CC-WiXBee line of Jasper products, you can configure your system to connect to components wirelessly using low-rate wireless personal area networks (LR-WPANs). This is a cost-effective option for clients who, for example, need to control lights in parking lots. If you won't connect any components wirelessly, you can skip this chapter.

You can differentiate the wired-only from the wireless versions of Jasper by the logo:

Wired-
only



Wireless



Jasper systems that include wireless components offer wireless menu options in the Jasper and Status menus.

If you have issues with your CC-WiXBee wireless module, refer to Performing wireless network diagnostics and troubleshooting.

5.1 Configuring wireless access

To enable wireless access to Jasper, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Jasper** menu and choose **Wireless** under the **Configuration** heading.

The Wireless Configuration page appears.

Wireless Configuration

Network	
Name	XBeeDOO Network ?
Serial Port Name	/dev/ttyxbee ?
Channel	15 ?
Enable encryption	☐ ?
AES encryption key	***** ?
Network Hops	7 ?
Confirmed retry timeout	3000 ?
Confirmed number of retries	3 ?
Confirmed access delay	1000 ?
Unconfirmed resend delay	3000 ?
Unconfirmed number of resends	1 ?
Unconfirmed access delay	250 ?
Time synchronisation interval	900 ?

Save

- Once you have configured wireless settings, click the **Save** button.

5.1.1 Name

Network description. Up to 19 characters.

5.1.2 Serial Port Name

The module serial port.

5.1.3 Channel

Radio channel number. Between 12 and 23.

5.1.4 Enable encryption

Enable or disable 128-bit AES encryption.

5.1.5 AES encryption key

The 128-bit key used for encryption and decryption. 0 - 30 hexadecimal characters.
(Default is empty.)

5.1.6 Network Hops

Sets the maximum number of hops expected in a network route. Between 1 and 32. Default value is 7.

5.1.7 Confirmed retry timeout

Confirmed messages retry timeout in milliseconds. Default 3000.

5.1.8 Confirmed number of retries

Confirmed messages number of retries. Default 3.

5.1.9 Confirmed access delay

Pause between two confirmed messages in milliseconds. Default 1000.

5.1.10 Unconfirmed resend delay

Unconfirmed messages repeat delay in milliseconds. Default 1000.

5.1.11 Unconfirmed number of resends

Unconfirmed messages number of repeats. Default 0.

5.1.12 Unconfirmed access delay

Pause between two unconfirmed messages in milliseconds. Default 250.

5.1.13 Time synchronisation interval

Time synchronisation interval in seconds. Default 300.

Note: Channel and Encryption must be the same for all wireless devices.

5.2 Configuring the CC-WiXBee wireless module

Determine how Jasper and the WiXBee wireless module communicate. You may need to change this setting:

- during initial configuration.
- for software other than Jasper.

This should only be set by a qualified technician. Jasper must be stopped before using this page. For instructions on how to stop Jasper, refer to Starting and stopping Jasper.

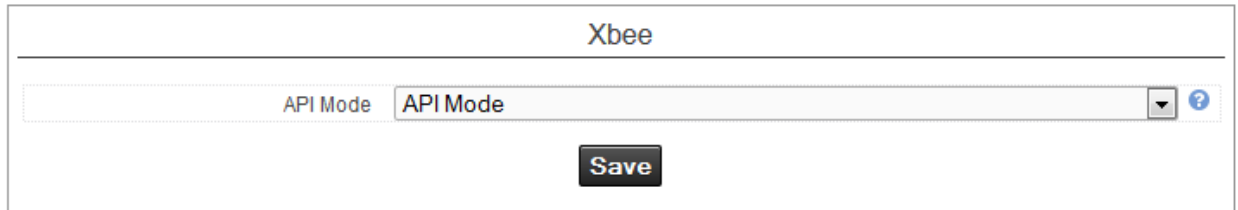
To enable the WiXBee wireless module, follow these steps.

1. Sign in to Jasper as an administrator.

2. Open the **System** menu and choose **Wireless**.

The Wireless Module Configuration page appears.

Wireless Module Configuration



For more information on the setting in this dialog, refer to “Transparent and API operating modes” in

<https://www.digi.com/resources/documentation/digidocs/pdfs/90000991.pdf>

3. Once you have configured wireless settings, click the **Save** button.

5.2.1 API Mode

The default setting for Jasper CC-WiXBee. Use this setting in all production environments.

5.2.2 Transparent Mode

The WiXBee module does not modify data sent through it.

5.3 Importing wireless configuration parameters

(Only present on CC-WiXBee model.) This page lets you import wireless configuration settings into Jasper.

This operation replaces all current configuration settings with information in the file containing new configuration parameters. You need to prepare this import using an application such as “DimOnOff App Light” (also known as the DOO App Light app) that generates an XML file.

You can import this file as either:

- an XML file
- a ZIP file that contains *only* the XML file

To import wireless configuration parameters, follow these steps.

1. Sign in to Jasper as an administrator.

2. Open the **Data** menu and choose **Import wireless config** under the **Cards** heading.

The Import of the wireless configuration page appears.

Wireless configuration settings import

☒ Lamps feedbacks
☒ Lamps commands
☐ Lamps scenes controls
☐ Lamps scenes
☒ Groups commands
☒ Groups scenes controls
☒ BACnet interface
☐ Lamps scenarios
☐ Groups scenarios

☐ Metering / voltage
☐ Metering / current
☒ Metering / power
☐ Metering / power factor
☐ Metering / active energy
☐ Metering / lamp burn time
☐ Metering / ballast burn time
☐ Metering / on off counter
☐ Metering / total energy

Version 6.00

Light XML

Light XML

Light Configuration File

C:\fakepath\Lavoisier.xml **Browse**

Lavoisier.xml
(text/xml) - 789 kilo-bytes, last modified: 07/02/2017

Continue

3. Once you have chosen the wireless settings you want to import, click the **Continue** button. Jasper updates the system using the parameters you imported.

6 General settings

6.1 Setting display language and web interface behaviour

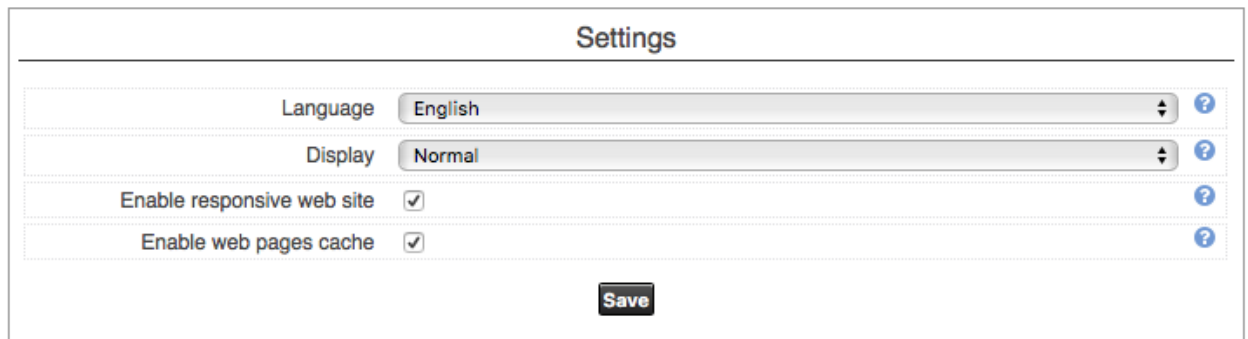
You can determine how Jasper appears in the web browsers of people who use it in your organization.

To configure these settings, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **System** menu and choose **Settings**.

The Settings dialog appears.

Settings



Settings	
Language	English
Display	Normal
Enable responsive web site	☒
Enable web pages cache	☒

Save

3. To have your changes take effect, click **Save**.

6.1.1 Language

Choose English or French as the display language.

6.1.2 Display

Normal: the interface appears in the centre (horizontally) in the web browser.

Full screen: the interface occupies the full width of the browser and is left-justified. This option can enable display of the browser across multiple screens.

6.1.3 Enable responsive web site

Check this box to enable Jasper to modify its appearance to be more usable on narrower screens (e.g. tablets, phones, narrow computer web browser windows).

Regardless of the setting, some pages remain easier to use on a computer with a full-sized screen.

6.1.4 Enable web pages cache

Enable this option to speed up communication between a browser and Jasper.

6.2 Starting and stopping Jasper

As you configure Jasper, you may need to restart the system so that your changes take effect. This page gives you the tools to restart Jasper.

Tip: You don't need to restart Jasper after every change. To save time during configuration, you can make a planned number of changes before you restart Jasper.

In addition to start and stop controls, this page displays the status of both Jasper (at the top of the page) and SQLManager (at the bottom of the page).

To start and stop Jasper or check the status of Jasper or SQLManager, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Data** menu and choose **Start/Stop Services**.

The Process Status dialog appears.

Jasper

Jasper Building Control Software configuration has been modified.
Please terminate your modifications and restart Jasper.

Jasper Building Control Software is **running**.

Restart

Stop

Disable

?

SQLManager

SQLManager Software is **stopped**, use the [Loggers Maintenance](#) page to start it.

6.2.1 Jasper status messages

Any highlighted text at the top of the dialog shows Jasper's current status.

6.2.2 Restart button

Use this button to apply changes to Jasper's configuration. This button does not appear when Jasper is stopped.

6.2.3 Start/Stop button

When Jasper is active, the middle button reads **Stop**. When Jasper is not active, that button reads **Start**.

When you start your Jasper controller, several things happen:

- It reads XML files containing Jasper's application settings and loads these definitions into memory. (These files are located on the computer that hosts Jasper in the "/etc/Jasper" folder. Jasper creates these files when it is first installed.
- It collects information from all control cards to find any information it's missing.
- It periodically checks each variable if a write request is made.

6.2.4 Disable button

Use this button to ensure Jasper does *not* start when you boot your system. This option prevents needless activity by a server that maintains a real-time redundant copy of your Jasper configuration.

6.2.5 SQLManager messages

Any highlighted text at the bottom of the dialog shows SQLManager current status.

The SQLManager manager application runs for brief intervals according to a schedule described in Copy Logs to Backup Database.

6.3 Managing cards

You configure each device connected to your BACnet system using a "card" (controller) that connects to the dataserver over the network. You will need to add cards, delete cards and perform other configuration tasks to enable people to manage BACnet components.

6.3.1 Adding a card

To add a card, follow these steps.

1. Install the card on the network.
2. Sign in to Jasper as an administrator.
3. Open the **Data** menu and choose **Add** under the **Cards** heading.

The Card Templates page appears.

Device Model/Type

- CCLP-1664
- CCTHV407
- CCTHV4-LS
- LS-Slave
- LS-PULSE
- RIBTW2401B-BC
- BAC-10142
- LDALI-ME204
- BASRT-B
- LIP-ME201

CCLP-1664



BACnet

Name: ?

Address: ?

Device Id: ?

Advanced Configuration: ☐ ?

6.3.1.1 Device Model /Type list

Use this list to specify the type of card you want to add. When you click a card, an image of it appears to the right so you can confirm you're adding the right type of card.

6.3.1.2 BACnet Name

Type the name you want to assign to the new card.

6.3.1.3 BACnet Address

Type the BACnet address for the new card.

6.3.1.4 BACnet Device ID

Type the BACnet ID of the new card.

If you click the Advanced Configuration checkbox, the following optional parameters appear. Jasper automatically configures advanced settings for each controller. You can change them if need be during installation.

Advanced Configuration:	☒	?
RPM Service:	Enable	?
Max APDU:	244	?
Get Event Support:	Disable	?

6.3.1.5 RPM Service (ReadPropertyMultiple)

Use this setting to read more than one BACnet value at a time. This is more efficient than having the system transmit one value per message.

6.3.1.6 Max APDU

Application Protocol Data Unit is the content of a BACnet message. Note: Jasper checks the RPM Service setting against the Max APDU setting. If RPM Service exceeds Max APDU, the controller will not be able to transmit its values.

6.3.1.7 Get Event Support

Determine whether the device can send alarms to Jasper.

The last section of the page offers settings specific to each type of card. For more information on these settings, refer to the documentation that accompanied the card.

6.3.2 Deleting a card

To delete a card, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Data** menu and choose **Configuration/Delete** under the **Cards** heading.

The Cards Configuration page appears.

Cards Configuration

The screenshot shows a web interface for configuring cards. On the left, a list of cards is displayed, with 'Temperature R&D' selected. On the right, the configuration details for the selected card are shown, including fields for Name and Device Id, and checkboxes for applying to variables. The interface includes 'Disable' and 'Delete' buttons for the selected card, and an 'Apply' button for the configuration changes.

3. Click the name of the card in the Cards list that you want to delete.
You can choose a range of cards by: clicking the top card in the range; holding the Shift button on your keyboard, and; clicking the bottom card in the range.
4. Click the **Delete** button.
5. Remove the card(s) from the dataserver.

7 Finding connected BACnet devices

You can have Jasper find BACnet devices on your network that were not configured when you added cards to Jasper. Once Jasper finds those devices, you can add them to Jasper using the instructions in Adding a card.

To find connected BACnet devices, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Data** menu and choose **BACnet Discovery** under the **Cards** heading.

The BACnet Discovery page appears.

BACnet Dataserver Discovery

Scan BACnet Devices

Scan Range

0

to

4194303

Start Scan

Clear

Filter by name...

38 devices

Instance	Name	Version	Model	Vendor	Address	Object #	
	2025216	CCLP-Conference	3.4.4	CCLP-1664-BIP	CRISTAL	172.20.200.16:47820	245
	222638	SODALITE	2.61.2	SO-BN-DA-CTRL	CRISTAL	172.20.200.210:47820	6216
	1000206	BAC2DMX	3.0.0	CCLP-DMX-BIP	CRISTAL	172.20.200.21:47820	522
	311403	PosteVirtual2	3.8.1.0	BACnetBrowser	CRISTAL	172.20.200.200:47820	1
	20251	LIP-CRISTAL-CCTHV	V7	LIP-ME201C	LOYTEC Electr...	172.20.200.101:47820	2
	1000201	LIP Conference	V7	LIP-ME201C	LOYTEC Electr...	172.20.200.11:47820	2
	1000000	Jasper Cristal	2.9.1	Jasper Building ...	CRISTAL	172.20.200.14:47820	12
	5000	CC-Clock_Conference	3.1.3	CC-CLOCK-BIP	CRISTAL	172.20.200.102:47820	20

7.1 Scan Range

Enter the range of device instance numbers to scan for, from 0 to 4194303. On a large network with many devices, this option saves you time by creating a smaller list of devices to search through for the one you want.

7.2 Start Scan

Click this button to have Jasper build a list of devices it finds on your BACnet network. While a scan runs, this button changes to **Stop** so you can end the scan early, and to **Rescan** once the scan is complete.

CRISTAL

7.3 Clear

Click this button to clear the list of devices.

7.4 Filter by name

Type in this box to narrow the list to devices whose name matches what you enter.

7.5 (listed devices)

For each device, Jasper shows the Instance, Name, Version, Model, Vendor, Address and the number of objects it holds. Click the “+” to open a device and configure its objects on a separate screen.

When you open a device, Jasper reads its objects and shows a device information panel above the object list.

7.6 Name

The name reported by the device.

7.7 Instance

The device instance number.

7.8 Model

The device model name.

7.9 Version

The device firmware version.

7.10 Vendor

The device vendor name.

7.11 Max APDU

The largest message the device accepts, in bytes.

7.12 Support ReadPropertyMultiple

Whether the device supports the ReadPropertyMultiple service, which lets Jasper read several properties in one request.

7.13 Support SubscribeCOV

Whether the device supports the SubscribeCOV service, which lets Jasper receive value changes as they happen.

BACnet Dataserver Discovery

CCLP-Conference - 2025216

Save

Close

245 / 245

Name

CCLP-Conference

Instance

2025216

Model

CCLP-1664-BIP

Version

3.4.4

Vendor

CRISTAL

Max APDU

480

Support ReadPropertyMultiple

Yes

Support SubscribeCOV

Yes

Filter by name...

Update names from network

☐ Type	Instance	Name	Value	Reliability	Poll
+ ☐ device	2025216	CCLP-Conference			Polling
+ ☒ analog-value	0	CCLP-Conference / GROUP 1 FB	80 %	☒	COV
+ ☒ analog-value	1	CCLP-Conference / GROUP 2 FB	80 %	☒	COV
+ ☐ analog-value	2	GROUP FB 03	0 %	☒	Auto
+ ☐ analog-value	3	GROUP FB 04	0 %	☒	Auto
+ ☐ analog-value	4	GROUP FB 05	0 %	☒	Auto
+ ☐ analog-value	5	GROUP FB 06	0 %	☒	Auto
+ ☐ analog-value	6	GROUP FB 07	0 %	☒	Auto

7.14(expand)

Click the “+” to read and display the object’s proprietary properties. See Discovering proprietary properties.

7.15Check box

Select this check box to add the object to Jasper.

CRISTAL

7.16 Type

The BACnet object type.

7.17 Instance

The object instance number.

7.18 Name

The object name. The button next to the name switches it between the name read from the network and the configured name.

7.19 Value

The present value of the object. If you click a value, a separate dialog appears where you can change the value.

7.20 Reliability

Select this check box to have Jasper read the Reliability property of the object. It can inform users of an issue with the BACnet object.

7.21 Poll

You can have Jasper choose which objects are read and how from the device. Note that not all choices are available for all objects.

- No: Jasper does not read the object. It only writes.
- Polling: Jasper reads the value periodically.
- COV: (Change of Value) The value is obtained using the BACnet service “SubscribeCOV”. If an error occurs while trying to subscribe to the object, Polling will be used for the subsequent reads.
- COV Forced: The value is obtained using the BACnet service “SubscribeCOV”. Even if an error occurs, Jasper continues attempting to subscribe to the object.
- Auto: The next time Jasper restarts, this value will be set as COV if the COV subscription is successful. If not, polling will be set.

7.22 Updating object names from the network

While a device is open, you can align the configured variable names with the names read from the device.

7.22.1 Update names from network

Replace every configured name with the name read from the device. Because this overwrites customized names, Jasper asks you to confirm first.

7.22.2 (update a single name)

The button next to each name updates that configured name from the name read from the device.

7.22.3 (restore a single name)

The button next to each name restores the previously configured name for that variable.

7.23 Discovering proprietary properties

Some BACnet objects expose proprietary properties, which are vendor-specific properties with an identifier of 512 or higher. Click the “+” next to an object to read its proprietary properties from the device.

☒	binary-input	0	WR-8501 / CCLP-1664 / INPUT 01 / interrupteur A ↻	ON	☐	COV	▼
Proprietary Properties							
☒	Enumerated	532	CCLP-Conference / INPUT 01 ↻			Polling	▼

7.24 Adding objects to the dataserver

Select the objects and proprietary properties you want, set their Poll and Reliability options, then click **Save** to add the device to the dataserver configuration. Before saving, Jasper shows a summary so you can review the changes:

7.24.1 Added variables

Variables that will be added to the configuration.

7.24.2 Removed variables

Variables that will be removed from the configuration.

7.24.3 Renamed variables

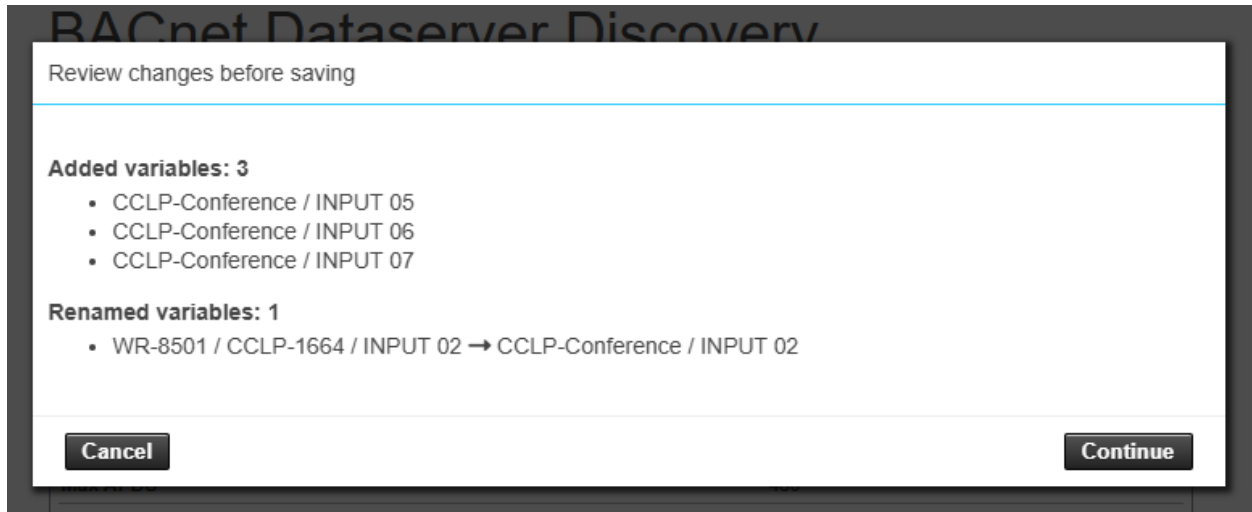
Variables whose name will change.

