CONVIRON

Central Management

Operator's Manual
Software Version 8.5

283442-ENGR01

Central Management

Operator's Manual

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Please read these instructions carefully and completely before operating.

PREFACE

Welcome to the Operator's Manual for the Conviron Central Management™ (CM) System. This Manual has been developed to assist those responsible for remotely monitoring and operating Conviron growth chambers. The Manual is provided to all clients who have purchased a chamber(s) with Central Management.

The manual is structured to provide step-by-step instructions. Clients will find sufficient detail including figures, diagrams, and graphics to remotely monitor and operate the chamber without issue. However, given that installations are specific to each facility and that facilities may have unique circumstances, additional information or assistance from Conviron may be required. In such cases, contact information is provided on the following page.

This equipment is only to be used by authorized personnel – that is, personnel who have been trained on the proper use of the equipment and who have read this manual.

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SERVICE & TECHNICAL SUPPORT

Conviron welcomes the opportunity to provide assistance and to answer any technical questions related to the start-up, use and general technical support and troubleshooting of the Central Management system.

Before contacting Conviron, please check the following:

- Read this Operator's Manual in its entirety for information about the feature(s) with which you are experiencing trouble.
- If the problem persists and/or you require additional assistance, please collect the following information prior to contacting Conviron:
  - Serial Number – The serial number of Central Management is located on the serial card on the side of the computer or on the Installation Media
  - Software version number of Central Management – Open Central Management and then select **Help** > **About**. A dialog box appears, showing the software version number.
  - A description of the problem
  - A description of what you were doing before the problem occurred

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Conviron warrants the Software and media for a period of ninety (90) days from the date of installation or one hundred and twenty (120) days from the date of shipment from the factory, whichever comes first, provided the Software is delivered to you by Conviron, or to a Conviron authorized distributor or agent. This warranty applies only if you are the original licensee of this copy of the Software. Conviron warrants that the media on which the Software is distributed will be free and clear from defects during the warranty period stated above.

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Conviron's obligation under this warranty is void in its entirety if the Software is improperly installed, abused, misused, neglected or altered, or if damaged by flood, fire, or any act of God. Any re-configuration of the Software without the prior consent of Conviron shall be considered tampering and will void the warranty in its entirety. Where the Software cannot perform properly due to conflicts with user installed software or hardware, this warranty shall not apply.

Warranty for Central Management Hardware

Conviron warrants Central Management hardware against defects in components or parts for a period of twelve months from the date of acceptance, or fourteen months from the date of shipment from the factory, whichever comes first. Conviron will replace or repair at its option, without charge, such defective parts or equipment. Conviron's obligation under this warranty is void in its entirety if the equipment is improperly installed, or is in any way abused, misused, neglected, or altered, or if damaged by fire, flood, or acts of God, or if the serial number plate has been altered, defaced, or removed. Freight and labor charges incurred in replacing or repairing such defective parts are included in the coverage provided by the warranty. The customer is responsible for all customs and duty charges where applicable. Conviron shall not be liable for any loss or damage, including incidental or consequential, due to operation failure of the Central Management PC or its components.

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Disclaimer of Damages

In no event shall Conviron (including its directors, officers, employees and agents) be liable for any special, consequential, indirect or similar damages, including but not limited to any lost profits or lost data arising out of the use or inability to use the Software or Central Management PC, even if Conviron has been advised of the possibility of such damages. Some jurisdictions do not allow the limitation or exclusion of liability for incidental or consequential damages, so the foregoing limitation or exclusion may not apply to you. In no case shall Conviron's liability exceed the purchase price for the Software, media, and/or Central Management PC.

General

This agreement shall be governed by the laws of the Province of Manitoba, in Canada, with the courts of the Province of Manitoba having exclusive jurisdiction.

PRECAUTIONS

The following symbols are used throughout this manual to draw your attention to important warnings, guidelines and product information. Please take note of their respective meanings.

The **"HAZARD WARNING"** symbol is used whenever a hazard exists which could cause personal injury or potential equipment damage, and requires correct procedures/practices for prevention.

The **"IMPORTANT INFORMATION"** symbol is used to identify operating procedures which must be followed to ensure smooth and efficient operation.

The **"PLEASE NOTE"** symbol is used to draw attention to additional information which may assist in the operation of the equipment.

HAZARD WARNINGS

Please note the following Hazard warnings before operating this equipment:

⚠️	• Users of Central Management must be aware that changes they make will impact electrical and/or mechanical operations of a chamber(s) at a location that they are not visually monitoring and/or physically present at.
	
	• Operating the chamber remotely, while others are occupying or servicing the chamber, COULD BE HAZARDOUS AND MAY RESULT IN PERSONAL INJURY to service or other on-site personnel. As such, manipulation of parameters via CM must only be performed when Users have taken appropriate safety precautions including having established that NO ONE ELSE is occupying or servicing the chamber while using CM software.
	
	• Conviron Central Management is normally the connection point to several external alarm monitoring systems. Consequently, it is important to understand the following:
	
	    • Users of CM must have permission to connect to CM and if the work requires rebooting or shutting down the equipment, the onsite authority must be informed such that this procedure can be accomplished safely.
	
	    • Be certain of the correct procedures for remote connection, login and disconnect. It is possible to select the incorrect "quit" methodology and shutdown" the CM system rather than simply disconnecting the remote connection. If the system is shutdown, all subsequent chamber alarms occurring would not be recognized by CM, thereby failing to send out alarm notifications. Once shutdown, the CM system would require a manual startup.
	
	    • While the CM system shows many of the chambers' parameters, alarm settings and physical conditions are not available to the remote user. Any type of change, or diagnostics, is best performed when onsite personnel are available to work with the remote user.
	
	• Central Management is an optional feature. If Central Management is being used it becomes inextricably linked to the use of the control system and therefore, both the Central Management Manual and the Operator's Manual for the control system must be read and understood in their entirety prior to operation.

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1   INTRODUCTION

1.1   Contents

This Manual explains how to use the Conviron Central Management (CM) system to remotely monitor and operate Conviron growth chambers based on CMP series control systems. It is intended for people who are responsible for managing and / or operating the growth chambers within their facility, but who are not expert users of Microsoft Windows.

This Manual contains seven chapters.

Chapter 1.0 Introduction

Describes the organization of the Manual, its document conventions, the major features of the Central Management system, and how to contact Conviron Client Services.

Chapter 2.0 Quick Start

Explains how to get started. Instructions are provided including setting up the computer and chamber network and using the Central Management application, along with a brief outline of the user interface. A step-by-step approach has you working right away. It also describes how to get online help and further assistance.

Chapter 3.0 Using Central Management

Explains how to use all Menu functions including adding chambers and subscribers to the Central Management Network, organizing chambers in folders, planning experiments, viewing Activity Logs, and Extracting data or alarms.

Chapter 4.0 Chamber Activities

Outlines the necessary day-to-day activities in a workflow format to aid the Administrator in using the software effectively. Included are: Monitoring chambers using the Thumbnail Status, Email Alerts, Chamber Panel and Viewing alarms, and configuring responses.

Chapter 5.0 Remote Chamber Programming

Describes how Users access and work with the Central Management system and Chambers from Network, Internet locations and alternate devices.

Chapter 6.0 System Maintenance and Troubleshooting

Describes the necessary details for the configuration of backups, Central Management system settings, Alarm responses and network addressing, and restoration of Central Management software.

Chapter 7.0 Central Management Software Installation

Provides instructions on learning how to install the Central Management software-only component of the Conviron Central Management system.

Glossary of Terms used in this Manual.

1.2   Document Conventions

To help you find and understand information, the following document conventions are used in this Manual.

Table 1.1: Conventions

Convention	Meaning
Tip:	Information that isn't procedural, but will help with the use of Central Management.
Important:	Information that is essential to performing a procedure.
Bold text	The name of a section in this Manual or another Manual.
Italic text	The name of the file or directory.
Typewriter font	Text that you enter.
"In Quotes"	Menu names and menu selection options
key1+key2	Press and hold the first key while you press the second key.
key1, key2	Press and release the keys sequentially.

1.3   Central Management System Features

The Central Management system is a Microsoft Windows based remote control and monitoring application for Conviron growth chambers equipped with CMP series control systems.

Using Central Management, you can operate and monitor growth chambers from a central location. The Central Management system makes it possible for Conviron Client Services to perform maintenance and troubleshooting tasks remotely.

1.3.1   Central Management system features

Using Central Management, you will be able to perform the following tasks remotely:

- Tell, at a glance, the status of any chamber on the network
- Operate all chambers on the network from a central location
- Receive Email Alerts for Urgent Alarms
- Download alarm and log data in text or .csv format
- Gain online access to Central Management system using Windows Terminal Services
- Take advantage of Central Managements built-in Web Reporting service
- Mirror the CMP6060 control system local display

The Central Management System includes software version 8.5 and optional hardware.

1.3.2   Optional Central Management hardware

- Pentium processor
- 8 GB RAM
- 2TB hard drive
- 19 inch monitor
- Conviron Restore Drive
- Dual 10/1000Base-T Ethernet cards
- Sanity Card ensures fail-safe operation
- DCS - Dry Contact Alarm Reporting System
- Microsoft Windows Operating System

> The hardware for the Central Management™ system reflects current PC technology, including Conviron's additions of Conviron Drive imaging and Restore, Sanity / Alarm card, Dry Contact System (DCS), dual Network cards with three display monitor capability, and Daily Automated Backup. A single LCD display is standard.

1.3.3   Central Management Hardware Options

- Autodialer

1.3.4   Central Management Software Features

- The Central Management system has all the features of the previous Central Control system (CCS) with many additions to meet the changing needs of our clients.
- Central Management is a .NET 4.0 application. The application runs on Windows 7 and Windows 10.

- The Central Management *core*, (CMService.exe) runs as a system service (it is not tied to a user account) allowing multi-user security access. Central Management is the User Interface and may be closed, without effect to logging, alarms, or email.

- Central Management is network-independent. Addressing can conform to Users' needs to permit integration and coexistence in existing Networking Structures (some restrictions apply to legacy equipment).

- Direct online Central Management system access via network or optional modem using generic Windows Terminal Services on PCs or Macs and Mobile Devices.

- Windows 10 operating system shares PC resources more efficiently, allowing the Central Management PC to be a fully functional workstation.

- Central Management software can run on Client hardware without the Conviron's hardware option; however, the Local Audible alarm, Sanity reset, Autodialer, and Building dry contacts options for Alarm alerting would not be available. In this situation, Email Alerts is the only alerting method.

- Central Management has a built-in Web Reporting service. This provides Status Thumbnails, Data and Alarm logs, Trend-Graphing, Service History, and Data downloading to a remote user by way of a web browser. The Web Reporting service is suitable for users with read-only access who need to see what the chambers are doing. Web Reports are available anywhere by way of Internet or Intranet web browsers.

- A full featured calendar based Experiment Scheduler documents the start-stop date, chamber ID, User Name, Experiment Name, and notes. Information is presented on a Gantt style or grid chart display.

- The Scheduler tool has Chamber Usage tracking and reporting by Chamber or User, for charge out purposes. Reports are printable or may be saved in text and HTML formats.

- Central Management's chamber properties record contains editable fields of ID, Model, Serial, Notes, Service History, Service Notes, Experiments, Subscribers, and a 12-character description field. The chamber database keeps all the related items to a chamber and experiment together in one place.

- The email alarm reports are *configurable*, allowing you to determine which alarm will generate an email alert. The email system is organized for a single *Network subscriber* who gets every chamber alarm message and individual *chamber subscribers* who see only alarms from their particular chamber(s). An Email Alert message links to the Web Report Alarms page for a particular chamber.

- Trend graph allows for instant multi-day, (up to 1 year) multi-point graphs and printouts, (optionally) including alarm condition indicators.

- Files are stored on the Central Management system in standard Comma Separated Values (CSV) format. Files are organized by chamber ID, in DataLog, Alarmlog and Programs directories. The data file is stored as a daily archive and filename-branded with *year - day of the year – Chamber number* (e.g., 07124001.log) format.

- Dry Contact System has a programmable reset interval to prevent masking of second and tertiary alarm actions.

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- Configurable settings for Email, Web Reports, Dry Contact System, and Alarm Actions are flexible to work the particular environment.
- Easy test verification features for Email, Dry Contact System and Sanity.

1.3.5   Virus Protection

The Conviron hardware includes Microsoft Defender. As Virus protection is vital for any internet-connected PC, it is strongly advised that an Anti-Virus program is installed. The Conviron Central Management system includes Microsoft Defender by default. As most clients have an existing preference for an Anti-Virus program, be sure to read Chapter 6 regarding Central Management requirements and Third Party Security protection. Restore and Backup operations are explained in detail in Chapter 7, Section Software Restore, starting on page 137.

1.3.6   Chamber Networking

The Chambers and Central Management system do not have special requirements for networking hardware. Connecting the chambers with a local private network is the default installation type. Expanding or connecting to the building services can be added at any time, as the Central Management system is ready for the additional connection. The second Building Network card is set to auto-configure (DHCP). Details on configuring TCP/IP networking with the Central Management system are found in Chapter 6.

1.3.7   Online Assistance

Conviron Client Services offers online assistance with all our products, and this is facilitated by our ability to connect to your Central Management system network. This can be via the Internet (analog modem optional) or LAN connections, whichever is appropriate for your IT Building Services to supply. For your security, take note that we use several static TCP/IP addresses for Internet connections to your facility. These addresses can be added to your firewall rules, allowing secured access to Central Management: 207.54.102.226 primary and 207.54.102.229 secondary.

1.3.8   Customization

The decision that must be made, is how the Central Management system is to be used in your specific environment. This can wait until all the features and possibilities are understood, within the framework of the users' workflow. The Email, Remote Communication, and Web services can be activated at any time by adding the necessary settings to Central Management's settings panel. See Central Management System Features to select the options that best fit your needs.

1.3.9   References

This Central Management Operator's Manual explains how to use Central Management. If you need assistance using Microsoft Windows, a Conviron control system, or any of the other software applications included with the Central Management System, refer to one of the following user guides:

- Microsoft Windows User's Guide
- Conviron CMP4030 User's Guide
- Conviron CMP5090 User's Guide
- Conviron CMP6050 Operator's Manual
- Conviron CMP6060 Operator's Manual
- Conviron CMP37660 User's Guide (3000 Host)

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2   QUICK START

The Central Management program runs in the Windows Operating System so you need a basic understanding of how to work with Windows applications. Central Management can be run on Windows 7 and Windows 10 Professional. Microsoft .NET v2.0 is required.

This chapter is intended for readers who have little experience with a Central Management system or Windows. In this chapter, you will learn:

- How to setup the Central Management™ hardware
- To understand the features and startup mode
- To Login as Administrator or Guest
- How to start and quit Central Management™
- About the Central Management™ system
- To setup your Chamber Network
- How to get online help

2.1   PC Hardware Setup

Table 2-1 lists the recommended connection sequence.

Table 2-1   Hardware Connection Sequence

Component	Action
1	Connect monitor and PC power cables to power bar.
2	Connect monitor, mouse, and keyboard to PC.
3	Connect Ethernet cables to chamber network, PC, and switch.
4	Connect building network cable to PC and building services. (Optional)
5	Connect Dry Contact System cable to PC and DCS box.
6	Connect DCS to autodialer and/or building alarm system. (Optional)
7	Connect modem cable to modem and the other end to phone outlet. (Optional)
8	Connect autodialer to modem "phone jack" (Optional)
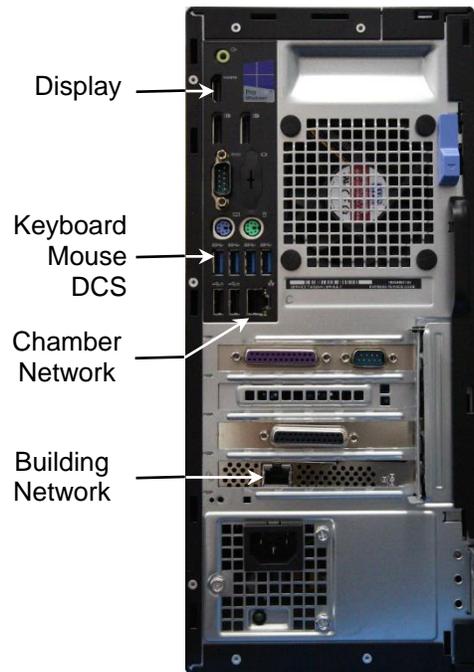
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Figure 2-1   Dell CM Computer Back View

> To merge into a building network, the addressing scheme must be disclosed and Conviron equipment preconfigured with static network addresses.
>
> The CMP4000 to CMP5000 control systems have several possible Ethernet LAN configurations, but there are certain restrictions. These options are available only with the control system software version 6.22.

2.2   Network Description

Inter-connections between the Chamber control systems (CMP4000, CMP5000 and CMP6000) and the Central Management system PC utilize industry standards to ensure that a proven network technology is provided for the Conviron Chamber Network.

Conviron, by default, provides a private network for the chambers and Central Management system. The hardware and equipment is non-proprietary and can coexist in most TCP/IP based Ethernet networks.

2.2.1   Conviron Controller Ethernet LAN Configurations

The Chamber may be:

- Integrated into Client's network as fixed (static, not DHCP) IP address in the existing User's LAN address scheme.

- Integrated into user's network as separate subnet, using a private addressing scheme, but connected to the user's LAN hardware.

- Connected to Client's network via a router, allowing the physically separate hardware and addressing schemes to communicate to each other.

- Connected to Client's network via a Central Management™ system, allowing the physically separate hardware and addressing schemes to communicate to each other (Conviron Default).

- Incorporating VLAN technology, chamber clusters in separate locations (floors or buildings) can be "grouped" as a single private LAN and monitored by a single CM system.

2.2.2   Central Management Networking

Connect the Chamber and Central Management PC to the Ethernet switch using the same Ethernet cabling as the Chamber.

1. On the computer screen, click **Start** > **Control Panel** > **Network and Internet** > **View network status and tasks > Change adapter settings**.

2. Right-click on the **Chamber Network**, and then select **Properties**.

The **Network Properties** screen appears (Figure 2-2).
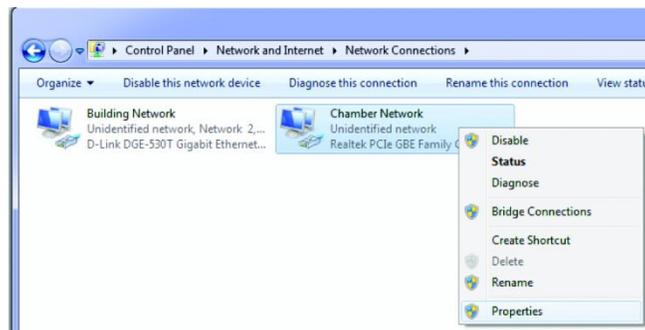
Figure 2-2   Network Properties

1. Scroll down and select Internet Protocol Version 4 (TCP/IP), then click on the "Properties" button.

Figure 2-3   Internet Version 4 Protocol Properties appears.
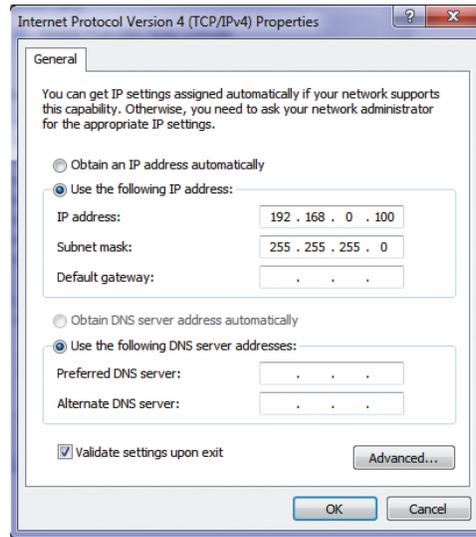
Figure 2-3   Internet Version 4 Protocol Properties

The Building Network connection is optional and must be configured by on site I.T. staff.

The Central Management system is installed with 192.168.0.100 as the default Network address. Chambers also default to 192.168.x.xx for the Central Management network, but their address must be set, so each Chamber has a unique ID (address).

Assuming the first Chamber is set to 192.168.0.1 (Unit ID 001), set each Chamber to have sequential IDs (1,2,3 ...and so on). We reserve the first (100) addresses for legacy chambers, CMP4000 and CMP5000. The remaining addresses of 192.168.0.101 to 254 are suitable for selection for CMP6xxx Chamber control systems.

2.2.3   CMP4000-5000 Networking

To set the Chamber Addressing:

1.   Power on the Chamber's control system.

2.   From chamber status screen, tap the **Options** icon, and then locate the Group and Unit numbers.

3.   Tap the group and unit buttons, Figure 2-4   Group and Unit Address, to set the control system's Group to **0** and Unit ID to **1-99** or the desired TCP/IP address.

Figure 2-4   Group and Unit Address

4.   Once the Group and Unit are set, tap **Exit** to save the change and exit.
A pop-up window appears, warning "Net Address changed you must cycle power."

5.   Tap **OK** to continue.

After the restart, the new Unit ID appears on the control system status display, Figure 2-5 CMP5090 Status Display.
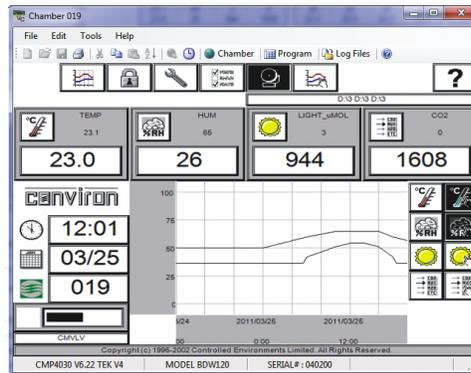
Figure 2-5   CMP5090 Status Display

2.2.3.1   Addressing Format Requirements

- IP address is 192.168.x.yy
- x is the first digit of the address (Group). Range is 0 to 9
- yy are the last two digits of the address (Unit). Range is 1 to 99
- Subnet mask is fixed at 255.255.255.0
- Setting the Unit ID to 001 will set the TCP/IP address of the chamber to 192.168.0.1.

> Remember, the chamber must be set to an address on the same network (x) as the Central Management PC (default – 192.168.0.100).

2.2.4   CMP6050 Networking

The CMP6050 can be connected to a Central Management system on an Ethernet Local Area Network. To enable communications, the control system must be connected to the network and configured with a suitable network address. There are two places where the control system IP addresses must be set-up: At the control system and at the Central Management PC.

There are two network addresses to set in the CMP6050:

CMP Address: Address or ID of the control system within the network.

Netmask: Divides an IP address into subnets and specifies the

network's available host.

Central Management   Enables or Disables CM communication

CM Address: Central Management IP Address

A valid IP address is needed for the "CM Address" value when there is a Central Management system present. If there is no Central Management system present, the CM Address should be set to 'Disabled'

To set the Chamber Addressing:

1. From the status screen, tap the ID button [ID 000] to access the network configuration (Figure 2-6).
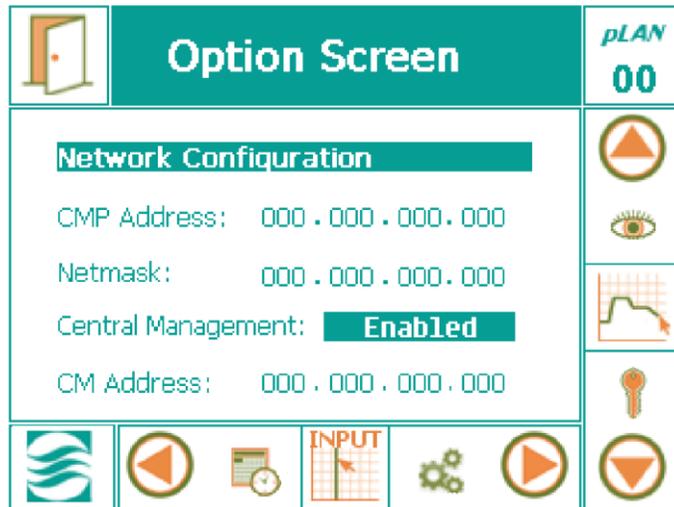
Figure 2-6   CMP6050 Network Configuration

If Disabled appears, tap **Disabled**, and then press the Up arrow key to change Disabled to **Enabled**. Press the **Enter** key to save. Use the controller keys (Figure 2-7).

Figure 2-7   Controller Keys

2.   To change the address numbers, touch each individual numerical field. A pop-up keypad (Figure 2-8) appears every time a field is accessed.
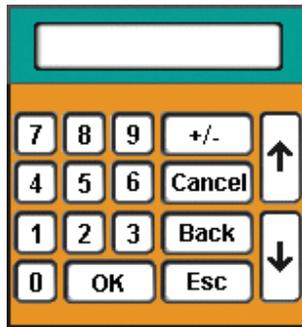
Figure 2-8   Keypad

3.   Once all the addresses have been entered, tap **Exit** 🚪.
      A pop-up warning window (Figure 2-9) appears to confirm the numerical entries.
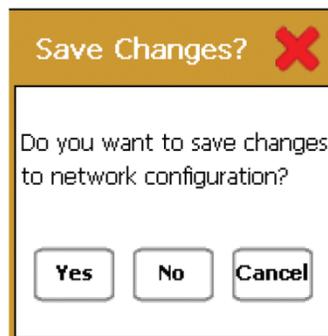
Figure 2-9   Save Changes

4.   Tap **Yes** to save the changes or tap **No** to discard the changes.
      Tap **Cancel** to return to the previous screen and re-enter any numerical address errors.

2.2.5   CMP6060 Networking

The CMP6060 can be connected to the Central Management system on an Ethernet local Area network. To enable communications, the control system and the Display must be connected to the network and configured with a suitable network address. There are two places where the control system and Display IP addresses must be set-up: At the control system/Display and at the Central Management PC.

There are three network addresses to set in the CMP6060:

Control System Address	Address or ID of the control system within the network
Netmas:	Divides an IP address into subnets and specifies the network's available host
Display Address	Address or ID of the HMI Display within the network
Netmask	Divides an IP address into subnets and specifies the network's available host
Central Management	Enables or Disables CM communication
CM Address	Central Management IP Address

A valid IP address is needed for the "CM Address" value when there is a Central Management system present. If there is no Central Management system present, the CM Address should be set to 'Disabled'.

