SYSX-65 : CBX CBV Continuous Restart issue

Issue Date: May 17th 2019
Product: CBX-8R8, CBX-8R8-H, CBV-2U4-3T, CBV-2U4-3T-N
Product Version: 7.9.1

Summary

NOTE: This applies **only** to **CBX** and **CBV** controllers running firmware version `7.9.0` and is briefly described in Cylon Bulletin 0428.

Under certain circumstances, a **CBX** or **CBV** controller running firmware version `7.9.0` can be caused to continuously restart, i.e. run for 30+ seconds then restart. This bulletin discusses how the issue is triggered, how to update your controllers, and what to do if a controller is continuously restarting.

Cylon recommends that all sites with **CBX** and **CBV** controllers with firmware version `7.9.0` currently installed be upgraded to version `7.9.1` as soon as possible.

This issue should be considered **low probability** but can have a **significant impact** if it occurs.

Background

In **CBX** or **CBV** controllers running firmware version 7.9.0,

1. if the controller has been powered up and run continuously for more than 24.8 days, and
2. if a triggering condition has occurred and
3. if the triggering condition is followed by a reboot,

then it will cause the controller to continuously restart.

Features

The following table details the required actions if the continuous-restart issue occurs:

	From boot to 24.8 days	After 24.8 days
Description	Trigger conditions will have no effect during this time.	Triggering conditions followed by a reboot will cause the controller to continuously restart.
Recommendation Action	If the site is being installed or commissioned, upgrade the firmware in any **CBX** and **CBV** controllers from version `7.9.0` to version `7.9.1` as part of your commissioning. **Strategy** and parameters will be retained. (No additional T&B is required.)	If the building has been commissioned and handed over, arrange a maintenance visit and upgrade **CBX** and **CBV** controllers Firmware from `7.9.0` to `7.9.1` as soon as possible. **Strategy** and parameters will be retained. (No additional T&B is required.)
Is Controller functioning?	Follow the steps in Upgrading the Controller.	Follow the steps in Upgrading the Controller.
Is Controller continuously restarting?	Not Applicable (Controller should be functioning and not continuously restarting during this period.)	Follow the steps in "CBX Recovery" or "CBV Recovery" as appropriate to your controller.

When a controller is continuously restarting, it will appear offline in **ASPECT®** or **INTEGRA™** and cannot be accessed by **NB-Pro**. The control sequence of a strategy will not function.

Triggering Conditions

A **triggering condition** is a set of circumstances where the **controller** is forced save a portion of its flash due to scenarios including but not limited to those described below.

These scenarios occur during normal commissioning of the controller.

Triggering conditions must occur after `24.8` days since the last restart to cause the **CBV** or **CBX** controller to continuously restart.

CXpro^{HD}

Conditions that **trigger** the condition:

- Downloading a **strategy** to a controller.
- **Hardware overrides** that have been set or when a timed **override** has expired.

NB-Pro, Aspect, Integra, or other 3rd part BACnet tool

Conditions that do **NOT** trigger the condition:

- Writing **Setpoints**
- Writing to **Priority Arrays**
- Writing **BACnet Schedules**

Conditions that **trigger** the condition:

On **Analog Inputs** (AI), **Digital Inputs** (DI), **Analog Outputs** (AO), and **Digital Outputs** (DO) **only**, changes of

- `Out Of Service` property
- **BACnet** values **other** than `Present Value` (PV)

(Changes to any **BACnet** objects other than **AI**, **DI**, **AO** and **DO** do **not** trigger the condition.)

CBT-STAT

Since the **CBT-STAT** only allows configuration of setpoints, user interaction through the **CBT-STAT** will **NOT** trigger this condition.

NetLink

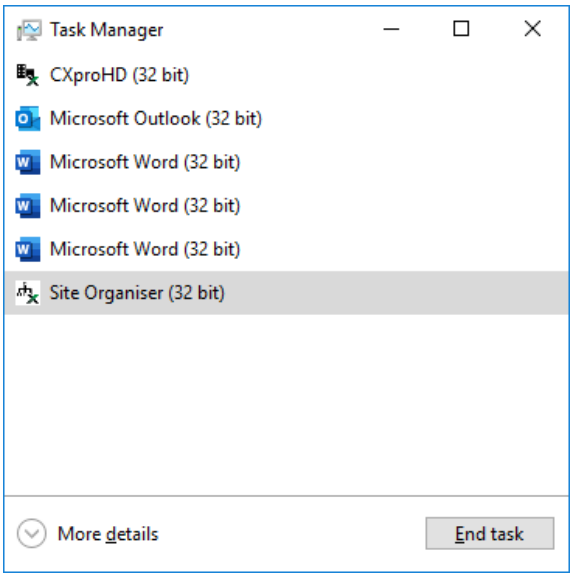
Since **NetLink** only allows configuration of setpoints, commissioning performed with **NetLink** after the `24.8` days of operation will **NOT** trigger this condition.