7.24.4 Poll changes

Variables whose Poll setting will change.

7.24.5 Reliability changes

Variables whose Reliability setting will change.



Confirm the summary to save the changes, or cancel to keep editing. Jasper may prompt you to restart the system for the changes to take effect.

This page can be used by only one user at a time. If someone else is already using it, Jasper warns you and lets you take over the page, which disconnects the other user.

8 Configuring the scheduler

You can set daily and weekly schedules using Jasper. Since users can adjust these settings as well, you can find instructions for them in the Cristal Controls Jasper User Manual under the following headings:

- Configuring the scheduler
- Setting geographical coordinates
- Setting “typical days” with sunrise and sunset events
- Setting up daily events
- Setting schedule exceptions
- Creating calendars
- Managing calendars
- Managing dates
- Date types

9 Managing Variables

You can adjust the attributes and behaviour of system variables on the dataserver to make your Jasper system better serve your particular application.

9.1 Renaming variables

You can assign names that are meaningful in a given application. For instance, you can put the name of a room in a variable's name. Changing variable names does not affect the proper functioning of your Jasper system.

To change the name of a variable, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Data** menu and choose **Configuration** under the **Variables** heading.

The Variables Configuration page appears.

Variables Configuration

The screenshot shows the 'Variables Configuration' page. On the left, under the 'Variables' heading, there is a search bar and a list of variables. The first variable, 'LS-SLAVE-1 / REM TEMPERATURE', is selected and highlighted. The list includes 'Lecture Puissance', 'LS Relay 01' through 'LS Relay 08', and several 'CCLP-1664 DEMO' relay commands and feedbacks. On the right, the 'Configuration' section for the selected variable is shown. It includes a 'Name' field with a help icon, a 'New Name' input field containing 'LS-SLAVE-1 / REM TEMPERATURE', and a 'Rename' button. Below this, the 'Usage' section shows the variable's 'Type' as 'Dataserver'. Under 'Dataserver', it lists 'From card LSSLAVE-1.'. Under 'Load Shedder Configuration', it lists 'Configured as External Temperature variable.'.

9.1.1 Variables list

Click the name of a variable whose name you want to change. You can also type part of the name of a variable next to the magnifying glass icon to find the desired variable more quickly.

9.1.2 New Name

The selected variable's current name appears here.

You can type a new name for the variable here as well. Before you take this step, review information in the **Usage** field below to ensure you're changing the right variable's name.

9.1.3 Rename button

Click this button to save the new name to the variable.

9.1.4 Usage

Review the Jasper functions that use the selected variable. Each location features a link to a configuration page where Jasper uses the variable.

9.2 Recovering variable values

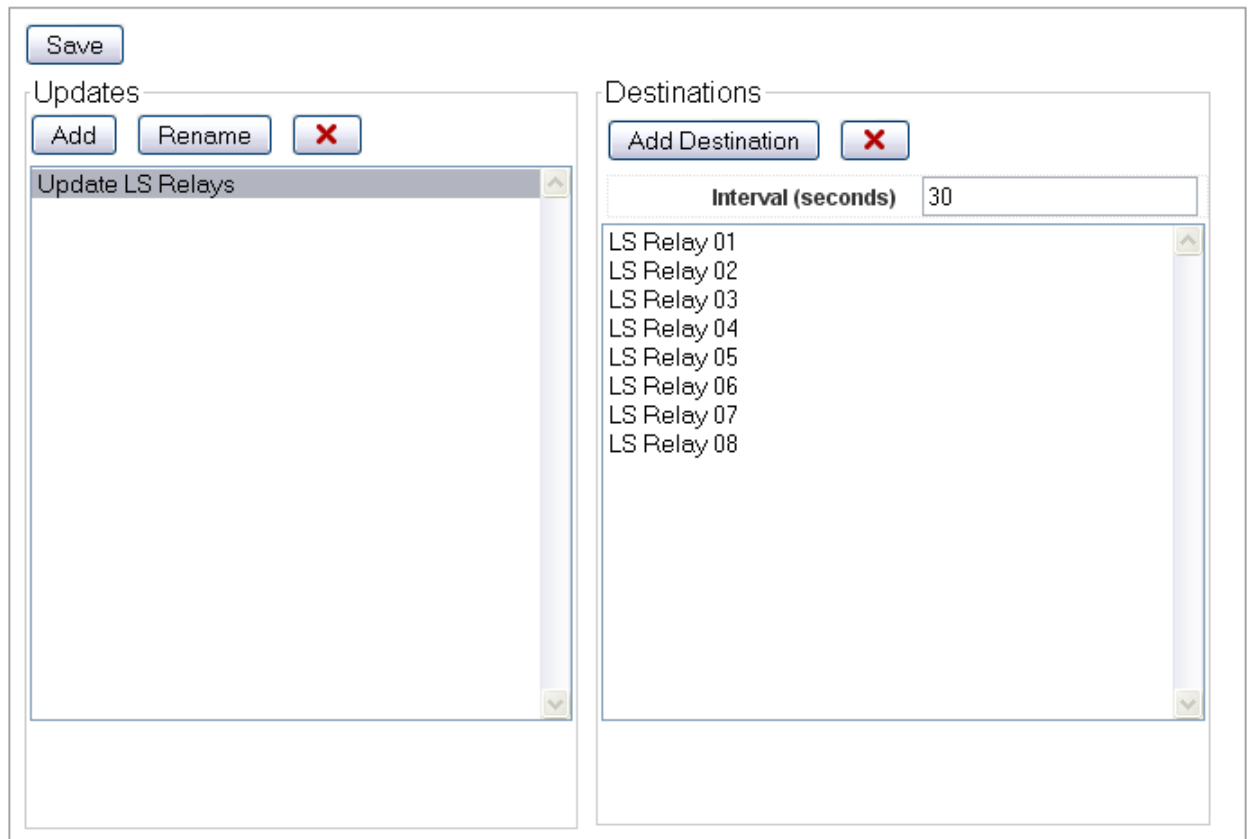
When a controller is reset, it can lose the values stored in its variables. To prevent issues due to the loss of those values, you can have Jasper rewrite those values repeatedly, after set intervals, regardless of the state of the controller.

To have variable values updated periodically, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Data** menu and choose **Variables Updates** under the **Variables** heading.

The Variables Updates Configuration page appears.

Variables Updates Configuration



The image shows a software window titled "Variables Updates Configuration". It is divided into two main sections: "Updates" on the left and "Destinations" on the right. At the top left is a "Save" button. The "Updates" section has buttons for "Add", "Rename", and a red "X" icon. Below these is a list box containing "Update LS Relays". The "Destinations" section has buttons for "Add Destination" and a red "X" icon. Below these is a text field labeled "Interval (seconds)" with the value "30". Underneath the interval field is a list box containing eight items: "LS Relay 01", "LS Relay 02", "LS Relay 03", "LS Relay 04", "LS Relay 05", "LS Relay 06", "LS Relay 07", and "LS Relay 08".

It is split into two parts:

- Updates
- Destinations

3. Click the **Save** button to have your changes take effect.

9.2.1 Updates

9.2.1.1 Add

Click this button to have a text field and OK button appear. Type the name of the group of variables you want to update and click OK. The group name appears in the list below.

9.2.1.2 Rename

To change the name of a group in the list below, first click the name, then click this button. A text field and OK button appear. Type the new name of the group and click OK. The group appears in the list below with its new name.

9.2.1.3 Red “X”

To delete a group from the list below, first click the group name, then click this button. The group disappears from the list.

9.2.1.4 List (left side)

This list contains the groups of variables that Jasper periodically updates. When you click a group name in this list, the variables it contains appear in the list to the right.

9.2.2 Destinations

9.2.2.1 Add Destinations

To choose variables to perpetually update, first click the relevant variables group in the list to the left, then click this button. A list of all configured variables in Jasper appears. Highlight the variables you want Jasper to update and click **Select**. The list of variables disappears and your selected variables appear in the main dialog in the list below this button.

9.2.2.2 Red “X”

To remove a variable from the list to the right, first click the variable, then click this button. The selected variable disappears from the list.

9.2.2.3 Interval (Seconds)

Type the interval at which Jasper rewrites the variable’s value. For example, if you type “30,” Jasper writes the value every 30 seconds to the controller.

9.2.2.4 List (right side)

Names of variables to which Jasper writes values. This list of variables is included in the group name selected in the list to the left.

9.3 Binding variables to enable automation

Note: in this manual, the terms “binding” and “link” are used interchangeably.

You can have variable values automatically trigger processes on your Jasper network. For instance, you can have your HVAC system switch to either “heat” or “cool” depending on the temperature outdoors.

Automation like this calls for several steps. One of these steps is to “bind” a variable’s value to the controller responsible for taking that action. In the example given above, you would bind your HVAC system’s “on/off” (binary) variable to the “outdoor temperature” (analog) variable.

To create “bindings,” follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Data** menu and choose **Binding** under the **Variables** heading.

The Binding page appears.

Binding

The Binding dialog box is split into two main sections: Source and Output.

Source Section:

- Buttons: Save, Add, X
- Search bar
- Source variables list: Button 1 / Button State 101, Button 1 / Button State 102

Output Section:

- Buttons: Add Destination, X
- Value Translators dropdown
- Translators configurations link
- Destination list: CCLP-1664 / RELAY CMD 1
- Execution options: Execute all, Execute first, Validity (each with a help icon)

This dialog is split into two halves:

- Source
- Output

In the Output section, you choose the variables you want to bind to the source variable you choose in the Source portion of the dialog. You can bind more than one output variable to the same source variable.

3. To have your changes take effect, click the **Save** button.

9.3.1 Binding Source

9.3.1.1 Add

Click this button to view a list of available variables. Click the variable(s) you want to create bindings for and click **Select**. Your selection appears in the list below.

9.3.1.2 Red “X”

To delete a source variable, first click the variable, then click this button. The variable disappears from the list.

9.3.1.3 Search field

This search feature saves you time when the Source list of variables becomes lengthy. If you know any part of the name of the variable you want to find in the Source list, type that text here. As you type, Jasper culls variables whose names don't match the text from the list.

9.3.1.4 Source list

This is a list of variables that contain values to be copied to destination variables.

9.3.2 Binding Output

9.3.2.1 Value Translators drop list

Choose the value translator needed to convert the value of the source variable so it can be read by the destination variables that use it.

Jasper does not update destination values if either:

- the source value does not ordinarily change
- the translator rule does not change the value of the destination variable.

If you need to verify or change the configuration of a value translator, click the “Translators configurations” link. For more information, refer to Value Translators.

9.3.2.2 Add Destinations

Click this button to display a list of variables that you can add to the binding.

Note: Variable names frequently contain the name of the controllers they affect.

9.3.2.3 Red “X”

To remove a variable from the Output list, click the variable, then click this button. The selected variable disappears from the list.

9.3.2.4 Execute all

Check this box to have destination values updated each time Jasper reads source variable values. If you don't check this box, Jasper updates destination values only when source values change.

9.3.2.5 Execute first

Check this box to have Jasper update destination variables when it first reads source variable. Use this setting to, for instance, avoid applying a dry contact's initial value to its destination variables when Jasper first boots.

If you don't check this box, Jasper updates destination variables when the source variable is updated.

9.3.2.6 Validity

Jasper checks variable attributes to ensure they are valid. Jasper also stores a validity state attribute for each variable. This can be either "valid" or "(potentially) invalid." (Different devices have different names for this state.) (Potentially) invalid states can arise when, for example, values aren't properly read or the values are outside the range that the device can read.

If you check this check box, the validity state of the source variable will be transferred to destination variables.

9.4 Value Translators

Value translators convert a given value to another format. For example, they can convert:

- Celsius to Fahrenheit
- a numerical input to ON or OFF
- ON / OFF to a percentage or preset temperature

To work with value translators, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Data** menu and choose **Translators** under the **Variables** heading.

The Value Translators page appears.

Value Translators

Save

Value Translators

Add **Rename** **×**

Only OFF
Only ON

Rules

Add rule *Rules are evaluated from top to bottom.*

When input value is:
Not equal

Then output value will be:
Input value +

When input value is:
Any

Then output value will be:
Cancelled

This page is divided into two main sections:

- Value Translators
- Rules

You configure the value translator behaviour in the Rules section for the translator you choose in the Value Translators section.

3. To have your changes take effect, click the **Save** button.

9.4.1 Value Translators

9.4.1.1 Add button

Click this button to type the name of a new value translator. Click OK to have it appear in the list below.

9.4.1.2 Rename button

Select a value translator from the list below, then click this button to rename it.

9.4.1.3 Red “X” button

Select a value translator from the list below, then click this button to delete it.

9.4.1.4 Value Translator list

This list contains existing value translators.

9.4.2 Rules

9.4.2.1 Add rule button

Click this button to add a rule that:

- triggers the value translator according to a source value.
- creates an output value for the destination variable.

Translators can have more than one rule. You must configure each one you add for it to take effect.

Since Jasper evaluates rules from the top of this list to the bottom, use the up-arrow and down-arrow keys to the right of the rules to put them in the order you want them evaluated.

To delete a rule, click the red “x” button to its right.

9.4.2.2 When input value is:

Use the drop list and combination drop list/text field to set parameters Jasper uses to determine whether to perform this translation.

9.4.2.3 Then output value will be:

If you set the drop list to “Input value” Jasper uses it to do the arithmetic you specify in the following two fields.

Consider these examples:

- To convert from Celsius to Fahrenheit, use this formula: $C \times 1.8 + 32$.
- To convert a value to a number, make the “x” number zero (0) and type the desired destination value in the “+” field.
- To convert amperes to watts, multiply amperes x 120 Volts + 0

To prevent the binding from running, set the required input value conditions in the rule and choose “Cancelled”.

9.5 Creating and configuring groups of variables

You can group variables for BACnet devices that regularly handle similar commands at the same times. Groups of variables are useful for triggering events using:

- schedules
- user interface buttons

Buttons, for example, only allow changes to one variable, so to have a button change multiple variables, those variables must be in a group.

Note: One variable can be part of more than one group.

To work with groups, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Data** menu and choose **Groups** under the **Variables** heading.

The Groups Configuration page appears.

Groups Configuration

This page is divided into two main sections:

- Groups
- Group Members

3. To save your changes to the Jasper configuration file, click the **Save** button.

4. To have your changes take effect, restart Jasper.

9.5.1.1 Set Value... button

Use this button to send a value to all members of the selected group. If you have just added a group, you need to restart Jasper before you can set the value of the new group of variables.

9.5.2 Groups

9.5.2.1 Create button

Click this button to type the name of a new group.

9.5.2.2 Rename button

Select a group from the group list below, then click this button to rename it.

9.5.2.3 Duplicate button

Select a group from the list below, then click this button to create a copy of it. Jasper suggests a name based on the original group (the original name followed by (copy)). Type a name for the new group and confirm. The new group includes all the members of the original group. To have the new group take effect, restart Jasper.

9.5.2.4 Red “X” button

Select a group from the list below, then click this button to delete it.

9.5.2.5 Search field

When you type part of the name of a group you’re looking for, Jasper culls the list to include only group names that contain the text you type.

9.5.2.6 Groups list

This list contains existing groups.

9.5.3 Group members

9.5.3.1 Add Members button

Click this button to display a list of controllers that you can add to the group. You can add more than one variable at a time by shift-clicking variable names.

9.5.3.2 Red “X” button

Select a variable from the list below, then click this button to delete it.

9.5.3.3 Search field

When you type part of the name of a variable you’re looking for, Jasper culls the list to include only variable names that contain the text you type.

9.5.3.4 Group Members list

This list contains all variables that are members of the selected group.

9.5.3.5 Value mode

This dropdown controls how the group variable gets its value.

- **Command:** default behavior. The group value is the last command written to the group.
- **Automatic:** the group value and status reflect the real state of its members. When all members are boolean, the value is the logical OR of the members. When all members are numeric, the value is the average of the members. Otherwise, the value is the last command written.

9.6 Managing BACnet objects

Use this page to add, configure and delete BACnet objects managed by Jasper.

To manage BACnet objects, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Data** menu and choose **BACnet Objects** under the **Configuration** heading.

The BACnet Objects Configuration page appears.

BACnet Objects Configuration

Save

Objects

Add **Modify** **X**

LOAD_SHEDDER_SETPPOINT
LOAD_SHEDDER_SHEDDING
LOAD_SHEDDER_SHEDDING_TOTAL
LOAD_SHEDDER_SETPPOINT_GEN
RGB_CONTROL
rgb_demo_red
rgb_demo_green
rgb_demo_blue
Current

Options

Value	40.000000	?
Instance Number	3	?
Type	ANALOG_VALUE	?
COV Increment		?
Initial Value	40.000000	?
Initial Value Priority	8	?
Non Volatile	☒	?

This page is divided into two main sections:

- Objects
- Options

3. To have your changes take effect, click the **Save** button.

9.6.1 Objects

9.6.1.1 Add button

Click this button to add a new object. For each object, you must enter:

- Name: a unique name that other BACnet devices use to recognize this object.
- Instance number: a unique number. This number must be unique for the Type.
- Type: the type of variable the object uses.

- COV (change of value) Increment (only if Type is any of the “analog” choices): If the variable’s value changes to a greater extent than the COV increment, the device notifies other devices on the network.

9.6.1.2 Modify button

Select an object from the object list below, then click this button to modify its attributes. Those attributes are the same as those you configure when you use the Add button (described above).

9.6.1.3 Red “X” button

Select an object from the list below, then click this button to delete it.

9.6.1.4 Objects list

This list contains existing objects.

9.6.2 Options

9.6.2.1 Value

The current value for this object.

9.6.2.2 Instance number

A unique number. This number is unique for the Type.

9.6.2.3 Type

This is the type of value the object stores.

9.6.2.4 COV Increment

If the variable’s value changes to a greater extent than the COV (change of value) increment, the device notifies other devices on the network.

9.6.2.5 Initial Value

This is the value assigned to the object when Jasper starts up.

9.6.2.6 Initial Value Priority

This is the initial priority assigned to the BACnet object.

Priorities are integers between 1 and 16, with 1 being highest priority.

9.6.2.7 Non Volatile

If this box is checked, Jasper saves any changes to the value of this object to flash memory and reapplies it when Jasper is restarted.

10 Configuring Lighting Statistics

Building managers use lighting statistics to help them run their buildings efficiently. For instance, they may want to calculate electricity consumption through a given control, or they may want to determine when to relamp.

For more information on usage of lighting statistics, refer to “Viewing lighting statistics” in the Cristal Controls Jasper User Manual.

For managers to use these statistics, you need to configure them.

To configure lighting statistics, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Loggers** menu and choose **Lighting Statistics Configuration** under the **Statistics** heading.

The Lighting Statistics Configuration page appears.

Lighting Statistics Configuration

Lighting Statistics Configuration		
Enable	☒	?
Delay	3600	?
Digital transition ON	0	?
Analogic transition ON	0	?
Analogic percentage use	☐	?
Save		

10.1 Enable

Select this check box to have Jasper periodically save statistics.

10.2 Delay

With **Enable** (above) selected, type the number of seconds between write-to-disk operations.

The default is one hour (3,600 seconds). Too small a delay may prematurely age the recording device’s flash memory. Too long a delay increases the risk of data loss during a power failure.

10.3 Digital transition ON

Added time (in seconds) in a transition OFF to ON for digital controls. The default value is 0 (blank field).

10.4 Analog transition ON

Added time (in seconds) in a transition OFF to ON for analog controls. The default value is 0 (blank field).

10.5 Analog percentage use

Click this check box to record the proportion of electricity used by analog controls. For example, if an LED bulb is on for one hour at 50 per cent intensity, this period counts as 30 minutes of the bulb's lifespan.

This percentage helps you estimate a device's remaining lifespan. The lower the percentage use of a device, the longer its expected lifespan.

Once you have configured lighting statistics, click the **Save** button. Jasper will prompt you to restart the system to have your changes take effect.

11 Configuring the load shedder

Jasper users need to track load shedder activity and may also need to change certain settings.

Note: when referring to the load shedder, the terms “stage” and “step” are used interchangeably.

11.1 How the load shedder uses variables

The dataserver refers to several variables during peak consumption management. The dataserver:

- reads a variable to determine current consumption (in the unit of the power meter, as selected in Power Unit on the Options tab).
- uses the current load number and a preset setpoint to determine whether to enable or disable load. (You can use a fixed setpoint or a variable that stores a setpoint.)
- writes to other variables to enable or disable load.