To set the Chamber Addressing:

1. On the control system screen, tap **ID** [ID 050] in the top banner to access the network configuration (Figure 2-10).
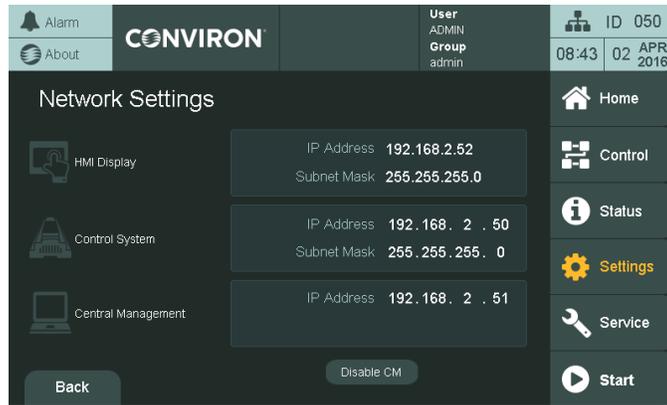
Figure 2-10   CMP6060 Network Configuration

⚠️ The HMI Network setting dialog cannot be canceled and will reboot the HMI once the Apply button is pressed.

2. Tap on any of the values to bring up a dialog box to edit the settings.

There are two dialog boxes: one for the HMI settings (Figure 2-11) and one for the PLC/CM settings (Figure 2-12).
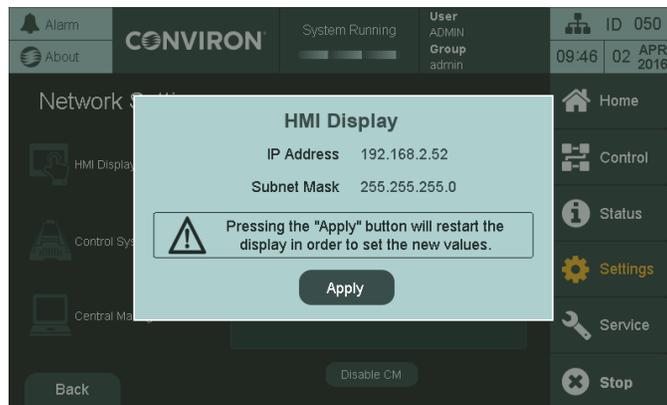
Figure 2-11   CMP6060 HMI Network Settings

Figure 2-12   CMP6060 PLC and CM Network Settings

3.   Tap on any of the values to bring up a keypad to enter the new values.

4.   Tap the Enable/Disable CM to toggle between enabling and disabling CM.

2.3   Startup and Logon

2.3.1   Start-up

When the PC is powered on, it will automatically start the Central Management service. No user interaction is required. Data logging and alarming sequences are handled by the Central Management service, which is always operating when the PC on.

2.3.2   Login as Administrator

After a power outage, the PC will power up automatically starting the Operating System and the Central Management service. The user must log in with a Conviron ID.

2.3.3   Administrator Login Credentials

The administrator username is **conviron** with the password **CXyyyy**, where **yyyy** is the work order of the Central Management system, which can be referred to on page (i) of the Central Management System Installation Manual.

If this information is lost, please contact Conviron Client Services, with your Central Management System serial number (located on the Central Management system side panel). The Administrator login allows the user to run the Central Management System, which permits full access to the chambers and management of all chamber-related information.

2.3.4   Configuration

Additional hardware options provided by Conviron are already pre-configured to a site's existing chamber list (if known). Software installations will need to add chambers to the Central Management system list to enable communications with the Central Management system.

2.4   Starting and Quitting Central Management

Your system has been preconfigured to automatically run Windows and the Central Management software whenever you start the computer.

Normally the Central Management service is *always* active. However. the Central Management Operator Application can be started when required and closed when not needed.

For software updates and specific service tasks, the Central Management service may need to be stopped and restarted. Refer to Chapter 7, System Maintenance and Troubleshooting, on page 108 for details.

2.4.1   Starting the Central Management application

To start the Central Management application program, double-click the **Central Management** icon .

2.4.2   Quitting Central Management

There are two ways to quit Central Management:

- From the **File** menu, select **Exit** (Figure 2-13).
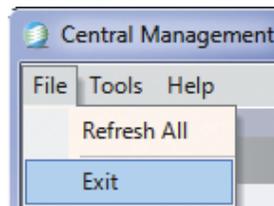
Figure 2-13   Exit CM

- Double-click the button in the top left corner of the Central Management window.

2.5   Understanding the Central Management Program Window

2.5.1   Menu bar

The menu bar runs along the top of the window and provides access to all of the application commands (Figure 2-14).
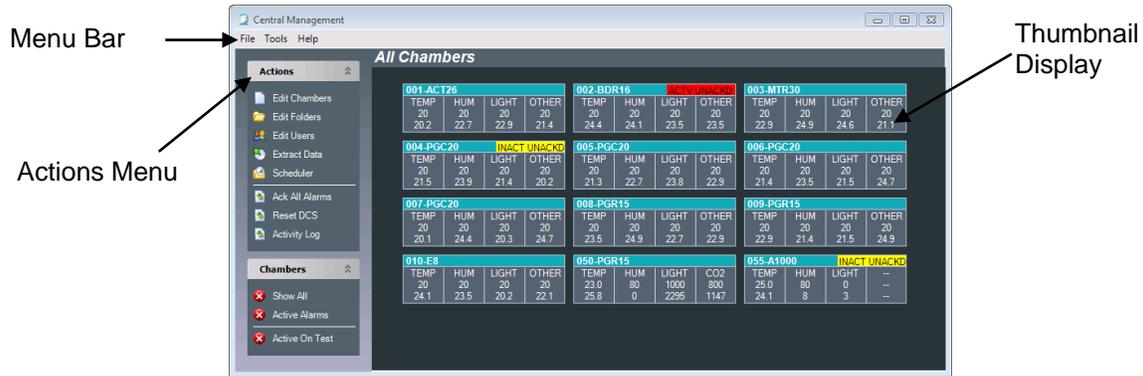
Figure 2-14   Central Management Status Display

2.5.2   Chamber Status

The Chamber Status Thumbnails window displays the current status of each growth chamber currently connected to the network (Figure 2-14).

Organize chambers in *folders*, and then access them by clicking the Chambers List displayed on the right portion of the window. (See Chapter 3, Using Central Management, on page 27 for directions on using folders.)

2.5.3   Thumbnail

Individual Thumbnails display the current status of all chambers connected to the network.

From a chamber's thumbnail display (Figure 2-15), you can read the chamber's zone selectors and alarm status. See Chapter 3, Using Central Management, on page 27 for more information about reading thumbnails.

Figure 2-15   Thumbnail Display

2.5.4   Actions List

The **Actions** list comprises a list of the most used commands for working with Central Management. If hidden, click on the roll-up button to reveal the entire menu.
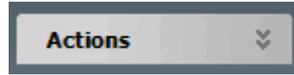
Figure 2-16   Actions List rolled up

2.5.5   Virtual Login Window

Right-click on a chamber thumbnail display to activate the chamber menu (Figure 2-17).

Select **Virtual Chamber** to log in and work with the chamber control system. The control system display that appears may vary, depending on the Chamber control system type. For more information, refer to Section 4.5, Scheduling Activities, on page 58 and Section 4.12, Software Updates for CMP4030 and CMP5090, on page 78.

2.6   Adding a Chamber to the Status Display
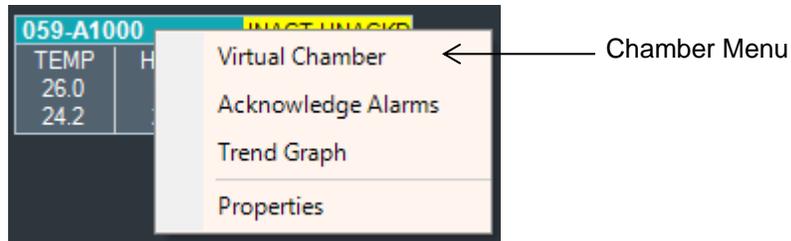
Figure 2-17   Chamber Menu

CMP5000
Interface
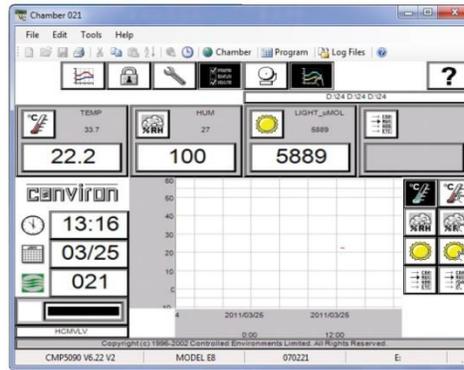
CMP6000
Interface

CMP6060
Interface

Figure 2-18   Virtual Chamber Displays

1.   From the **Actions** menu, select Edit Chambers (Figure 2-19).
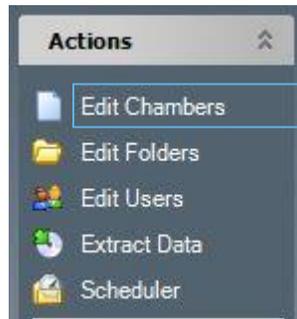
Figure 2-19   Edit Chambers

The **Edit Chambers** dialog box appears (Figure 2-20).
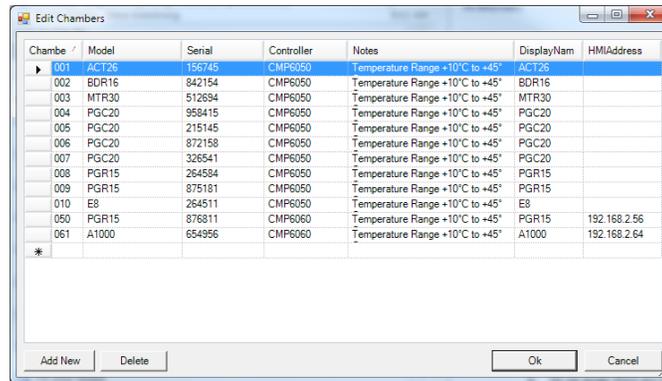
Figure 2-20   Edit Chambers Dialog

2.   To add a new chamber, select **Add New**.

3.   Type the Chamber ID number as shown on the Chamber control system, then tab to set Model Serial, Control System, Notes and Display Name.
     Both the Chamber ID and the control system entry are essential for Central Management to function properly with differing Conviron control systems.

4.   Enter the control system type as: CMPxxxx where the x= the four digit numeric model of your Chamber.

5.   To edit any record in the **Edit Chambers** dialog box, select the entry and type in the new information.

The Chamber specifications are especially useful in the **Notes** area. The Chamber ID and control system are the only **required** entries.

The Display Name Entry appears on the Thumbnail Display of both Web reports and Central Management Dashboard. The Display Name can be 12 characters or less.

To remove a Chamber entry, click on the column in front of the Chamber ID. Once the row is selected, press the **Delete** key on the computer keyboard.

2.7   Getting Online Help

Central Management includes a PDF (Adobe Portable Document Format) copy of the *Operator's Manual* that can be opened at any time.

2.7.1   From the menu bar

To access the online help from the menu bar, select **Help** > **Help** (Figure 2-21).
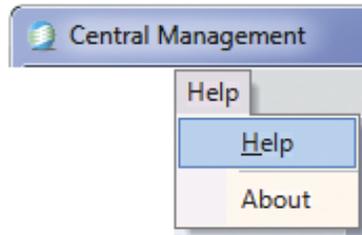
Figure 2-21   CM Help menu

The online help Table of Contents appears.

2.7.2   From within a remote control session

To access online help from a Remote Access Control or Virtual Login, click the **Help** icon , or from the Help **menu**, select **Help**.

The Help file will open to the table of contents.

2.8   Known Issues

- When installing the Central Management software, ensure the default installation location is used: C:\Program Files for 32-bit installations and C:\Program Files (x86) for 64-bit installations. This will avoid a potential Central Management Service startup failure.

- Ensure the Windows Regional and Language settings are set to English Canada. This prevents serious Program Editor Spreadsheet errors with time and units. CM expects the date format yyyy/mm/dd.

- The **Edit User** dialog box requires **Username** and **Email** entries. Neither field must be empty. If no Email address is provided, insert a blank space.

2.9   Arranging Windows

While working with Central Management, you can arrange windows on the Central Management system desktop any way you want. Refer to the *Microsoft Windows User's Guide* for detailed instructions on moving, sizing, and arranging windows.

2.9.1   Minimizing windows

Save space on the desktop by shrinking open windows into icons or minimizing the window.

Click   to minimize the window to a taskbar button. To restore the minimized window to its previous size, click its taskbar button.

2.9.2   Maximizing windows

To maximize an icon into a window, click ▣ so that the window covers the entire screen.

2.9.3   Arranging windows

After maximizing a window, click ⧉ to restore the window to its previous size.

To learn more about using Windows, refer to the *Microsoft Windows Help and Support Center*. Microsoft includes a self-paced tutorial with Windows. To start the tutorial, from the Windows **Start** menu, select **Help and Support**.

2.10 Typical Central Management Screens

Figure 2-22   Central Management
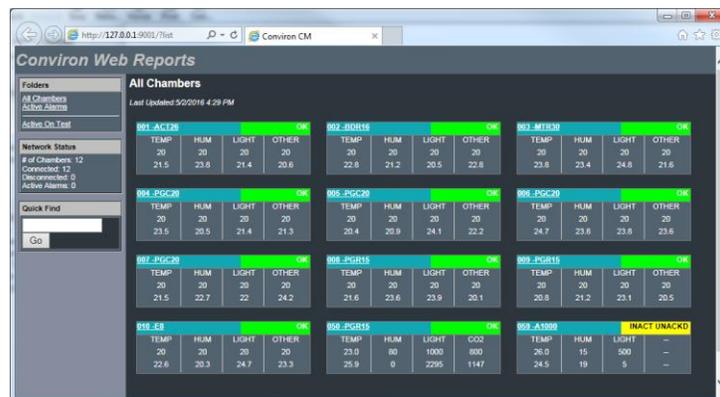
Figure 2-23   Web Reports
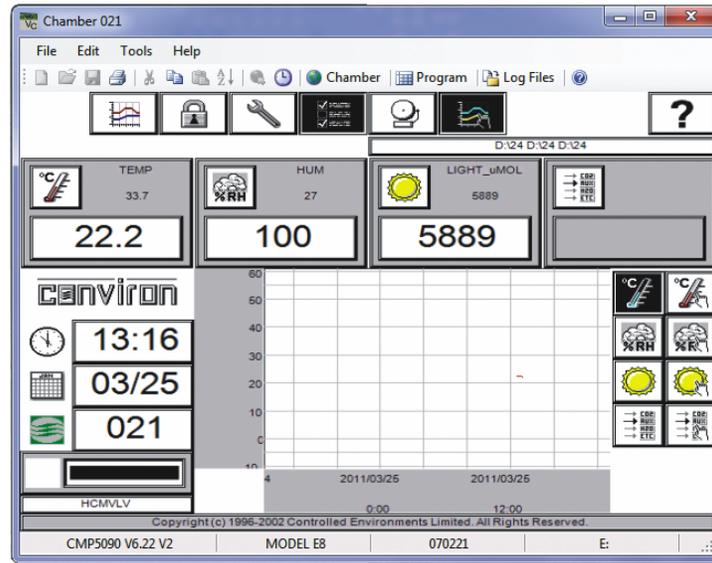
Figure 2-24   Virtual Chamber (Remote Interface for CMP4000/CMP5000 Series control systems)
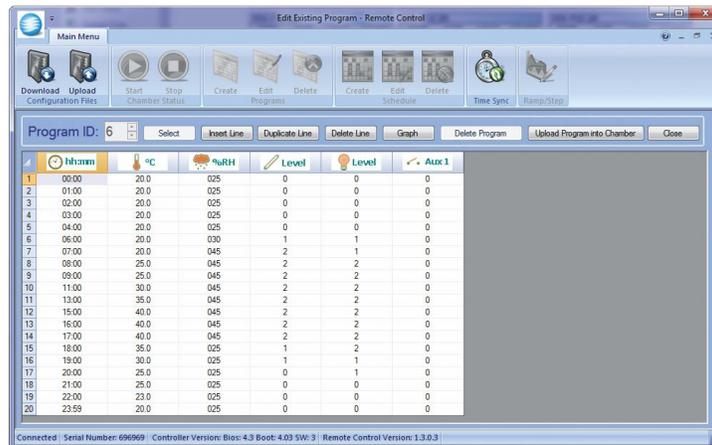
Figure 2-25   Remote Control (Remote Interface for CMP6000 Series control systems)
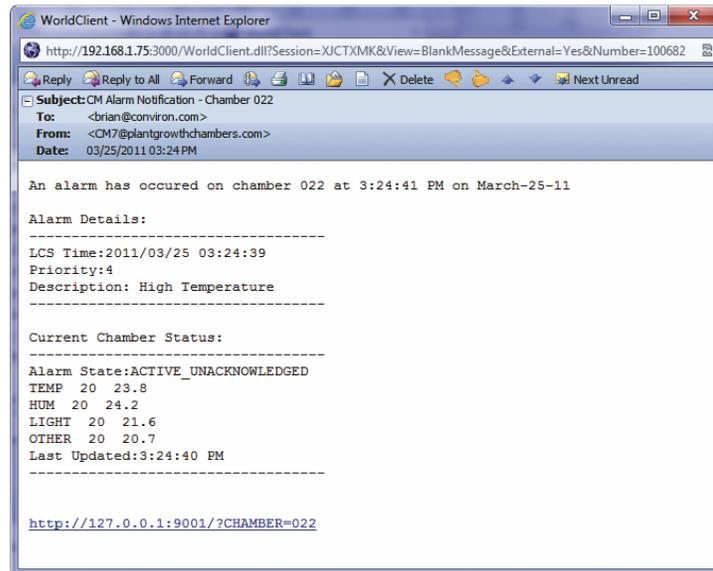
Figure 2-26   Email Alert
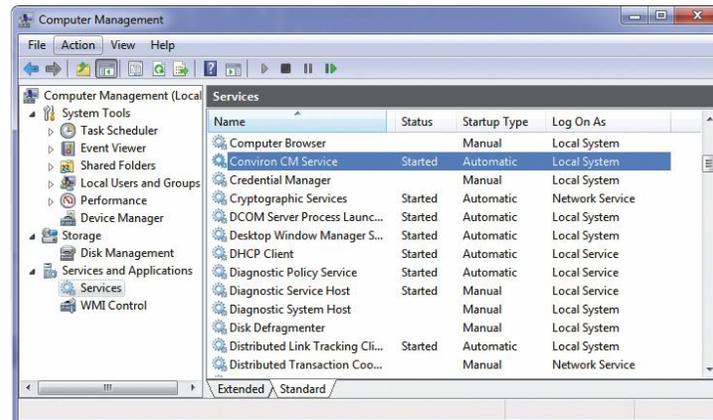
Figure 2-27   Central Management Service

Figure 2-28   Experiment Scheduler

Figure 2-29   Trendgraph

CONVIRON

3   USING CENTRAL MANAGEMENT

Central Management provides the ability to work with alarm actions to ensure alerts are noticed effectively. Logged data can be opened in other applications such as spreadsheets and text editors.

In this chapter, you will learn how to:

- Understand all menu functions
- Add Chambers to the network
- Add subscribers
- View activity logs
- Use diagnostics
- Acknowledge or respond to alarms
- Schedule experiments
- Extract data or alarms
- Export alarm and data to another application or file

> ⚠️ All menu item functions are explained in this section. For detailed use and workflow suggestions, see Chapter 4, Chamber Activities.

3.1   Action Panel

3.1.1   Edit Chambers

From the **Actions** menu, select **Edit Chambers** (Figure 3-1) to add a chamber, remove a chamber, or change the key information about an existing chamber record.
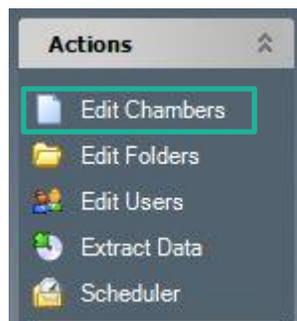
Figure 3-1   Edit Chambers

3.1.1.1   Add or Edit

1.   Click **Add New** (Figure 3-2), and then enter the Chamber ID number, as set in the Chamber control system.

Figure 3-2   Edit Chambers

2.   Tab to add or edit Model, Serial, Controller, and Notes.
The Controller entry is essential for Central Management to function properly with differing Conviron control systems.

3.   Enter the control system type as: CMPxxxx where the x= the four digit numeric model of your Chamber control system.

If CMP6060, also enter the IP address of the Display in the HMI address column.

> The Chamber specifications are especially useful in the Notes area. The Chamber ID and control system are the only required entries.

3.1.2 Edit Folders

1. From the **Actions** menu, select **Edit Folders** to create and maintain custom chamber groups.
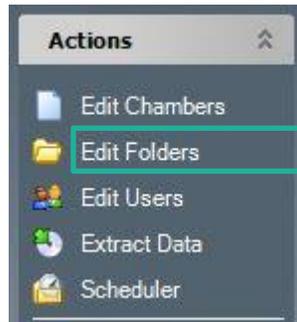
Figure 3-3   Edit Folders

2. Select **New Folder**, and then enter a custom folder name.
    Custom folder names will be displayed in the lower section of the **Chambers** panel (Figure 3-4).
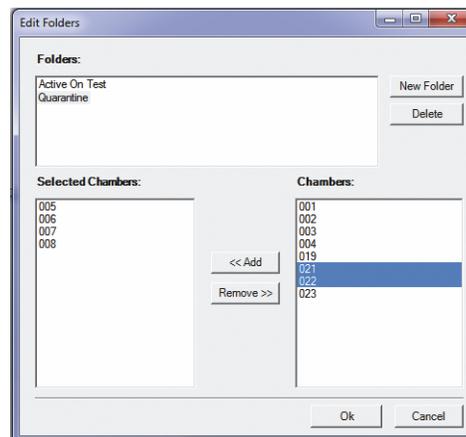
Figure 3-4   Folder Editing

3. In the **Folders** panel, select a folder name.

4. Select the chamber(s), and then click **Add** or **Remove** to update the folder's list.

5. Click OK to exit and save changes, or click Cancel to discard the changes.

The first two categories are system defaults and may not be altered.

Selecting **Show All** shows all the configured chamber thumbnail displays on the Status Display.

Selecting **Active Alarms** shows only the chambers that currently have active alarms.

3.1.3 User Folders

The remaining categories are user defined and some examples of organization are shown here. A newly installed system will not have user defined entries, until they are defined (Figure 3-5).
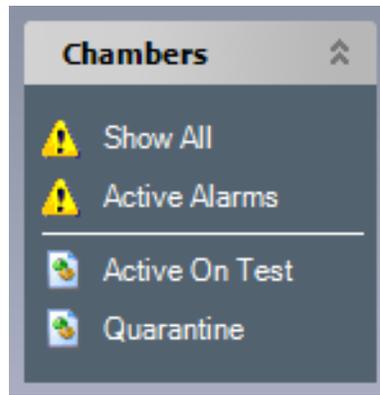
Figure 3-5   Chambers Folders

3.1.4 Edit User Account

From the **Actions** menu, select **Edit Users** (Figure 3-6). Adding users to Central Management allows the CM Administrator to be able to alert the appropriate persons responsible for chamber activity, alarms, and performance.
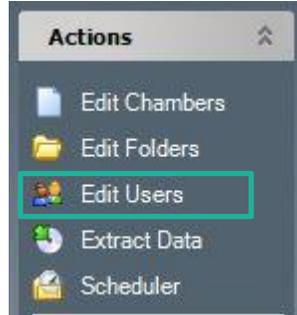
Figure 3-6   Edit Users from the Actions Menu

Usage reports and email functions require the chambers to have users associated to them. The Email address is optional, but Email configuration must be completed for the Email Alerts to become functional (Figure 3-7).

See Section 6.1, Email Alerts , on page 94 and Section 7.4, Central Management Software Settings on page 125 for additional email setup.
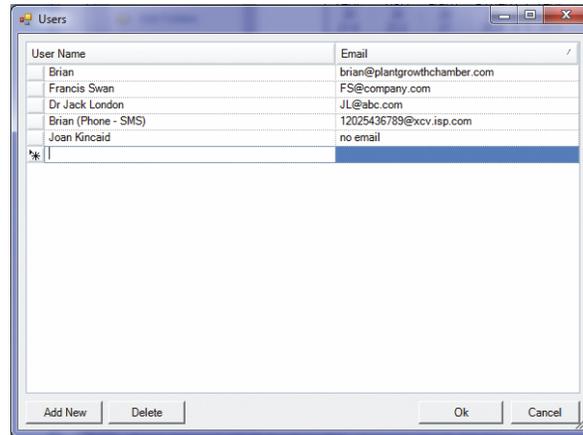
Figure 3-7   Edit Users Dialog Box

3.1.5 Extract Data

The **Extract Data** option lets you choose where to copy the file and other chamber-specific information.