Upgrading the Controller

Cylon recommends that you use **CXpro^{HD} Site Organiser** version `1.00.06` to update your sites to firmware version `7.9.1`.

How to update Site Organiser to version 1.00.06

1. Ensure **Site Organiser** is not currently running in Windows. Use Windows Task Manager to verify this. In the screenshot below (on **Windows 10**), you can see **Site Organiser** running. Select Site Organiser (32bit) and click the End Task button.



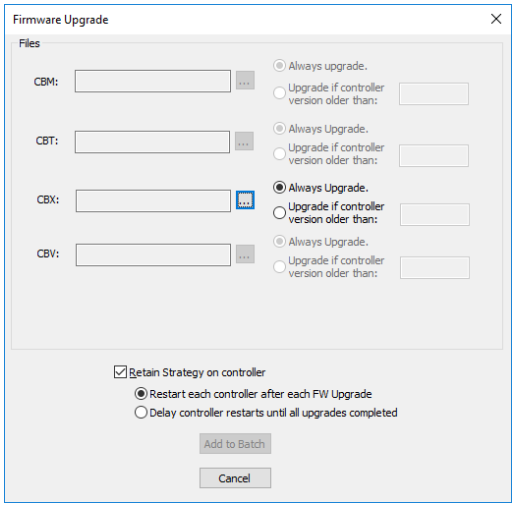
2. Download `SiteOrganiser_1.00.06.zip` from the Cylon Auto-Matrix Toolbox.
3. In the directory on your PC in which **CXpro^{HD}** `v1.00.05` is currently installed (e.g. `C:\CXproHD`), make a backup copy of `Ccsiteor.exe` and `CCSITEORTEXT.DLL` by using standard Windows methods to rename these two files.
4. Extract the new versions of `Ccsiteor.exe` and `CCSITEORTEXT.DLL` from the downloaded `.zip` file.
5. Copy the extracted `Ccsiteor.exe` and `CCSITEORTEXT.DLL` into the directory in which **CXpro^{HD}** `v1.00.05` is currently installed (e.g. `C:\CXproHD`).
6. Launch **Site Organiser** as normal from the **CXpro^{HD}** Ribbon and use **Site Organiser** to update the **CBX** and **CBV** controllers.

Using Site Organiser to upgrade firmware to version 7.9.1.

For detailed information on using **Site Organiser**, refer to *MAN0135 CXpro^{HD} Site Organiser manual* included with installs of **CXpro^{HD}** version `1.00` and later. Section 5 of the manual is specific to firmware upgrades.

> Note: Setpoints will be retained through this process so test and balance procedures will not need to be performed.

When you choose to upgrade your firmware, be sure to set " Retain Strategy on controller " and " Always Upgrade " similar to what is shown below:



> Note: Be sure to verify the " Retain Strategy on controller " option is checked and " Always Upgrade " is selected. Also be sure to restart each controller after Firmware upgrade if the building is occupied. See manual for more details.

Important Recommendations:

1. Perform the firmware update on one MS/TP trunk at a time. This gives you an opportunity to review the progress in reasonable chunks of effort.
2. Very Important: If using a laptop, please be sure to keep the laptop plugged in and powered on so that the battery does not lose power during the upgrade process.
3. Very Important: Disable any power saving mode or sleep while the upgrade process is going so that the upgrade process will not be interrupted due to user inactivity.

Time Burden

You can expect approximately four and a half minutes (`4:30`) per controller to be upgraded using **Site Organizer**. For ease of calculation, twelve per hour is a reasonable expectation. This operation can be done unattended as **Site Organizer** gives a green and red flag indication of success or fail.

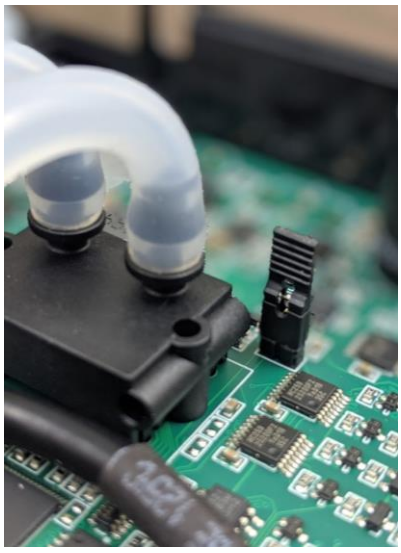
Recovering Affected Controllers

If a controller is affected by this issue, it is possible to restore it to working order and upgrade it to a safe firmware version as described below.