11.2 Enabling the load shedder

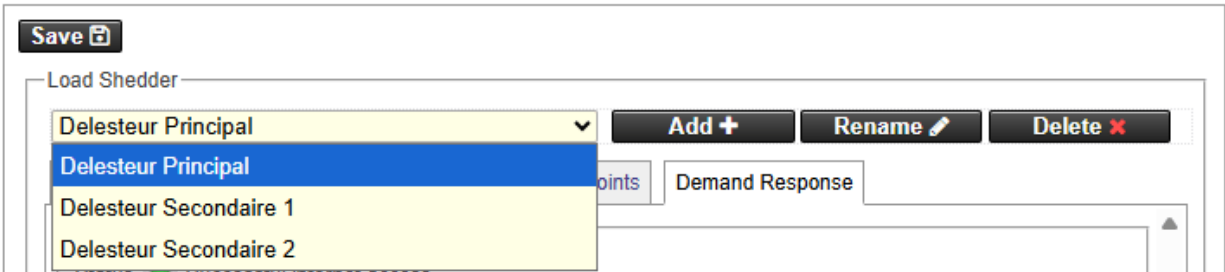
To enable load shedder features for users, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Jasper** menu and choose **Configuration** under the **Load Shedder** heading.

The Load Shedder Configuration page appears. Information for each tab in this page appears on the following pages:

- Load Shedder Configuration: Stages tab
 - Load Shedder Configuration: Groups tab
 - Load Shedder Configuration: Options tab
 - Load Shedder Configuration: Setpoints tab
 - Load Shedder Configuration: Demand Response tab
3. In the **Load Shedder** list, select the load shedder to configure.
 4. Once you have configured the load shedder, click the **Save** button.

11.3 Selecting, adding, renaming and deleting load shedders



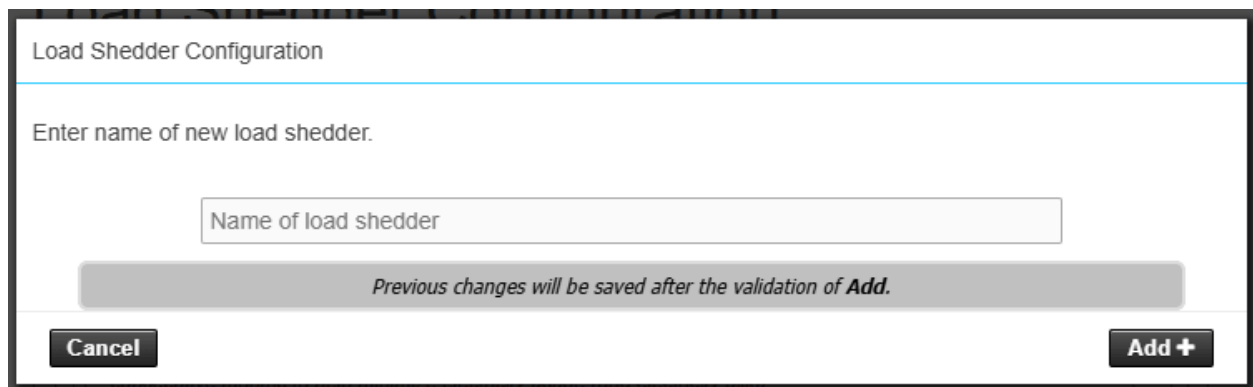
Jasper can run several load shedders at the same time. Each load shedder has its own settings on every tab of the configuration page, and its own BACnet objects and demand response events.

The **Load Shedder** section, above the tabs, lists the load shedders. Select a load shedder in the list to display and change its settings.

11.3.1 Add

Click **Add**, enter the name of the new load shedder and click **Add** in the dialog. The new load shedder is created with an initial configuration and becomes the selected load shedder.

If the existing load shedder has not been named yet, it appears as “Default LoadShedder” in the list. In this case, Jasper first asks you to name it. Click **Name** in the dialog, then enter a name.



11.3.2 Rename

Select the load shedder, click **Rename**, enter the new name and click **Rename** in the dialog. The names of the BACnet objects and value translators of the load shedder are also updated.

Load Shedder Configuration

Enter new name of the load shedder.

Delesteur Principal

Previous changes will be saved after the validation of **Rename**.

Cancel

Rename 

11.3.3 Delete

Select the load shedder, click **Delete** and confirm. Jasper deletes the load shedder with its BACnet objects, value translators and demand response events. This operation cannot be undone.

Load Shedder Configuration

Do you want to delete the load shedder ? **Delesteur Principal**.

Previous changes will be saved after the validation of **Delete**.

Cancel

Delete 

11.4 Load Shedder Configuration: Stages tab

The screenshot shows the 'Stages' tab of the Load Shedder Configuration interface. At the top, there is a 'Save' button and four tabs: 'Stages', 'Groups', 'Options', and 'Setpoints'. Below the tabs, there is a section titled 'Add Stage Repeat' with a tooltip that says 'Add Stage Repeat. Added to the end. ?'. This section contains three identical stage configuration blocks. Each block has a 'Repeat Count' input field (with values 2, 4, and 2 respectively), an 'Add group' button with a tooltip 'Add a group.', and a text input field for the group name (with values 'Group 1', 'Group 2', and 'Group 1' respectively). To the right of each group name are three buttons: an up arrow, a down arrow, and a red 'X' button. To the right of the entire list of stages are three vertical buttons: a red 'X' button, an up arrow, and a down arrow. A vertical scrollbar is visible on the right side of the stage list.

Jasper sheds load one stage at a time. You define each stage by:

- adding groups to them. (To create groups, use the **Groups** tab on this page)
- ordering the groups within stages and ordering the stages.

11.4.1 Add Stage Repeat

Click this button to add a stage to the end of the list.

You can reorder stages in this list using the up and down arrows to the right of the stages.

You can delete a stage by clicking the red “X” to the right of the stage.

11.4.2 Repeat Count

Set the number of members you want Jasper to shed load from in this stage. The default value is 1, which means Jasper will shed load from one member in this stage before it moves on to another stage. You can have Jasper shed load from two or more members in this stage by changing the Repeat Count number. This number must be an integer.

11.4.3 Add Group

Click this button to add a group to a stage. You create groups using the **Groups** tab on this page. For more information, refer to Load Shedder Configuration: Groups tab below.

You can reorder groups within a stage using the up and down arrows to the right of the groups.

Jasper sheds load from one member of the first group, then one member of the second group, and so forth to the last group. If necessary, it restarts by shedding load from a second member of the first group, and it continues to cycle in this way.

You can delete a group from a stage by clicking the red “X” to the right of the group. This does not delete the group itself.

11.5 Load Shedder Configuration: Groups tab

You can apply one set of load shedder settings to several variables if you put those variables in a group.

Use the tools in this dialog to create load shedder groups.

11.5.1 Groups list

11.5.1.1 Add

Click this button to add a group to the list of groups below the button.

11.5.1.2 Rename

Click this button to rename the group currently selected in the list below.

11.5.1.3 Red “X”

Click this button to delete the group currently selected in the list below.

11.5.1.4 Members tab

11.5.1.5 Add member

Click this button to add a variable to the group.

11.5.1.6 Rearranging members

Use the up and down arrows to the right of the member name to move that member to a different position in the list. The load shedder will shed load from these members in the order they appear in this list. For more information, refer to Load Shedder Configuration: Stages tab.

11.5.1.7 Replacing members

Click the member name. A list of variables appears. Click the control name and click the **Select** button. Jasper replaces the original control in this spot with the control you select.

11.5.1.8 Deleting a member

Click the red “X” to the right of the member name.

11.5.1.9 Options tab

The screenshot displays the Jasper control interface. At the top, there is a 'Save' button and four tabs: 'Stages', 'Groups', 'Options', and 'Setpoints'. The 'Groups' tab is active, showing a list of groups: 'Group 1' and 'Group 2'. Above the list are 'Add', 'Rename', and a red 'X' button. The 'Options' sub-tab is selected for 'Group 1'. It contains the following settings:

Options	
Type	FILO ?
Load	? (input field)
Shedding Mode On	Not modified ?
Shedding Mode Off	Not modified ?
Use in Generator Mode	☒ ?

11.5.1.10 Type

Use this drop list to determine the order in which loads are enabled and disabled.

- **FIFO** (First In First Out): loads are enabled in the same order they were disabled. You can have them cycle to share electric consumption time equally between group members.
- **FILO** (First In Last Out): the first load enabled is the last one disabled. You can use this configuration to grant priority to specific loads.
- **Proportional**: enables control on 0-100% analog loads.

The load shedder considers the load of a whole group to be 100 percent. You can program loads to be shed in, for instance, five steps of 20 per cent each.

You can modulate proportional loads by setting their minimum and maximum power consumption. For instance, you can allow a boiler to shed load down to a minimum of 30 percent. This enables load shedding while keeping building occupants comfortable.

To choose more than one controller, you need to create a group using the instructions in Load Shedder Configuration: Groups tab.

11.5.1.11 Load

(Optional for FIFO and FILO types) Indicates the default power load for the entire group, in the same unit as the power reading (Power Unit on the Options tab). If left blank, the power load must be provided for each member. If a value is configured for a member, it will be used. When using a Proportional type group, this value indicates the power load at 100%

11.5.1.12 Cycling (seconds)

(for FIFO groups) The load shedder can shift load from one controller to the next. For instance, if you have four heating controllers, the load shedder shuts down two and Cycling is set to 300 (i.e. five minutes), the load shedder will reactivate the first controller to be shut down and deactivate the next controller in line after five minutes. It will cycle through the controllers so that it manages load while keeping building occupants comfortable.

11.5.1.13 Minimum

(for Proportional groups) A percentage of total load, written as an integer. Once the load shedder reaches this minimum percentage as it sheds load, it will no longer shed power.

11.5.1.14 Maximum

(for Proportional groups) A percentage of total load, written as an integer. Once the load shedder reaches this maximum percentage as it restores power, it will no longer add power.

11.5.1.15 Step Count

(for Proportional groups) The number of steps, expressed as an integer, that the load shedder takes as it modulates proportional loads. For instance, if you want the load shedder to shed in steps of 20 percent of total load, enter the integer “5” in Step Count. (5 x 20% = 100% of total load)

11.5.1.16 Shedding Mode On

Sets the power reactivation mode for this group.

- **Not Modified:** uses the value set in the **Options** tab, explained in Load Shedder Configuration: Options tab.
- **By Power:** the number of activated steps is calculated according to the power available between the power reading and the setpoint. For example, if the load shedder determines that it can add another 50 kW before it reaches the load setpoint, it will find 50 kW of load among inactive controllers and add that load.
- **Single Step:** steps are activated one by one. After a controller is reactivated, Jasper checks whether the load has reached the load setpoint before it takes another step towards that setpoint.

11.5.1.17 Shedding Mode Off

Sets the shedding mode for this group.

- **Not Modified:** uses the value set in the **Options** tab, explained in Load Shedder Configuration: Options tab.
- **By Power:** the number of activated steps is calculated according to the power available between the power reading and the setpoint. For example, if the load shedder determines that it can shed another 50 kW before it reaches the load setpoint, it will find 50 kW of load among active controllers and shed that load.
- **Single Step:** steps are activated one by one. After a controller is deactivated, Jasper checks whether the load has reached the load setpoint before it takes another step towards that setpoint.

11.5.1.18 Use in Generator Mode

Select this check box to have Jasper control the group while the building gets power from a generator.

If the option “Setpoint Mode Transition” is off, loads that are not controlled in generator mode stay off while generator mode is active. For more information on this option, refer to Load Shedder Configuration: Options tab.

11.6 Load Shedder Configuration: Options tab

You can set parameters used by the load shedder. Many of these values can be found in variables since they fluctuate during the day.

Load Shedder Configuration

Save

StagesGroupsOptionsSetpoints

Load Shedder Information

Power	LS-Slave / IN POWER	✖	?
Setpoint	LOAD_SHEDDER_SETPOINT	✖	?
Generator Setpoint	LOAD_SHEDDER_GENERATOR_SETPOINT	✖	?
Setpoint Mode	LOAD_SHEDDER_SETPOINT_MODE	✖	?
Setpoint Mode Transition	Off		?
Shedding	LOAD_SHEDDER_SHEDDING	✖	?
Shedding Total	LOAD_SHEDDER_SHEDDING_TOTAL	✖	?
Hysteresis	5		?
Delay On	5		?
Delay Off	5		?
Shedding Mode On	By Power		?
Shedding Mode Off	By Power		?
Minimum Valid	11		?
External Temperature	LS-Slave / REM TEMPERATURE	✖	?
Offset	10		?

Calculated Power Value ☒ ?

Minimum Input	0	?
Maximum Input	100	?
Minimum Power	0	?
Maximum Power	10000	?

11.6.1 Power

Variable for total system power consumption, read from the building power meter.

11.6.2 Power Unit

Unit used to display the power: **watt (W)** or **kilowatt (kW)**. Leave blank to display no unit.

This setting only changes the unit shown in the interface. It does not convert any value. Select the unit that matches the **Power** variable. All other power values (setpoints, Hysteresis, Minimum Valid, group and member loads, Calculated Power Value minimum and maximum) must be entered in this same unit.

11.6.3 Setpoint

Variable for the load shedder setpoint.

11.6.4 Generator Setpoint

Variable for the generator mode load shedder setpoint.

11.6.5 Setpoint Mode

Variable that controls load shedder mode. If value is “0” the load shedder is in normal mode. If it is any other value, it is in generator mode.

11.6.6 Setpoint Mode Transition

This variable controls load shedder behaviour depending on whether the generator is running or not.

There are two options:

- None: the shedding sequence continues with the new setpoint.
- Off: To keep from overloading the generator, all loads turn off as the building transitions to generator power and the system adds load to the generator gradually.

11.6.7 Shedding

This variable stores the current shedding level. You can view the shedding level as “Active Steps” in Jasper - Load Shedder - Display as explained in “Configuring the load shedder” in the Jasper user manual.

The numerator is the number of active loads and the denominator is the total number of loads. For example, if you see “ $\frac{3}{8}$ ” there are 8 total loads of which 3 are active. The “3” is the Shedding variable’s value.

11.6.8 Shedding Total

Variable for the total shedding level. You can see the shedding total as “Active Steps” in Jasper - Load Shedder - Display as explained in “Configuring the load shedder” in the Jasper user manual.

The numerator is the number of active loads and the denominator is the total number of loads. For example, if you see “ $\frac{3}{8}$ ” there are 8 total loads of which 3 are active. The “8” is the Shedding Total variable’s value.

11.6.9 Hysteresis

Lag applied to the setpoint, in the unit selected in Power Unit. For example, if your setpoint is 100 kW and this setting is 5, Jasper waits until consumption reaches 95 kW before reactivating load.

11.6.10 Delay On

Delay (in seconds) between each load activation. For example, if this setting is “15” and Jasper reaches the load shedder setpoint, it waits 15 seconds before adding load. It then waits another fifteen seconds before evaluating the effects of adding load before adding more load. The default value is 15.

Note: Jasper compares the power with the setpoint each time a new power reading is received. The delay starts at the reading that requires a change. When the delay has expired, Jasper acts at the next power reading, and only if that reading still requires the change. The actual delay can therefore be longer than this setting. When the Power variable is polled, saving the configuration sets its poll interval to the lowest value among Delay On, Delay Off and the dataserver polling interval (minimum 1 second).

11.6.11 Delay Off

Delay (in seconds) between each load deactivation. For example, if this setting is “5” and Jasper reaches the load shedder setpoint, it waits 5 seconds before shedding load. It then waits another five seconds before evaluating the effects of load shedding before shedding more load. The default value is 5.

Note: Jasper compares the power with the setpoint each time a new power reading is received. The delay starts at the reading that requires a change. When the delay has expired, Jasper acts at the next power reading, and only if that reading still requires the change. The actual delay can therefore be longer than this setting. When the Power variable is polled, saving the configuration sets its poll interval to the lowest value among Delay On, Delay Off and the dataserver polling interval (minimum 1 second).

11.6.12 *Shedding Mode On*

There are two options here:

- By Power: the number of steps to be activated is calculated according to the power available between the power reading and the setpoint.
- Single Step: steps are activated one at a time.

This setting may be overridden for specific groups on the Groups tab.

11.6.13 *Shedding Mode Off*

There are two options here:

- By Power: the number of steps to be deactivated is calculated according to the power available between the power reading and the setpoint.
- Single Step: steps are deactivated one at a time.

This setting may be overridden for specific groups on the Groups tab.

11.6.14 *Minimum Valid*

Sets the minimum value for a valid power meter reading, in the unit selected in Power Unit. If this reading goes below Minimum Valid, there may be a problem with the power meter. Jasper may not be able to activate load. When the power is below this value, Jasper sheds all load in order to protect the building's electrical system.

11.6.15 *External Temperature*

Variable for the outside air temperature.

11.6.16 *Offset*

Allows you to adjust the power value. The offset can be positive or negative.

11.6.17 *Calculated Power Value*

Allows calculating the power value when the BACnet power reading object does not directly represent a power. For example, the BACnet power reading object represents a volt value coming from a current transformer (CT) or a percentage value.

11.6.18 *Minimum Input*

Defines the minimum value of the BACnet power reading object.

11.6.19 *Maximum Input*

Defines the maximum value of the BACnet power reading object.

11.6.20 Minimum Power

Defines the minimum power value when the BACnet power reading object value is Minimum Input.

11.6.21 Maximum Power

Defines the maximum power value when the BACnet power reading object value is Maximum Input.

11.7 Load Shedder Configuration: Setpoints tab

Load Shedder Configuration

Save

StagesGroupsOptions**Setpoints**

Monthly Setpoints

Set twelve monthly power setpoints (Jasper selects a setpoint according to the system date) and the generator setpoint. By indicating meter-reading dates, the system will automatically use the lower setpoint of two consecutive months to help minimize electricity usage (and electricity bills).

Meter Reading Dates

From3To10

Months

3 January 55	3 July 45
3 February 55	3 August 45
3 March 50	11 September 50
3 April 50	3 October 50
3 May 45	11 November 55
3 June 45	3 December 55

Generator Setpoint

50**Write**

Use the Setpoints tab to set twelve monthly power setpoints (Jasper selects a setpoint according to the system date) and the generator setpoint. By indicating meter-reading dates, the system will automatically use the lower setpoint of two consecutive months to help minimize electricity usage (and electricity bills).

11.7.1 Meter Reading Dates

The dates each month between which meter readings are taken. A range of dates can be found on past electricity invoices. Set these dates to the earliest and the latest dates as indicated on your invoices.

Once you choose these dates, click the Save button to have them take effect.

11.7.2 Months

Type the power setpoint for each month, in the unit selected in Power Unit on the Options tab.

Jasper places a date at which this setpoint takes effect that month.

- If the setpoint is lower than that of the previous month, this date is the one you set in the “From” drop list.
- If the setpoint is higher than that of the previous month, Jasper sets this date as the one after the date you set in the “To” drop list.

Once you choose these setpoints, click the Save button to have them take effect.

11.7.3 Generator setpoint

Type the power setpoint for generator mode.

Once you choose your setpoint, click the Write button to have it take effect.

11.8 Load Shedder Configuration: Demand Response tab

Save 

Load Shedder

Delesteur Principal 

Add 

Rename 

Delete 

Stages

Groups

Options

BACnet Objects

Setpoints

Demand Response

Hydro-Quebec Access

Status  Successful internet access.

Source Type

Manual ☒

Hydro-Quebec ☒

Power Limit Default (%): 

Duration of the Warning State (min) : 

Hydro-Quebec - Offer

GDP-Affaires 

Upcoming Events

Add 

	Start	End	Power Limit (%)	Command
Man	20/11/2026  06:00 	20/11/2026  09:00 	80	  

Use the Demand Response tab to lower the load shedder setpoint during peak demand events. Events can be entered manually, received automatically from Hydro-Québec, or both.

11.8.1 Hydro-Quebec Access

This section appears only when the **Hydro-Quebec** source is selected. The status light shows the result of the last connection to the Hydro-Québec service.

- Green: the message “Successful internet access.” appears.

- **Red:** a message explains the problem. For example, the DNS resolution failed, no Internet connection was detected, the Hydro-Québec server could not be reached or its response was invalid.

The status is updated each time Jasper retrieves the Hydro-Québec events, once per hour.

11.8.2 Source Type

Both sources can be selected at the same time.

When you clear the Manual or Hydro-Quebec check box, Jasper asks what to do with the events of that source:

- **Keep:** the source is disabled and its events are kept.
- **Delete:** the events of that source are deleted.

11.8.2.1 Manual

Select this check box to enter peak demand events yourself with the **Add** button in Upcoming Events.

11.8.2.2 Hydro-Quebec

Select this check box to have Jasper retrieve the peak demand events published by Hydro-Québec for the offer selected in Hydro-Quebec - Offer. A warning message appears when you select it:

- Jasper needs an active Internet connection to retrieve the events.
- The notification email sent by Hydro-Québec remains the primary and official means of communication for peak demand events.
- Keep the Jasper software up to date.

11.8.2.3 Power Limit Default (%)

Power limit applied during a peak demand event that has no power limit of its own. Value between 1 and 100. For example, with a setpoint of 500 kW and a default power limit of 80, the setpoint used during the event is 400 kW.

11.8.2.4 Duration of the Warning State (min)

Number of minutes before the start of an event during which the demand response status is in the warning state. Value between 1 and 1440. For example, with a value of 10, the status changes to warning 10 minutes before the event starts.

11.8.3 Hydro-Quebec - Offer

Select the Hydro-Québec offer that matches your electricity rate. Jasper retrieves only the events of this offer. The list of available offers comes from Hydro-Québec and requires Internet access.