1.   Select the chamber (Figure 3-8).
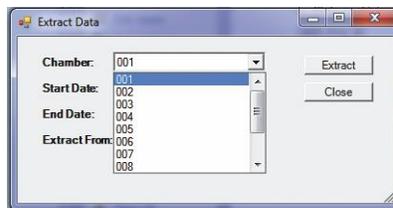
Figure 3-8   Select Chamber

2.   Select the start date (Figure 3-9).
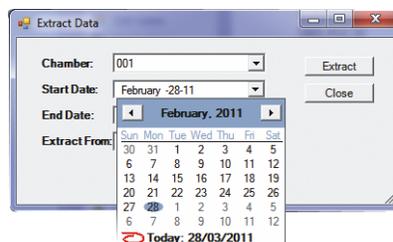
Figure 3-9   Select Start Date

3.   Select the end date (Figure 3-10).
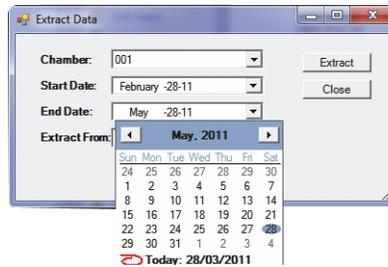
Figure 3-10   Select End Date

4.   From the **Extract From** dropdown menu (Figure 3-11), select whether the data type to copy is alarm or log files.
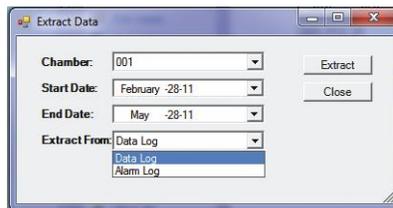
Figure 3-11   Extract From

5.   Click **Extract** (Figure 3-22).
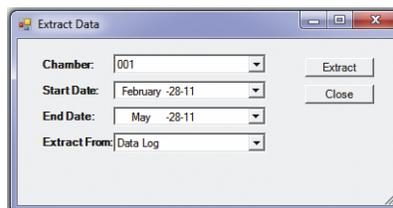
Figure 3-12   Extract

The **Save As** dialog box lets you to save the extracted data to any device or location connected to the Central Management computer (Figure 3-13).
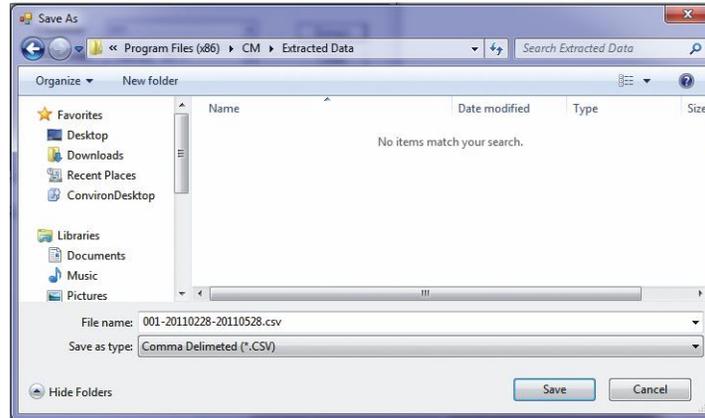
Figure 3-13   Data Extract Dialog

6.   Enter a filename, and then select one of the available formats: **Excel Ready** (CSV) or
        Tab delimited (Print Ready).

3.1.6   Scheduler

The Chamber Scheduler is a powerful management interface to all Chamber information. From
the **Actions** menu, select **Scheduler** (Figure 3-14).
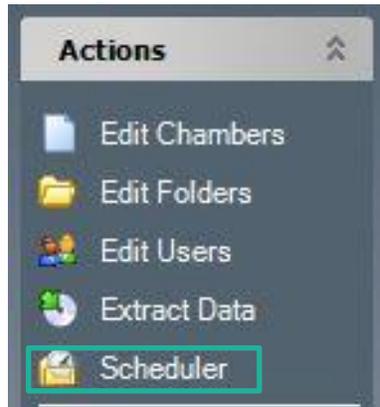
Figure 3-14   Actions Scheduler
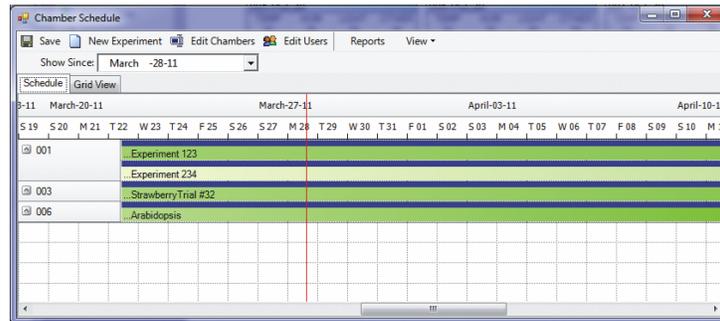
Figure 3-15   Scheduler Gantt View

Two views are available for the schedules: the Gantt (Figure 3-15) and the grid (Figure 3-16). Both views can be configured to suit your needs. The Tool bar has two items from the **Actions** menu for convenience.
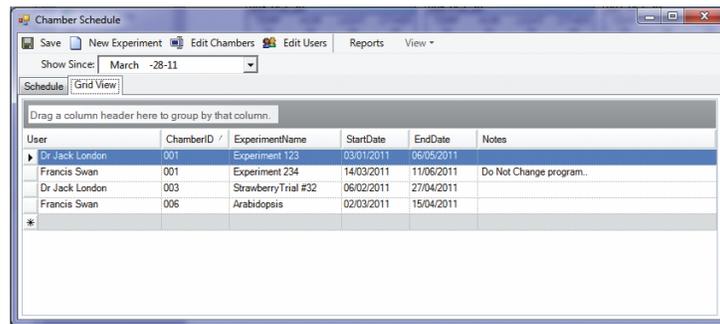
Figure 3-16   Scheduler Grid View

Experiments are more than records of Chamber usage. They document the User, Chamber, and any informative notes that are pertinent to the scheduled experiment. The start and stop dates assist the Administrator in determining the duration of all experiments (reports are by Chamber or by User). Detailed instructions are found in Chapter 4, Chamber Activities, on page 53.

3.1.7   Acknowledge All Alarms

This global command will acknowledge all alarms for all Chambers on the network. Acknowledging alarms indicates that you have seen the alarm condition and subsequent corrective action, if any, is your responsibility.
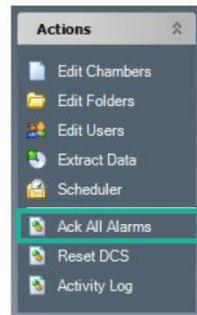
Figure 3-17   Ack All Alarms

Acknowledging active alarms stops the local audible alarm and email notification as well as changing the state of the chamber display icons of the system tray, thumbnail display, and Chambers panel.

3.1.8   Reset DCS

Selecting **Reset DCS** (Figure 3-18) will deactivate the relay of the Conviron Alarm Contacts box during an Alarm condition. It will set the N.C. (normally closed) contacts back to a closed position and the Green LED (normal) will be illuminated. This feature is provided for backward compatibility with autodialer settings used in CCS versions 4, 5, and 6. This function is only needed when the **DCS reset interval** is set to 0 (disabled), or during the Dry Contact System reset interval.
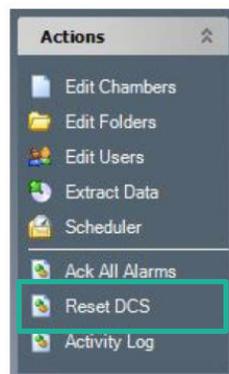
Figure 3-18   Reset DCS

3.1.9   Activity Log

From the **Actions** menu, select **Activity Log** (Figure 3-19) to review all CM-related network events.
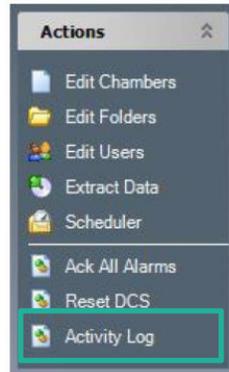
Figure 3-19   Activity Log

Remote Chamber Connections, Email Alarms and tests, Central Management Service status, Dry Contact System Relay Status, Sanity Status, and Chamber Communications are all examples of the message types stored in the Activity Log.

The files are located in *C:\Program Files\CM\ActivityLogs* for 32-bit installations and *C:\Program Files (x86)\CM\ActivityLogs* for 64-bit installations directory. The files are date coded for mm/dd/yy.log

3.1.10 Alarm icons

Three types of icons (Table 3-1) precede the log message to indicate the urgency of the log entry. These icons also appear in the Chambers panel, folders list, indicating the alarm status of the individual folder groups.

Table 3-1   Alarm Status Icons

Icon	Alarm Status	Description
	IA	Inactive Acknowledged (or no alarm) Information – Confirmation messages. Example: login to chamber.
	IU	Inactive Unacknowledged Alert – Unexpected conditions, response needed. Example: Chamber in database trying to log in.
	AU	Active Unacknowledged Error – More serious conditions, response is needed. Example: Error sending email alerts.

3.2   Chambers Panel

The **Chambers** panel (Figure 3-20) controls the display of the chamber thumbnails in the Central Management network. Select the grouping you want to display on the Chamber Status thumbnail window.
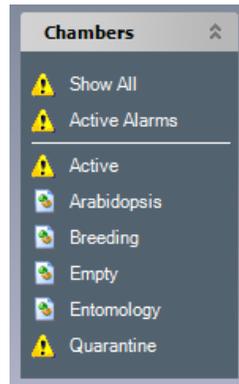
Figure 3-20   Chambers Panel

All the remaining categories are user defined. Icons indicate the current alarm status of each group. For the meaning of each icon, see Section 3.1.10 Alarm icons on page 36.

The letter abbreviations correspond to the Chamber control systems designations.

3.2.1   Show All

The **Show All** option displays all the chambers, whether or not these are active.

3.2.2   Active Alarms

The **Active Alarms** option shows only the chambers with active alarms.

3.2.3   User folders

The entries on the **Chambers** panel below the white line are folders added by the User to organize the Chambers in a logical manner that is appropriate to the User's needs.

3.3   Tools Menu

3.3.1   Diagnostics
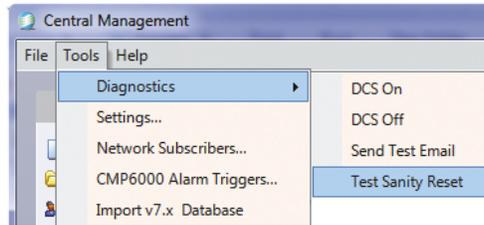
Figure 3-21   Diagnostics

3.3.1.1   DCS Test

This diagnostic tool can be used to verify the DCS (Dry Contact System) operation and to ensure the alarm contacts correctly signal the Autodialer or Central Monitoring Station.

3.3.1.2   Send Test Email

Verify the email configuration is configured correctly by sending a test email to any valid email address. Setting for SMTP server and email configuration must be completed in the **Settings** window prior to testing.

3.3.1.3   Test Sanity Reset

Select **Test Sanity Reset** to be certain that the Watchdog Card is working properly.

Once you click **OK** in the **Sanity Reset Test** dialog box (Figure 3-22), the process cannot be cancelled.
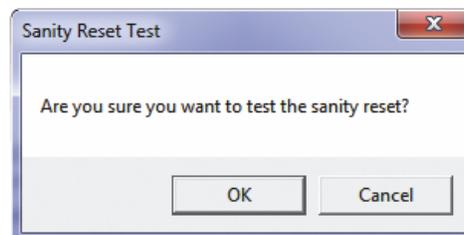
Figure 3-22   Sanity Warning

After a time delay of about 40 seconds, the system reboots. The Central Management system automatically restarts and runs the necessary services to monitor the Chambers.

If the sanity reset fails, refer to Chapter 7, System Maintenance and Troubleshooting, on page 108 for Sanity Card settings and troubleshooting hints.

3.3.2   Settings

From the Central Management menu bar, select **Tools** > **Settings** to configure the Central Management options. See Chapter 7, System Maintenance and Troubleshooting, on page 108 for details on each setting.
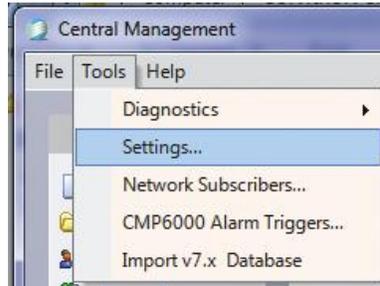
Figure 3-23   Application Settings

The default settings for the Central Management system are documented in chapter 7, System Maintenance and Troubleshooting. However, most settings never need to be altered. Email, Mail Server, and Web Server settings have site-specific addresses that need to be provided by the onsite IT administrator. Refer them to Chapter 7, System Maintenance and Troubleshooting, on page 108.
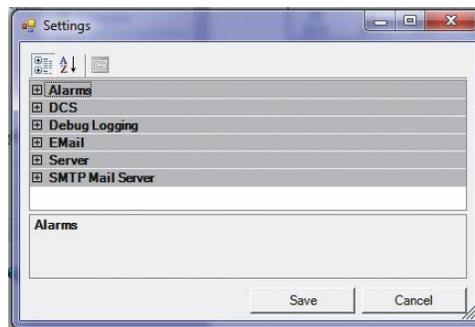
Figure 3-24   Settings Categories

3.3.3   Network Subscribers

Network Subscribers are typically system administrators. All Chamber alarm conditions are sent to the Network Subscribers. Regular Subscribers are added to the individual **Chamber Property Subscriber** lists. Users appearing in both lists will receive only one email alarm notification.

To access the **Network Subscribers** dialog box (Figure 3-26), from the **Central Management** menu bar, select **Tools** > **Network Subscribers**.
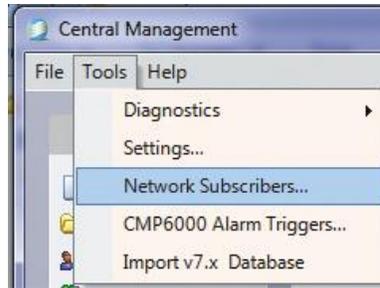
Figure 3-25   Network Subscribers

Users can be added to the Network Subscribers list by clicking on the drop-down list box and selecting one or more of the displayed names (Figure 3-26).

If this list is empty, then first add users with the **Edit Users** option from the **Actions** menu.
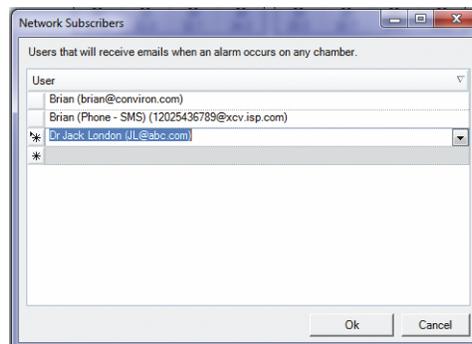
Figure 3-26   Network Email Subscribers

3.3.4   CMP6000 Alarm Triggers
Select **Tools** > **CMP6000 Alarm Triggers** to set the default actions for all CMP6000 series Chamber control systems.

Figure 3-27   CMP6000 Alarm Triggers

3.3.4.1 Global Settings

The default Alarm Triggers settings are the Global Alarm action rules applied to every CMP6000 Chamber control system.
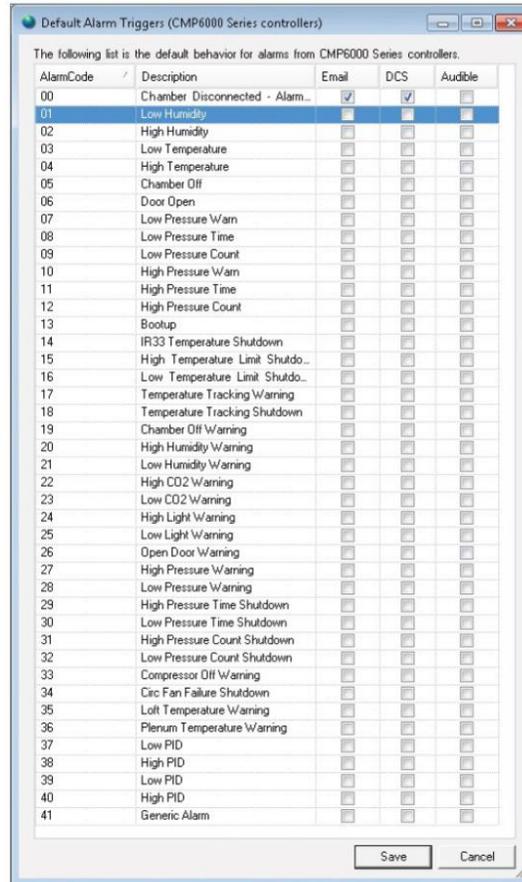
Figure 3-28   Default Alarm Triggers

To configure chamber-specific individual settings, use the Chambers Properties menu of the Chamber Thumbnail display. See the following section for details.

3.3.4.2 Chamber Settings

To change the Alarm actions of a specific Chamber:

1. From the **Central Management Main Status** display window, locate the Chamber.

2. Right-click on the Thumbnail display to bring up the Chamber menu.

3. Select **Properties** (Figure 3-29).
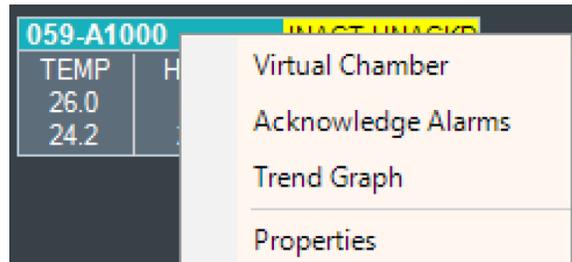
Figure 3-29   Chamber Properties

4.   Select the **Alarms** tab.

5.   On an individual alarm, add or remove the check mark (✓) to change the default actions for this number.

The settings shown in

The CM PC uses a built-in speaker for the audible alarm. Use the PC volume control to set the PC speaker volume to an appropriate volume.

Figure 3-30 are the alarm action rules applied to Chamber 001 of the CMP6000 Chamber control system.
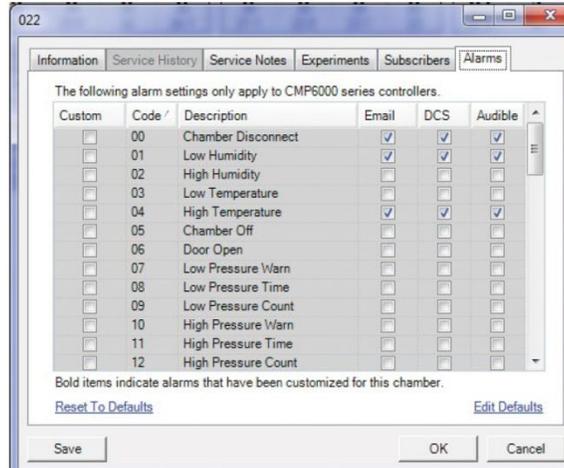
The CM PC uses a built-in speaker for the audible alarm. Use the PC volume control to set the PC speaker volume to an appropriate volume.

Figure 3-30   Chamber Alarm Settings

The settings that are grayed-out are the Global defaults that are currently applied. Overriding a Default Alarm action will add a check mark the "Custom" box for the row associated with the setting you have altered.

Each setting can be enabled (✓) or disabled (blank).

1. To set the chamber to the Default Alarm Triggers settings, click **Reset to Defaults**.

2. To make changes that will affect all chambers, click **Edit Defaults**.
   The Default Alarm Triggers Global settings window appears.

3. To accept and activate the settings, click **OK**. To exit without saving changes, click **Cancel**.

3.4 File Menu

3.4.1 Refresh All

To force a Thumbnail display refresh, from the Central Management menu bar, select **File** > **Refresh All**.
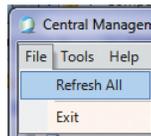
Figure 3-31   Refresh All

3.4.2 Exit

To close the Central Management window, select **File** > **Exit**.
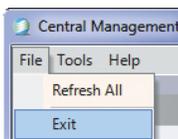
Figure 3-32   Exit

3.5 Help Menu

3.5.1 Help

To open a PDF copy of the Central Management Operators Manual, select **Help** > **Help**.

The PDF file, which is stored in *C:\Program Files\CM\Manuals\CMOperatorsManual.pdf* for 32-bit installations and *C:\Program Files (x86)\CM\Manuals\CMOperatorsManual.pdf* for 64-bit installations, can be copied to another PC and used for reference. The PDF file is not printable.
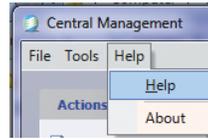
Figure 3-33   Help

3.5.2   About

To view the technical and legal details of the Central Management software (Figure 3-35), select Help > About (Figure 3-34).
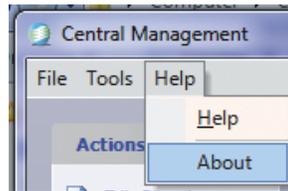
Figure 3-34   About
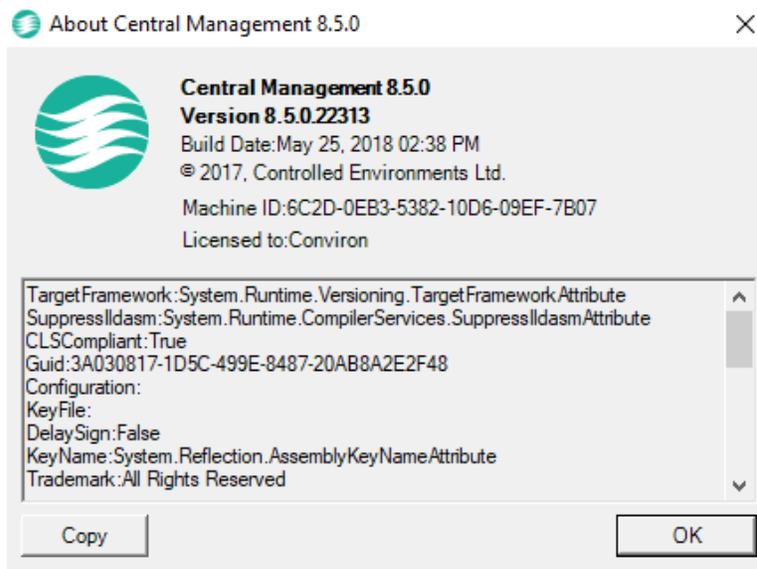
Figure 3-35   Technical and License Details

3.6   Chambers Menu Properties

To view the information of a chamber, right-click on its thumbnail display, and then select **Properties** (Figure 3-36).
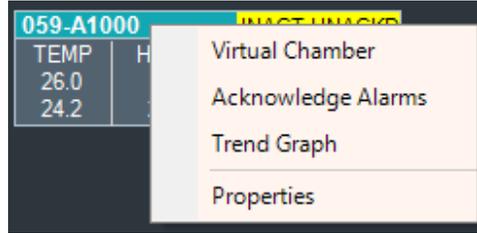
Figure 3-36   Chamber Menu

3.6.1   Information

Select a tab to view or modify. The Information tab is displayed by default. All chamber information entered in the **Edit Chambers** window is displayed for the selected chamber, as seen in Figure 3-37 Chamber Information.
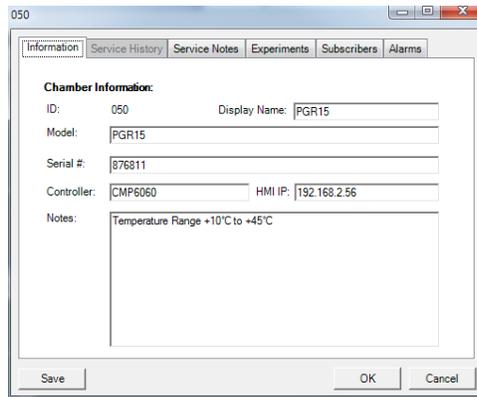
Figure 3-37   Chamber Information

Legacy chamber control systems (CMP4000 and CMP5000) will show the **Alarms** tab as disabled, as this feature is exclusive to the CMP6000 control systems.

3.6.2 Service History

The **Service History** tab shows the current operating history of control devices in the selected chamber. Each chamber's list will be different (Figure 3-38). This tab is disabled for the CMP6000 control systems.
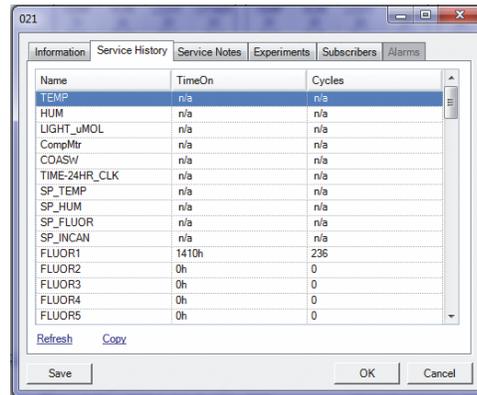
Figure 3-38   Service History

Items prefixed with **SP** are setpoints and do not have a recorded history.

To view updated values from the chamber, click **Refresh**.

To store data from the **Service History** tab, click **Copy**, and then paste the information to a spreadsheet or text editor.

Service History is also available in the Web Reports.

3.6.3 Service Notes

Service Notes can contain any useful information, such as Maintenance, Operations journal, problem log, or part replacement schedules (Figure 3-39).
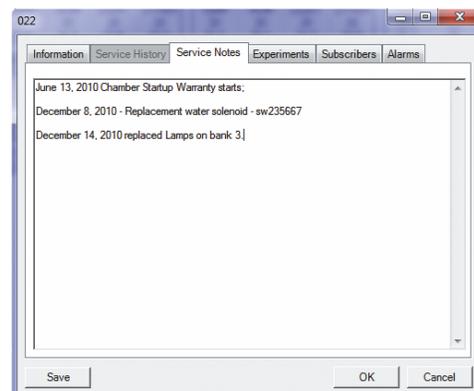
Figure 3-39   Service Notes

3.6.4   Experiments

Experiments are more than records of chamber usage (Figure 3-40). They can document the User or any informative notes that are pertinent to the scheduled experiment. The start and stop dates assist the Manager to determine the duration of all experiments. The Scheduler can print reports by Chamber or by User.
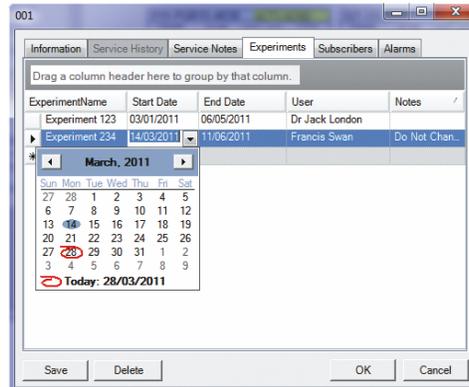
Figure 3-40   Experiment Schedule

3.6.5   Subscribers

To add a subscriber, click the dropdown arrow (Figure 3-41) to display the current user list, and then select a user account. You can only add current users to the subscriber list. To add new or edit user accounts, refer to Section 3.1.4, Edit User Account, on page 30.
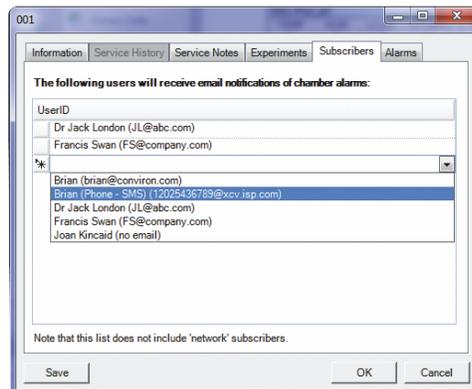
Figure 3-41   Subscribers

3.7 Trend Graph

To open the Chamber menu, right-click on its Thumbnail display (Figure 3-42). Select **Trend Graph** to plot the Chamber information.
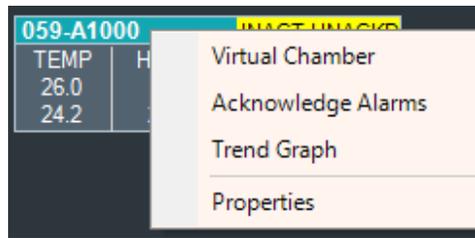
Figure 3-42   Chamber Menu

Trend Graph will display up to 4 plots of logged data from a Chamber (Figure 3-43). Up to 365 days in sequence may be shown on one plot. Additionally, Chamber Alarm impulses may be plotted on the graph.
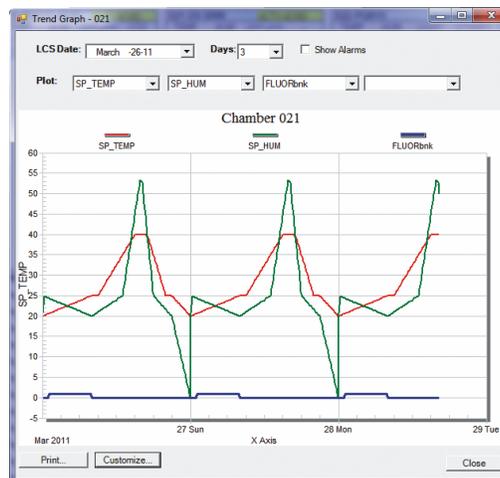
Figure 3-43   Trend Graph

Legacy chambers may have a varied selection of logged data and logging frequency. That option is set at the Chamber **Options** screen. Note that CMP6000 control systems have a fixed logging frequency (18 seconds).