CBV Recovery

The following is the procedure to recover a **CBV** with `7.9.0` firmware that is experiencing this continuous-restart issue.

1. Remove the cover by pulling back on the finger tabs.
2. Place jumper over the jumper header next to the flow sensor (see images below.)

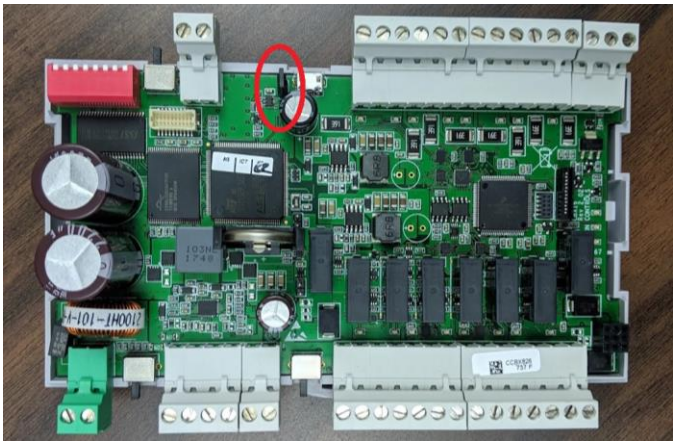


3. Wait for up to `3` minutes for the unit to resume normal operation
4. Upgrade the firmware to version `7.9.1` over the **BACnet** network
5. Remove the jumper on the header next to the flow sensor
6. Replace the cover

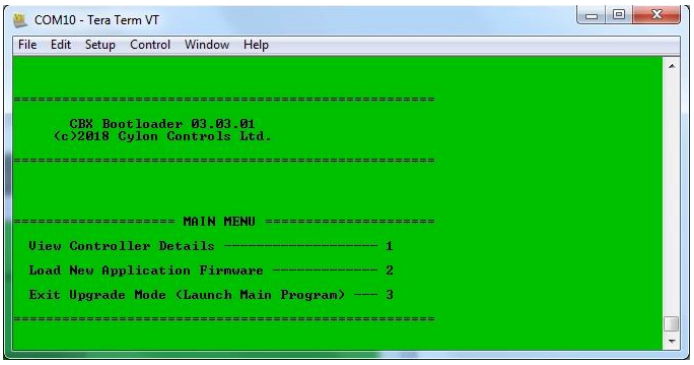
CBX Recovery

The following is the procedure to recover a **CBX** with `7.9.0` firmware that is experiencing this continuous- restart issue.

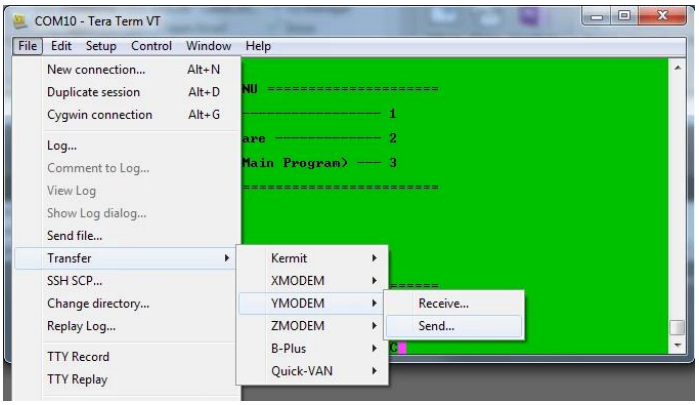
1. Remove the plastic lid by pulling back on the finger tabs.
2. Place a jumper over the **jumper header** next to the **USB** port:



3. Cycle Power in order to place the **CBX** into Bootloader mode
4. Attach USB cord to computer
5. Connect to the terminal interface by opening **Tera Term** (or equivalent) at any baud rate setting



6. Select "2" from the menu and hit enter
7. Choose the `7.9.1 Firmware file` and send it via the Y-Modem send feature



8. Once the upgrade has completed, remove the jumper next to the USB port
9. Select option `3` to boot the **CBX**
10. Remove the USB cable
11. Replace the plastic lid.

Customer Impact

This issue affects only **CBX** and **CBV** controllers running firmware version `7.9.0`. Any sites with these versions **must upgrade** to version `7.9.1` as soon as possible.

Upgrading controllers to prevent the issue arising is expected to take approximately four and a half minutes (`4:30`) per controller.

Note: This issue does not affect controllers running version `7.8.3` or earlier. It also does not affect **CBM** and **CBT** controllers. If a maintenance update is being carried out, these controllers may also be upgraded to version `7.9.1` if convenient to do so, but it is not required for the issue described in this bulletin.