Once the configuration is saved, Jasper retrieves the offers and the events at the start of every hour.

11.8.4 Upcoming Events

Lists the events that have not ended yet, sorted by start date.

Each row shows:

- Source: **Man** for a manual event, **HQ** for a Hydro-Québec event.
- Start and End: date and time of the event.
- Power Limit (%): power limit of the event. When this field is empty, it shows the Power Limit Default value in grey, and that value applies.
- Command: buttons to modify (pencil), disable or enable (pause or play) and delete (red "X") the event. A disabled event has a grey background and is ignored by the load shedder.

11.8.4.1 Add

(Manual source only) Click this button to add an event. Enter the start date and time, the end date and time and, optionally, the power limit (1 to 100). Leave the power limit blank to use Power Limit Default.

Demand Response configuration

Modify this event :

Start Date
20/11/2026

Start Time
06:00

End Date
20/11/2026

End Time
09:00

Power Limit

Cancel
Save

11.8.4.2 Modifying an event

Click the pencil button, or click a field of the event, to change it. For a Hydro-Québec event, only the power limit can be changed. Hydro-Québec events cannot be deleted, but they can be disabled.

11.8.5 Past Events

Lists the events that have ended, most recent first. This section is hidden when there are no past events.

11.8.6 How demand response changes the setpoint

During an active event, Jasper lowers the setpoint:

Effective setpoint = setpoint × power limit / 100

The power limit used is the power limit of the event or, if the event has none, Power Limit Default. If neither is set, the setpoint is not changed.

The **Power Limit** object, selected on the BACnet Objects tab, can also lower the setpoint. During an event, if its value is not 0 and is lower than the event power limit, it is used instead. When no events are active, a Power Limit value other than 0 always applies.

Jasper writes the result to these BACnet objects:

- Effective Setpoint: setpoint actually used by the load shedder.

- Effective Power Limit: power limit (%) actually applied.
- Demand response status (multistate): 1 = no event, 2 = event in progress, 3 = warning (an event starts within Duration of the Warning State).

When an event starts, Jasper raises the alarm “Demand Response event active”, with the event start, end and power limit. The alarm becomes inactive when the event ends.

12 Configuring scenes controllers

This web page enables digital addressable lighting interface (DALI) scene commands like GOTO, STORE and REMOVE.

Scenes enable preset configurations of distinct groups of lights in a given space. For instance, in a conference room:

- Scene 1 can automatically dim lights near a screen to 20 per cent intensity and those farther away to 80 percent intensity to make the screen's contents more legible.
- Scene 2 can be 100 per cent intensity for regular meetings.
- Scene 3 can be zero per cent to turn off all lights when the room is not occupied.

To configure scene controllers, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Data** menu and choose **Scene controllers** under the **Variables** heading.

The Scene controllers page appears.

Scene controllers

The screenshot displays the 'Scene controllers' interface. At the top left is a 'Save' button. Below it is the 'Controller variables' section, which includes an 'Add' button, a red 'x' button, a search input field with a magnifying glass icon, and a large empty list area. At the bottom of this section is a 'Version' dropdown menu set to '1'. To the right is the 'Scenes' section, featuring a dropdown menu with 'Scene 1' selected and an 'Edit label' button. At the bottom of the interface is the 'Scenes actions' section, containing three buttons: 'Go to', 'Store', and a red 'x' 'Remove' button.

12.1 Controller variables section

12.1.1 Add button

Click this button to add a scene variable. A dialog appears where you can select the variable.

12.1.2 (red “x” button)

Click this button to remove the scene controller variable that you selected in the list of variables below.

12.1.3 (list)

Scene controller variables on the BACnet system. Multiple variables may be assembled into one group.

12.1.4 Version

The version of L-DALI in use. The default is 2. You can choose “1” to ensure compatibility with the first version of L-DALI.

12.2 Scenes section

12.2.1 Drop list

Choose the scene you want to configure. You can configure up to 16 scenes in each room.

You must have at least one variable in the list to the left to be able to use this drop list.

12.2.2 Edit Label button

Click this button to rename a scene. Jasper keeps the scene number and adds the text you type to the right of the number. (e.g. “Scene 2 - Presentation”). Once you assign a named scene to a variable, that name only appears when you click that variable.

12.3 Scenes actions

12.3.1 Go to button

With a scene selected in the Scenes drop list and a variable that contains a lighting configuration selected in the list to the left, click this button to assign the scene to the variable.

12.3.2 Store button

If you have manually configured a lighting setup in a room that you want to use again, click this button to store the current lighting setup (as represented by a variable in the list to the left) in a scene.

12.3.3 X Remove button

Click this button to delete the selected scene’s settings.

Jasper sends the following values to the variables according to the scene you select and the button you click.

	Scene 1	...	Scene 16
Go to	1	2...15	16
Store	17	18...31	32
Remove	33	34...47	48

13 Configuring the sequencer

The sequencer runs ordered lists of variable writes, called sequences. Each sequence writes a series of values to datasever variables, one step at a time, with a configurable delay before each step. A sequence starts, stops, pauses and resumes based on the value of a trigger variable, so you can drive it from a schedule, an alarm, a button on a floor plan or any other logic that can write the trigger variable.

To configure the sequencer, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Data** menu and choose **Sequencer** under the **Variables** heading. The Sequencer Configuration page appears.

Sequencer Configuration

Save

Sequences

Add + Rename ×

blink-zone-1

Sequence - blink-zone-1

Trigger source OB MSV SEQ 1 × ?

Execute count 10

Steps ? Add +

Step 1 ×

Delay (s) 1

Address Bureau Vente 1 / PR-1 / R06 / LAMP CMD ×

Value 100

Step 2 ×

Delay (s) 1

Address Bureau Vente 1 / PR-1 / R06 / LAMP CMD ×

Value 0

The page has two panels: the **Sequences** list on the left and the details of the selected sequence on the right. Once you have configured your sequences, click the **Save** button. Jasper may prompt you to restart the system to have your changes take effect.

13.1 Managing sequences

Use the buttons above the **Sequences** list to manage sequences.

13.1.1 Add

Create a new sequence. A dialog box appears where you can enter the name of the new sequence.

13.1.2 Rename

Rename the sequence currently selected in the list.

13.1.3 Red “X”

Delete the sequence currently selected in the list.

13.1.4 Sequences

The list of all sequences. Click a sequence to show its settings and steps in the panel to the right.

13.2 Configuring a sequence

Select a sequence in the list to configure its trigger, execute count and steps.

13.2.1 Trigger source

The variable that controls the sequence. Click the link to select a variable, or click the red “X” to clear it. Use a multi-state variable where it is possible to write one of these values to it:

- 1 = Start
- 2 = Stop
- 3 = Pause
- 4 = Resume

13.2.2 Execute count

The number of times the sequence runs each time it is started, from 1 to 254, or **Infinite**. An infinite sequence repeats until it is stopped, and its steps must total at least one second of delay per iteration to prevent a runaway loop.

13.3 Configuring steps

The **Steps** section lists the writes the sequence performs. Steps run from top to bottom. Click **Add** to append a step, and click the red “X” on a step to delete it.

13.3.1 Delay (s)

The number of seconds Jasper waits before it runs this step. Use 0 to run the step without waiting.

13.3.2 Address

The target variable to write. Click the link to select a variable, or click the red “X” to clear it.

13.3.3 Value

The value to write to the target variable.

Each sequence requires a trigger source and at least one step, and each step requires an address and a value. If any of these are missing when you save, Jasper reports the sequence and step that need attention.

14 Customizing the Jasper interface to the client application

Jasper ships with a default interface that end users access using a web browser. Clients can customize this interface to match their brand or other company guidelines.

Customized interfaces tend to show more useful information than that found on standard Jasper web pages and make Jasper easier for client personnel to learn. For instance, customers may want to see things like their own floor plans or thermostat tables.

Beyond appearances, a customized interface can also ensure end users only access the parts of Jasper that they need to use.

14.1 General notes on customizing the web browser interface

Webmasters who understand PHP and JavaScript can customize the Jasper web interface. They then transfer the customized site using FTP to the “/home/www/user” folder in the Jasper file system.

To have their changes take effect, the site files they upload to “/home/www/user” must contain a file with one of these names:

- index.php
- index.html
- index.htm

The system uses that file as the start page instead of the default Jasper page.

14.2 Customizing thermostats

This page shows thermostat states. You can modify parameters like the setpoint on this page.

To access and modify thermostat states in Jasper, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Jasper** menu and choose **Thermostats** under the **Visualization** heading. (By default, Jasper lists thermostats on a separate page by type.)

The Thermostats page appears. Note: the image below was taken from a system created for a company where the working language is French. The names of floors, zones and thermostats are like proper names and are not translated if you change languages in Jasper.

Thermostats /

Global Configuration

Floor	Zone	Thermostat	Temp.	Setpoint Heat	Setpoint Cool		Output		☒
Cristal	Avant	Bureau Porte Avant	22.8	24.0			50.0%		☒
		Bureau Pierre Chaput	23.5	23.5			0%		☒
		AC Avant	23.1	23.0	24.0		50.0%		☒
	Service	AC Service	21.8		22.5		0%		☒
	Montage	AC Montage	22.5	22.5	23.5		0%		☒
	Entrepot	Entrepot	21.8	21.5			0%		☒
DimOnOff	R&D	DimOnOff Tech	22.9	23.5			100.0%		☒
		DimOnOff Service	24.6	18.0			0%		☒
	Administration	DimOnOff Daniel	22.8	22.5			0%		☒
		DimOnOff Bernard	22.1	22.5			100.0%		☒

14.2.1 Floor

Name of a floor in a building. To view only control names on that floor, click the floor name.

14.2.2 Zone

Name of a zone on a floor. To view only control names in that zone, click the zone name.

14.2.3 Thermostat

Thermostat names. To set parameters for a thermostat, click its name. A dialog containing two panels (Basic and Advanced) appears where you can set the following:

- Setpoint Cool (Basic tab)
- HVAC Mode (Basic tab)
- Setpoint Cool Unoccupied (Advanced tab)
- Maximum User Setpoint (Advanced tab)
- Minimum User Setpoint (Advanced tab)

Once you make your changes, click Save to have them take effect.

14.2.4 Temp

Actual temperature reading from the thermostat.

CRISTAL

14.2.5 Setpoint Heat

Heat setpoint for the thermostat.

14.2.6 Setpoint Cool

Cool setpoint for the thermostat.

14.2.7 Occupied mode / night mode indicator (crescent moon)

The sun icon indicates occupied mode. The crescent moon icon indicates unoccupied mode.

To view the schedule for the thermostat, click this icon. If no schedule has been applied, Jasper displays the message “(thermostat name) (mode) not controlled by the scheduler.”

To assign a schedule to a thermostat, refer to Configuring the scheduler.

14.2.8 Output

Current thermostat activity.

- A red bar indicates the percentage of heating output relative to full output.
- A blue bar indicates the percentage of cooling output relative to full output.
- A grey bar indicates the upper limit for heating or cooling as determined by the load shedder. If the load shedder is active, a portion to the right of the grey section will be white.
- The background white portion indicates the percentage of electricity consumption that the load shedder currently prevents. To the left of the white portion is either grey (the upper limit), blue or red, or a combination of blue and grey or red and grey.

14.2.9 Communications with the thermostat (magnifying glass)

Thermostat update status. When a magnifying glass appears, the system has obtained updated values from the thermostat.

A yellow exclamation mark means Jasper is not communicating with the thermostat. To learn more about the issue, place your mouse pointer over any pictograms shown.

14.2.10 Global Configuration (check boxes)

Select checkboxes for thermostats that you want to adapt a “global configuration.”

Once you have checked the appropriate boxes, click the “Global Configuration” link at the top left of the thermostat list, A dialog containing two panels (Basic and Advanced) appears where you can set the following:

- Setpoint Heat (Basic tab)
- Setpoint Cool (Basic tab)
- HVAC Mode (Basic tab)
- Setpoint Heat Unoccupied (Advanced tab)
- Setpoint Cool Unoccupied (Advanced tab)
- Maximum User Setpoint (Advanced tab)
- Minimum User Setpoint (Advanced tab)

Once you make your changes, click Save to have them take effect.

14.3 Customizing floor plans

Customized floor plans display switches and sensor readouts used for controllers linked to Jasper via the BACnet network. “Floor plans” can consist of both interior and exterior elements, as illustrated in the sample floor plan below.



Each floor plan consists of:

- a *background image* of the floor plan that you create outside of Cristal Controls and import into the system. You can import such images from CAD drawings. You can also create them using illustration software.

- *controls and readouts* positioned in the appropriate places against the background image. The controls you place on the background image are not tied to that image. This means you can replace the image. If the new image is the same size as the old one, controls stay in the same place relative to the floor plan.

The most commonly used controls include:

- on/off
- analog
- horizontal sliders
- vertical sliders
- buttons
- links

For more information, refer to:

- Configuring the Jasper user experience (floor plans)
- Cristal Controls Jasper User Manual, “Adjusting settings for customized floor plans”

15 Configuring the Jasper user experience (floor plans)

You can create and configure floor plans for your building. These floor plans contain both sensor feedback (e.g. voltage, current, power, frequency, lamp feedback) and setting controls for BACnet devices. You can place both types of objects in the places within your floor plans so that Jasper users can easily find the readings and controls they need.

15.1 Accessing floor plans

You can work on floor plans as both an end user and as an installer. This manual covers installer instructions to help you configure floor plans. For instructions on working with floor plans as an end user, refer to the Cristal Controls Jasper User Manual, “Adjusting settings for customized floor plans.”

To work with Jasper’s floor plan features, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Jasper** menu and choose **Floor Plan** under the **Visualization** heading.
The Floor Plan page appears.

Floor Plan

New					
Name	Description				
Cristal2		Floor Plan	Table	Table - Text	Configuration
Cristal	Plan de plancher - 2025 Lavoisier	Floor Plan	Table	Table - Text	Configuration
RelayStatus		Floor Plan	Table	Table - Text	Configuration
CRISTAL-DEMO		Floor Plan	Table	Table - Text	Configuration
CRISTAL-DEMO-1		Floor Plan	Table	Table - Text	Configuration
CRISTAL-DEMO-2		Floor Plan	Table	Table - Text	Configuration
CRISTAL-DEMO-3		Floor Plan	Table	Table - Text	Configuration
CRISTAL-DEMO-4		Floor Plan	Table	Table - Text	Configuration
CRISTAL-DEMO-1-C		Floor Plan	Table	Table - Text	Configuration
CRISTAL-DEMO-3-C		Floor Plan	Table	Table - Text	Configuration
CRISTAL-DEMO-4-C		Floor Plan	Table	Table - Text	Configuration
MF-A		Floor Plan	Table	Table - Text	Configuration
MF-B		Floor Plan	Table	Table - Text	Configuration
MF-C		Floor Plan	Table	Table - Text	Configuration
MF-AB		Floor Plan	Table	Table - Text	Configuration
MF-BC		Floor Plan	Table	Table - Text	Configuration
MF-ABC		Floor Plan	Table	Table - Text	Configuration
MF-DEMO		Floor Plan	Table	Table - Text	Configuration

Notes:

- You can also choose the “Floor Plan Fullscreen” option to remove the page header and footer. This option shows more of the list on your screen.
- If you don’t see the Configuration buttons visible in this screen image, you may be signed in to Jasper as a user and not an administrator.

Each line in this floor plan table contains a label, a description and four buttons.

15.1.1 (floor plan link)

View and work with the floor plan as a graphic.

15.1.2 Description

A brief note on the nature of this floor plan. To configure the description, refer to Configuring a floor plan.

CRISTAL

15.1.3 Floor Plan button

View and work with the floor plan as a graphic.

15.1.4 Table button

View and work with the floor plan with each element in its own table row. Each element appears as it does in the graphical floor plan.

15.1.5 Table – Text button

View and work with the floor plan with each element in its own table row. Unlike the “Table” option (above), elements are represented as text instead of their graphical icons.

15.1.6 Configuration button

Work with the tools that enable you to configure a floor plan.

You cannot undo changes you make here, so before you make any changes, back up the current configuration. You can later revert to that backup if you need to. For instructions on backing up and restoring your configuration, refer to Backing up and restoring configuration files.

For more information, refer to these sections:

- The Configure option: Configuring a floor plan.
- All other sidebar options: Creating a floor plan below.

15.2 Creating a floor plan

To create a floor plan, follow these steps.

1. Follow the instructions in Accessing floor plans until Jasper displays the Floor Plan page.
2. Click the **New** button.

A **Floor Plan** dialog appears. It includes the fields “Enter name.” and “Choose a floorplan template.”. The choice of a floorplan template is optional.

Floor Plan

Enter name.

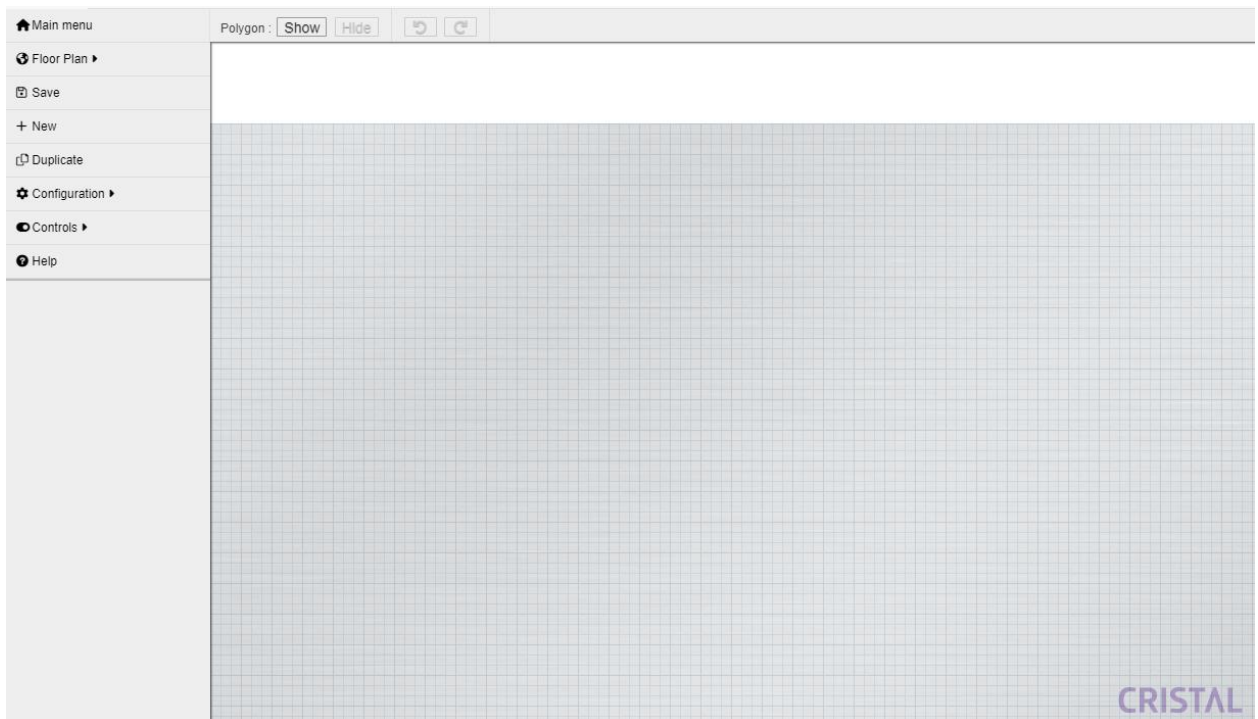
Enter name.

Choose a floorplan template. ▼

Cancel Create +

3. Type the name for your new floor plan, if necessary, choose a floorplan template and click the **Create+** button.

A screen appears containing a grid on which you can lay out a floor plan, with a list of floor plan creation tools in a sidebar to the left of the grid. This screen also features undo and redo buttons at the top left corner of the grid.



Notes:

- The name of your floor plan appears in the tab of your web browser and in the bottom border of the browser window.

- The current coordinates of your mouse pointer and, when applicable, the time and an error message appear in the bottom border of the browser window.

15.2.1 Main menu

Return to the Jasper home page.

15.2.2 Floor Plan

View a list of existing floor plans. To view or edit a floor plan, click that plan's name in the sidebar. The plan appears in the grid to the right.

To close this list and return to the main sidebar, click Floor Plan again.

15.2.3 Save

Save any changes you have made. You can also use the keyboard shortcut Ctrl + S.

15.2.4 New

Create a new blank floor plan. A **Floor Plan** dialog appears. Type the name for your new floor plan and click the **Create+** button. A screen appears containing a grid on which you can lay out a floor plan, with a list of floor plan creation tools in a sidebar to the left of the grid.

15.2.5 Duplicate

Create a new floor plan based on the one that you currently have open. A **Floor Plan** dialog appears. Type the name for your new floor plan and click the **Create+** button. A screen appears containing a copy of the floor plan you duplicated, with a list of floor plan creation tools in a sidebar to the left of the grid.

15.2.6 Configuration

Show configuration options that affect the entire current floor plan. For more information, refer to Configuring a floor plan.