To print or customize the graph, click **Print** or **Customize**.

3.8   Acknowledge Alarms

To open the Chamber menu, right-click on its Thumbnail display (Figure 3-44). Select **Acknowledge Alarms**.
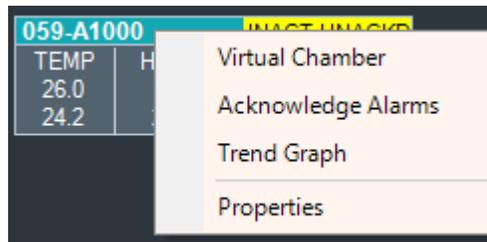
Figure 3-44   Chamber Menu

Acknowledging alarms indicates to the system that you have seen the alarm condition and subsequent action is now your responsibility. Acknowledging stops the local audible alarm and email notification as well as changes the state of the chamber display icons of the System tray, Thumbnail display, and Chambers panel. This is a chamber specific command that will only acknowledge alarms at the selected chamber.

See Chapter 4, Chamber Activities, on page 53 for details on responding to Alarms.

3.9   File Locations

Files are stored on the local hard drive in different locations since version 7.5 of the Central Management systems. Both file locations are similar in structure and differ only in their "root" location (Figure 3-45).
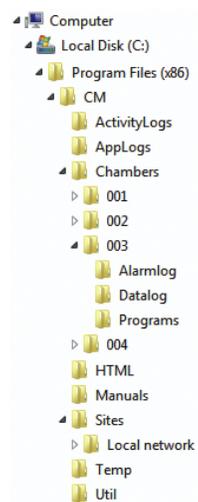
Figure 3-45   File Locations

Table 3-2 outlines the files and their locations within the Central Management system (xxx is Chamber ID).

Table 3-2   CM Files and Locations

File	Location
System files for application	C:\Program Files (x86)\CM
Application activity log files	C:\Program Files (x86)\CM\ActivityLogs
Application debuggubg*.log files (* not active by default	C:\Program Files (x86)\CM\Applogs
Log and Alarm files from Central Management	C:\Program Files (x86)\CM\Chambers\xxx
	C:\Program Files (x86)\CM\Sites\Local network\xxx\Alarmlog
Log, Alarm, and Program Files from Virtual Chamber	C:\Program Files (x86)\CM\Sites\Local network\xxx\Datalog
	C:\Program Files (x86)\CM\Sites\Local network\xxx Programs

⚠ The current 64-bit Windows installation is shown. A 32-bit system uses a similar path, but without (x86).

⚠ Do not edit the **CP4** or **CCF** files.

Under the Sites directory is the default site name *Local Network*. Central Management automatically creates (as needed) directories for Chamber Numbers, AlarmLog, DataLog, and Programs. All files are text based and readable, with the exception of .CCF configuration + .CP4 program files. These are raw Controller Files.

⚠ This page applies to the legacy CMP4000 and 5000 control system based chambers. The CMP6000 based chambers save configuration files (xxxx. CCF) by default to the "My Documents folder". You can save files to that location or add them to the existing logical CM folder structure.

PGM files are readable and editable versions of the CP4 files. Log and Alarm files are not intentionally duplicated. If Virtual Chamber is used to download Log and Alarm files from the Flash drive of a Chamber (optional storage) these files are stored in:

CM\Sites\Local network\xxx

The file data is the same, but the latter files are branded by Central Management, with received time and date, automatically storing logs in the default location:

CM\Chambers\xxx

3.10 Virtual Chamber

The **Virtual Chamber** option is used to communicate with the Chamber's control system. Many user-level functions can be performed from this interface remotely.

Right-click on the Chamber Thumbnail Display, and then select **Virtual Chamber** (Figure 3-46).
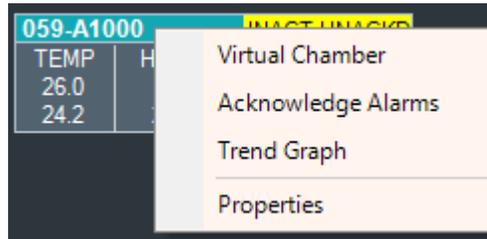
Figure 3-46   Chamber Menu

Depending on the control system type, the User interface may vary. CMP5000 and CMP4000 series control systems use a **Virtual Chamber** interface (Figure 3-47).
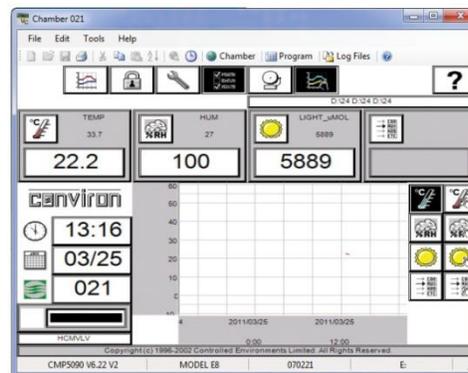
Figure 3-47   Virtual Chamber

The CMP6050 control system (Figure 3-48) and the CMP6060 control system (Figure 3-49) use the **Remote Control** interface.

Figure 3-48   CMP6050 Remote Control
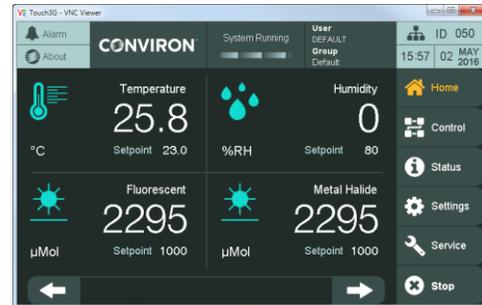
Figure 3-49   CMP6060 Remote Control

All three programs use the mouse and keyboard to make icon selections and enter information. The program editors have *cut-and-paste* editing, file import, and file export functions. Refer to Chapter 4, Chamber Activities, on page 53 for detailed instructions.

4 CHAMBER ACTIVITIES

The Chamber Activities outlines the necessary day-to-day activities in a workflow format to aid the Administrator in using the software effectively.

In this chapter, you will learn how to:

- Work with User Types and Security
- Set up Alarm Priorities, Procedures, and Actions
- Plan with Experiment Scheduler
- Operate Remote Chamber software (Virtual Chamber and Remote Control)

4.1 User Types and Security Roles

4.1.1 Administrator

The Administrator has full access to the Central Management PC and can edit Chamber Lists, Users, Experiments, respond to alarm conditions, update service logs, and print chamber usage reports. They can work at the Central Management console or via Remote Desktop access. The Administrator typically receives global email alerts. Other users can be selected to receive global email alerts – there is no restriction on the number or type of user to be alerted. Two additional Security levels are provided – *Local* and *Remote*. The Windows and Chamber logon securities protect against unauthorized changes.

4.1.2 Local Network User

These Users may or may not have access to the Central Management PC as determined by the Administrator. From any network connected PC, they can use a Web Browser to connect to Central Management. From a Web Browser, Web Reports are presented showing a thumbnail display for all chambers. Users can download alarm and data files, view service history, receive email alarm alerts on a chamber-by-chamber basis. This requires low security, as no changes can be made - that is, it is a view-only mode.

4.1.3 Remote Users

By way of the Internet, all or part of any of the User Types can be enabled, as determined by the local IT security and firewall configuration rules.

CONVIRON

> ⚠ Acknowledging, responding to, and correcting alarm conditions can prevent more serious problems. Alarm priorities are set first in the chambers' Alarms screen for CMP4000 and CMP5000 control systems. Individual parameters can be given priorities in the range of 1-99. See the CMP5090 User Guide for details. Central Management software has an Alarm actions setting for each CMP6000 chamber to enable or disable the alarm actions for each alarm condition. Refer to Section 4.2 Alarm Actions on page 54, for more information.

4.2   Alarm Actions

Central Management responds very specifically to three ranges of alarms for the CMP4000 and CMP5000 chambers and three client selectable actions for the CMP6000 chambers.

4.2.1   Above Priority 40

No Central Management response, alarm message is displayed and logged.

4.2.2   Priority 31-40

Audible alarm from Central Management PC

4.2.3   Priority 21-30

4.2.4   Email alert + Audible alarm

4.2.5   Priority 1-20

DCS alarm + Email alert + Audible alarm
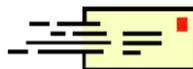
Use one of the Acknowledge Alarm buttons at the Central Management dashboard or on the Alarms Screen at the chamber to silence the alarm. Assess and correct the cause.

> A thumbnail for a particular chamber on the Central Management dashboard must be configured and active before the alarm can be received from that chamber.

> Chamber alarm messages are sent to Central Management when they are initially added to the Chamber alarm list. Existing alarm state changes are not sent to Central Management. Deleting the alarm from the Chamber will ensure it is reported to Central Management if it becomes re-activated. Central Management has an Alarm Delay function, which means the delay (5 seconds) is the time that an alarm must be present in the active state before the Dry Contacts System will be triggered. Version 7 of CCS added a DCS Reset Interval feature, which automatically resets the DCS after 10 seconds (default), permitting retriggering of the DCS for subsequent alarms.

4.3   Dry Contact System (DCS)

The DCS has two isolated sets of Form C dry contacts for alarm triggering to external systems. Typically, these may be an Autodialer and/or a Building Monitoring System (Figure 4-1).
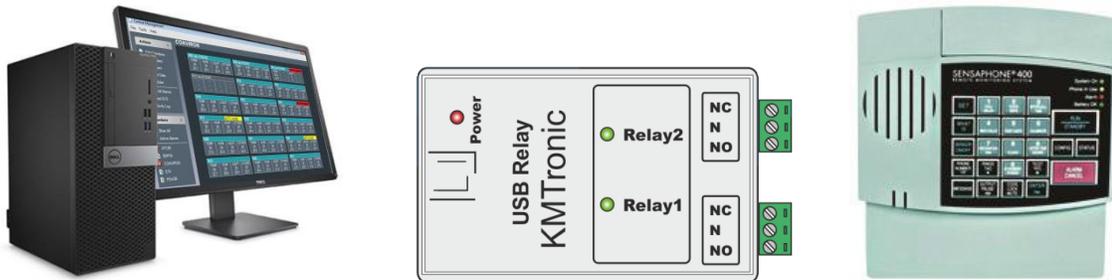
Figure 4-1   DCS and Autodialer Operation

By default, DCS automatically resets after 10 seconds, permitting retriggering of the DCS and Autodialer for subsequent alarms.

The Autodialer will respond to an alarm by dialing up to four separate telephone numbers. When the call is answered, an **Alert Condition** message is delivered and a user-recordable voice message plays automatically.

To acknowledge the call, press **555** on the phone keypad.

4.3.1   Alarm States

Normal Operation   The red power LED is on to indicate the DCS box is powered. Relay 1 and Relay 2 green LEDs are off.

Alarm Condition   Relay 1 and Relay 2 green LEDs are on and an energized relay signals an alarm condition.

Power Failure Alarm   If a power failure occurs at the Central Management PC, the relay will de-energize and remain de-energized, until power comes back on and the Central Management operating system completes its startup sequence.

Chamber Alarm   Upon receipt of a chamber alarm of high priority (1-20), the Central Management will energize the relay.

> Acknowledging the voice warning is not the same as acknowledging the alarm. The Central Management alarm and autodialer voice warning must both be acknowledged.
>
> Ensure that you are attending to the alarm at the chamber that caused the dial-out event. If you are onsite, check the Central Management dashboard or the chamber itself to diagnose what action needs to be taken to correct the problem. If you are remote, you can connect to the Central Management dashboard to view the alarm condition or use email alerting/web reports to view the actual chamber number and alarm condition. If the chamber must have the program settings altered, you can use the Central Management dashboard or personally access the chamber.

4.4   Acknowledging Alarms with DCS

Alarm sequence

Sequence of operation   1   During normal operation, when there are no active, unacknowledged alarms with a priority in the range of 1 to 20 on the network, the NORMAL (green) LEDs are off.

Alarm and delays   2   When an alarm occurs on any network chamber, the alarm delay is started. (The default delay is 5 seconds.)

                        3   The audible alarm is triggered and the email alert is sent.

                        4   The alarm delay lapses and the triggering of the DCS box occurs. The Relay 1 and Relay 2 green LEDs on the dry contact box comes on. The green LED lights remain on until the alarm is acknowledged or automatically resets after 10 seconds.

Autodialer	5	The autodialer input recognition delay starts (5 seconds default) and after the delay lapses, the autodialer will initiate calling the designated phone numbers (how many times it calls and how many numbers it calls depends on the programmed settings of the autodialer).
Acknowledge	6	When the call is answered, you can acknowledge the alarm warning by pressing the appropriate touch tone buttons) on the telephone (555 is default).
Reset	7	The "Reset DCS" button returns the dry contact box to its normal state. The Relay 1 and Relay 2 green LEDs will turn off. If another high priority alarm occurs while you are diagnosing and fixing the present problem, the system will be ready to phone out again. If this crucial step is skipped, the autodialer cannot be triggered to call out for the subsequent alarms.
Diagnose	8	The next step is to diagnose the chamber that had the alarm and take the necessary steps to correct the fault.

The *DCS Reset interval* feature automatically resets the DCS after 10 seconds by default, and permits retriggering of the DCS and auto dialing systems for subsequent alarms. If set to **0**, the DCS will not reset after an alarm. To reset the alarm, use the **Actions** menu on the Central Management dashboard to force a manual **Reset DCS**.

Sensaphone autodialer connected to older Central Management systems used a default *input recognition time* of 3 minutes. This is not compatible with the Central Management default settings. The result will be an autodialer that is never activated by alarms. The recommendation is to reduce the input recognition time to 5 seconds.

The reason for the 3-minute input recognition time in earlier systems was to mask a Central Management sanity reset from alarming. While instability was an issue in Windows operating systems prior to Windows XP, this situation is very unlikely to occur with the current Central Management version.

4.5 Scheduling Activities

4.5.1 Chamber Scheduler
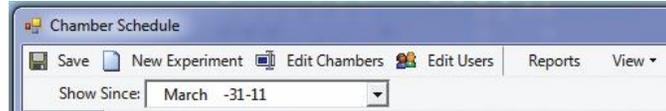
Figure 4-2   Chamber Scheduler Toolbar

4.5.2 Save

Save is required when changes are made. If you do not save, when you exit, changes will be lost.

4.5.3 Show Since

The **Show Since** option places the center of your scheduler view at the date you selected from the dropdown calendar.

4.5.4 Time Scale

Select **View** > **Time Scale**.

The default settings of the time scale appear. Adjust both the bottom and middle tiers to show a time scale that suits your needs.

4.5.5 Group By

The Default View shows the Chamber ID (Figure 4-3).

To change the grouping:

1.   Select **View** > **Group By**, and then select a new item category from the **Group Items By** list.

2.   Click **OK** to update your scheduler display.
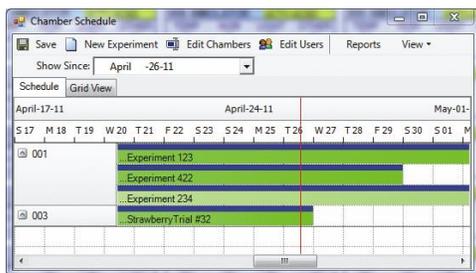
Figure 4-3   Default View
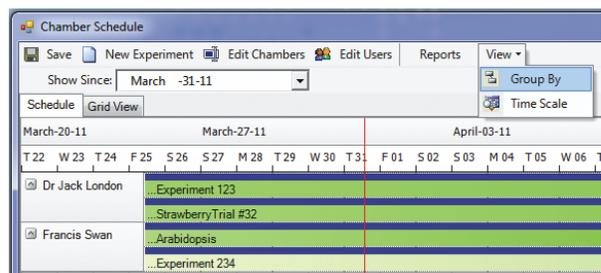
Figure 4-4   User View

To learn more about editing the settings of a Chamber and User Account, refer to Chapter 3, Using Central Management, on page 27.

4.5.6   Views

The Administrator has access to two different views of the chamber information.

4.5.7   Schedule View

More than one experiment may be attached to a Chamber, as seen in Figure 4-3 Default View. However, the list of experiments may be rolled up to show only a single line per Chamber (Figure 4-5).
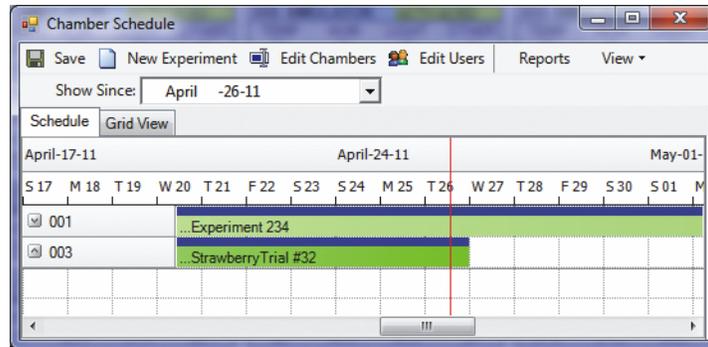
Figure 4-5   Timeline View

The Schedule time line changes color to a darker shade as time progresses. The red line indicates the current date.

4.5.8   Grid View

Select the **Grid View** tab to customize the order of the experiment view. Click a column header to sort the view by its title (Figure 4-6).
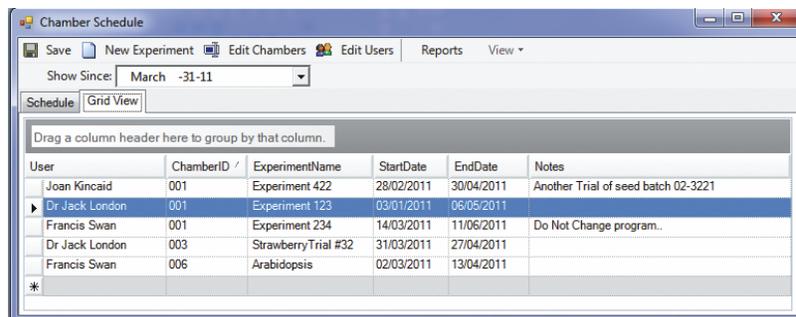
Figure 4-6   Grid Line View

4.5.9   New Experiment

On the **Chamber Schedule** toolbar, click **New Experiment** [New Experiment] to plan every aspect of the chamber's usage.
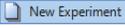
The **Chamber**, **User**, **Start**, and **End** fields are mandatory and require values. However, additional information such as **Name** and **Notes** will assist with administration tasks (Figure 4-7). Experiment information appears on each Chambers' properties menu as a tab (Figure 4-8).

Figure 4-7   Experiment Info

The experiment name is displayed on the Chamber Scheduler main window and helps differentiate one experiment from another. By default, lists are sorted by Chamber ID, but may be re-sorted by any of the displayed fields.

There are three types of notes for each Chamber:

- **Experiment Notes**—Contain experiment-related information as well as guidelines and warnings
- **Chamber Notes**— Contain technical specifications about the chamber
- **Service Notes**—Contain information for chamber maintenance

Right-click on the thumbnail display of a chamber to open the Chamber menu, and then select **Properties**.

The **Chamber Information** dialog box appears (Figure 4-8).

Figure 4-8   Chamber Information

4.5.10 Reports

1. On the **Chamber Schedule** toolbar (Figure 4-2), click **Reports**.
    The **Usage Reports** dialog box appears (Figure 4-9).
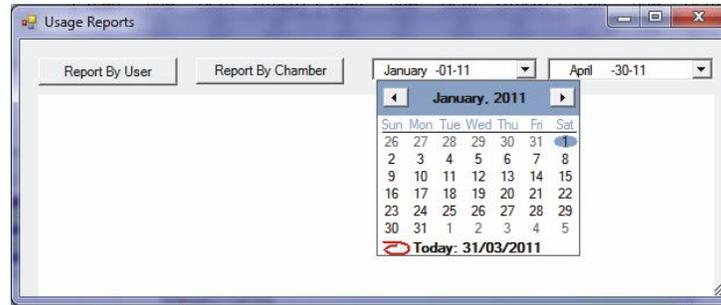
Figure 4-9   Usage Reports

2. Select the date period for the usage report.

3. To view usage information by user account, click **Report By User** (Figure 4-10).

To view usage information by chamber, click **Report By Chamber** (Figure 4-11).
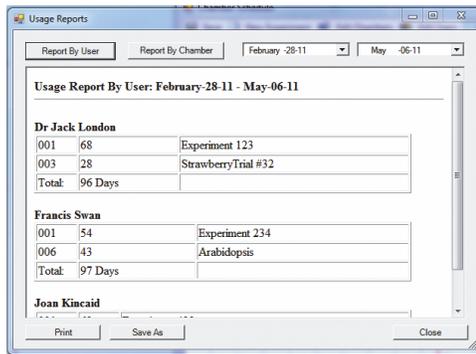
Figure 4-10   Usage Reports by User
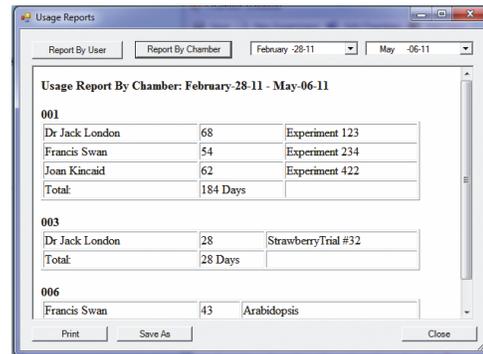
Figure 4-11   Usage Reports by Chamber

4. Print or copy to clipboard as needed.

4.6   Using Virtual Chamber – CMP4000-5000 Legacy

4.6.1   Start a Virtual Session

Depending on the type of control system used in the chamber, the interfaces may vary. The following information, Sections 4.6 through 4.11, refer to the CMP4000 and CMP5000 series control systems.

For details regarding the CMP6000, refer to Section 4.12.

For details regarding the CMP6060, refer to Section 5 (Central Management uses the appropriate interface, according to chamber configuration, as discussed in Section 2.6, Adding a Chamber to the Status Display on page 19).

From the Central Management dashboard, right-click on the chamber thumbnail, and then select **Virtual Chamber** (Figure 4-12).
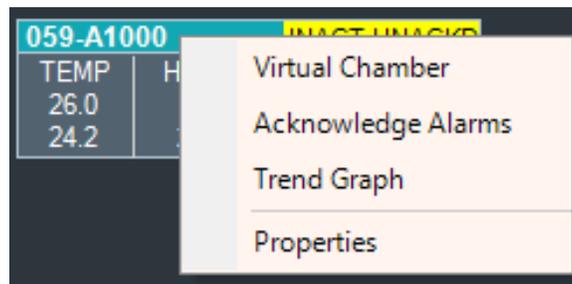
Figure 4-12   Chamber Menu

The dialog of the selected virtual chamber appears (Figure 4-13).
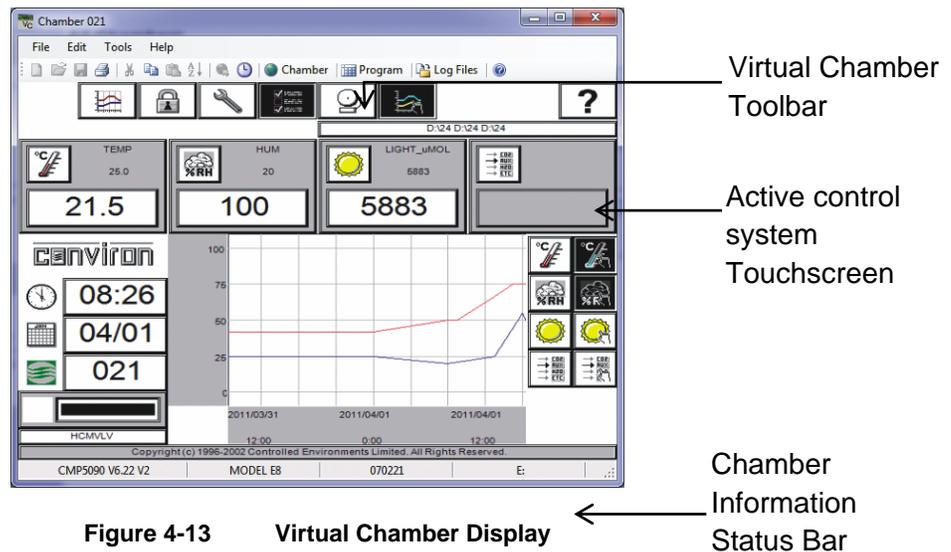
Figure 4-13   Virtual Chamber Display

4.6.2   Could Not Connect

The following error message (Figure 4-14) may appear, indicating a complete communications failure. Check all settings and connections and try again. If the problem persists, refer to Chapter 7, System Maintenance and Troubleshooting, on page 108 or call Conviron Client Services.
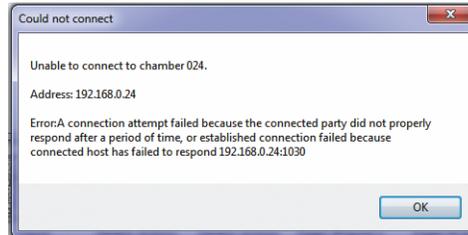
Figure 4-14   Could Not Connect

4.6.3   Time-out

The following message (Figure 4-15) appears to indicate that the inactivity time-out period of 15 minutes has expired and the Virtual Chamber has automatically disconnected from the Chamber. This ensures that the control system display at the Chamber is available for local access.

Figure 4-15   Disconnected

4.7   Virtual Chamber Functions
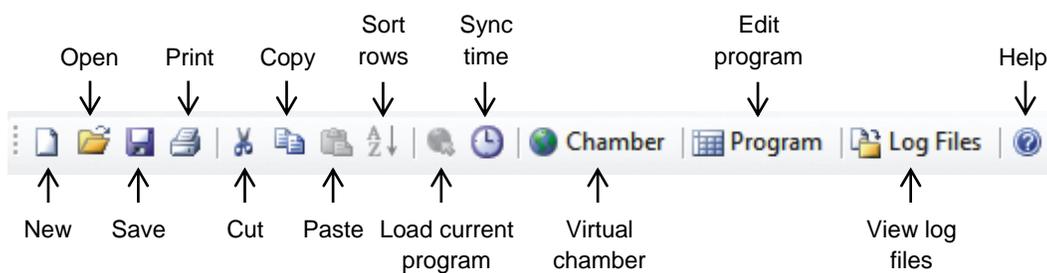
Figure 4-16   Virtual Chamber Toolbar

4.7.1   Toolbar

New	Clears the spreadsheet
Open	Imports program (pgm) from disk
Save	Saves the current program to the Chamber
Print	Prints the current program or Chamber screens
Cut	Cuts content of selected cell(s)
Copy	Copies content of selected cell(s)
Paste	Pastes clipboard contents to selected cell(s)
Sort	Arranges rows (time lines) in chronological order
Load	Loads the current program into the Chamber Editor (ready to run)
Sync	Synchronizes the Chamber date and time to Central Management
VC Panel	Displays virtual Chamber screens of logged-in chamber
Program Editor	Edits Chamber programs on Virtual Chamber program editor
Log files	Downloads and displays alarm and data of files from Chamber storage drive
Help	Opens the Help Document VC3.pdf

4.7.2   Menus

4.7.2.1   File
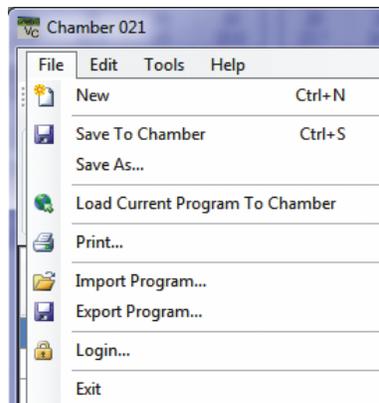
Figure 4-17   File Menu

The **File** menu contains the same functions as the icons on the toolbar, with the following additional functions:

Save As   Permits saving the loaded program to a different number

Export   Exports program (pgm) to Program disk

Login   Allows entering the required security information when Chamber Security is enabled

4.7.2.2   Edit
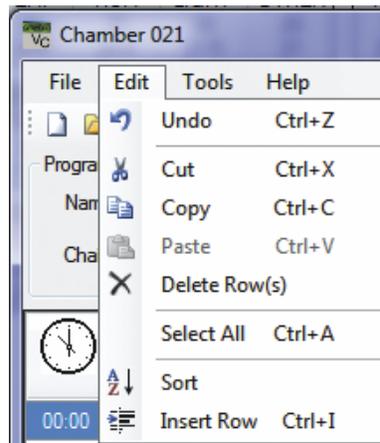
Figure 4-18   Edit Menu

The **Edit** menu contains the same functions as the icons on the toolbar, with the following additional functions:

Undo   Undoes the last operation

Delete Row(s)   Deletes the selected row(s)

Select All   Selects all the cells of the spreadsheet

Insert Row   Inserts a blank row at the selected location

4.7.2.3   Tools

Figure 4-19   Tools Menu

The **Tools** menu contains the same functions as the icons on the toolbar, with the following additional functions:

Upgrade   For upgrading the software of the control system. Conviron is the sole
                           provider of software and can add new functions to existing control systems.

Send File   Factory-only software feature

Retrieve File   Factory-only software feature

4.7.2.4   Help

This 🛈 icon will open the Virtual Chamber Manual in PDF format. All User Manuals are located in the default installation directory:

C:\Program Files (x86)\CM\Manuals

4.8   **Chamber Panel**
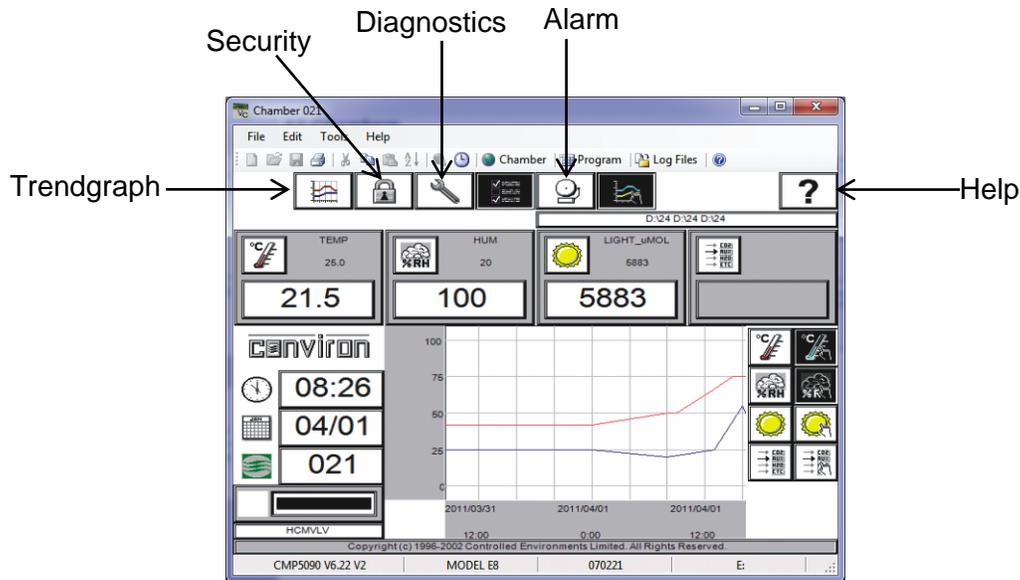
Figure 4-20   **Virtual Chamber**

See the *CMP4030 User Guide* or *CMP5090 User Guide* for full details about the control system software functions and use. All the expected control system features are available at Central Management, using a mouse click rather than a screen touch.

4.9   **Program Editor**

To start the program editor (Figure 4-21), click **Program** .

With Central Management, you can write a program, store it on the Central Management system, and download it to any chamber control system on the network.

In this section, you will learn to:

- Understand the name and function of each section of the Program Editor
- Write programs using the Program Editor
- Print a program from the Program Editor
- Load programs onto a chamber control system from the Program Editor
- Save programs onto chamber control system from the Program Editor
- Import and Export a program into the Program Editor from Central Management
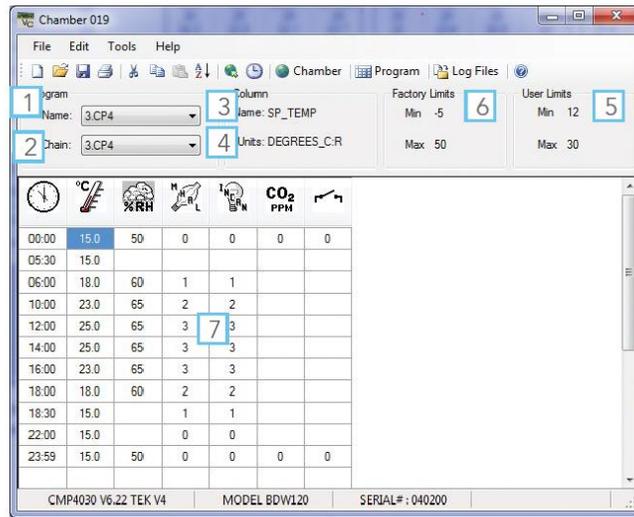
Figure 4-21   Program Editor

4.9.1   **Parts of the Program Editor**

No.	Name	Description
1	Name list	Lists the programs stored on the chamber control system. The name of the program currently loaded into the Program Editor is displayed.
2	Chain list	Lists the programs stored on the chamber control system. The program name displayed is the program to which the program currently loaded into the Program Editor is chained.
3	Column	Displays the zone currently selected in the table
4	Units	Displays the unit of measurement used by the current zone. For example: °C for temperature
5	User Limits (Active Zone Operating Range)	Displays the Chamber operating range for the active zone
6	Factory Limits (Active Zone Alarm Limit Range)	Displays the range of setting for the Alarm Limits that apply to the active zone. You cannot change the factory settings.
7	Program table	A series of columns and rows in which you enter your program

4.9.2   Using the Program Editor

4.9.2.1   Clearing the Program Table

To clear the program table to start writing a new program, from the **File** menu, select **New**.

Figure 4-22   New Program

You can also click the **New** icon on the Virtual Chamber toolbar, or press **CTRL + N** on your computer keyboard.

If there are values in the table that have not been saved, a message appears to ask if you want to save changes. Click **Yes** to save the changes or **No** to discard the changes.

The program table is cleared.

4.9.2.2   Entering Values

To enter a value into the program table, select a cell, and then enter a value.

4.9.2.3   Deleting Values from Cells

1.   To clear a value from a cell or series of cells, select the cell or range of cells that you want to clear.

2.   From the **Edit** menu, select **Cut**.

Figure 4-23   Delete

You can also click the **Cut** icon or press **Ctrl + X**. The selected cells are cleared and the values are copied to the Windows clipboard.

4.9.2.4   Copying Values in Cells

1.   To copy a cell or range of cells, select the cell or range of cells that you want to copy.

2.   From the **Edit** menu, select **Copy**.

Figure 4-24   Copy

You can also click the **Copy** icon 📄, or on your computer keyboard, press **Ctrl + C**. The values of the selected cells are copied to the Windows clipboard.

4.9.2.5   Pasting Values into Cells

1.   To paste values that you have cut or copied to new cells, select the cell to which you want to paste values.

If you are pasting a range of cells, select the first (top, left) cell in the range.

2.   From the **Edit** menu, select **Paste**.

Figure 4-25   Paste

You can also click the **Paste** icon 📋 or press **Ctrl + V** on your computer keyboard.

The last value that was cut or copied is pasted to the selected cell or cells.

4.9.2.6   Selecting the Whole Table

You can select an entire program table, copy it, and append it to another program.

To select the whole program table, from the **Edit** menu, select **Select All**, or on your computer keyboard, press **Ctrl + A**.

Figure 4-26   Select All

4.9.2.7   Inserting a Row

To insert a row into the program table, select a cell in the row above where you want to insert a row.

From the **Edit** menu, select **Insert Row**, or on your computer keyboard, press **Ctrl + I**.

A blank row is inserted after the row you selected.

Figure 4-27   Insert Row

4.9.2.8   Deleting a Row

To delete an entire row, select a cell in the row that you want to delete, and then from the **Edit** menu, select **Delete Row(s)**.

Figure 4-28   Delete Row

The entire row is deleted and the following rows are moved up in the table.

4.9.2.9   Sorting Rows

To sort rows by time, from the **Edit** menu, select **Sort** or click the **Sort** icon $^{A}_{Z}\!\downarrow$.

Figure 4-29   Sort Rows

The program rows are sorted chronologically.

4.9.2.10 Undo Edit

To undo an edit and restore the cell(s) to prior values, from the **Edit** menu, select **Undo**, or on your computer keyboard, press **Ctrl + Z**.

Figure 4-30   Undo

The value(s) are restored to the affected cell(s).

4.9.2.11 Saving a Program to a Chamber Control System

After writing or editing a program in the Program Editor, assign a name to the program before saving it. Save the program on the chamber control system before loading and running the program.

To save an already named program that was just edited, from the **File** menu, select **Save**, or click the **Save** 🖫 icon, or on your computer keyboard, press **Ctrl + S**.
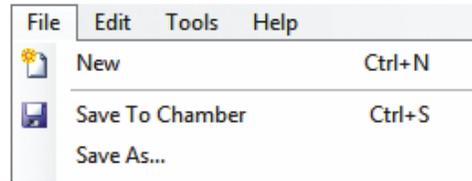
Figure 4-31   Save to Chamber

To save an unnamed program that was newly created:

1.   From the **File** menu, select **Save As** (Figure 4-31), or click the **Save** 🖫 icon.
      The **Save As** dialog box appears.

2.   Enter a program number that is numeric only and is a maximum of eight characters,
      and then click **OK**.

The program is saved on the chamber control system with the numeric name assigned.

4.9.2.12 Saving a Program on Central Management

To save a program written in the Program Editor on Central Management:

1.   From the **File** menu, select **Export Program** (Figure 4-32).
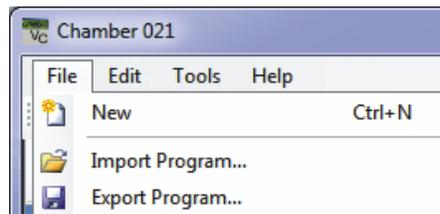
Figure 4-32   Export Program

2.   In the **File Name** field, enter a name for the program (Figure 4-33). The program name
      can be a maximum of up to eight characters
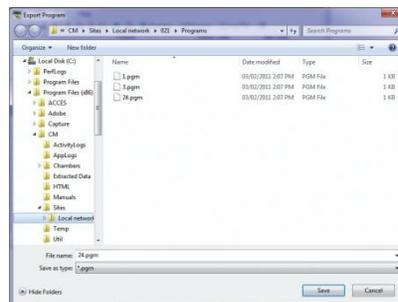
Figure 4-33   Export Program Dialog Box

If you want to save the program with an existing file name, select a name from the File Name list. Note that your changes will overwrite the old values in the selected program.

If you want to save your file to a different directory or drive, select a new path from the Directories and Drives lists.

3.   Click **OK**. The program is saved in Central Management.

Programs stored in Central Management have a file extension of .pgm and are text-based. They can be opened and edited with Excel or text editors.

4.9.2.13 Loading a Program to the Program Screen of the Chamber Control System

Before starting a program, first load the program into the Program screen of the control system. You cannot start a chamber program from the Program Editor.

To load a program, make sure that you have saved the program on the control system as described in the section 4.9.2.11, Saving a Program to a Chamber Control System, on page 71.

1.   From the **File** menu, select **Load Current Program to Chamber**, or click .
      The program is loaded to the Program screen.
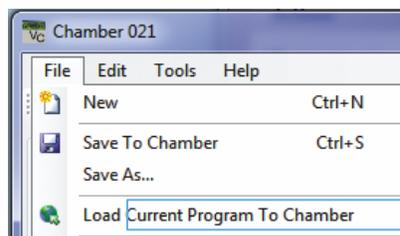
Figure 4-34   Load to Chamber

2.   Go to the Chamber panel, and then navigate to **Program Spreadsheet** to run the program.

4.9.2.14 Opening a Program Saved on the Central Management System

To open a program saved on the Central Management system:

1.   From the **File** menu, select Import **Program**.
      The **Import Program** dialog box appears.
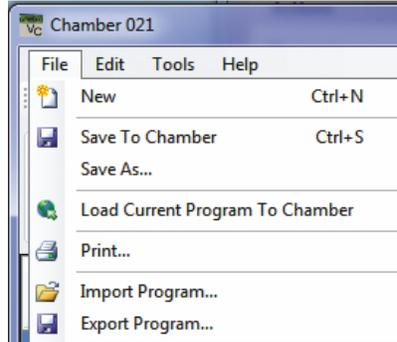
Figure 4-35   Import Program
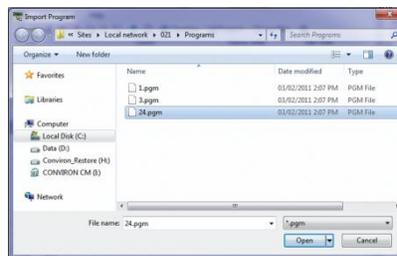
Figure 4-36   Import Program Dialog Box

2.   From the file name list, select the file that you want to open.

        If you do not see the file you want, select a new directory or drive from the directories
        and drives lists.
        Programs stored on the Central Management system have a file extension program.

3.   Select a file, and then click **Open**.
        The program you selected appears in the Program Editor.

4.10 Printing a Program

To print a copy of the program that is currently loaded into the Program Editor, from the **File** menu, select **Print** or click 🖨.
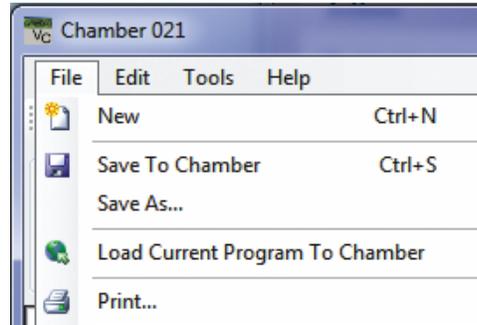
Figure 4-37   Print Program

4.11 Log Files

If the chamber is equipped with additional log storage, the Virtual Chamber can access, download, and view both Alarm and Data logs. The Virtual Chamber status bar shows if a storage drive is installed on a Chamber (Figure 4-38).

Floppy Storage
or Flash Card

Figure 4-38   Chamber Status Bar

To access the log files on the control system, on the Virtual Chamber toolbar, click 📄 Log Files .

4.11.1 Sync

Before working on the files from the Chamber control system, first sync the files. In other words, download the files from the Chamber control system.

1.   From the **Sync Files** dropdown menu, select the number of days to sync data from the chamber to Central Management (Figure 4-39).
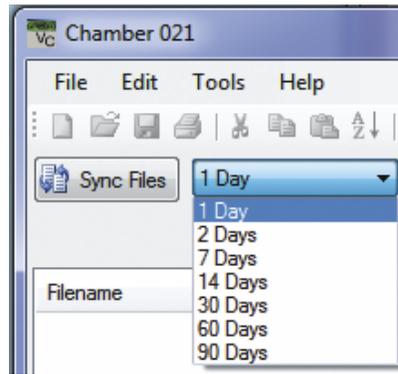
Figure 4-39   Select Sync Duration

2.   Click the **Sync Files** button .
        The Virtual Chamber retrieves the files from the Chamber control system. If no file
        exists, then nothing is downloaded.
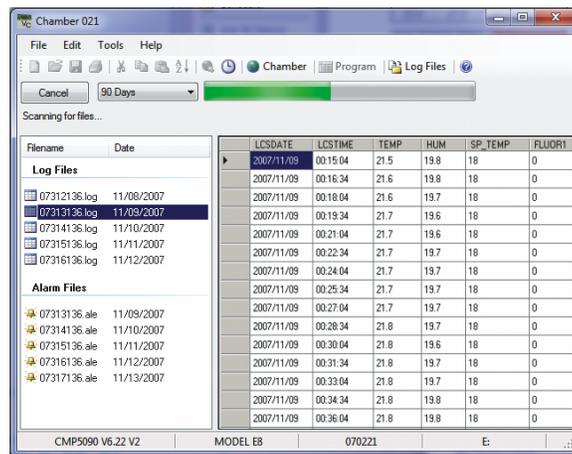
Figure 4-40   Sync File Progress

A progress indicator and file listing shows the file downloading progress (Figure 4-40).

4.11.2 File Locations

Central Management stores the files retrieved by Virtual Chamber on the local hard drive under:

C:\Program Files (x86)\CM/Sites

Inside the Sites directory is the default site named *Local network*.

Inside the default site *Local Network*, the Virtual Chamber automatically creates (as needed)
directories for Chamber Numbers, AlarmLog, DataLog, and Programs. All files are text-based and

readable, with the exception of .CP4 program files. These are raw Controller files, and the PGM files are the readable versions.

> ⚠ Do *not* edit the CP4 files.

CMService Logs

Virtual Chamber
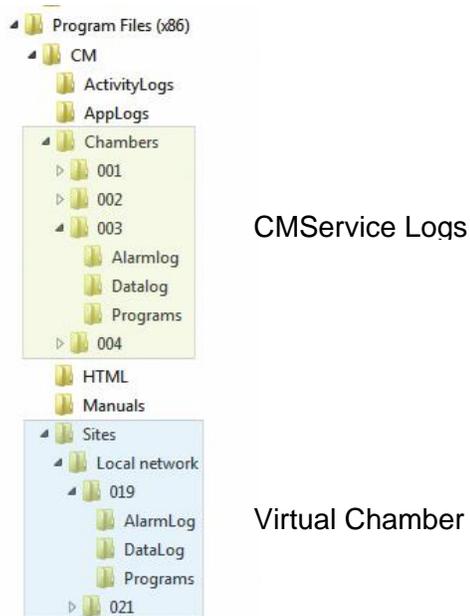
Figure 4-41   File Locations

4.11.3 View

Once the log files are retrieved, selecting a file name in the left pane will display its contents in the right pane (Figure 4-42). The data view can be scrolled, sorted, and copied. If a selected file shows no data in the right pane, it is likely that the storage media is full and needs to be cleared.

Figure 4-42   Log File View

4.12 Software Updates for CMP4030 and CMP5090

Conviron can offer software upgrades to Chamber control system software to enhance the operation of the Chamber, add new features and change the mode of the alarming functions. Contact Client Services for details.

4.12.1 Floppy vs. Flash vs. Hard Drive

Depending on the physical characteristics, age, and versions of the hardware and software, the features of the CMP control systems vary. Conviron maintains detailed information that is easily accessed by the chamber serial number. The current features as well as the upgrade abilities can be determined by providing this information in any upgrade request.

4.12.2 Prepare Package

Conviron provides the upgrade software package on Floppy disk, Flash Card, or by way of electronically transferred zip file (email or the Conviron FTP site).

For installation by Central Management or Virtual Chamber, unzip and copy the update package to the local hard drive. Logically if you are to upgrade Chamber 3, place the update package in a directory within file structure of Chamber 3 (Figure 4-43).
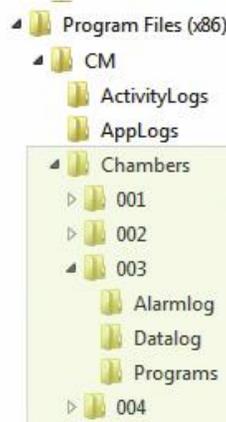
Figure 4-43   Chamber Directory

4.12.3 Log In

In the Central Management system, right-click on the chamber thumbnail, and then select **Virtual Chamber** (Figure 4-44).
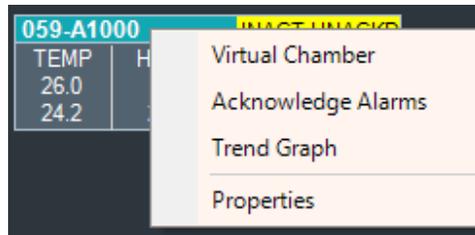
Figure 4-44   Virtual Chamber Login

4.12.4 Security

A minimum Security Level 40 is required for the *Software Upgrade* feature. This protects the Chamber control system from accidental corruption by unauthorized personnel. After logging in to the chamber, from the **File** menu, select **Login**.

Enter a user name and password that have security level 40.

Figure 4-45   Security Dialog

Contact your administrator or Conviron for access information.

4.12.5 Locate Upgrade

1. From the **Tools** menu, select **Upgrade** (Figure 4-46).
The upgrade dialog box appears.
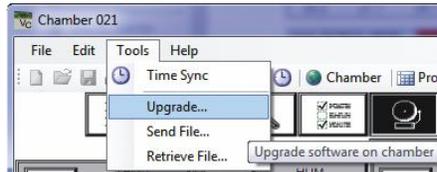
Figure 4-46   Tools Upgrade

2. Click **Browse**, and then navigate the directories to: *C:\Program Files (x86)\CM\Chambers\003\Update*

4.12.6 Serial Number

All Conviron products are identified by serial number; therefore, upgrades must be for the *matching* serial number.
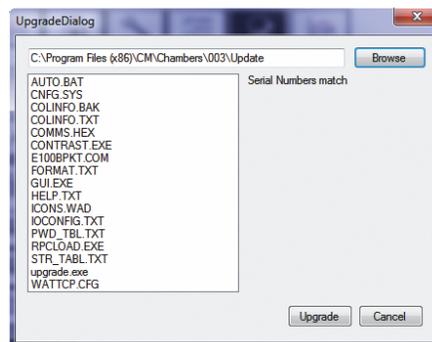
Figure 4-47   Upgrade Dialog Serial Match

If you see the "DO NOT MATCH" message, do *not* continue. Cancel the operation, and then contact Conviron Client Services for assistance.

Once the Serial Numbers are confirmed to match, click **Upgrade**. The **Upgrade File Transfer** dialog box appears to show the progress of the update procedure.

4.12.7 Reboot

Once all the files have been transferred to the Chamber control system, a **Reboot** dialog box appears (Figure 4-48). Click **Yes** to restart the Chamber control system.
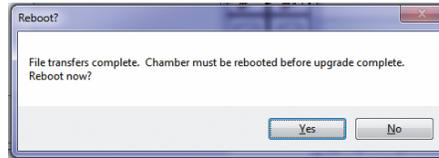
Figure 4-48   **Upgrade Complete**

Additionally, power to the chamber control system needs to be cycled off, then on again after 10 seconds.

The control system should restart and in a minute or two, show the status screen. If this does not occur as expected, repeat the power cycling and follow the recommended startup procedure for CMP control systems as outlined in the *CMP4030 – CMP5090 User Guide* or *Conviron CMP4030 Version 6.00 - 6.20 Software Update Guide.*

5 REMOTE CONTROL

5.1 Using Remote Control – CMP6050

5.1.1 Introduction

The CMP6050 is the most advanced control system developed by Conviron. Configured to your chamber specifications from the factory, the CMP6050 offers a wide array of setup, control, and alarm features to tune the configuration to your specific requirements. As well, the scalability of the CMP6050 accommodates additional Input/Output ports if your research requires additional sensors.

> Always keep in mind that changes made remotely to a chamber will affect its electrical and/or mechanical operations, even if you are not visually monitoring and physically present at the chamber.
>
> Operating the chamber remotely, while others are occupying or servicing the chamber, *could be hazardous and may result in personal injury* to service or other on-site personnel. As such, perform parameter changes by way of CM *only* if you are absolutely sure that *no one else* is occupying or servicing the chamber.