15.2.7 Controls

List controls you can add to the floor plan. For more information, refer to Adding controls to a floor plan.

15.2.8 Help

List keyboard shortcut options and explanations of icons. The Help menu also offers suggestions on how to modify the page URL to customize the floor plan interface. These settings do not affect the Jasper interface outside of floor plan pages.

15.2.9 Polygon: Show/Hide

Make polygon controls accessible/inaccessible on the floor plan. If the Show button is activated, polygon controls become accessible and can be modified. All other control types become non-configurable and vice versa (if the Hide button is activated).

15.3 Configuring a floor plan

You can use the tools in this sidebar to create a new floor plan or configure the global attributes of an existing plan. To return to the main sidebar, click **Configuration** again.

15.3.1 Rename

Rename the floor plan.

15.3.2 Modify description

Change the description that appears in the main floor plan list of tables. By default, floor plans have no description.

15.3.3 Modify plan

Upload a new image to serve as the background image of the floor plan (walls, doors, parking spaces, etc.). These images help end users orient themselves when they use Jasper.

You can create floor plan background images using CAD software, flowchart software or even simple illustration software. The .png format is recommended due to its small size and clarity. You can also use other formats such as .jpeg or .gif.

15.3.4 Resize controls

Adjust the size of all controls in the floor plan. This feature does not adjust the size of the floor plan in the background.

15.3.5 Delete

Delete the floor plan. You cannot undo floor plan deletions.

15.4 Adding controls to a floor plan

You can add and configure a variety of controls to your floor plan. For full explanations of each control, refer to the Jasper user manual, “Adjusting settings for customized floor plans.”

To add controls to your floor plan, follow these steps.

1. Follow the instructions in Accessing floor plans until Jasper displays the Floor Plan page.
2. Find the floor plan to which you want to add controls and click its **Configuration** button. (You can also use this process to configure or delete existing controls.)

The floor plan appears with configuration controls in the left sidebar.

3. In the sidebar, click **Controls**.

A list of controls appears in the sidebar. To return to the main sidebar, click **Controls** again.

4. Click a control in the sidebar to add it to the floor plan.

You can move a control by using the mouse to drag the small hand icon attached to it. You can determine precise placement using the Position attribute described in Configuring a control's attributes (master attribute list).

Note that the two check boxes at the top of the sidebar are not controls. They determine the behaviour of the floor plan interface. For illustrations of these controls, refer to the Cristal Controls Jasper User Manual, "Adjusting settings for customized floor plans."

5. Configure the control using the options that appear in the sidebar. For more information, refer to Configuring a control's attributes.
6. Click the **Modify** button to have your changes take effect.

15.4.1 Toggle Grid check box

Select this check box to overlay the floor plan with a 10 x 10 pixel grid to help you position controls.

15.4.2 Snap To Grid check box

Select this check box to have Jasper align controls automatically to the grid. If you want to position controls free of this constraint, deselect this box.

15.4.3 Add digital

On / off switch to the floor plan.



15.4.4 Add analog

Control offering a 0-100% range.



15.4.5 Add slider vertical

Control offering a 0-100% range.



15.4.6 Add slider horizontal

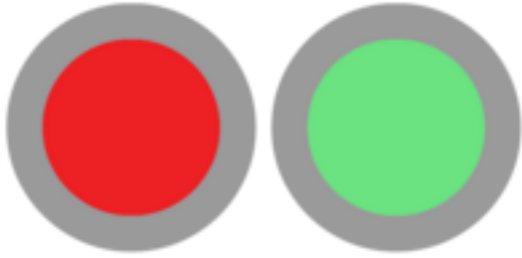
Control offering a 0-100% range.



15.4.7 Add on / off

Toggle for on and off values.

CRISTAL



15.4.8 Add simple

Trigger a write command with the value shown by the button.

Simple button

15.4.9 Add link

HTML link button to open a new web page.



15.4.10 Add text

Fixed text label

Text

15.4.11 Add input text

Numeric value.



15.4.12 Add input color

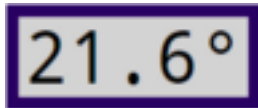
Color control with Red, Green and Blue components.

CRISTAL



15.4.13 *Add card*

Temperature control for Cristal CCTHV-407 Thermostat.



15.4.14 *Add light control*

Control of temperature and intensity



15.4.15 *Add polygon*

Control allowing to have any shape on the floor plan.

15.4.16 *Add system time*

Display the Jasper system date and time on the floor plan. The displayed format is configurable with the Time Format option. The available values are Date + Time, Time, Time (no seconds) or Date.

2026-08-31 11:48:15

15.5 *Configuring a control's attributes (master attribute list)*

Each control in a Jasper floor plan is made up of both:

- physical appearance
- attributes that control how it influences variables

By choosing the control you want to add, you determine its appearance. To have a control affect Jasper according to your specifications, you need to configure that control's attributes.

Note: you can configure attributes both when you add a control to a floor plan and if you need to edit the control.

Since attributes can apply to more than one control, this section lists attributes in alphabetical order. To have your changes take effect, click the **Modify** button below the list of attributes.

15.5.1 Card

This is the card selected for this control. Click **Modify** to select a thermostat.

Applies to: Card.

15.5.2 Icon

A simple icon that appears in the control on the floor plan. Each control can only display one icon.

- To choose an icon for the control, click the icon to the right of the text field.
- To delete the icon, click the red “x” to the right of the text field.

Applies to: Simple, Link, Text.

15.5.3 Link

The URL of a web page. You can use this attribute to open another web page that a user needs to configure the floor plan.

Applies to: Link.

15.5.4 Live Update

Click this check box to have the control write its current value to the variable while the user slides the control using the mouse. Otherwise, the control writes the value set when the user releases the mouse button.

Applies to: Slider vertical, Slider horizontal.

15.5.5 Position

These two numbers are the X (horizontal) and Y (vertical) coordinates of the control on the floor plan.

- The first number is X, with 0 being the left edge of the floor plan.
- The second number is Y, with 0 being the top edge of the floor plan.

Applies to: all controls.

15.5.6 Read variable

The variable from which the control displays the value you see.

Applies to: Digital, Analog, Slider vertical, Slider horizontal, On/off, Input text, Input color, Polygon.

15.5.7 Size

The width and height, in pixels, of a control.

Applies to: Simple, Link, Text, Input text, Input color.

15.5.8 Skin

A selection of different “looks.” You may need to choose a different skin to make the control stand out from the floor plan background.

Applies to: all controls except Card.

15.5.9 Style

You can determine the appearance of a control using CSS attributes such as width, height, color, font size and text alignment.

Applies to: various controls.

15.5.10 Text

A label that appears in the control on the floor plan.

Applies to: Simple, Link, Text.

15.5.11 Time Format

Select how the system date and time appears: **Date + Time**, **Time**, **Time (no seconds)** or **Date**.

Applies to: System time.

15.5.12 Title

Text that appears as a tooltip when users move the mouse pointer over the control.

Applies to: Input color.

15.5.13 Type

A read-only label (short form) of the control.

Applies to: all controls.

15.5.14 Unit

A label for the value displayed. (e.g. A, Amp, kW, kWh, Hz, etc.)

Applies to: Input text.

15.5.15 *Value*

The value written to the write variable when you press a Simple button. You can choose a value from the drop list or type a value in that same field.

Applies to: Simple.

15.5.16 *Write variable*

The variable to which the control writes the value the end user enters.

Applies to: Digital, Analog, Slider vertical, Slider horizontal, On/off, Simple, Input text, Input color.

15.5.17 *Highlight*

Check this box to set the control to have a white border when the value of the write variable is equal to the value of the read variable.

Applies to: Simple button.

15.5.18 *Background color*

Changes the background color of the polygon.

Applies to: Polygon.

15.5.19 *Opacity*

Changes the transparency of the control. It takes decimal values between 0 and 1 (with 0 totally transparent).

Applies to: Polygon.

15.5.20 *Border color*

Changes the color of the control border.

Applies to: Polygon.

15.5.21 *Border width*

Changes the thickness of the control's border. A value of 0 indicates that there is no border on the control.

Applies to: Polygon.

15.6 Using right-click menu floor plan tools

While you work in a floor plan, you can use the right-click menu to show a list of features that can help you create your floor plan.

15.6.1 Show plan image

See the plan (without controls) in a new browser tab.

15.6.2 Plan screen shot

Download a screen shot of the plan, with controls, to your computer.

15.6.3 Reload

Load the last saved version of the plan.

15.6.4 Show information

Show information about the floor plan, including:

- Name
- Description
- Size of the floor plan
- Number of different types of controls

15.6.5 Keep Selection

(This option only appears if a control or controls are selected in the floor plan.) Use this option to copy the selection of controls so you can paste it into another floor plan.

15.6.6 Insert Saved Selection)

Paste the selection of controls that you copied from another floor plan using the Keep Selection option.

15.6.7 Search controls

Open a search box to find and highlight controls on the floor plan. For more information, refer to Searching for controls on a floor plan.

15.6.8 Exit Configuration Mode

Display the user interface for the floor plan.

15.7 Configuring controls: advanced techniques

15.7.1 Advanced techniques

When you start working with floor plans, you will create controls and move them on a floor plan one at a time. As your floor plans acquire more controls, you can work more quickly using the following tips.

15.7.1.1 Move multiple controls

Select the controls you want to move (drag your mouse over a group of controls) and drag the group.

15.7.1.2 Duplicate a control

Select the control and press Ctrl-V on your keyboard.

15.7.1.3 Duplicate multiple controls

Select the controls and press Ctrl-V on your keyboard.

15.7.1.4 Copy controls from one floor plan to another

Select the control(s) you want to copy, right-click and choose **Keep Selection**.

Go to the floor plan to which you want to add the control(s), right-click and choose **Insert Saved Selection**.

15.7.1.5 Copy select parameters from one control to another

Click the control that has the parameters you want to copy to select it. A Paste Special icon appears above the grid, to the right of the Redo icon.

Click the Paste Special icon. The Paste Special dialog appears.

Paste Special

Paste Special allows to paste the parameters of the selected control to one or multiple controls.

Check the parameters to copy.

- ☐ All
- ☐ Read Variable
- ☐ Write Variable
- ☐ Icon
- ☐ Skin
- ☐ Width
- ☐ Height
- ☐ Style
- ☐ Unit
- ☐ Background color
- ☐ ...

Cancel

Ok

Select the parameters you want to copy and click OK. More controls appear above the plan grid.

Select the controls to which you want to apply these parameters and click the **Apply** button.

Once you no longer need this feature, click the **Done** button.

15.7.1.6 Positioning multiple controls

If you select multiple controls in a floor plan, additional icons appear above the grid that enable the following operations on the selected controls.

- Horizontal auto-align left, center and right. For left and centre, Jasper uses the control farthest to the left as a guide. For right, it uses the control farthest to the right.
- Vertical auto-align top, center and bottom. For top, Jasper uses the topmost control as a guide. For bottom, Jasper uses the bottommost control as a guide. For center, Jasper uses the leftmost control as a guide.
- Distribute controls horizontally or vertically. Jasper distributes the buttons equal distances apart using the controls at the right and left edges (or top and bottom edges) of your selection as guides.

- Delete controls. You can also use the Delete key on your keyboard.

15.7.2 Polygon control configuration

Functionality	Description
Drawing	Allows to define any polygon by selecting the various points that form it. This requires the polygon to be selected on the floor plan to be modified. After clicking on the button, the selected polygon is no longer visible on the floor plan. Move the cursor and click on the floor plan at each position where you wish to place a point. To form the polygon by connecting the various points, simply double-click when you add the last point to form the polygon.
Editing	It is used to modify the shape of a polygon control on the floor plan. The modification concerns the position of the points. It is possible to move the points of a polygon after selecting one of them. The cursor is used to move it to the desired position.
Point	A Allows to modify the shape of a polygon by adding a new point to the polygon. After clicking on the option, the polygon takes on an editable shape with the various points that make it up. The cursor is used to add the point at the desired position with a click.
	D Allows to modify the shape of a polygon by deleting a point on it. After clicking on the option, the polygon takes on an editable shape with the various points that make it up. Use the cursor to select the point and click to delete it.
Modify	Used to move a polygon to a given position. The x (abscissa) and y (ordinate) coordinates of the position must be entered in the first and second write fields respectively. The values given must be whole numbers.

Functionality	Description
---------------	-------------

Type: polygon
Read Variable
   
Polygon
Drawing Ed
Point
Add Delete
Background color

Opacity
1
Border color

Border width
1
Position
60 20
Modify
Delete 

15.8 Deleting a floor plan

To delete a floor plan, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Jasper** menu and choose **Floor Plan** under the **Visualization** heading.
The Floor Plan page appears.

Floor Plan

New					
Name	Description				
<u>Cristal2</u>		Floor Plan	Table	Table - Text	Configuration
<u>Cristal</u>	Plan de plancher - 2025 Lavoisier	Floor Plan	Table	Table - Text	Configuration
<u>RelayStatus</u>		Floor Plan	Table	Table - Text	Configuration
<u>CRISTAL-DEMO</u>		Floor Plan	Table	Table - Text	Configuration
<u>CRISTAL-DEMO-1</u>		Floor Plan	Table	Table - Text	Configuration
<u>CRISTAL-DEMO-2</u>		Floor Plan	Table	Table - Text	Configuration
<u>CRISTAL-DEMO-3</u>		Floor Plan	Table	Table - Text	Configuration
<u>CRISTAL-DEMO-4</u>		Floor Plan	Table	Table - Text	Configuration
<u>CRISTAL-DEMO-1-C</u>		Floor Plan	Table	Table - Text	Configuration
<u>CRISTAL-DEMO-3-C</u>		Floor Plan	Table	Table - Text	Configuration
<u>CRISTAL-DEMO-4-C</u>		Floor Plan	Table	Table - Text	Configuration
<u>MF-A</u>		Floor Plan	Table	Table - Text	Configuration
<u>MF-B</u>		Floor Plan	Table	Table - Text	Configuration
<u>MF-C</u>		Floor Plan	Table	Table - Text	Configuration
<u>MF-AB</u>		Floor Plan	Table	Table - Text	Configuration
<u>MF-BC</u>		Floor Plan	Table	Table - Text	Configuration
<u>MF-ABC</u>		Floor Plan	Table	Table - Text	Configuration
<u>MF-DEMO</u>		Floor Plan	Table	Table - Text	Configuration

- Click the floor plan you want to delete.
The floor plan appears.
- Right-click the floor plan and click **Enter Configuration Mode**.
The floor plan appears in configuration mode.
- In the sidebar to the left, click **Configuration**.
The Configuration sidebar appears.
- In the configuration sidebar, click **Delete**.
A confirmation dialog appears.
- Click the **Delete x** button.
Jasper returns to the Floor Plan page. The plan you deleted no longer appears in the list.

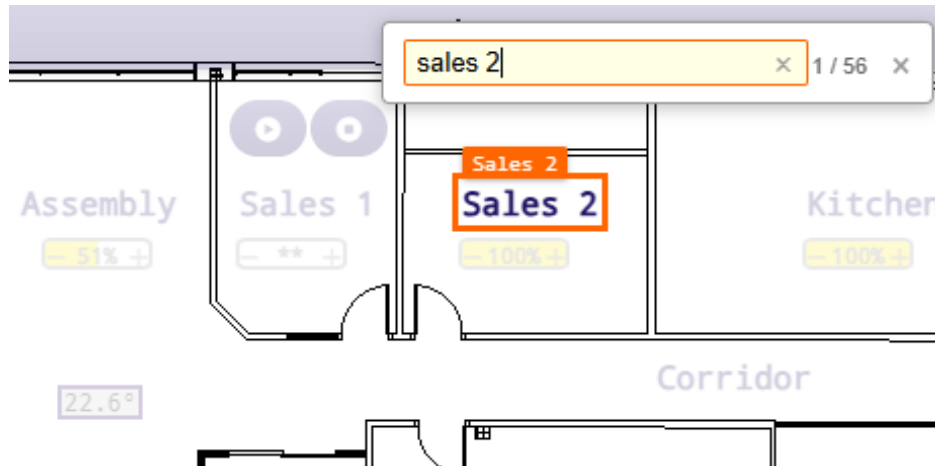
15.9 Searching for controls on a floor plan

You can use the search box to find and highlight the controls you are looking for.

To search for controls on a floor plan, follow these steps.

1. Right-click the floor plan and click **Search controls**.

A floating search box appears at the top right of the plan.



2. Type part of a control name, variable, or text in the search box.

As you type, Jasper highlights the matching controls and dims the others. A counter next to the box shows the number of matches out of the total number of controls.

Notes:

- The search looks through the control text, title, and the names of the variables the control uses.
- Press **Escape** on the keyboard or click the close button (x) to close the search box.

16 Managing Loggers

Jasper logs activity from both its own components and those on the BACnet network it works with.

16.1 Configuring Loggers

You can enable data logging in one or more output formats. The three file formats available are:

- SQLite (database)
- a single tab-separated values (TSV) file
- multiple tab-separated values (TSV) files

To configure loggers, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Loggers** menu and choose **Configuration** under the **Trending** heading.

The Loggers Configuration page appears.

Logging	
SQLite	
Enable	☒
Single Log File	
Enable	☐
File	/home/ftp/System_JasperLog.tsv
Multiple Log File	
Enable	☐
Path	/home/ftp/JasperLog
Save	

You can activate more than one log output format. However, if you want to minimize disk space usage, use only one file type.

- If you use SQLite, Jasper automatically clears old data from storage. For more information, refer to Maintaining loggers.
- For the latter two options, use the destination folder /home/ftp. This folder may offer more space for files and is accessible via FTP.

3. Once you complete your configuration settings, click Save.

16.2 Configuring log filters

You can use this page to create, rename, and delete log filters. Filters serve to group variables that you want to log as a group. For instance, you can arrange filters for:

- temperature sensors that cause their readings to be logged either every ten minutes or whenever the temperature changes by one degree, whichever happens sooner.
- power meters that cause their readings to be logged either every five minutes or after every 25 kW, whichever happens sooner.

To have variable readings logged, you must create filters. If you have no filters, Jasper does not log any readings.

To configure log filters, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Loggers** menu and choose **Filters Configuration** under the **Trending** heading.

The Loggers Configuration page appears.

In this dialog:

- the “Filters” section lists filters.
 - the “Members” section lists members of the filter currently selected in the “Filters” section.
3. Once you complete your log filter configuration tasks, click Save. You will also be prompted to restart Jasper to have the filters take effect.

16.2.1 Filters section

16.2.1.1 Create button

Click this button to create a new filter.

16.2.1.2 Rename button

Click this button to rename the filter that you selected in the list of filters below.

16.2.1.3 (red “x” button)

Click this button to delete the filter that you have selected in the list of filters below.

16.2.1.4 (magnifying glass)

To quickly find specific filters in a long list of filters, type the name of the filter you want in this field. Jasper shortens the list so it contains only filters that contain the search text.

16.2.1.5 (list)

Currently available filters.

16.2.1.6 Interval(s)

Type the minimum time interval, in seconds, for the logger to record the variables that are members of the filter, then click the Set button.

If you set a Minimum variation (see below) as well as an interval, the value will be written if the variation criterion is met. The next interval recording happens starting from the point of the variation-triggered recording. For example, if:

- interval = 300 s (5 minutes)
- T + 120s (2 minutes) the value meets the min. variation threshold and triggers a recording

the next interval recording occurs at T = 420 s (7 minutes)

16.2.1.7 Min. variation

Type the variation in the variable's value that will trigger a recording.

All variables captured by this filter must have values that are measured by the same unit of measurement. The most commonly used units of measurement are: degrees Celsius; kilowatts; and percentage.

Do not type the unit of measurement (e.g. kW) in this field. Type only the numerical value for the variation.

16.2.2 Members of the filter (name of filter)

16.2.2.1 Add members

With a filter selected on the left side of this dialog, click this button to add variables to the filter. A dialog appears from which you can select one or multiple variables to the filter.

16.2.2.2 (red "x" button)

Click this button to remove variables you select in the list below from the filter.

16.2.2.3 (magnifying glass)

To quickly find specific members in a long list of members, type the name of the member you want in this field. Jasper shortens the list so it contains only members that contain the search text.

16.3 Running reports

You can use the reporting feature to extract data from the logger database. You can view this data on screen and save it to disk.

To run reports in Jasper, refer to “Generating Reports” in the Cristal Controls Jasper User Manual.

16.4 Maintaining loggers

You can regain disk space on the Jasper server by managing log data. You can copy or move data to other locations and you can delete data as well. The data you export can prove useful to examine historical performance of devices on your BACnet network. That analysis can reveal issues that you need to deal with.

To maintain loggers, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Loggers** menu and choose **Automatic Database Maintenance** under the **Trending** heading.

The Loggers Maintenance page appears. This page contains four dialogs, one for each function:

- **MySQL Backup Database:** Use this dialog to designate the MySQL database that hosts your log backups. (Jasper uses SQLite. The MySQL database Jasper users designate commonly resides on another computer.) For more information, refer to MySQL Backup Database.
- **Copy Logs to Backup Database:** Use this dialog to make a copy of your logs on your backup database without deleting the copy presently on your main log server. For more information, refer to Copy Logs to Backup Database.
- **Move Logs to Backup Database:** Use this dialog to copy logs to your backup database and delete them from your main log server. For more information, refer to Move Logs to Backup Database.

- Delete Logs from Local Database: Use this dialog to permanently delete log from your main log server. For more information, refer to Delete Logs from Local Database.

16.4.1 MySQL Backup Database

Settings entered into this dialog designate the backup for Jasper's MySQL database. This dialog must be completed by the technician who set up the MySQL server.

MySQL Backup Database	
Host Name	192.168.2.141 ?
Host Port	?
Database Name	Log2025Lavoisier ?
User Name	cristal ?
Set password ☐	
Password	***** ?
Repeat password	***** ?
Save	

16.4.2 Copy Logs to Backup Database

Use this dialog to have logs periodically copied to a backup database. To designate a backup database, refer to MySQL Backup Database above.

Copy Logs to Backup Database	
Frequency	Disable ▼ ?
Minute	?
Hour	?
Day	?
Month	?
Save Execute now	

16.4.2.1 Frequency

Choices include:

- Hourly
- Daily
- Weekly

- Monthly
- Yearly

16.4.2.2 Minute

Type a whole number from 0 to 59.

16.4.2.3 Hour

Type a whole number from 0 to 23

16.4.2.4 Day

Weekly frequency: type a whole number from 0 to 6 (0 is Sunday)

Monthly frequency: Type a whole number from 1 to 31.

16.4.2.5 Month

Type a whole number from 1 to 12.

Depending on the choice you make using the Frequency drop list fields below either accept settings or remain unavailable. For instance, if you select Daily from the Frequency drop list, you set the Minute and Hour but the Day and Month fields remain unavailable.

The synchronization software keeps track of data transmitted to avoid copying the same data during the next copy operation.

16.4.3 Move Logs to Backup Database

Use this dialog to have logs periodically:

- copied to a backup database. To designate a backup database, refer to MySQL Backup Database.
- removed from Jasper.

Move Logs to Backup Database	
Frequency	Disable ?
Minute	?
Hour	?
Day	?
Month	?
Save Execute now	

This option makes more disk space available on Jasper.

The five options work the same way they do in Copy Logs to Backup Database.

16.4.4 Delete Logs from Local Database

Use this dialog to periodically clear old data from the local Jasper database and make more disk space available in the process.

Delete Logs from Local Database	
Frequency	Daily ?
Max age (days)	30 ?
Minute	5 ?
Hour	1 ?
Day	?
Month	?
Save Execute now	

In addition to the options offered in the preceding two dialogs, this dialog offers a text field called “Max age (days)” text field. For instance, if you want to clear all log data older than a month, type “30” in this field. Jasper deletes that data according to the frequency and time you set using the other five options.

16.4.5 Manually deleting log data

Use this page to delete all references to selected variables from the database log. The disk space used by the variable in the database is not necessarily released. Records created after this deletion operation will reuse that space.

To delete variable data from logs, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Loggers** menu and choose **Manual Database Cleanup** under the **Trending** heading.

The Manual database cleanup page appears.

Manual database cleanup

Delete variables

Select variables to delete from log database. By clicking on delete all references to selected variables would be deleted from the database. Filters can be used to delete only some values of a variable.

The interface consists of a list of variables on the left and filter options on the right.

Variable List:

- LC-211_1 / PR-DIM / R01 / DIGITAL IN 3
- LC-211_1 / PR-DIM / R01 / LAMP FB
- LC-211_1 / PR-DIM / R01 / OCCUPIED MODE
- LC-211_2 / PR-DIM / R02 / DIGITAL IN 3
- LC-211_2 / PR-DIM / R02 / LAMP FB
- LC-211_2 / PR-DIM / R02 / OCCUPIED MODE
- LC-211_3 / PR-DIM / R03 / DIGITAL IN 3
- LC-211_3 / PR-DIM / R03 / LAMP FB
- LC-211_3 / PR-DIM / R03 / OCCUPIED MODE
- LC-211_4 / PR-DIM / R04 / DIGITAL IN 3
- LC-211_4 / PR-DIM / R04 / LAMP FB
- LC-211_4 / PR-DIM / R04 / OCCUPIED MODE
- LC-211_5 / PR-DIM / R05 / DIGITAL IN 3
- LC-211_5 / PR-DIM / R05 / LAMP FB
- LC-211_5 / PR-DIM / R05 / OCCUPIED MODE
- LC-211_6 / PR-DIM / R06 / DIGITAL IN 3
- LC-211_6 / PR-DIM / R06 / LAMP FB
- LC-211_6 / PR-DIM / R06 / OCCUPIED MODE
- LC-211_7 / PR-DIM / R07 / DIGITAL IN 3
- LC-211_7 / PR-DIM / R07 / LAMP FB

Time Filter:

- ☒ Start time: 2018-04-01 00:00:00
- ☒ End time: 2018-04-07 23:59:59
- Data between the "Start time" and "End time" will be deleted.

Value Filter:

- ☐ Minimum Value: [text input]
- ☐ Maximum Value: [text input]

Delete

16.4.5.1 List (left side of page)

Choose one or multiple variables for which you want to delete log data.

16.4.5.2 Time filter - Start Time

Click this check box and enter a date and time using the calendar icon.

- If you choose an end time as well, Jasper erases data recorded between the start and end times.
- If you do not choose an end time, Jasper erases data recorded before the start time.

16.4.5.3 Time filter - end time

Click this check box and enter a date and time using the calendar icon.

- If you choose a start time as well, Jasper erases data recorded between the start and end times.
- If you do not choose a start time, Jasper erases data recorded after the end time.

16.4.5.4 Value filter - minimum value

Click this check box and enter a minimum value. Values are usually percentages, power readings or temperatures. Do not enter the unit of measurement. (e.g. 25 kW would be typed as “25”)

- If you choose a maximum value as well, Jasper erases data where the values fall between these two limits.
- If you do not choose a maximum value, Jasper erases data where the values are smaller than the minimum value.

16.4.5.5 Value filter - maximum value

Click this check box and enter a maximum value. Values are usually percentages, power readings or temperatures. Do not enter the unit of measurement. (e.g. 25 kW would be typed as “25”)

- If you choose a minimum value as well, Jasper erases data where the values fall between these two limits.
- If you do not choose a minimum value, Jasper erases data where the values are larger than the maximum value.

16.5 Configuring the Jasper Portal

The Jasper administrator and other users can be notified if Jasper loses its Internet connection.

Your Jasper system communicates with the Cristal Controls Jasper Portal periodically. If the Jasper Portal loses contact with your Jasper system, the portal emails you (your team) with this news.

To enable email notifications in case Jasper loses its Internet connection, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Loggers** menu and choose **Jasper Portal Configuration** under the **Alarms** heading.

The Jasper Portal Configuration page appears.

Jasper Portal Configuration

Jasper Portal Configuration	
Enable	☒
Save	

Test Connection

3. Click the enable check box and click Save.
4. Call Cristal Controls to create an account on the Jasper Portal and designate the email addresses that are to receive alerts should your Jasper system lose its Internet connection.

You can test your Jasper system's Internet connection by clicking the Update Now button.

17 Managing Users

Before people can use Jasper, they need user IDs that enable them to access and work with the system. You can create those user IDs.

Jasper is not configurable with Windows Authentication.

17.1 Understanding user permissions

Different users have different sets of permissions depending on their job responsibilities. The following table outlines the user types and permissions available to you.

17.1.1 Administrator

Administrators have unlimited system rights. In this context, they can add or delete users, and modify their permissions.

17.1.2 View Edit

View edit users can configure Jasper (e.g. they can manage schedules, groups and alarms) but they cannot configure system settings (e.g., IP address and date / time).

17.1.3 View write

View write users can view system status (e.g. level of load shedding and relay states) and send network commands to controllers. They cannot configure Jasper.

17.1.4 View

View users can only view system status (e.g. level of load shedding and relay states).

17.1.5 No Access

No access users are user IDs that are temporarily disabled but not deleted.

17.2 Adding, modifying and deleting users

To manage users, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **System** menu and choose **Users**.

The Users page appears.

Add user

Username	Permissions	Last activity time		
root	Administrator	2013-01-23 12:26:47 (192.168.2.119)	Modify	Delete
noname	No Access		Modify	Delete
view	View		Modify	Delete
superuser	View Edit		Modify	Delete
demo	Administrator		Modify	Delete

Web Server Authentication

Web server authentication, allows to add an extra layer of security. A username/password will be asked by the web server before the user can access any web page. The username is 'root'.

☐ Enable

Current password

Save

17.2.1 Adding a user

To add a user, follow these steps:

1. Complete the process in Adding, modifying and deleting users.
2. Click the Add user button.

The Add user dialog appears.

3. Complete the dialog and click the **Save** button.

17.2.1.1 Username

A unique name for the user. You can use letters, numbers, spaces and punctuation for user names. While you can use the same username that people use for Windows, Jasper cannot be used with Windows Authentication.

17.2.1.2 Permissions

Choose one of the sets of permissions offered in the drop list. For more information, refer to Understanding user permissions.

17.2.1.3 Enter new password

Type a password for the user. While you can use the same password that people use for Windows, we recommend users have a distinct password for Jasper.

17.2.1.4 Re-enter new password

Type the same password again to ensure it is spelled correctly.

17.2.1.5 Auto Log In IP

When connecting to Jasper from this fixed IP address, Jasper logs the user in without requesting a password. When connecting from a different IP address, the user must enter the assigned username and password.

17.2.1.6 Virtual keyboard

Let the user access a virtual keyboard when using Jasper on touchscreen devices.

17.2.2 Modifying a user's profile

If you need to change a user's settings (or assign a new password), find the user's name in the User list and click the Modify button. A dialog with the user's name in the title bar appears. This dialog works the same way as the "Add user" dialog explained.

17.2.3 Deleting a user ID

To delete a user ID, find it in the Users list and click the Delete x button.

17.3 Limiting connection attempts

Within the Users interface, you can prevent brute force attempts to guess a Jasper username and corresponding password by limiting the number of times a user can try to sign in to Jasper.

To set this limit, click the Maximum Connection Attempts link below the user list.

The Maximum connection attempts dialog appears.

Maximum connection attempts

Maximum connection attempts

Number of invalid signin attempts Jasper accepts before temporarily preventing subsequent signin attempts.

Count

10

?

Delay (sec)

60

?

Timeout (sec)

300

?

Save

17.3.1 Count

The number of invalid connection attempts Jasper accepts from users within the time set in the Delay field (below) before preventing them from trying again for a period of time determined in the Timeout field (below).

To disable this feature, enter “0” in this field.

17.3.2 Delay

If a user tries to sign in to Jasper the number of times set in the Count field (above) within the number of seconds in the Delay field, Jasper will prevent subsequent connection attempts for the period of time set in the Timeout field (below). This measure slows down brute-force attack attempts perpetrated by automated systems, which tend to send attempts more quickly than human beings.

17.3.3 Timeout (seconds)

Time (in seconds) that Jasper refuses connection attempts from the IP address where the Count number of failed attempts originated.

17.4 Enabling web server authentication

Note: this feature has been removed from newer versions of Jasper.

You can add an extra layer of security by enabling web server authentication. When enabled, users must first sign in to the web server on which Jasper resides before they can sign in to Jasper itself. This measure helps prevent unauthorized connection attempts when your web server is connected to the Internet.

Web server authentication is turned off by default.

To turn on web server authentication, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **System** menu and choose **Users**.

The Web Server Authentication page appears.

3. Scroll down to the Web Server Authentication dialog. (If this dialog is missing from this page, your version of Jasper does not feature web server authentication.)

Web Server Authentication

Web server authentication, allows to add an extra layer of security. A username/password will be asked by the web server before the user can access any web page. The username is 'root'.

Enable

☒

Current password

Password modification

Enter new password

Re-enter new password

Save

4. Once you complete this dialog, click the Save button.

17.4.1 Enable

Click this check box to enable web server authentication.

17.4.2 Current password

Enter the current password if you need to:

- enable or disable web server authentication
- change the password

The default password is “cristal” when you first install Jasper.

17.4.3 Enter new password

Enter a new password. Jasper does not accept a new password unless you complete the “Current password” field above.

17.4.4 Re-enter new password

Re-enter the new password.

18 Diagnostics and Troubleshooting

If you have an issue with Jasper or the BACnet system, use the processes in this chapter to diagnose the issue.

18.1 Configuring Alarms

Use this page to configure system alarms. Jasper sends an alarm whenever the state of a variable changes to meet criteria you set for that alarm.

Here's a brief explanation of each type of alarm:

18.1.1 Hardware

This type of alarm indicates broken equipment to be repaired by an electrician or networking technician. Such issues can include: faults on relays; ballasts; chain of monitored alarm systems; and loss of communication with devices.

18.1.2 Software

This type of alarm indicates a critical software error that requires the intervention of a technician. These can include: corrupted configuration files; disk writing problems; and unexpected system states.

18.1.3 Security

This type of alarm is usually triggered when a person operates a switch or door contact.

18.1.4 Supervised

The alarm is triggered by readings that are made continuously and have reached a high or low limit.

To configure alarms, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Loggers** menu and choose **Configuration** under the **Alarms** heading.

The Alarms Configuration page appears.

Alarms Configuration

Save

Notifications Database Serial Pagers Sources

All Hardware Software Security Supervised

Types

- Email (1)
- Serial Pager (0)
- Datasever (1)
- Email Report (1)

Email

Add

cristal@cristalcontrols.com

- Once you complete your alarm configuration tasks, click Save to have Jasper recognize your choices.

18.1.5 Notifications tab - All

18.1.5.1 Types list

A list of notification types you can set. These include

- Email: Have designated personnel receive an email whenever errors occur (for instance, a device returns an error code or Jasper loses contact with a device) or a variable's value meets certain criteria.
- Serial pager

- Dataserver: Have a Jasper variable written to when an alarm is triggered. For example, Jasper can send a “1” to a relay when an alarm occurs and a “0” when all alarms go back to normal.

Jasper displays the number of notification destinations already set for each type in parentheses following the type.

18.1.5.2 Add button

Click this button to add a notification for the type selected in the Types list.

- Email: enter an email address and click OK.
- Serial pager: configure your serial pagers in the Serial Pagers tab prior to adding them here.
- Dataserver: choose variables for notifications. Once you add variables to this list, you can set the values that represent an alarm state or not using the Modify button for each variable. When an alarm occurs, the system can: send email; send a message to a serial pager, or; change a variable’s value.

18.1.5.3 Email Report

(not available in the All tab)

Have Jasper send periodic emails that list all alarms for the time period since the previous email.

18.1.6 Database tab

18.1.6.1 Database check box

Select the check box to enable the database that stores alarms.

Save

Notifications ?

Database ?

Serial Pagers ?

Sources ?

Database ☒ ?

18.1.7 Serial Pagers tab

18.1.7.1 Add button

Click this button to configure a serial pager to receive alarms. Once you click this button, the following fields appear. To have your settings take effect, click OK.

Save

Notifications ?

Database ?

Serial Pagers ?

Sources ?

Name

Port Name

/dev/ttyS3

Baud Rate

9600

Data Bits

8

Parity

None

Stop Bits

1

OK

Cancel

Jasper transmits messages in clear text for the protocol “COMP1”.

18.1.7.2 Name

Type a name for the serial pager.

18.1.7.3 Port Name

Choose the serial port that the pager will use from the preconfigured ports in the drop list. Jasper scans the Linux OS to automatically build this list of available ports.

18.1.7.4 Baud Rate

Set the correct baud rate for your pager according to documentation for the paging transmission system.

18.1.7.5 Data Bits

Set the correct number of data bits for your pager according to documentation for the paging transmission system.

18.1.7.6 Parity

Set the correct parity for your pager according to documentation for the paging transmission system.

18.1.7.7 Stop Bits

Set the correct stop bits for your pager according to documentation for the paging transmission system.

18.1.8 Sources tab - Sources

18.1.8.1 Add button

Click this button to add variables from your Dataserver to the Sources list below.

18.1.8.2 (red “x” button)

Click this button to remove selected variables from the Sources list.

18.1.8.3 Sources list

A list of variables whose values you can set alarms for.

18.1.9 Sources tab - Options

Save

Notifications ?Database ?Serial Pagers ?Sources ?

Sources

Add

Bureau Porte Avant / TEMPERATURE INT

Options

Type

Out of Range

Time Delay

300

Dead band

1

☒ Lower Limit

16

☒ Upper Limit

26

18.1.9.1 Type

- “Out of Range” lets you set a lower limit, upper limit, or both for the value.
- “Change of Value” lets you set a specific value that triggers an alarm. For instance, a binary variable that ordinarily has a value of 0 can trigger an alarm if the value changes to 1.

Note: options below this drop list change depending on the type you choose.

18.1.9.2 Time Delay (seconds)

Out of Range: specify the minimum period of time (in seconds) during which the value must remain outside the band defined by High Limit and Low Limit before an alarm is generated.

Change of Value: specify the minimum period of time (in seconds) during which the value must be equal to Alarm Value before an alarm is generated.

18.1.9.3 Dead band

Type a range outside of the Lower Limit and Upper Limit inside of which the alarm does not sound. For example, if:

- the upper limit is 26
- the value fluctuates between 25.5 and 26.7

a dead band value of 1 prevents the alarm from sounding. Should the value exceed 27, the alarm sounds.

18.1.9.4 Alarm Value

A value that, once reached, generates an alarm. This option is available for the “Change of Value” type.

18.1.9.5 Lower Limit

(optional) a lower limit for a value before it triggers an alarm. This option is available for the “Out of Range” type.

18.1.9.6 Upper Limit

(optional) an upper limit for a value before it triggers an alarm. This option is available for the “Out of Range” type.

18.2 Reviewing alarms history

For more information on this page, refer to the Cristal Controls Jasper User Manual section “Viewing alarm history.”

To review alarms history, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Loggers** menu and choose **History** under the **Alarms** heading.

Alarm history appears.

Refresh		Filters		Archive		Clear alarms	
Alarms							
☐	Creation	Archive	Type	Status	Origin	Information	
☐	2016-03-29 11:47:54		Hardware	Normal	LS-Slave	Card variables are online.	
☐	2016-03-29 11:47:52		Hardware	Normal	Entrepot	Card variables are online.	
☐	2016-03-29 11:47:50		Hardware	Alarm	LS-Slave	Card variables are offline.	
☐	2016-03-29 11:47:50		Hardware	Alarm	Entrepot	Card variables are offline.	
☐	2016-03-29 11:47:50		Hardware	Alarm	AC Montage	Card variables are offline.	
☐	2016-03-29 11:47:50		Hardware	Alarm	AC Avant	Card variables are offline.	
☐	2016-						
Alarms count: 29							
Page 1 of 1		Number of alarms per page 50					

18.3 Setting web browser notifications

Jasper can alert users when a new alarm is generated.

To receive Jasper alarm notifications:

- Jasper must be open in at least one browser tab.
- the user must grant Jasper permission to display system notifications. If it doesn't have permission, Jasper asks the user for it.

The user can turn off notifications in browsers that support notifications, including:

- Mozilla Firefox 22 or later
- Google Chrome 22 or later
- Safari 6 or later
- Microsoft Edge 14.342 or later

Note: Internet Explorer 11 does not support notifications.

18.4 Reviewing the services trace log

Jasper records all system activity pertaining to Jasper's automated actions, user activity and system activity. These logs records activities that can affect the system as a whole (e.g. changes to a configuration file or a variable).

Jasper dedicates a set amount of storage to these logs. If the amount of storage required exceeds this limit, Jasper begins to delete older log entries to make room for newer ones.

To review the services trace activity, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Status** menu and choose **Services Trace Log** under the **System** heading.

The Services Trace Log page appears. Log entries are divided among three tabs:

- Jasper tab below
- Users tab
- System tab

18.4.1 Jasper tab

This tab lists traces of Jasper application activity.

Jasper ? Users ? System ?			
Time	Source	Type	Log
Mar 13 16:57:54	Jasper[30594]	warn	TimeOut for address of device_id = 68354
Mar 13 16:57:48	Jasper[30594]	warn	TimeOut for address of device_id = 5
Mar 13 16:57:42	Jasper[30594]	warn	TimeOut for address of device_id = 4
Mar 13 16:57:36	Jasper[30594]	warn	TimeOut for address of device_id = 3
Mar 13 16:57:30	Jasper[30594]	warn	TimeOut for address of device_id = 2
Mar 13 16:57:24	Jasper[30594]	warn	TimeOut for address of device_id = 1

You may want to check this log upon startup, since it shows any configuration or communication problems. One common type of issue this tab can flag is if Jasper finds errors in specific configuration files.

18.4.2 Users tab

This tab lists activities performed by Jasper users.

Jasper ?

Users ?

System ?