5.1.2 Remote Control Operations

The Remote Control Main Menu shows all of the software features (Figure 5-1).
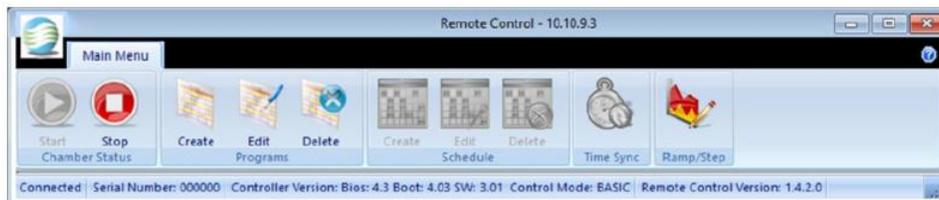
Figure 5-1   Remote Control Main Menu

Remote Control lets you do the following tasks:

- Connect to a chamber
- Start and Stop a chamber schedule
- Create, edit, or delete Programs and Schedules
- Perform Time Synchronization
- Modify Chamber Ramp and Step Operation

CONVIRON

5.1.3 Chamber Communication

5.1.3.1 Addressing

5.1.3.1.1 TCP/IP

All Chamber settings are done in the CMP6050 Options screen.

5.1.3.1.2 SNMP

Port 161 is the standard SNMP port. This port is not alterable.

5.1.4 Remote Access

5.1.5 Firewall

Windows or third-party firewall software must allow the SNMP port (161) to pass through from the Chamber to the Central Management and/or Remote Control software.

5.1.6 Chamber Information

When connected to a Chamber, the Chamber information is displayed in the status bar of the **Remote Control** dialog box (Figure 5-2).
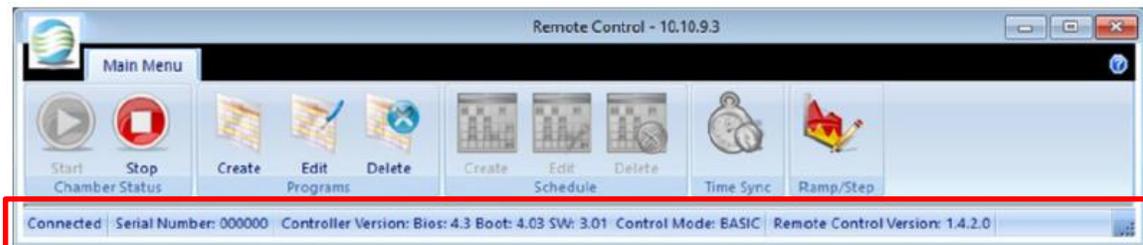
Figure 5-2   Remote Control Status Bar

Connection status, Chamber serial number, control system version, and remote control software version are displayed. Access to the CMP6050 control system is by way of Central Management.

5.1.7 Connecting to Chambers

To connect to a chamber, right-click on the Chamber thumbnail on the Central Management status window, and then select **Virtual Chamber**.

Once you are connected to a chamber, the Remote Control main menu appears (Figure 5-3).

Figure 5-3   Remote Control Main Menu

During a Remote Control session, the Chamber display is locked from local use. This ensures that only one user at a time has access to the chamber.

5.1.8   Disconnect

Click the **Exit** icon ⌧ to terminate an active connection. The Remote Control software detects inactivity, and after 15 minutes, automatically terminates an active connection, releasing the Chamber display lockout after a few seconds.

5.1.9   Chamber Status

5.1.9.1   Starting and Stopping

Once you have connected to a chamber, the status of both the Chamber and the schedule is indicated in the **Chamber Status** section (Figure 5-4).

Figure 5-4   Chamber Status

If the Chamber is running, the **Start** icon is disabled and the **Stop** icon is active, indicating that you can stop the Chamber at any time.

When the Chamber is stopped, the **Start** icon becomes active.

When the **Start** icon is selected, you are prompted to pick a program to run from the schedule.

5.1.10 Programming

5.1.10.1 Creating a Program

1.   Click the **Create** icon [icon] to start creating a program.
     In the **Program** ID field, the next unused program number becomes available (Figure 5-5).

Figure 5-5   Program Selector

2.   Click **Select** to accept the new number or use the spinner to choose another number, with only the unused number displayed.
     The Program Spreadsheet appears.

3.   Use the Program Spreadsheet Tools to insert timelines specific to your needs.

For more information, refer to Section 5.1.10.2, Editing a Program, on page 86.

5.1.10.1.1 Program Spreadsheet Tools
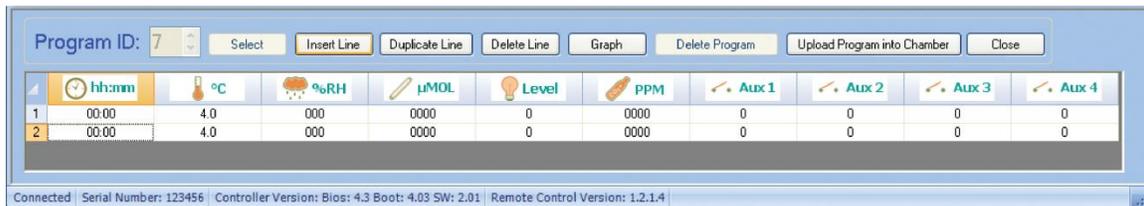
Figure 5-6   Program Spreadsheet Tools

Click	To
Insert Line	Insert a time line with default settings.
Duplicate Line	Insert a copy of an existing line.
Delete Line	Remove the selected line or lines from the program.
Sort Lines	Arrange the lines in ascending or descending order, according to the selected column header.
Graph	Display data graphically. Highlight one or more columns by selecting the column header with a right-click, and then click **Graph**.
Upload Program	Save the new or edited program to the Chamber control system
Close	Close the **Program Spreadsheet** window. Unsaved changes are lost.

5.1.10.2 Editing a Program

1.   Click the **Edit** icon ![Edit] to start the editing a program.

2.   Click **Select** to accept or use the spinner to choose another number. Only used program IDs will be displayed.
      The Program Spreadsheet toolbar becomes active.

3.   To insert a time line with default settings, click **Insert Line**.

4.   To sort the lines by column header, select **Sort Lines**, and then click a column header to arrange the lines in ascending or descending order, according to the selected column.

5.   To view data graphically, click **Graph** ![Graph].

Programmed parameters can be easily verified by highlighting one or more columns with a right-click. The column header changes color to indicate selection.
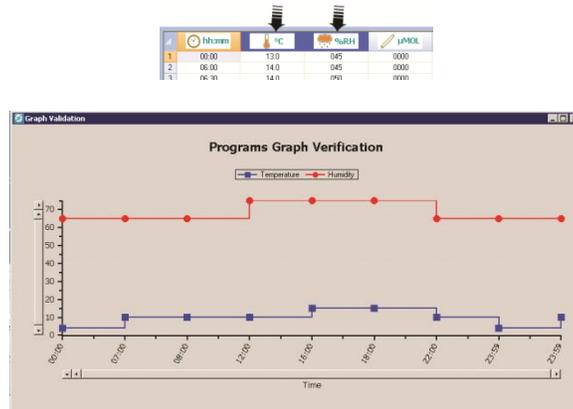
Figure 5-7   Program Verification

6.   Click **Upload Program** to save the current spreadsheet program to the chamber. Otherwise, click **Close** to exit the window and lose unsaved changes.

Before you can run the program, first add it to a Schedule. Refer to Section 5.1.11.1, Creating, Editing, or Deleting a Schedule, on page 87 for complete details.

5.1.10.3 Deleting a program

The Program Spreadsheet toolbar becomes activated.

Click	To
Delete Program	Delete the currently selected program
Close	Quit the Program. Unsaved changes are lost.

5.1.11 Scheduling

5.1.11.1 Creating, Editing, or Deleting a Schedule

> Creating a schedule is only allowed if there is no existing schedule. Once the schedule is created, the **Delete** button becomes activated.
>
> Editing a schedule requires an existing schedule.
>
> Deleting a schedule is only allowed if there is an existing schedule. Once the schedule is deleted, the **Create** button becomes activated.

5.1.11.2 Schedule Table Tools

Click	To
Insert Entry	Add a line to the schedule table. Entries of program number and program repeats are defaulted to **1**, but you can change the value, as necessary.
Delete Entry	Remove a program from the schedule table
Program repeat	To set the program to repeat between 1 and 99 repetitions
Global repeat	May be set between 1 and 99 or infinite / continuous repetitions of the schedule
∞	Select the infinity symbol to set the Global Repeat to continuous.
Upload Schedule	Send the schedule to the chamber.
Close	Close the **Schedule** window. Unsaved changes are lost.

5.1.11.3 Working with the Schedule Editor

The **Schedule** section in the **Remote Control** main menu lets you create, edit, or delete a schedule (Figure 5-8).

Figure 5-8   **Schedule Section in the Remote Control Main Menu**

When you select one of the Schedule icons, the **Schedule Editor** dialog box appears (Figure 5-9).

Figure 5-9   **Schedule Editor**

To create or edit a Schedule, do the following:

1.   To open the **Schedule Editor** dialog box, click the **Create** or **Edit** icon.

2.   Add or modify the schedule entries for programs and repetitions.

3.   Set a value in the **Global Repeat** field.

4.   To save the schedule, click **Upload Schedule into Chamber**.

      If you click **Close** without uploading the schedule into the chamber, then **Schedule Editor** discards any changes.

5.   To run the schedule, select the **Start** icon , and then select a program (row) to be the first program to run (Figure 5-10).
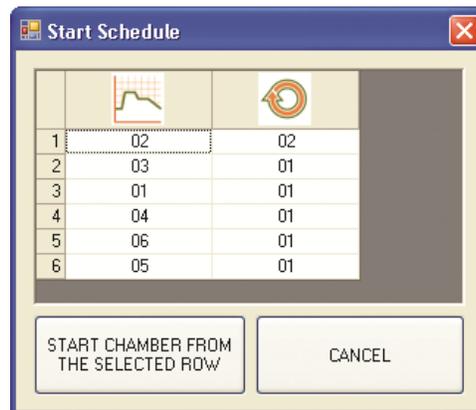
Figure 5-10   **Start Schedule**

5.1.12 Time Synchronization

Click the **Time Synchronization** icon to set the control system to the same time and date as Central Management.

The **SYNCHRONIZE TIME** dialog box appears (Figure 5-11).

Figure 5-11   Time Synchronization

> ⚠️ Altering the control system time and date will cause changes to the logged data

5.1.13 Ramp-Step Mode Setting (Prior to Version 3.10)

Previous versions of the CMP6050 software allowed Step or Ramp Mode control for temperature, and Step Mode only for all other processes.

1.   Click the **Ramp/Step** icon to open the **Ramp/Step Settings** dialog box (Figure 5-12).
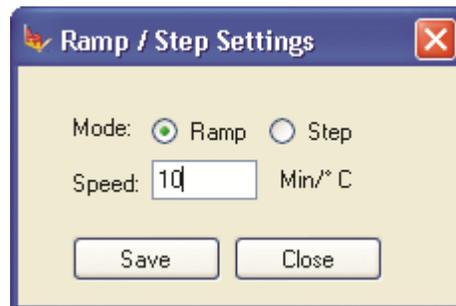
Figure 5-12   Ramp/Step Settings Software versions prior to v3.10

If you select **Step**, then the **Speed** field is disabled.

The permissible setting range is from 4 to 900 minutes per degree Celsius. Attempting to set beyond this range will cause a warning dialog to be displayed.

2.   Click **Save** to save the settings and immediately update the chamber control system.

To discard the changes and exit, click **Close**.

When the mode is changed, the Chamber confirms the setting (Figure 5-13).

Figure 5-13   Change Mode

5.1.14 Revised Process Ramping (for Version 3.10)

The CMP6050 control system version 3.10 lets you select **Step** mode, **Ramp** mode, or **Disable** mode for all process controls (Figure 5-14). The various modes can be changed while a program is running. Note that all processes can be disabled, except temperature.
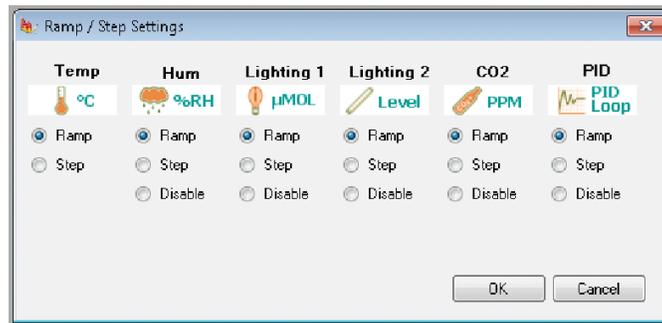
Figure 5-14   Ramp/Step Setting Software v3.10 and later

1.   Select **Ramp**, **Step**, or **Disable** for any of the processes of the dialog.

2.   Click OK to save the settings and immediately update the chamber control system.

To discard the changes and exit, click **Cancel**.

When the mode is changed, the Chamber confirms the setting (Figure 5-13).

5.1.15 Security and Login

The security settings are entirely based in the Chamber control system. This permits individual Chamber settings.

5.1.15.1 Security and Login Screen

If the security features are enabled at the Chamber control system, then a single prompt for password appears when a user logs in to the Chamber. The password entered is validated by the chamber and access is granted if the password matches the Chamber settings.

5.1.15.2 Logout Security Screen

When the Remote Control program is terminated, you are automatically logged out of the Chamber after a few seconds.

5.2 Using Remote Control – CMP6060

The CMP6060 Remote Control is an exact mirror of the local chamber display. Actions taken on the Remote Control are reflected on the local display and vice versa. The CMP6060 Remote Control is a perfect tool for local display training without being at the chamber. It allows full access to the chamber controls, settings, and parameters (with a few minor exceptions described in the following sections). It is ideal for monitoring local operation or local maintenance and troubleshooting.

5.2.1 Chamber Communication

5.2.1.1 Addressing TCP/IP

Use the **Options** screen to customize the Chamber settings, as described in Section 2.2.5, CMP6060 Networking, on page 14. The IP address of the display also has to be entered in the **Edit Chamber** dialog box as described in Section 2.6, Adding a Chamber to the Status Display, on page 19, in the HMI Address Column, or in the **Chamber Information** dialog box as described in Section 3.6, Chambers Menu Properties, on page 44.

5.2.1.2 Port

Port 5900 is the standard Remote Control port. This port is not alterable.

5.2.2 Remote Access

5.2.2.1 Firewall

Windows or third party firewall software must allow the Remote Control port (5900) to pass through from the Chamber to the Central Management and / or Remote Control software.

5.2.2.2   Connecting to Chambers

To connect to a chamber, on the Central Management dashboard, right-click on the chamber thumbnail, and then select **Virtual Chamber**.
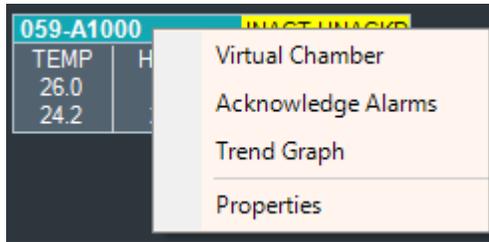
Once you are connected to a chamber, the Remote Control main menu appears on the computer screen (Figure 5-15).
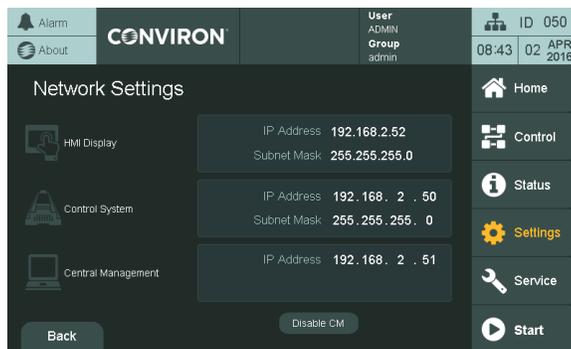
Figure 5-15   Remote Control Window

The chamber thumbnail also displays a **Connected** status (Figure 5-16).
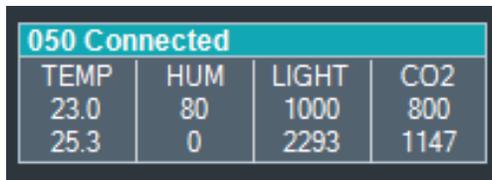
Figure 5-16   Chamber Thumbnail with Virtual Chamber Connected

During a Remote Control session, the Chamber Touch screen mirrors identically the remote HMI and both the local user and the remote user can interact with the display and observe the actions on the display.

5.2.3   Disconnect

Click the **Exit** icon ☒ to terminate an active connection. The Remote Control software detects inactivity, and after 15 minutes, automatically terminates an active connection, releasing the Chamber display lockout after a few seconds.

5.2.4   Remote Control Function

The remote control mirrors the local interface. Refer to the *CMP6060 Operator's Manual* for instructions about operating the control system. The remote control interface allows the use of the mouse and keyboard on the Central Management computer. When a keypad is displayed on the computer screen, use the CM keyboard to enter information.

The following functions are not available from the remote connection (and locked out from the local display as well when a remote connection is in progress)::

- HMI display IP address modification (because changing the HMI display IP address could terminate the remote control session)
- Overriding output values in the **Service** screen. For safety reasons, output values may not be overwritten from the remote control interface, as there is a risk of personnel working or servicing the chamber while the remote connection is active, and energizing the equipment remotely could harm people working in the chamber.

6   REMOTE CHAMBER PROGRAMMING

The Remote Chamber Programming allows the user to work with the Chamber from offsite locations using remote communication technologies.

In this chapter, you will learn how to:

- Add Subscribers.
- Receive and use Email Alerts.
- Use Web Reports to view Chamber history.
- Connect to Central Management through Microsoft Remote Desktop or an alternate remote control program, such as TeamViewer™.

6.1   Email Alerts

This section covers the Email Alert message and its features. The configuration details of the Central Management Email settings are covered in Chapter 7, System Maintenance and Troubleshooting, on page 108.

> ⚠️ All of the features in this Chapter require configuration by an onsite IT personnel.

6.1.1   Alerts for Subscribers

There are two types of Subscribers for Email Alerts.

- Network Subscriber – Receives Global Email Alerts from all Chambers on the network
- Chamber Subscriber – Receives Email Alerts only for the chambers for which the user has subscribed (Figure 6-1)

Figure 6-1   User Creation

Before creating subscribers, first ensure that they are already added as Users into Central Management system. Names and valid email addresses are required. Once an account is in the User list, the account can be *attached* to a particular chamber subscriber list or added to the network subscribers list.

CONVIRON

6.1.2 Add Subscriber

To add a Chamber Subscriber to a particular chamber:

1. On the Central Management dashboard, right-click the thumbnail of a Chamber. The Chamber menu appears (Figure 6-2).
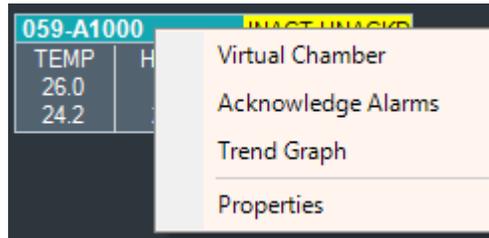
Figure 6-2 Chamber Menu

2. Select Properties.

3. On the Properties dialog box, select the Subscriber tab.

4. Click on the drop-down menu to display the current user list, as seen in Figure 6-3.
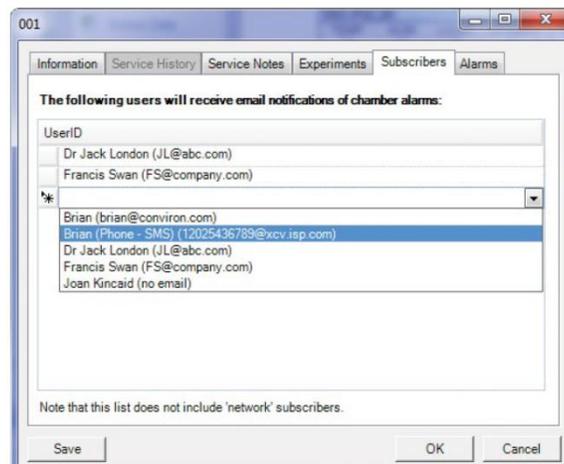
Figure 6-3 Chamber Subscriber

5. Select a user, and then click **OK**.

You can add one or more users to the subscriber list.

All users will receive an Email Alert when an alarm condition at this chamber is triggered that meets the Email Alert configuration.

To add a Network Subscriber to Global Email Alerts, from the Central Management menu bar, select **Tools** > **Network Subscribers** (Figure 6-4).
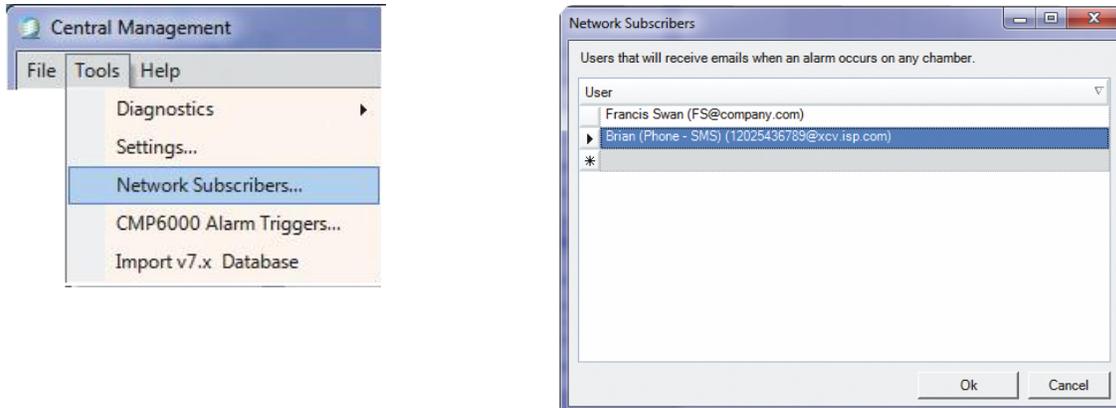
Figure 6-4   Network Subscriber

A subscriber list may have one or more network subscribers. All subscribers on the list will receive an Email Alert in the event of an alarm condition at *any* network Chamber that meets the configured Email Alert settings. Subscribers who are listed on both Network and Chamber lists will receive only a single Email Alert.

6.1.3   Alert Message

The email message of an Alarm contains:

- when the alarm occurred,
- what the priority was, and
- a text description of the alarm condition.

The Chamber uses abbreviations in the description, which are easily understood. From an alert message (Figure 6-5), check the description line for the Alarm Description.
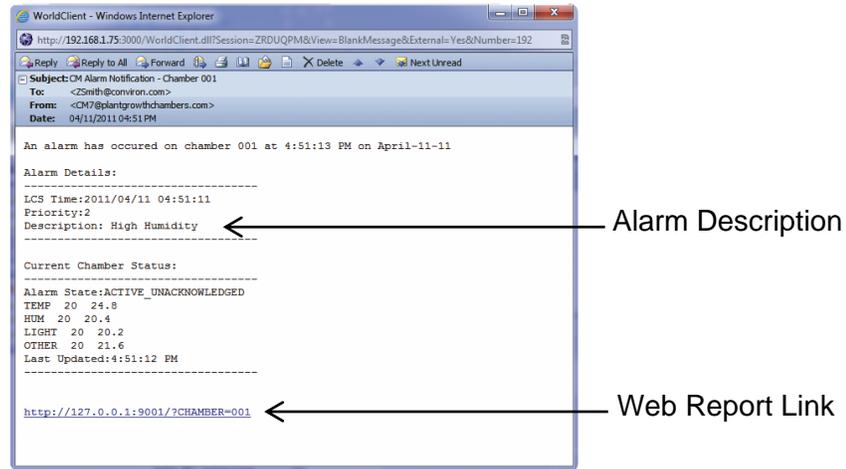
Figure 6-5   Alert Email Message

The Web Report link opens a Web page showing detailed information about the alarm.

6.2   Web Reports

6.2.1   Status
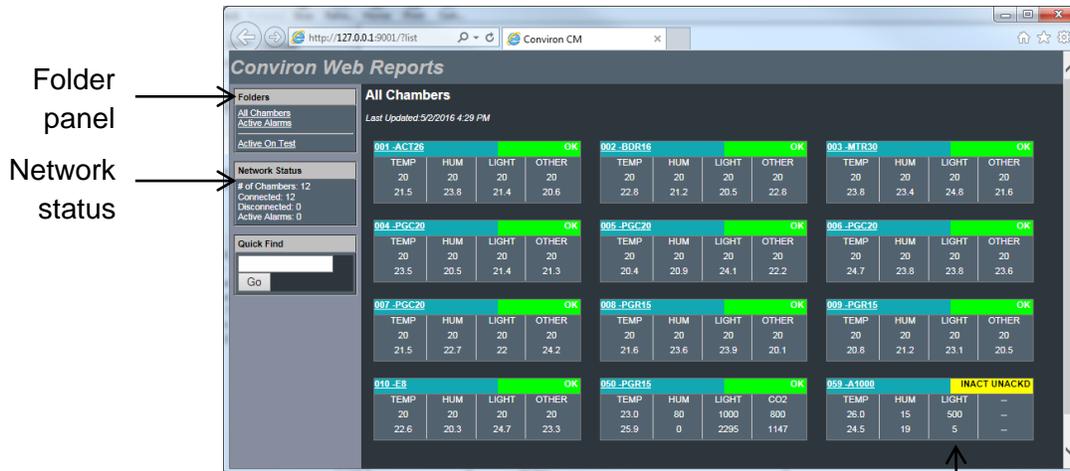
Figure 6-6   Web Report

Thumbnail Status Displays
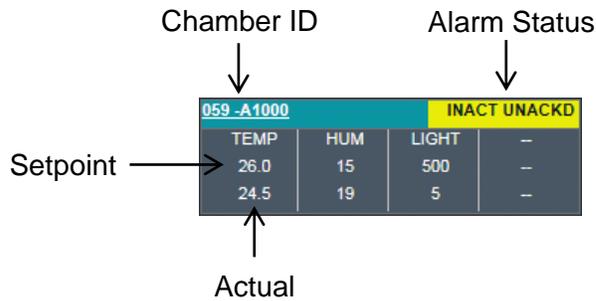
6.2.2   Chamber Page

To access a Chamber page, select the chamber ID number.