Time	Source	Type	Log
Mar 13 16:59:50	JasperWeb[25080]	notice	User root modified the settings.
Mar 13 16:59:50	JasperWeb[25080]	notice	User root modified the configuration file websystem.
Mar 13 16:59:28	JasperDS[25080]	notice	User root has wrote 1 in the variable 2025 AC Avant / HVAC MODE.
Mar 13 16:59:28	JasperDS[25080]	notice	User root has wrote 25.5 in the variable 2025 AC Avant / SETPOINT COOL.
Mar 13 16:59:28	JasperDS[25080]	notice	User root has wrote 24.5 in the variable 2025 AC Avant / SETPOINT HEAT.

18.4.3 System tab

This tab lists all connections to Jasper made using FTP and SSH.

Jasper ? Users ? System ?

Time	Source	Type	Log
Mar 13 16:01:44	pure-ftpd	info	(root@192.168.2.101) [INFO] Logout.
Mar 13 16:01:42	pure-ftpd	info	(?@192.168.2.101) [INFO] root is now logged in
Mar 13 16:01:42	pure-ftpd	info	(?@192.168.2.101) [INFO] New connection from 192.168.2.101

18.5 Reviewing currently active WebSocket sessions

This page shows detail for all currently active WebSocket connections.

To review currently active WebSocket connections, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Status** menu and choose **WebSocket Session List** under the **System** heading.

The WebSocket Session List page appears.

18.6 Reviewing software, system and network status

Any issues Jasper may present could have to do with the overall system on which it operates. You can view the status of three key parts of the system to help you find issues.

To view Jasper system status, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Status** menu and choose **Status** under the **System** heading.

The System Status page appears. It presents one status dialog for each part of the system:

- Software status below
- System status below
- Network status

18.6.1 Software status

The Software dialog shows:

- versions of software in use in the Jasper environment
- the last time Jasper's configuration file was changed.

Software	
Jasper Version	Jasper Building Control Server 2.1.3 Compiled on May 31 2017 10:59:51. (2.1.3R1)
SQLManager Version	SQLManager Version: 1.80 Compiled on May 31 2017 11:00:10
Last configuration time	2018-04-10 14:09:32
Clear web pages cache	

You can “Clear web pages cache” to rid the system of outdated information that Jasper may need to refresh. Jasper rebuilds cache files while it's in use - you don't need to restart Jasper for this to take effect.

18.6.2 System status

The System dialog shows:

- current system time
- accumulated uptime since last reboot

- resources usage
- effective load: “0” means no load. “1” means 100% load. You may sometimes see values greater than 1. This means the processor may be slightly delayed in executing tasks.
- information about the CPU
- the version of the kernel in use

System	
System Time	2014-01-29 11:08:32
Uptime	1 day(s),59 mins 7 secs
Memory	249.84 MB (Used = 59.95 MB, Free = 189.88 MB)
Hard Drive root (/dev/hda2)	55.53 MB (Used = 29.64 MB (56%), Free = 23.06 MB)
Hard Drive (/dev/hda3)	902.04 MB (Used = 17.39 MB (2%), Free = 838.82 MB)
Load	0.08 (last min.), 0.02 (last 5 mins.), 0.01 (last 10 mins.)
CPU Model	DM&P Vortex86 SX SoC
CPU Speed	1000.097 MHz
Kernel version	2.6.32.10 (Backfire)
File System Reboot Safe shutdown	

18.6.2.1 File System

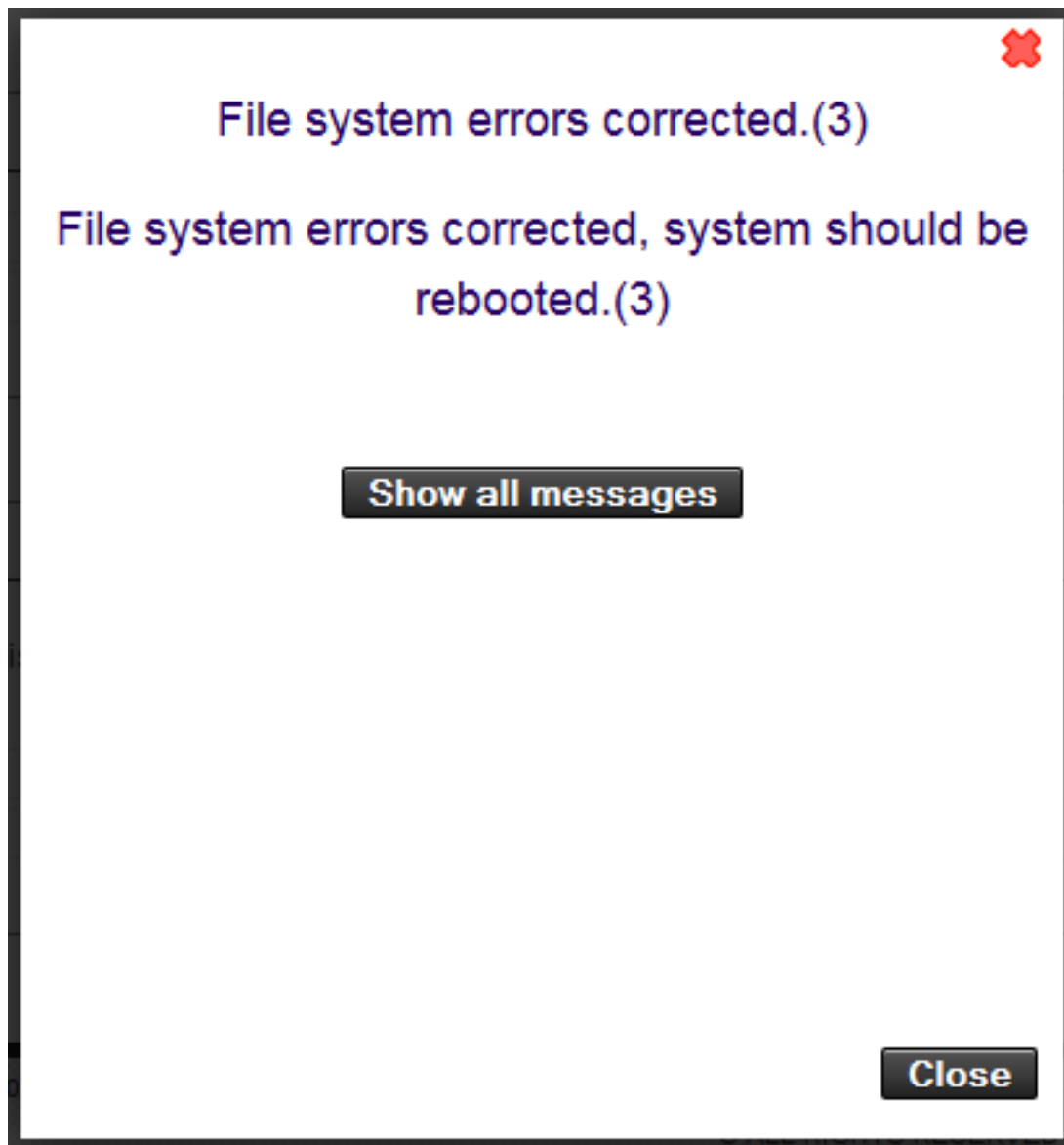
Click this button to view disk partitions and the last time they were checked. You can also reach this page by opening the **Status** menu and choosing **File System** under the **System** heading.

File System

/dev/root	
Directory	/
Hard Drive	114.03 MB (Used = 82.08 MB (74%), Free = 29.55 MB)
Last checked	Mon Jul 3 14:46:49 2017
Check file system ?	

/dev/sda3	
To check file system for this partition, Jasper must be <u>stopped</u> .	
Directory	/home/ftp
Hard Drive	1728.84 MB (Used = 12.39 MB (1%), Free = 1611.01 MB)
Last checked	Tue Jul 25 07:19:05 2017
Check file system ?	

You can start a check of the file system (and any needed repairs) after you stop Jasper by clicking the **Check file system** button. You may have to restart the system if errors are found. For instructions on how to reboot Jasper, refer to Starting and stopping Jasper.



18.6.2.2 Reboot

Click this button to shut down and restart Jasper.

18.6.2.3 Safe Shutdown

Shut down Jasper while preserving all data. Use this option if you need to turn off Jasper. Shutting down Jasper in other ways may cause data loss.

Jasper starts on its own after you start the server. You don't need to start the software as a separate step.

18.6.3 Network status

The Network dialog shows:

- information about the network interface and connection
- network usage statistics

Network	
Interface	
Interface	br-lan
MAC address	00:0C:29:89:69:89
IPv4 address	192.168.2.31
Netmask	255.255.255.0
Default gateway	
Statistics	
Multicast	1182273
Rx Bytes	265698999
Rx Packets	1925703
Tx Bytes	378525184
Tx Packets	879974
Restart	

Once you change network configuration information shown here, you can have the new parameters take effect without rebooting Jasper by clicking the **Restart** button here.

Note: You may lose contact with Jasper if the IP address changes automatically or you change it manually. You will need to retrieve the IP address before you can reconnect to Jasper.

18.7 Backing up and restoring configuration files

You can create backups of system configuration files that you can restore to the live system if you experience issues related to changes made to those files.

To reach the interface that enables configuration file backup and restoration, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **System** menu and choose **Backup / Restore**.

The Backup / Restore page appears.

18.7.1 Backing up configuration files

To back up any of the options shown, click the corresponding **Download** button.

Backup	
Let you backup the configuration of your system and user specific files.	
Jasper Configuration	Download
System Configuration	Download
Custom web site	Download
Data	Download

18.7.1.1 Jasper Configuration

The files backed up include all XML configuration files located in the */etc/Jasper* folder.

18.7.1.2 System Configuration

The files backed up include Linux system configuration files, most of which are located in the */etc/config* folder.

18.7.1.3 Custom web site

The files backed up include all web interface files created for a specific client installation and located in the */home/www/user* folder.

18.7.1.4 Data

The alarms and loggers databases. This file cannot be restored.

18.7.2 Restoring configuration files

Jasper creates its backups in ZIP format. Every backup file is ready to be used to restore Jasper using the simple process below.

To restore files, click the Browse button to choose the ZIP file that contains your backup, then click the Upload File button.

Restore

Let you restore the configuration of your system.

Browse

Upload File

Jasper unpacks the backup ZIP file and places each file the ZIP contains in the right places. Once you successfully complete the upload, Jasper may prompt you to reboot the system so that it uses the contents of the backup files.

Backup file uploads are limited to 20 MB so the web server does not time out during upload. Larger backups must be decompressed and transmitted by FTP.

18.8 Reviewing the address cache

The BACnet address cache displays information about the cards Jasper communicates with and the transaction state machine. Note: the *transaction state machine* is a sequence of operations that Jasper follows to find devices on the network. It checks for confirmation of messages that Jasper sends. It also retries messages that are not acknowledged as received.

To reach the BACnet Address Cache, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Status** menu and choose **BACnet Address Cache** under the **BACnet** heading.

The BACnet Address Cache page appears.

18.8.1 Cards table

This screen shows cards connected to Jasper and information about their network connection.

BACnet Address Cache

10 Card(s)							
Device ID ?	Name ?	Net ?	MAC Local ?	MAC Remote ?	Max APDU ?	TTL (seconds) ?	Flags ?
1000004	LS-Pulse Cristal	2025	192.168.2.19:47820	4	232	86131	1
1000105	2025 AC RD	2025	192.168.2.19:47820	11	70	86397	1
1000115	2025 AC Avant	2025	192.168.2.19:47820	15	70	86365	1

18.8.1.1 Device ID

Card device ID.

18.8.1.2 Device Name

Original BACnet card name.

18.8.1.3 Name

Human readable name as displayed in Jasper's configuration.

18.8.1.4 MAC

Controller MAC address.

18.8.1.5 Max APDU

Maximum Application Protocol Data Unit controller value.

18.8.1.6 Net

BACnet Network number.

18.8.1.7 TTL

(time to live, also known as "hop limit") TTL prevents a data packet from circulating indefinitely. It improves caching performance.

This value is set to 3600 seconds when communication is initiated with a unit. If this value reaches 0, it is because there was no communication with this device for at least an hour and the entry disappears from the list.

18.8.2 Transaction state machine (TSM) table

This table shows how many communications the system is currently engaged in relative to its total capacity for communication.

Note: the *transaction state machine* checks for confirmation of messages that Jasper sends. It also retries messages that are not acknowledged as received.

In the example below, there are 255 TSMs available (Total TSM). Since there are 255 TSMs available (Idle TSM), the system is not engaged in any communications. The lower the Idle TSM number drops, the more communications the system is currently managing.

TSM	
Idle TSM	255
Total TSM	255

18.9 Browsing cards

You can review cards connected to your Jasper system and, in some instances, change values for their variables. To do so, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Data** menu and choose **Browse** under the **Cards** heading.

The Browse Card page appears.

Cards list				
Open				
	Name	Model	Device Id	Address
☐	AC Avant	CCTHV407	1000115	2025 AC Avant
☐	AC Montage	CCTHV407	1000121	2025 AC Montage
☐	AC Service	CCTHV407	1000105	2025 AC RD
☐	BASRT-Select	BASRT-B	1000403	BASRT-SElect
☐	Bureau Pierre Chaput	CCTHV407	1000103	2025 Bureau Pierre Chaput
☐	Bureau Porte Avant	CCTHV407	1000102	2025 Bureau Porte Avant

18.9.1 (search field)

Type the name of a variable you're looking for. Jasper filters this list so only cards that contain your search text appear.

18.9.2 Open button

To view variable values for a card or cards, select their check boxes, then click the Open button. The selected cards appear in a new page.

18.9.3 (check box)

Check the cards you want to open in a separate page, then click the Open button. If you choose multiple cards, they must each be the same model (or compatible models) for Jasper to show them together in a list. Only the CCTHV407 thermostat page works this way.

18.9.4 Name

The name of the CCTHV407 thermostat card. To view a card's page, click the name of the card.

18.9.5 Model

The model of the card.

18.9.6 Device ID

The unique ID of the card on the BACnet network.

18.9.7 Address

The unique ID of a card within Jasper. Unlike the name and device ID, the address cannot be changed.

18.9.8 CCLP-BACnet lighting panels

You can view a CCLP-BACnet panel using the Browse Cards page. This page displays relay states. On this page, you can also:

- make changes to relay states (green = off, red = on) by clicking the appropriate relay.
- configure the relay by clicking the relay name to open its Variables Configuration page. For more information, refer to Managing Variables.

To access this page, follow the steps in Browsing cards, then click the name of the card. Its configuration page appears.

CCLP-1664_LO			
Reading panel ...			
Card1	Card2	Card3	Card4
RELAY COMMAND 01 #1  	RELAY COMMAND 17 #17  	RELAY COMMAND 33 #33  	RELAY COMMAND 49 #49  
RELAY COMMAND 02 #2  	RELAY COMMAND 18 #18  	RELAY COMMAND 34 #34  	RELAY COMMAND 50 #50  
RELAY COMMAND 03 #3  	RELAY COMMAND 19 #19  	RELAY COMMAND 35 #35  	RELAY COMMAND 51 #51  
RELAY COMMAND 04 #4  	RELAY COMMAND 20 #20  	RELAY COMMAND 36 #36  	RELAY COMMAND 52 #52  
RELAY COMMAND 05 #5  	RELAY COMMAND 21 #21  	RELAY COMMAND 37 #37  	RELAY COMMAND 53 #53  
RELAY COMMAND 06 #6  	RELAY COMMAND 22 #22  	RELAY COMMAND 38 #38  	RELAY COMMAND 54 #54  
RELAY COMMAND 07 #7  	RELAY COMMAND 23 #23  	RELAY COMMAND 39 #39  	RELAY COMMAND 55 #55  
RELAY COMMAND 08 #8  	RELAY COMMAND 24 #24  	RELAY COMMAND 40 #40  	RELAY COMMAND 56 #56  
RELAY COMMAND 09 #9  	RELAY COMMAND 25 #25  	RELAY COMMAND 41 #41  	RELAY COMMAND 57 #57  
RELAY COMMAND 10 #10  	RELAY COMMAND 26 #26  	RELAY COMMAND 42 #42  	RELAY COMMAND 58 #58  
RELAY COMMAND 11 #11  	RELAY COMMAND 27 #27  	RELAY COMMAND 43 #43  	RELAY COMMAND 59 #59  
RELAY COMMAND 12 #12  	RELAY COMMAND 28 #28  	RELAY COMMAND 44 #44  	RELAY COMMAND 60 #60  
RELAY COMMAND 13 #13  	RELAY COMMAND 29 #29  	RELAY COMMAND 45 #45  	RELAY COMMAND 61 #61  
RELAY COMMAND 14 #14  	RELAY COMMAND 30 #30  	RELAY COMMAND 46 #46  	RELAY COMMAND 62 #62  
RELAY COMMAND 15 #15  	RELAY COMMAND 31 #31  	RELAY COMMAND 47 #47  	RELAY COMMAND 63 #63  
RELAY COMMAND 16 #16  	RELAY COMMAND 32 #32  	RELAY COMMAND 48 #48  	RELAY COMMAND 64 #64  

While new commands are sent instantly, large volumes of dataserver polling can delay the refresh of this panel.

18.10 Viewing card statistics

This page displays network response times between Jasper and device cards. It also shows any timed-out communications.

To view card statistics, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Status** menu and choose **Cards Statistics** under the **Data** heading.

The Cards Statistics page appears.

Cards Statistics

BACnet

Live update 

Clear Statistics

Name	Model	Last Response Time (ms)	Timeout Counter
LSSLAVE-1	LS-Slave	22	0
2025 AC RD	CCTHV407	116	44
2025 AC Avant	CCTHV407	95	45
CCLD4002 PChaput	CCLD4002	39	23
CC-Clock Conference	CC-CLOCK-BIP		0
L-DALI Conference	LDALI-ME204	2	45
L-IP Conference	LIP-ME201	1	17
Afficheur LS-Pulse	LS-PULSE	43	41
CCLP-1664	CCLP-1664	2	42
LS-Pulse Cristal	LS-PULSE	119	2
CC-WiXBee Conference	CC-WiDOO		0

Notes:

- If you use Jasper on more than one network, cards on this page are separated by network type (e.g. BACnet and XBeeDOO).
- The Clear Statistics button resets counters for all cards.
- When the Live update checkbox is checked, the most recent statistics automatically appear on the page.

18.10.1 *Name*

Name of the card.

18.10.2 *Model*

Model of the card.

18.10.3 *Last Response Time (ms):*

Response time in milliseconds of the last communication with the card.

18.10.4 *Timeout Counter*

Number of timed-out communications.

18.11 Browsing, reading and writing variables

This window lists variables configured in Jasper. You can also use it to change variable values.

To work with variables, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Data** menu and choose **Browse** under the **Variables** heading.

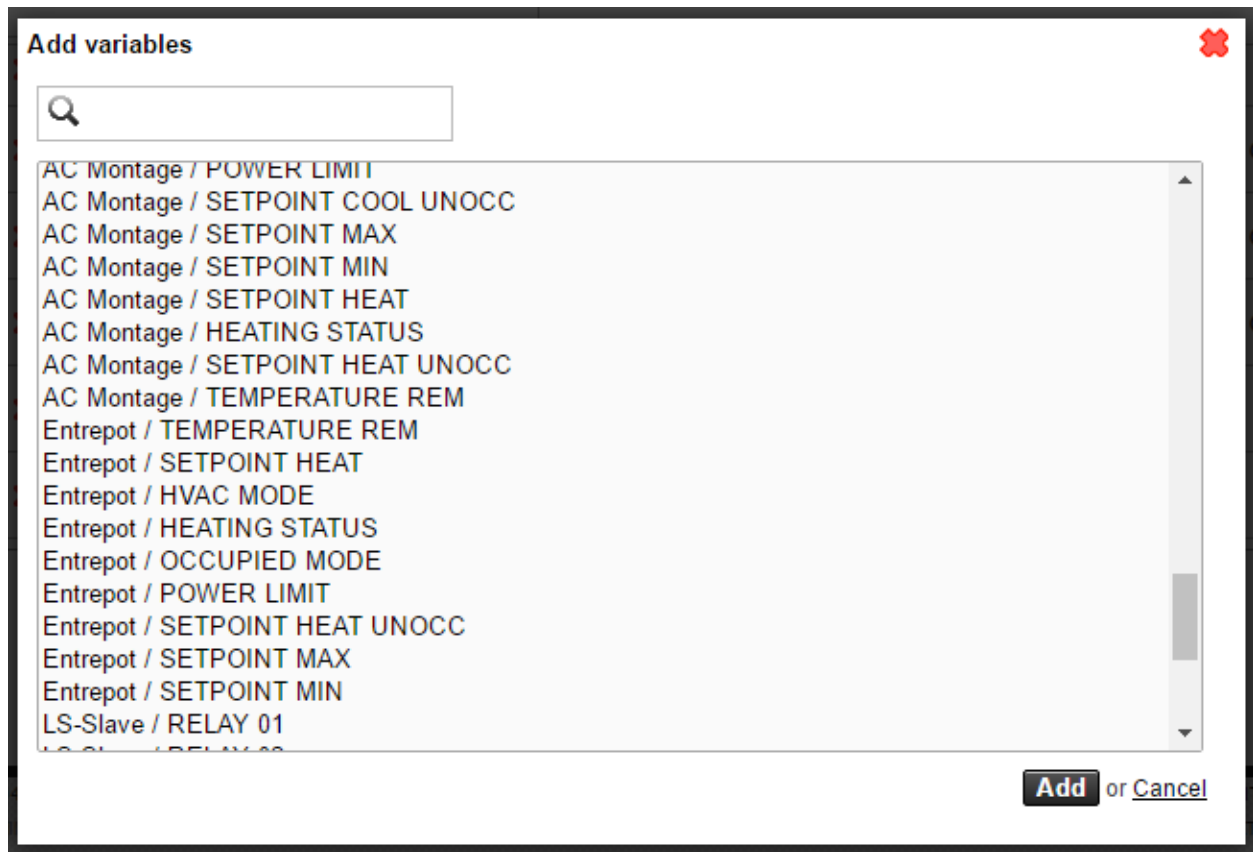
The Variables page appears.