The Chamber page (Figure 6-7) shows the current alarm status as well as five different links to allow access to additional information pages. Each page lets you select a particular time range for the displayed data.
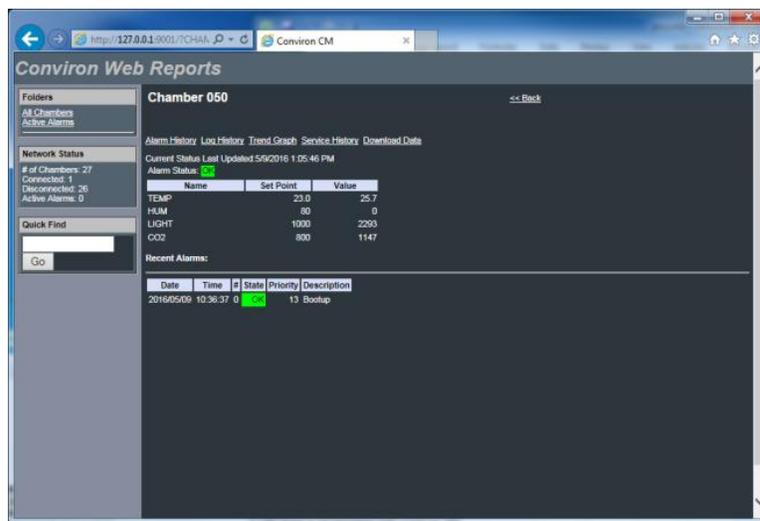
Figure 6-7   Email Alert Link Page

6.2.3   Alarm History

On the Chamber page, select the **Alarm History** link, specify the date to display, and then click **Show**.
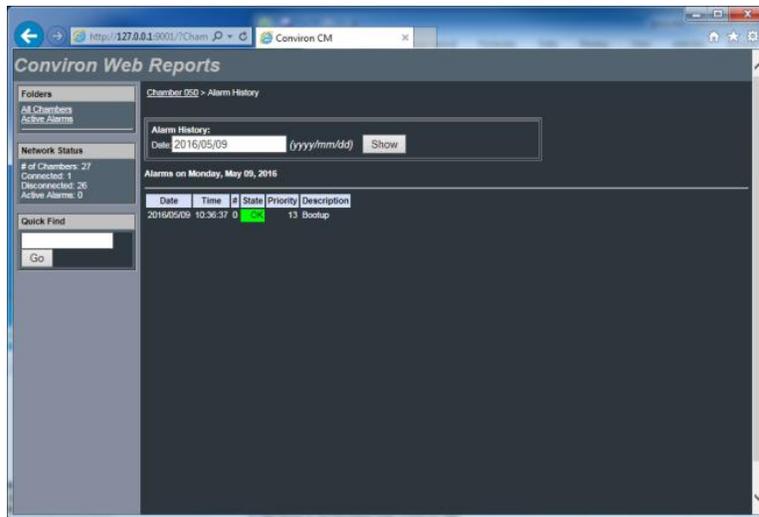
Figure 6-8   Alarm History

6.2.4   Log History

On the Chamber page, select the **Log History** link, and then specify the date to display.

If you want to display the alarms, select **Show Alarms**, and then click **Show**.
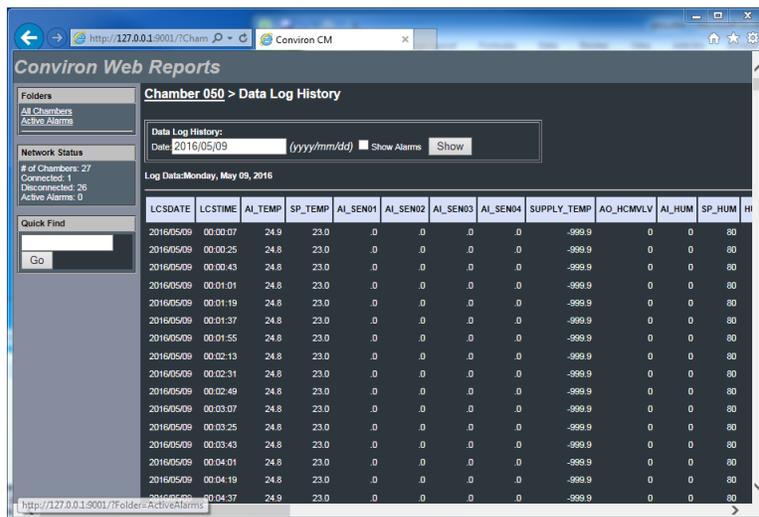
Figure 6-9   Log History

6.2.5 Trend Graph

On the Chamber page, select the **Trend Graph** link, and then specify the date and number of days to display. Select the data fields to graph from the list boxes, and then click **Show**.

You can also select **Show Alarms** to view the alarm time indicators.
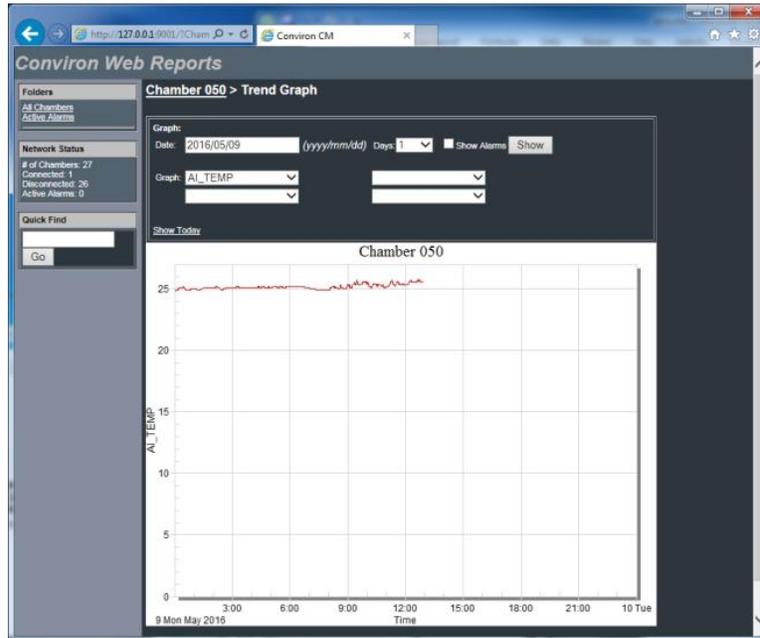
Figure 6-10   Trend Graph

6.2.6   Service History

On the Chamber page, select the **Service History** link to show the current time-on or cycles of each output. These values can only be changed at the Chamber's local display screen and only for CMP4000-5000.
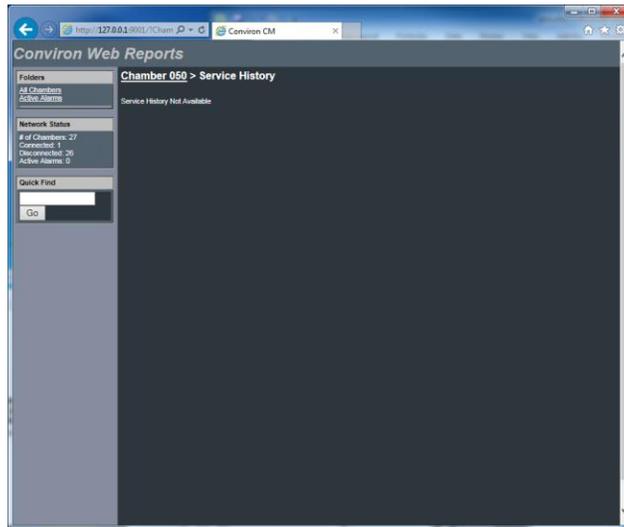
Figure 6-11   Service History

6.2.7   Download Data

To download Chamber logged information (whether alarm or data logs), do the following:

1.   On the Chamber page, select the **Download Data** link.
     The **Download Data** page appears (Figure 6-12).
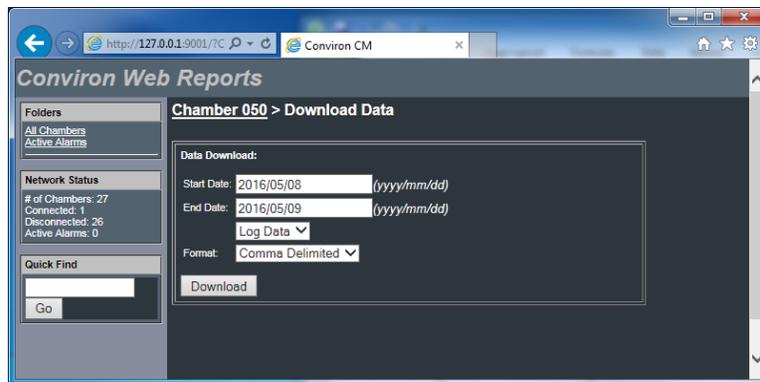
Figure 6-12   Download Data

2.   Select the Start Date, End Date, the type of data to download, and the file format.

3. Click Download.
   A message appears prompting you to open or save the file (Figure 6-13).
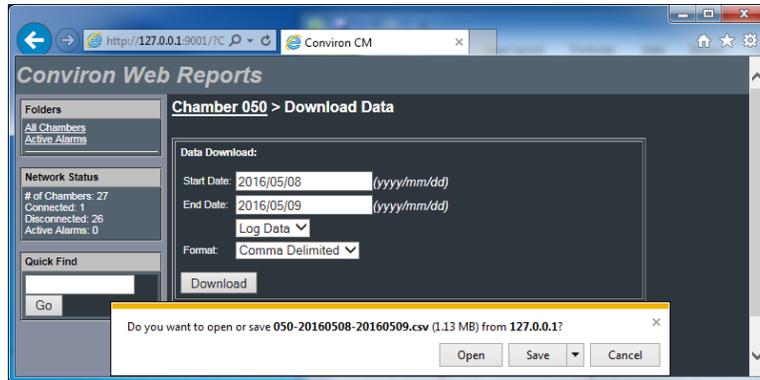
Figure 6-13   Open/Save Download

6.3 Remote Desktop

> ⚠ This instruction is based on Microsoft Windows 7 Professional. Other Windows interfaces differ slightly.

> ⚠ Central Management is normally the connection point to several external alarm monitoring systems. Consequently, it is important to understand the following:
> - If a procedure requires rebooting or shutting down the equipment, the onsite authority must first be informed before proceeding with the reboot or shutdown tasks.
> - Be certain of the correct procedures for remote connection, login, and disconnect. If you select the incorrect "quit" methodology, you could shut down the CM system rather than simply disconnecting the remote connection. If the system is shutdown, no subsequent chamber alarms occurring would be recognized by CM, thereby failing to send out alarm notifications. Once shutdown, the CM system would require a manual startup.
> - The CM system shows many of the parameters of the chamber; however, the alarm settings and physical conditions are not available to the remote user. Any type of change or diagnostics is best performed when onsite personnel are available to work with the remote user.

Central Management can be accessed through generic Windows Terminal Services or Microsoft Windows Mobile 2003SE for PDAs.

6.3.1 Logon Security

By default, the Central Management systems have the Remote Desktop connection enabled. Typically, only the Administration account **conviron** is permitted to gain control of the Central Management computer.

6.3.2 Install Defaults

The login and password is unique for each Central Management system and is documented in the Central Management Installation Manual delivered with the product shipment. If this information is lost, please contact Conviron Client Services, with your Central Management serial number, which is located on the Central Management PC side panel (Figure 6-14).

Figure 6-14   Serial Card

6.3.3 Single User

Microsoft Remote Desktop protocol (3389) can be used to do a Central Management takeover. Microsoft XP Professional software allows a single login session at any time. When the remote desktop session is active, the Central Management console cannot be used without disconnecting the remote user. Conversely, locally logging on to the Central Management system during a remote session will disconnect the remote user.

> When a user is disconnected, their programs are closed and unsaved data may be lost.

6.3.4   Start

To connect to the Conviron Central Management Server, open your Remote Desktop program:

1.   On your computer, click **Start** > **All Programs** > **Accessories** > **Communications** > **Remote Desktop Connection**.
The **Remote Desktop Connection** dialog box appears (Figure 6-15).

Figure 6-15   Remote Desktop Connection

2.   In the **Computer** field, enter the TCPIP address of the Conviron Central Management Server, using the address provided by your onsite IT staff.

This will likely be the TCPIP address of a firewall or the Central Management system Building Connection address.

3.   Click **Options**.

6.3.5   Options

Review the settings under each tab (Figure 6-16) to set the preferred parameters for your connection and graphics needs. To share drives and clipboard with the remote Central Management system, configure the related options.
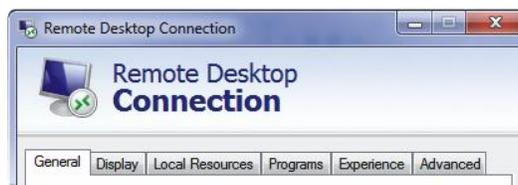
Figure 6-16   Remote Desktop - Options

6.3.6   Display

The default display setting (Figure 6-17) is suitable for most situations.
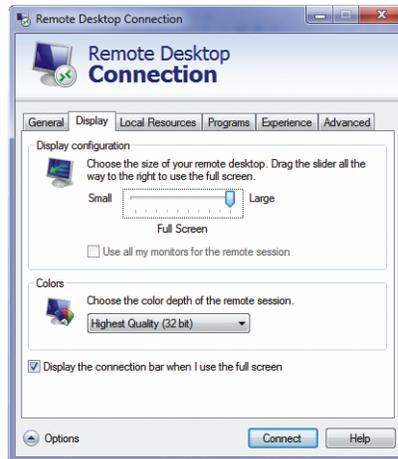
Figure 6-17   Remote Desktop - Display Settings

6.3.7   Local Resources

Click **More** to show the drive list (Figure 6-18).
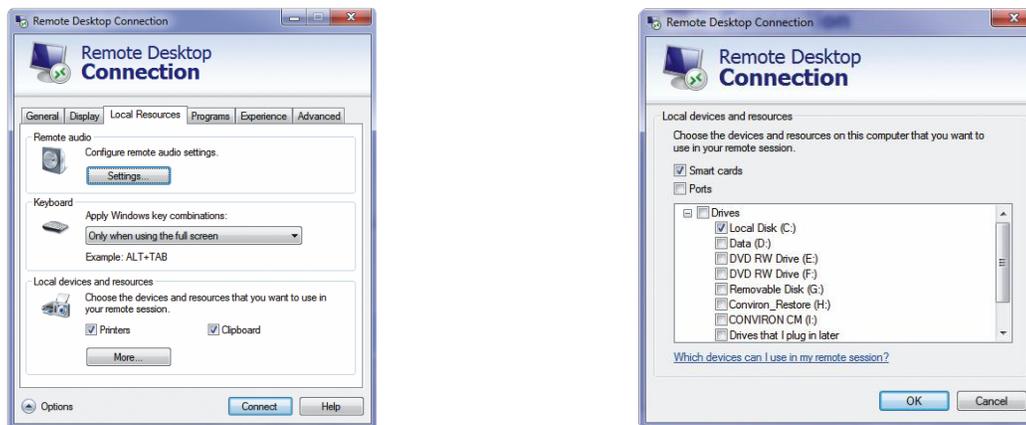
Figure 6-18   Remote Desktop - Sound and Drive Mapping

Selecting a drive letter enables disk drives to be available to transfer local files to and from programs on the Central Management Server. Improved performance will be achieved if these options are disabled. Selecting printers allows your local attached printer to be available on the Central Management server programs. Printer driver installation may be required, depending on printer requirements. Select **Clipboard** to allow the cut-and-paste function between the Central Management system and remote computer.

6.3.8   Experience

In the **Experience** tab, set the performance option of your connection speed. If you clear the checkboxes of the features, the performance of the display increases, but the quality of the Central Management screen decreases.
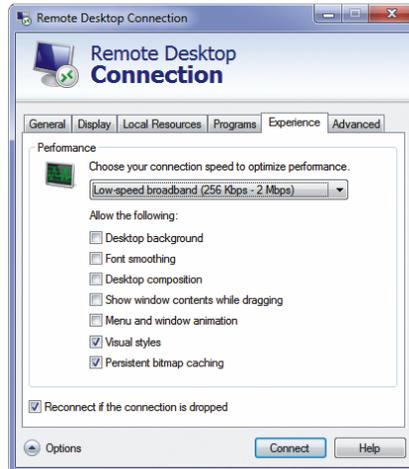
Figure 6-19   Remote Desktop Experience

6.3.9   Save Defaults

Once the settings are configured, select the **General** tab, and then click **Save** to save your settings for future connections (Figure 6-20).
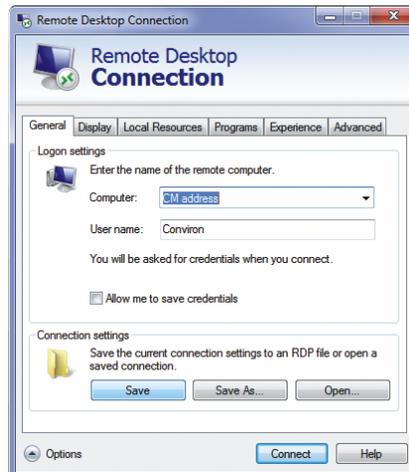
Figure 6-20   Remote Desktop - Save Settings - Connect

Ensure that you have an active Internet connection, and then click **Connect** to log in to the remote desktop.

6.3.10 Logging In

A dialog box appears, prompting you for a username and password.

Contact Conviron Client Services if you have lost this information. Be prepared to provide the Central Management system serial number.

Once you are connected, the Central Management desktop appears.

When your session is complete, click **Log Off** to close the programs and close the remote session. The Central Management programs run as Windows Services and will run as long as the Central Management computer is powered on.

7 SYSTEM MAINTENANCE AND TROUBLESHOOTING

The Central Management system settings, Chamber configuration, Operating System, and the Client PC settings are all important to ensure systems communicate properly (Figure 7-1).
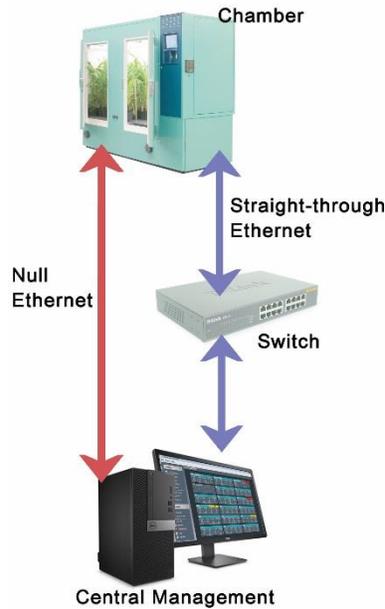
Figure 7-1   Ethernet Connections

In this chapter, you will learn how to:

- Connect hardware components
- Check all system settings - Central Management, Firewall, Chamber
- Test functionality of devices
- Perform basic troubleshooting
- Configure software features
- Set up the Central Management Backup
- Run DVD Restore system
- Update DVD Restore
- Install Central Management Software-only

CONVIRON

7.1   Connection Procedure

1.   Connect the Cabling to the Chamber.

2.   Connect Devices to the Network Switch.

3.   Connect Central Management.

4.   Set the TCP/IP Addressing of Central Management.

5.   Set the Chamber ID (TCPIP) Addressing.

6.   Verify and Test Communications.

> ⚠️ Follow the connection procedure, ensuring all devices are connected before applying power.

7.1.1   Cable

Ethernet Straight-through cables are normally connected to the network Switch (or Hub) and to each device.

If no switch is involved, an Ethernet Crossover cable is connected directly from the Chamber to the PC (Figure 7-2).
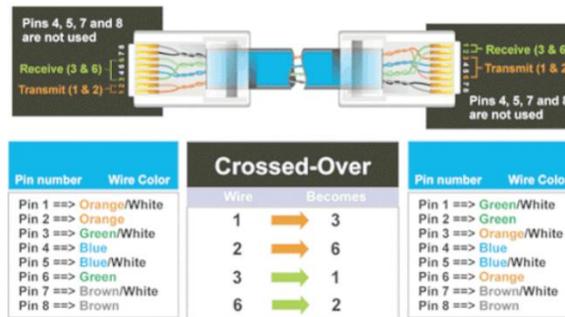
Figure 7-2   Ethernet Crossover Cable

7.1.1.1 Chamber

Connecting the cabling to the Chamber, the Central Management network uses UTP (Unshielded Twisted Pair) 100Base-T Category 5E, Ethernet cabling. From the Chamber, the cable exits the control panel and lays in a series of J hooks crossing the ceiling/wall. The J hooks (Figure 7-3) are spaced on a maximum of 5-foot centers and bring each cable run in an organized fashion from the devices (Chamber and PC) to the location of the switch(es).
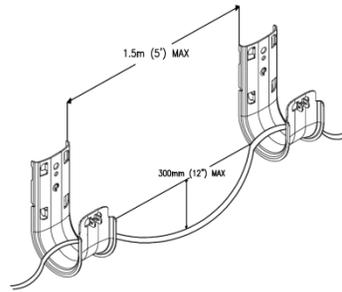
Figure 7-3   J-Hook Cable Supports

Before making any connections to the Chamber control system, first ensure that the control system is powered off.

Connect an Ethernet cable to the Chamber. The cable is connected to an RJ-45 receptacle on the bottom plate of the chamber control system or at the top of the Control Panel (Figure 7-4 and Figure 7-5).
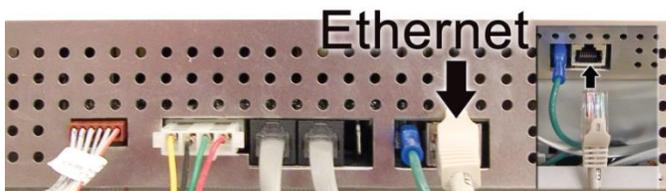
Figure 7-4   CMP4000-CMP5000 Bottom Ethernet Connection

Figure 7-5   CMP6000 Ethernet Socket

7.1.1.2   Switch

The switches or hubs provide multiple ports that are wired with Ethernet UTP cables connecting each chamber to Central Management. There is one cable for each device, and each port has the same function (Figure 7-6).

Figure 7-6   Network Switch

7.1.1.3   PC

7.1.1.3.1   Connecting the PC (Central Management)

Connect the Chamber and Central Management PC to the Ethernet switch using the same ethernet cabling as the Chamber. The correct network adapter to connect to the chambers is labeled Chamber network (Figure 7-7).

Display

Keyboard
Mouse
DCS

Chamber
Network
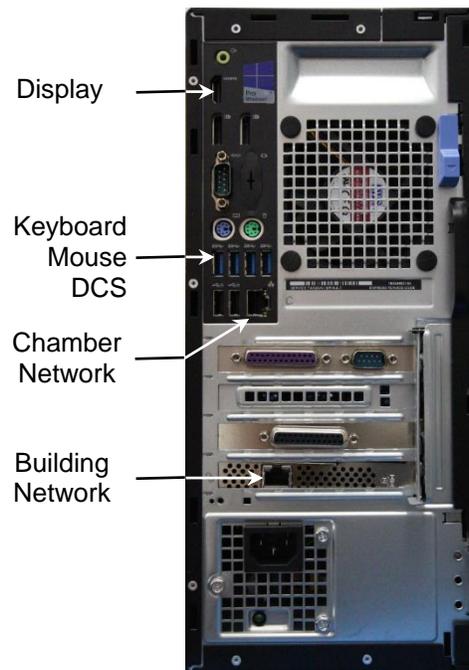
Building
Network

Figure 7-7   Central Management PC Connections

The Building Network connection is optional and must be configured by onsite IT staff.

7.1.1.3.2   Checking the Addressing of the Central Management

The Central Management system is installed with 192.168.0.100 (netmask 255.255.255.0) as the default network address. Chambers also default to 192.168.x.xx for Central Management Network, but their address must be set, so each chamber has a unique ID (address).

Assuming the first chamber is set to 192.168.0.1 (Unit ID 001), set each chamber to have sequential IDs (1,2,3 ...and so on). Conviron has reserved the first (100) addresses for legacy chambers, CMP4000 and CMP5000. The remaining addresses of 192.168.0.101 to 254 are suitable for selection for CMP6050 chamber control systems.

The standard configuration of the chamber control systems prior to CCS v7 used different TCP/IP addresses. New chambers use 192.168.x.xx by default. Legacy chamber configurations must be updated to enable communication to the new Central Management address.

> ⚠️ Updates must be done with the assistance of Conviron Client Services.

7.1.1.4   Chamber address

7.1.1.4.1   Setting Addresses for CMP4000 and CMP5000

1.   Power on the Chamber control system.

2.   Once you see the chamber status screen, tap the **Options** icon ⊡ and locate the Group and Unit numbers.

3.   Tap the group and unit buttons to set the control systems Group to **0** and Unit ID to **1-99** or the desired TCP/IP address.

4.   Once the Group and Unit are set, tap **Exit** ⊡ to save and exit. A pop-up window appears, warning "Net Address changed you must cycle power."

5.   Tap **OK** to proceed.
     After restarting, the new Unit ID appears on the control system status display (Figure 7-8).
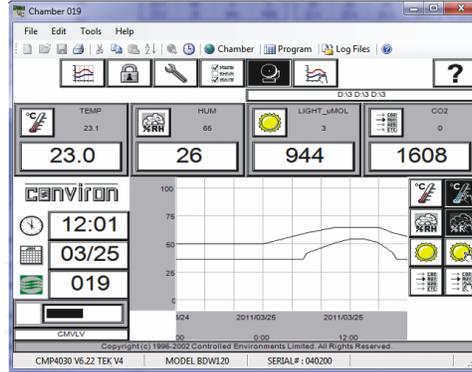
Figure 7-8   CMP5090 Status Display

When the Status screen is viewed, communication between the Chamber and Central Management should be completely functional.

Addressing format requirements:

- IP address is 192.168.x.yy
- x is the first digit of the LCS. Range is 0 to 9
- yy are the last two digits of the ID. Range is 1 to 99
- Subnet mask is fixed at 255.255.255.0

Setting the Unit ID to 001 will set the TCP/IP address of the chamber to 192.168.0.1.

Remember, the chamber must be set to an address in the same network (x) as the Central Management™ PC (default - 192.168.0.100).

7.1.1.4.2   Setting Addresses for CMP6000

The CMP6050 series can be connected to a Central Management system on an Ethernet Local Area Network. To enable communications the control system must be connected to the network and configured with a suitable network address. There are two network addresses to set up in the CMP6050 series as follows:

CMP Address	Address or ID of the control system within the network
Netmask	Divides an IP address into subnets and specifies the network's available host
Central Management	Enables or disables CM communication
CM Address	Central Management IP Address

A valid IP address is needed for the CM Address value even if there is no Central Management system present.