Variables

Add	Off On		Set
☐ X Name	Value	Time	
☐ X AC Service / SETPOINT MAX	23.000000	2016-04-05 12:02:25	⊙
☐ X Entrepot / TEMPERATURE REM	21.799999	2016-04-05 12:02:45	⊙
☐ X Entrepot / SETPOINT HEAT	21.500000	2016-04-05 12:02:45	⊙
☐ X Groupe Horaire Thermostats	1	2016-04-05 04:10:00	
☐ X Groupe HVAC	1.000000	2016-04-05 06:00:00	

18.11.1 Add button

Click this button to add variable values to the list. An “Add variables” dialog appears.



Select the variables you want to add and click the Add button. Those variables appear in the Variables list.

Note: you can add a group of variables by clicking the first variable in a range, holding the Shift button on your keyboard, and clicking the last variable in the range.

Note: you can also add a group of non-contiguous variables by clicking one variable, then holding the Control key on your keyboard as you click the other variables you want to add.

18.11.2 Off button

Set a variable's value to “off” (0). Before you use this button, check the check box next to the variables you want to turn off. This button only affects analog and binary variables.

18.11.3 *On button*

Set a variable's value to "on" (binary = 0, analog = 100). Before you use this button, check the check box next to the variables you want to turn on. This button only affects analog and binary variables.

18.11.4 *Set button and text field*

Set a variable's value to the value you type in the text field. Before you use this button, check the check box next to the variables you want to turn set. If you enter a non-zero value, binary variables take on the value "1."

18.11.5 *Search field*

Use this field to filter the list of variables according to the name of the variable you're looking for.

18.11.6 *(check box)*

Check the box for a variable if you want to change its value using the Set, Off or On buttons.

18.11.7 *(red "x")*

Click this x to remove the variable from this list. Clicking the X does not delete the variable.

18.11.8 *Name*

Name of the variable.

18.11.9 *Value*

Current value of the variable.

18.11.10 *Time*

The last date and time when the value was modified.

18.11.11 *(icon column)*

A magnifying glass icon flashes each time Jasper refreshes the value of the variable. An exclamation mark within a yellow triangle indicates the variable is not presently available.

18.12 Capturing network traffic

You can record the network traffic that reaches Jasper to a capture file, then download it and open it in a network analysis tool such as Wireshark. This page is available when the network capture package is installed.

To capture network traffic, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **System** menu and choose **Network Capture**. The System Network Capture page appears.

System Network Capture

The network capture is running.

Stop Capture

Enable Port ☐

Capture Port

File Size (Bytes): 295884 (2.96%)

18.12.1 Enable Port

Select this check box to limit the capture to a single port. When it is unchecked, Jasper captures traffic on all ports.

18.12.2 Capture Port

The port to capture when **Enable Port** is selected.

18.12.3 File Size Limit (Bytes)

The maximum size of the capture file. Jasper stops the capture when the file reaches this limit. This value is set on the system and cannot be changed from this page.

18.12.4 Start Capture

Begin recording packets to the capture file. While a capture runs, Jasper shows a message that the capture is running and keeps updating the File Size.

18.12.5 Stop Capture

Stop recording.

18.12.6 File Size (Bytes)

The current size of the capture file, with the percentage of the size limit it has reached.

18.12.7 Download Capture

Download the capture file to your computer. This button appears when a capture file exists and no capture is running.

18.12.8 Delete Capture

Delete the capture file from the system. This button appears when a capture file exists and no capture is running.

18.13 Performing wireless network diagnostics and troubleshooting

18.13.1 Viewing wireless Information

(Only present on CC-WiXBee model.) This page shows configuration information and communication counters for the wireless module.

To view this information, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Status** menu and choose **Status** under the **Wireless** heading.

The Wireless information page appears.

Wireless Informations	
Device Type Identifier	XBee DigiMesh 2.4 (2.4GHz)
Library Version	3.0.12-2
Firmware Version	8073
Hardware Version	184C
Serial Number / MAC	0013A200410311B5
Encryption	Disabled
Network Hops	7
Network ID	7FFF
Channel	13
Reception Count	32694
Invalid Reception Count	111
Transmission Count	499769
Transmission Error Count	0
<button>Reset wireless module</button>	

18.13.1.1 Device Type Identifier

Wireless module type.

18.13.1.2 Library Version

Version of the wireless communication library.

18.13.1.3 Firmware Version

Software version of the wireless module.

18.13.1.4 Hardware Version

Hardware version of the wireless module.

18.13.1.5 Serial Number / MAC

MAC address of the wireless module.

18.13.1.6 Encryption

Indicates whether communications are encrypted.

18.13.1.7 Network Hops

Allowed maximum number of network hops for transmitted messages.

18.13.1.8 Network ID

Network ID (PAN) used to group all radio modules for a project.

18.13.1.9 Channel

Wireless channel or radio frequency.

18.13.1.10 Reception Count

Number of received messages.

18.13.1.11 Invalid Reception Count

Number of invalid messages received.

18.13.1.12 Transmission Count

Total number of transmitted messages.

18.13.1.13 Transmission Error Count

Number of times the radios library could not transmit a message.

18.13.1.14 Reset wireless module

Stop and start the wireless module.

18.13.2 *Using the wireless spectrum analyzer*

(Only present on CC-WiXBee model.) The page analyzes energy usage across all frequencies. Note: This process can temporarily disrupt wireless communications.

To use the wireless spectrum analyzer, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Status** menu and choose **Spectrum Analyzer** under the **Wireless** heading.

The Wireless Spectrum Analyzer page appears.

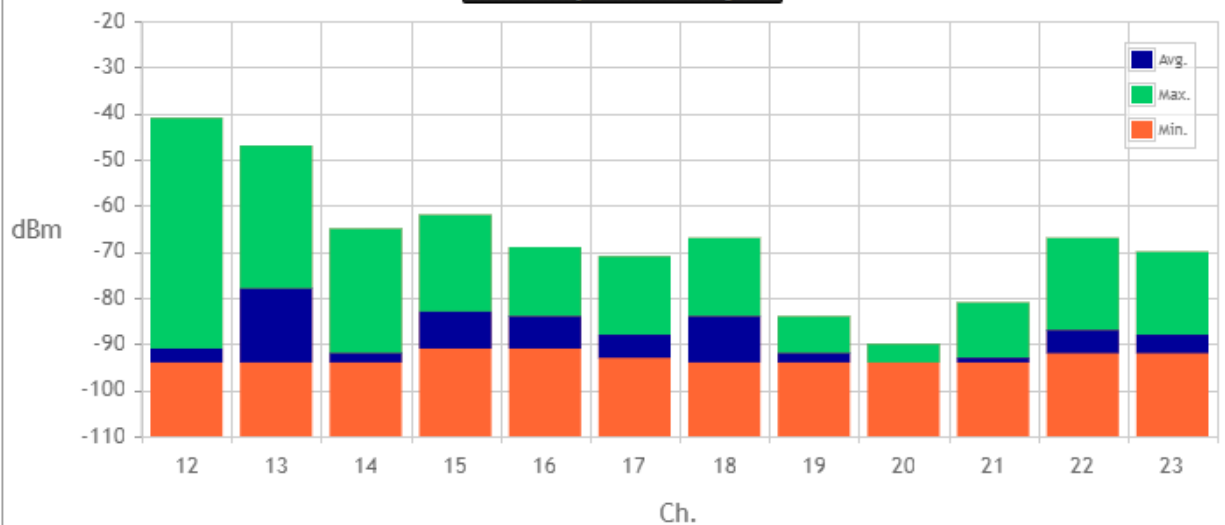
Wireless Spectrum Analyzer

The energy analysis of all frequencies can disrupt normal reception of wireless communication.

Number of readings ?

Continuous update ☐ ?

▶ Start Spectrum Analysis



Samples Reads: 10 / 10

Image

Ch.	Avg. (dBm)	Max. (dBm)	Min. (dBm)	Last (dBm)
12	-91	-41	-95	-95
13	-78	-47	-95	-66
14	-92	-65	-95	-94
15	-83	-62	-92	-92
16	-84	-69	-92	-69
17	-88	-71	-94	-71
18	-84	-67	-95	-68
19	-92	-84	-95	-89
20	-94	-90	-95	-95
21	-93	-81	-95	-93
22	-87	-67	-93	-84
23	-88	-70	-93	-91

18.13.2.1 Number of readings

This is the finite number of readings that the XBee radio uses to produce the test results shown in the graph and table. The default value is 10 readings. This option is not available if you choose “Loop infinitely” (below).

18.13.2.2 Continuous update

Choose this option to have the XBee radio perform energy analysis continuously without being limited by the Number of readings (above). To use Number of readings, deselect Loop infinitely.

18.13.2.3 Start Spectrum Analysis

Start the spectrum analysis.

18.13.2.4 Ch

Wireless channel number or frequency.

18.13.2.5 Avg. (dBm)

Average signal power (dBm).

18.13.2.6 Max. (dBm)

Maximum signal power (dBm) for the number of samples.

18.13.2.7 Min. (dBm)

Minimum signal power (dBm) for the number of samples.

18.13.2.8 Last (dBm)

Latest signal power reading (dBm).

18.13.3 *Monitoring wireless packets*

(Only present on CC-WiXBee model.) You can use the wireless packets monitor to follow packets received and sent by the wireless module, travelling between the module and devices on the wireless XBee network.

To use the wireless packets monitor, follow these steps.

1. Sign in to Jasper as an administrator.
2. Open the **Status** menu and choose **Packets Monitor** under the **Wireless** heading.

The Wireless Packets Monitor page appears.

Packets: 10 / Invalid Packets: 0 Show Packets Data ☐ Show Only Invalid Packets ☐ Number of packets 10 Address Filter						
Time	Source	Destination	Label	Command	Type	Arguments
14:22:19	SN1	SN71236 (D00 / Store)	8	get_metering (255)	tx	07FF
14:22:19	SN71236 (D00 / Store)	SN1	13	get_metering (255)	rx	07FF8A3B0251081962001B38F50007E4390007E439000005494059B825D9001BC74B
14:22:25	SN1	SN71237 (D00 / Kitchen)	9	get_metering (255)	tx	07FF
14:22:28	SN1	SN71237 (D00 / Kitchen)	10	get_metering (255)	tx	07FF
14:22:31	SN1	SN71237 (D00 / Kitchen)	11	get_metering (255)	tx	07FF
14:22:31	SN1	SN71241 (D00 / Conference)	12	get_metering (255)	tx	07FF
14:22:31	SN71241 (D00 / Conference)	SN1	8	get_metering (255)	rx	07FF8A0C02E209415E00222A3C0007E1730007E1730000005514059B825E50024E7D6
14:22:34	SN1	SN71237 (D00 / Kitchen)	13	get_metering (255)	tx	07FF
14:22:37	SN1	SN71242 (D00 / Corridor)	14	get_metering (255)	tx	07FF
14:22:37	SN71242 (D00 / Corridor)	SN1	10	get_metering (255)	rx	07FF8ADB062D159B630057EBF20007EB9D0007EB9D0000005634059B825EB0059DDC5

18.13.3.1

Clear all packets.

18.13.3.2

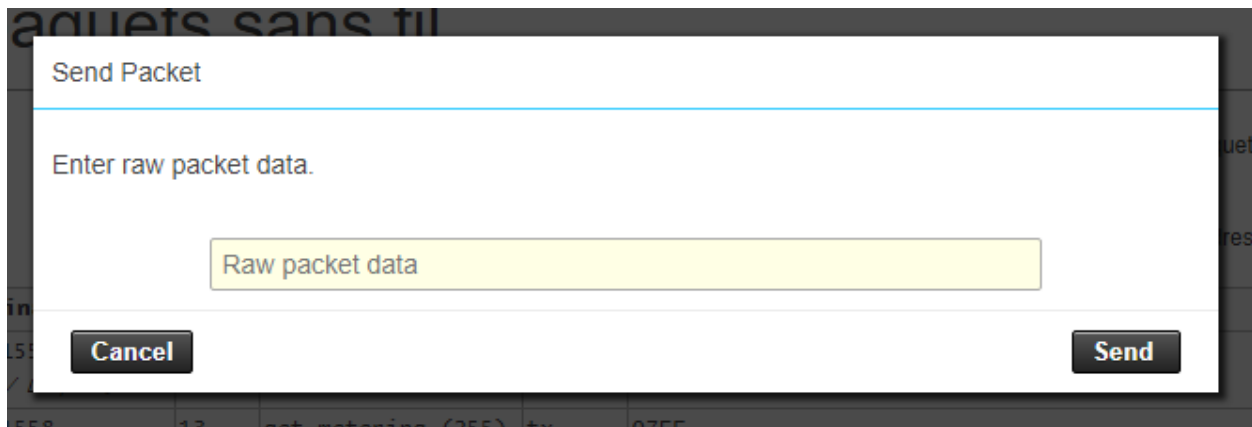
Save the packet list on your computer as a Comma-separated values (CSV) file.

18.13.3.3 /

Pause or restart packets monitor.

18.13.3.4

Allows direct entry of a packet to send it on the wireless network. Advanced users can test the wireless network using direct entry of packets.



18.13.3.5 Show Packets Data

Displays raw packet data.

18.13.3.6 Show Only Invalid Packets

Displays only the invalid packets. Invalid packets appear in red.

18.13.3.7 Number of packets

Limits the number of packets.

18.13.3.8 Address Filter

Displays only packets with this source or destination address.

18.14 Updating the Jasper system

There are two ways to update the Jasper software. You can upload an update file from the web interface, or you can use the Jasper Updater program on a Windows computer. Both methods install the update packages provided by Cristal Controls and then restart the Jasper software.

18.14.1 Web Update

You can update the Jasper software from the web interface by uploading an update file that Cristal Controls provides. Jasper stops the software, installs the update, then restarts the software.

Updates must be performed by a qualified technician. During the update, Jasper stops and the page may become unresponsive. Do not power off the system while an update is running.

To update the Jasper system, follow these steps.

1. Sign in to Jasper as an administrator.

2. Open the **System** menu and choose **System Update**. The System Update page appears.
3. Under **Upload Update File**, click **Select update file (.zip)** and choose the update file provided by Cristal Controls. The file must be a .zip archive.
4. Click **Upload and Install**.

During the upload, a progress bar shows the percentage transferred. Jasper then installs the update and, when it is done, restarts. The page reloads automatically once the system is back online.

18.14.2 *Jasper Updater*

You can update a Jasper device from a Windows computer using the Jasper Updater program provided by Cristal Controls. The program connects to the device over the network, installs the update packages, then restarts the Jasper software.

Updates must be performed by a qualified technician. The computer running the Jasper Updater must be able to reach the Jasper device on the network.

To update a Jasper device with the Jasper Updater, follow these steps.

1. On the Windows computer, run the Jasper Updater program provided by Cristal Controls.
2. In the **IP address** field, type the IP address of the Jasper device.
3. Click **Next** to start the update.

The program shows its progress while it installs the packages on the device. When it is done, the Jasper device restarts with the updated software.

Note: to install an optional extension, select **Extension packages**, then click **Install** for **Network Packet Capture** or **CC-XBee**. You can also use **Uninstall** to remove an extension.

19 Tailscale Remote Access

Tailscale gives secure remote access to the Jasper web interface over the internet, without any port forwarding or firewall changes at the site. When enabled, Jasper joins an encrypted private network (a *tailnet*) and receives a private Tailscale IP address in the 100.x.y.z range. Any computer or mobile device signed in to the same tailnet can then reach the Jasper web interface at that address.

19.1 Prerequisites

- Jasper has internet access.
- A Tailscale auth key from the tailnet admin console. A reusable, ephemeral key that allows the tag:jasper tag is recommended.

19.2 Enroll Jasper

Tailscale Remote Access

Tailscale Remote Access		
Enable	☒	?
Auth Key		?
Device Tag	tag:jasper	?
Subnet Router	☐	?
Tailnet Hostname	jasper-building-jasper-cf8a9b	?
Advanced Options	☐	?
Save		

Tailscale Remote Access configuration form

1. Sign in to the Jasper web interface as an administrator.
2. Open **System > Network**, then click **Tailscale Remote Access**.
3. Check **Enable** and paste the **Auth Key**.
4. Leave the **Device Tag** at its default (tag:jasper) unless your tailnet uses a different tag. The read-only **Tailnet Hostname** field shows the name Jasper will use on the tailnet.
5. Click **Save**.

Within a few seconds the **Status** panel shows the assigned **Tailscale IP**, and Jasper appears in the Tailscale admin console under its hostname. From any device signed in to the same tailnet, open a web browser and go to that IP, for example <http://100.x.y.z/>.

19.3 Status and actions

Tailscale Status

State Connected

Tailscale IP 100.114.45.123

Tailnet Hostname jasper-building-jasper-cf8a9b

Devices on the tailnet

Name	Tailscale IP	OS	Connection	State	Traffic (rx / tx)
building-jasper <i>(This device)</i>	100.114.45.123	linux	-	Online	0 B / 0 B
hvac-pc	100.68.112.112	windows	Relay (tor)	Online	0 B / 0 B
iphone-15-pro	100.75.90.14	iOS	Relay (tor)	Offline	0 B / 0 B
user-pc	100.122.96.3	windows	Relay (tor)	Offline	0 B / 0 B

- Some peers are advertising routes but `--accept-routes` is false

► Raw status output

Refresh

Disconnect

Remove Device

Tailscale status panel

The **Status** panel shows the current **State** (Connected, Enabled, not connected, Disabled, or Logged out - auth key required), the assigned **Tailscale IP**, the **Tailnet Hostname**, the devices on the tailnet, and any health warnings. Click **Refresh** to reload it.

The action buttons appear according to the current state:

- **Disconnect** drops the connection but keeps the saved device identity.
- **Connect** brings the tunnel back up after a Disconnect, reusing the saved identity. No auth key is required.
- **Remove Device** signs Jasper out of the tailnet and stops the service. The state then shows Logged out - auth key required and **Connect** is hidden: re-enrolling requires a new **Auth Key** and **Save**. Use it when decommissioning Jasper or moving it to another tailnet, and also remove the node from the Tailscale admin console.

- Unchecking **Enable** and saving turns the connection off. To turn it back on, check **Enable** and save with a blank auth key: Jasper reuses its saved identity.

If Jasper does not come online:

- Confirm Jasper has working internet access.
- Confirm the auth key is still valid and has not expired or been revoked.
- Confirm tag:jasper (or the tag you entered) is defined in the tailnet ACL.

19.4 Subnet routing (optional, advanced)

Caution

Subnet routing is **not enabled by default**. Enable it only when you need to reach other hosts on the local network at the site through Jasper. For plain remote access to the Jasper web interface, leave it off.

When enabled, Jasper advertises its local network(s) to the tailnet so other Tailscale devices can reach hosts behind it.

To enable it:

1. On the **System > Network** page, click **Tailscale Remote Access**, then check **Subnet Router**.
2. Review the **Advertised Subnets** field. It is pre-filled with the detected LAN (for example 192.168.1.0/24); edit it or add more subnets separated by commas.
3. Click **Save**.

Advertised routes must also be **approved** in the Tailscale admin console before other devices can use them.

19.4.1 BACnet access

Subnet routing forwards unicast traffic only: broadcasts do not cross the tailnet. BACnet/IP discovery (Who-Is / I-Am) relies on local broadcasts, so a remote BACnet client can reach devices on the advertised subnet by unicast, but a plain discovery finds nothing.

To discover and browse BACnet devices remotely, register the remote client as a foreign device with a BBMD (BACnet Broadcast Management Device) on the BACnet/IP network at the site. The BBMD then relays broadcasts to the remote client as unicast, which passes through the subnet route.

19.5 Login server (optional, advanced)

Caution

Leave this off unless the site runs its own control server. Most deployments use the official Tailscale coordination server and do not need it.

By default Jasper joins the official Tailscale coordination server. Under **Advanced Options** the **Login Server** URL can point Jasper at a self-hosted control server (such as Headscale) instead.

- Enter the full URL, for example `https://headscale.example.com`. Both `http` and `https` are accepted.
- Leave the field empty to use the official Tailscale server.
- The **Auth Key** must be issued by that same control server.
- Changing the login server logs Jasper out and re-enrolls it against the new server, so provide a valid auth key when changing it.

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