To set the Chamber Addressing:

1.   From the status screen, tap the ID button to access the network configuration (Figure 7-9).
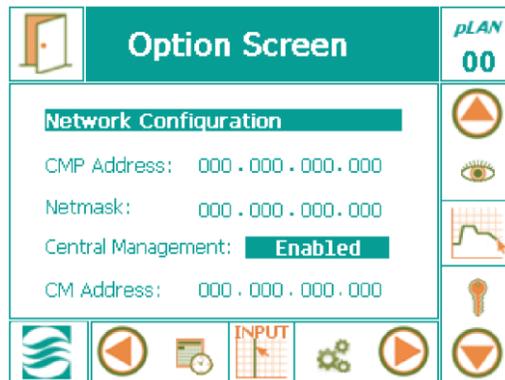
Figure 7-9   Network Configuration

If "Disabled" is displayed, select the **Disabled** text and use the controller keys (Figure 7-10) to change the value to **Enabled**. Press **Enter** to save.

Figure 7-10   Controller Keys

2.   To change the address numbers, touch each individual numerical field. A pop-up keypad (Figure 7-11) appears each time a field is accessed.

Figure 7-11   Keypad

3.   Once all the addresses have been entered, tap the Exit button 🚪. A pop-up warning window (Figure 7-12) appears to confirm the numerical entries.
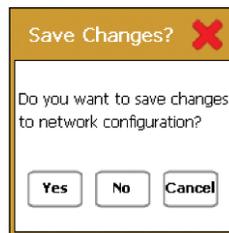
Figure 7-12   Save Network Changes

4.   Tap **Yes** to save the changes or **No** to discard the changes. Tap **Cancel** to return to the previous screen and reenter any numerical address errors.

7.1.1.4.3 Setting Addresses for CMP6060

The CMP6060 can be connected to the Central Management system on an Ethernet local Area network. To enable communications the control system and the Display must be connected to the network and configured with a suitable network address. There are two places where the control system and Display IP addresses must be set-up: At the control system/Display and at the Central Management PC.

There are three network addresses to set in the CMP6060:

Control System Address	Address or ID of the control system within the network
Netmask	Divides an IP address into subnets and specifies the network's available host
Display Address	Address or ID of the HMI Display within the network
Netmask	Divides an IP address into subnets and specifies the network's available host
Central Management	Enables or disables CM communication
CM Address	Central Management IP Address

A valid IP address is needed for the **CM Address** value when there is a Central Management system present.

If there is no Central Management system present, then the **CM Address** should be set to **Disabled**.

To set the Chamber Addressing:

1. From any screen, touch the **ID** button in the top banner to access the network configuration (Figure 7-13).

Figure 7-13   CMP6060 Network Configuration

2. Tap on any of the values to bring up a dialog box to edit the settings. There are two dialog boxes: one for the HMI settings (Figure 7-14) and one for the PLC/CM Settings (Figure 7-15).

3. Tap on any of the values to bring up a keypad, and then enter the new values.

> The HMI Network setting dialog cannot be canceled and will reboot the HMI once the **Apply** button is tapped.
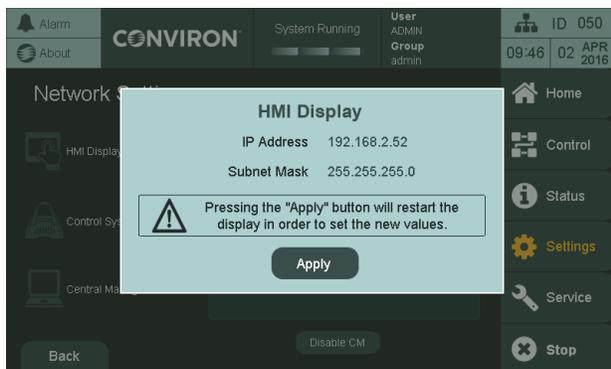
Figure 7-14   HMI Network Settings
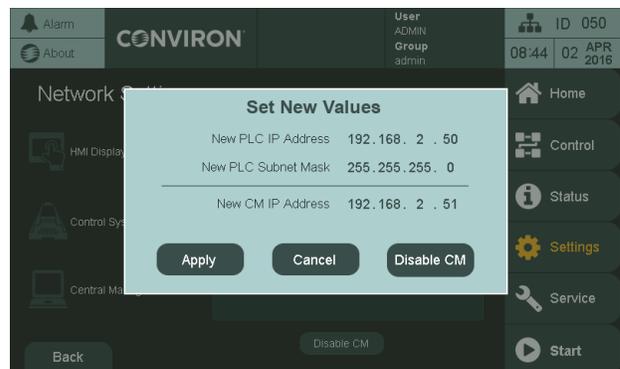
Figure 7-15   PLC and CM Network Settings

4. Tap **Enable/Disable CM** to toggle between enabling and disabling CM.

7.1.2 Test Communications with Central Management

When the chamber control system boots up, it senses the cable connection to the switch and to the Central Management system. If the connections are in place and configured correctly, the control system signals Central Management and a socket connection (software communication) is established. Through this socket, the chamber information is sent to Central Management. The most obvious indicator of the communication is the Chamber Status Thumbnail on Central Management (Figure 7-16).

1. To start Central Management, double-click on the Central Management icon. If the unit ID of your chamber does not appear on the **All Chambers** section, then select **Edit Chambers** to add a new display. Grayed-out displays are not communicating between Central Management and the Chamber. Chamber thumbnail displays typically appear when a chamber is powered on. After a PC power on, thumbnail displays may take up to 15 minutes to appear.

2. To verify communications to the chamber, a virtual login can be attempted at any time. Right-click on a thumbnail display, and then select **Virtual Chamber**.
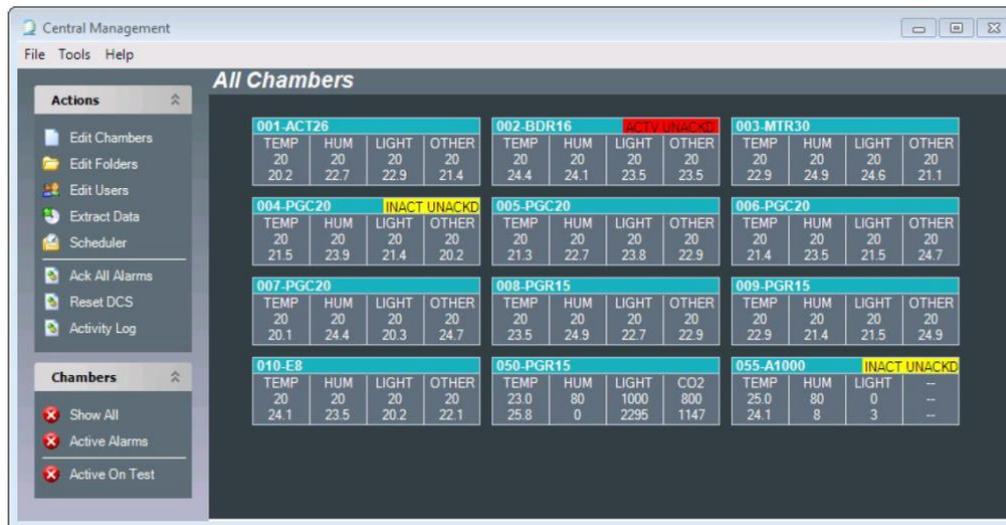
Figure 7-16   Central Management Status Thumbnails

The following window (Figure 7-17) appears as communications initiate with the chamber. Normally this proceeds rapidly. Within seconds, the Virtual Login will open to the chamber status screen.
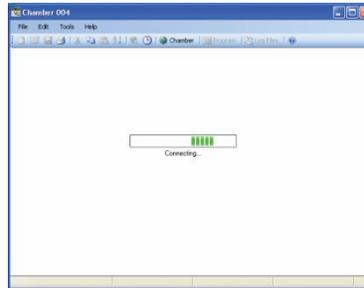
Figure 7-17   Connecting

One of the following Virtual Chamber Status screens appears, indicating the connection is successful: Figure 7-18, Figure 7-19, or Figure 7-20.
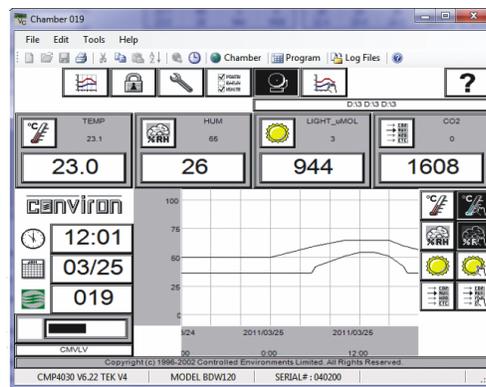
Figure 7-18   Virtual Chamber for CMP5090

Figure 7-19   Virtual Chamber for CMP6050

Figure 7-20　　　Virtual Chamber for CMP6060

If none of the screens appears, an error message will be displayed.

The error messages (Figure 7-21 and Figure 7-22) indicate a communications failure. Refer to Section 7.2, Diagnostics Switch, on page 120 to check all settings and connections, and then retest. If the problem persists, seek Conviron Technical assistance.
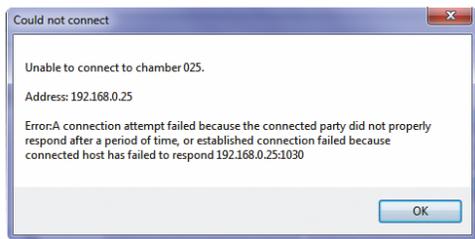
Figure 7-21　　　Login Failure - CMP5090　　　　**Figure 7-22　　　Login Failure - CMP6050**
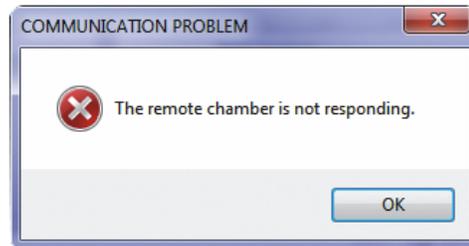
7.2 Diagnostics Switch

The switch has indicators that will assist in determining if connections and communications are operational (Figure 7-23).
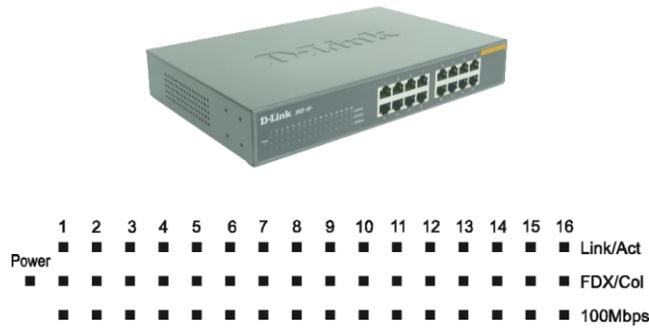
Figure 7-23   Network Switch

Link/Act	This indicator lights up when the port is connected to an Ethernet device; if the light is blinking, it indicates that data is being transmitted or received.
Power	The Power indicator light is green when the switch is receiving power; otherwise, the light is off.
FDX/Col (Full-duplex/Collision)	This LED indicator light is green when a respective port is in full duplex (FDX) operation mode. Otherwise, it is blinking when collisions are occurring on the respective port in half duplex operation mode.
100Mbps	This LED indicator lights green when the port is connected to a 100Mbps Fast Ethernet station. Otherwise, the LED is off when the port is connected to a 10Mbps Ethernet device.

The Link light must be illuminated for any device connected to the switch, when the devices (control system or PC) are powered on.

If not, check the device connected to that port. Reasons may include:

- The cable may be disconnected.
- The cable may be defective.
- The device address may be unset.
- The device may need a reboot.

If the Chamber control system is powered on and the green Ethernet Network Indicator is off, check the following:

- Cable is connected.
- Address is set.
- Reboot the control system.
- If it is a software problem, then reload the software.
- If it is a hardware problem, then replace the Controller.

7.2.1   Chamber

On the rear panel of the Chamber control system are several indicators for diagnostics (Figure 7-24). The green Ethernet Network Link Indicator must be constantly illuminated for Network communications to be functional. The red Ethernet Activity Indicator will flash intermittently when information is being transferred, such as during a Ping test.

Figure 7-24   CMP5090 Indicator LEDs

7.2.2   Central Management
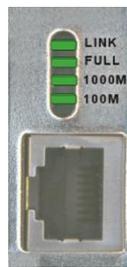
Figure 7-25   PC Ethernet Connector

The PC Ethernet Connector shows a steady green light, indicating good link between the Network Card and the switch. A flashing green light indicates activity (transmitting or receiving) within the adapter.

- Full – Steady green indicates the adapter is operating in full-duplex mode.
- 1000M – The LED indicator lights green when a 1000 Mbps device is connected to the adapter.
- 100M – The LED indicator lights green when a 100 Mbps device is connected to the adapter.

If all the above checks were accomplished and still no Thumbnail Display activity is seen:

- Try a Virtual Login to the Chamber
- In a **Command** window, run a Ping test. See the following section for complete details.

> ⚠️ If the CM is powered on and the green Ethernet Network Indicator is off, check the following:
> - Cable is connected
> - Address is set
> - NIC is Enabled
> - In a Command window, enter `ping 127.0.0.1`. If there is a time-out or error message, then it is a software problem.
> - If it is a hardware problem, then replace the NIC.

> ⚠️ For hardware problems with PCs under Conviron warranty, contact Conviron Client Services. For software issues, the re-installation of a device, driver, or program will correct most problems. The Central Management system can be restored to factory conditions using the Restore feature as a final solution.

7.2.3   Network Ping

The Ping utility is essentially a system administrator's tool used to check if a computer is operating and network connections are intact.

A small packet is sent through the network to a particular IP address.

The computer sening the packet then waits (or *listens*) for a return packet.

If the connections are good and the target computer is up, a good return packet will be received.

The Ping command also lets you know the amount of time it takes for a packet to make the complete trip.

One address that cannot be used by any computer in the world, is the address 127.0.0.1. This address has been reserved for what is known as the loopback address. A loopback address is an address that tells the computer to test its own basic network setup.

> ⚠️ All Conviron units by default use the prefix **192.168** (custom or versions prior to V7 may have a different default prefix).

7.2.3.1 Using Ping to Test the Network Connection

1. Open a **Command Prompt** window and at the prompt (**C:**), type the command line as shown, using the Unit ID number of the control system as the internet address. Note that all Conviron chambers use the prefix **192.168**.

2. On the computer keyboard, press Ctrl+C to stop, and record minimum, maximum, and average ping times.

Usage: ping [-t] [-a] [-n count] [-l size] [-f] [-i TTL] [-v TOS] [-r count] [-s count] [[-j host-list] | [-k host-list]] [-w timeout] destination-list

Examples

Table 7-1   Ping Command Options

To test chamber 001 use	`ping 192.168.0.1`
To test chamber 101 use	`ping 192.168.0.101`

Usage: ping [-t] [-a] [-n count] [-l size] [-f] [-i TTL] [-v TOS] [-r count] [-s count] [[-j host-list] | [-k host-list]] [-w timeout] destination-list

Option	Description
-t	Ping the specified host until stopped.
	To see statistics and continue, type Ctrl – Break.
	To stop, type Ctrl – C.
-a	Resolve addresses to hostnames.
-n count	Number of echo requests to send
-l size	Send buffer size.
-f	Set do not Fragment flag in packet.
-i TTL	Time To Live
-v TOS	Type Of Service
-r count	Record route for count hops.
-s count	Timestamp for count hops
-j host-list	Loose source route along host-list
-k host-list	Strict source route along host-list
-w timeout	Timeout in milliseconds to wait for each reply

If the basic communication problem persists, consult local IT staff or call Conviron Client Services for technical assistance.

7.3 Central Management and Chamber Networking

In all Windows-based Computer Operating Systems, a network adapter will require a TCP/IP address to operate on the LAN. Conviron Software expects at least one adapter in the PC to be dedicated to the Central Management network. The address of the adapter must be known by the Conviron Central Management software and the chamber.

Both programs have settings that must agree with the Operating Systems TCP/IP setting. The Central Management Setting **LCSNetwork** and the chamber setting of the Unit ID must have the compatible TCP/IP settings as the Network Card allocated to the Central Management Chamber network.
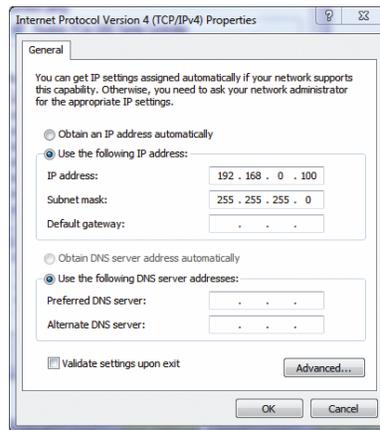
Figure 7-26   Internet Protocol TCPIP Settings

See the following section for details of the software setting for Conviron applications.

7.4 Central Management Software Settings

7.4.1 Central Management Settings Panel
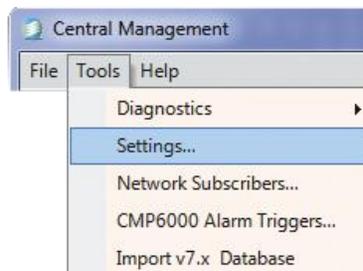
Figure 7-27   Tools - Settings

To configure options in Central Management, select **Tools** > **Settings** (Figure 7-27).

The Central Management **Settings** panel has six sections for configuration information:

- Alarms
- DCS
- Debug Logging
- Email
- Server
- SMTP Mail Server

7.4.2 Alarms
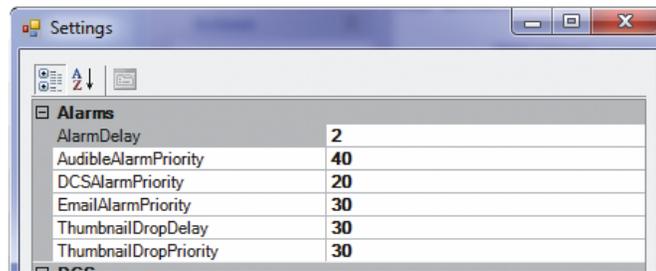
Figure 7-28   Alarms Settings

Table 7-2 lists and describes the options in the **Alarms Settings** section (Figure 7-28).

Table 7-2   Options in the Alarms Settings Section

Option	Description
AlarmDelay	Delays the alarm activation of email, audible, and Dry Contact System. The value is specified in seconds, with a settable range of 1-999.
AudibleAlarmPriority	Enables a short tone every ten seconds for an unacknowledged alarm that is less than or equal to the Audible Alarm Priority setting. The alarm priority setting for each chamber's specific alarm condition is set in the Local Control System or Chamber's control system.
DCSAlarmPriority	Enables the DCS (Dry Contact System) to trigger contacts at the set priority value or less. Any Local Control System alarm of the priority 1 to 20 inclusive will trigger the contacts.
EmailAlarmPriority	Enables the alarm priority number, which is compared to every chamber alarm. If the Alarms priority number is less than or equal to the value in this setting, then Central Management will send an Email Alert notification action to all identified users.

Option	Description
ThumbnailDropDelay	The time (in seconds) will delay the triggering of a "Communication lost" alarm when a Local Control System disconnects from Central Management. This setting exists to provide compatibility with previous versions of the Local Control System software that dropped connections intermittently, causing nuisance alarms. To disable this function, set the value to zero.
ThumbnailDropPriority	The value in this setting is the alarm priority number applied to the "loss of communication" alarm between the Local Control System and Central Management. The priority setting will determine Central Management's notification action.

7.4.3   Dry Contact System
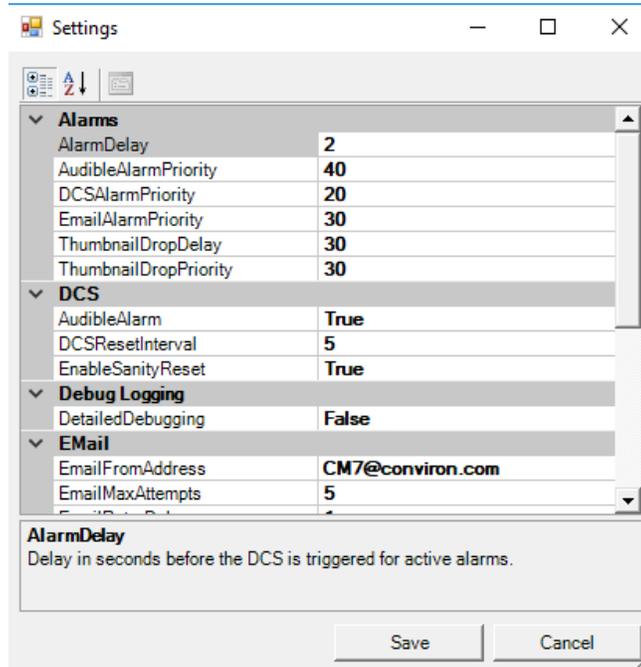
Figure 7-29   Alarm - DCS Settings

Table 7-3 lists and describes the options in the **Dry Contact System** section (Figure 7-29).

Table 7-3   Options in the DCS Setting

Option	Description
AudibleAlarm	When enabled, the Audible alarm emits a short tone every ten seconds for an Unacknowledged alarm that is less than or equal to the Audible Alarm Priority setting. The alarm priority setting for each chamber's specific alarm condition is set in the Local Control System or chamber's control system. To enable the Audible alarm, set to **True**. To disable the Audible alarm, set to **False**.
DCS Reset Interval	A delay in seconds that the Central Management system will wait, before resetting the Dry Contacts System after an alarm has occurred. To specify no interval, set the value to zero.
EnableSanityReset	By default, the value is set to True, which means this option is enabled, ensuring continuous operation of the Central Management system. In the event of PC lockup due to a transient malfunction, the PC will be forced to restart.

7.4.4   Debug Logging

Figure 7-30   Debug Logging

By default, this option is set to **False**. However, Conviron Client Services may request this option to be set to **True**, which enables this option. When this option is enabled, detailed debugging log files are generated.

7.4.5   Email
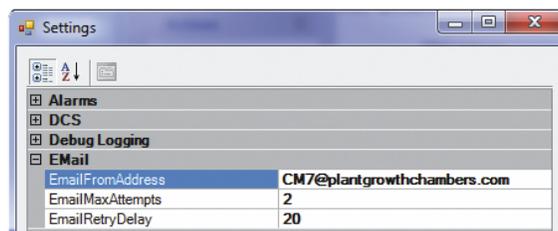
Figure 7-31   EMail Local Settings

Table 7-4 lists and describes the options in the **Dry Contact System** section (Figure 7-31).

Table 7-4   Options in the Email Setting

Option	Description
EmailFromAddress	The email address that Central Management will use for the Email Alert Message. This email address can be different from the SmtpUserID.
EmailMaxAttempts	The maximum number of attempts that the Central Management system will try to send an email alert.
EmailRetryDelay	The time in seconds that the Central Management system will wait before trying to resend an email if the SMTP server was not available.
	You can enter a value within the range of 0 to 99999.

7.4.6   Server
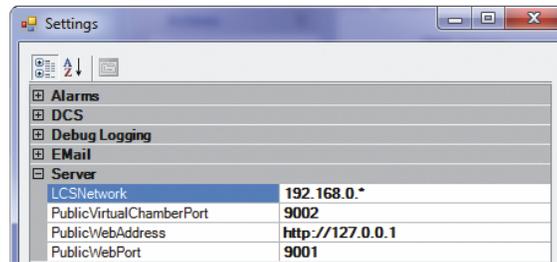
Figure 7-32   Server Setting

Table 7-5 lists and describes the options in the **Alarms Settings** section (Figure 7-32).

Table 7-5   Options in the Server Setting

Option	Description
LCSNetwork	Class B TCP/IP address. This is the first two octets of the Central Management network; for example, 192.168.
	For CMP5090 control systems or later, it is the first three octets; for example, 10.242.56.
PublicVirtualChamberPort	Defines the port that the Virtual Chamber software uses to communicate to the Chamber

CONVIRON

Option	Description
PublicWebAddress	The address used in this option appears in the email alerts that Central Management sends to the Email Subscribers. Users may browse to this address to view the Chamber status. The address is specific to each installation, as it typically reflects the Building Network Address. The Central Management system is shipped with the default address, and the onsite IT staff are responsible for providing the correct Building Network address.
PublicWebPort	Appended to the Public Web address to allow access to the Web Reports page using a web browser. For example: `http://192.168.0.100:9001/?list`

7.4.7   SMTP Mail Server
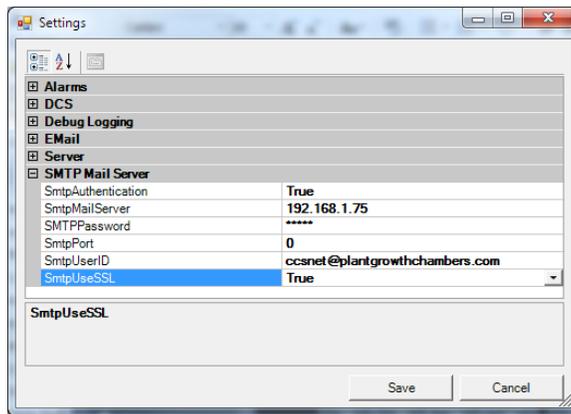
Figure 7-33   Mail Server Setting

Table 7-6   Options in the Mail Server Setting

Option	Description
SmtpAuthentication	If your SMTP server requires authentication, then set the value to **True**.
SmtpMailServer	The address of your email server that Central Management will use to send Email Alert messages
SMTPPassword	If **SmtpAuthentication** is set to **True**, then enter the password.
SmptPort	Set to **0** (port 25) as a default. A different port is required for SSL or TLS.

Option	Description
SmtpUserID	An email account. Enables send email access for Email Alerts to the mail server.
SmtpUseSSL	To enable TLS (SSL) encryption security, set the value to **True**.

The settings and options discussed in Section 7.4, Central Management Software Settings, are assigned by the onsite IT department. If you are using an outside ISP email server, then contact their Technical Support for appropriate settings. Once the server settings are complete and the **EmailFromAddress** is set, email alerts will be enabled. The final task would be to assign **users** with email addresses to the **Network Subscriber List** or on individual Chamber's **Properties** form.

> Restart the Conviron CM Service to accept all Email and SMTP Server settings.

7.5   Web Reports

7.5.1   Enable Web Reports

Connect the Central Management Building adapter to the Network.

1. On your computer, navigate to the **Network Connections** dialog box, and then select the Building Network Adapter.

2. Right-click on the icon, and then select **Properties**.

3. Select Internet Protocol Version 4, and then click Properties.

4. Note the IP address.

5. Enter this address in the **Server** settings, **PublicWebAddress** option (Figure 7-34).
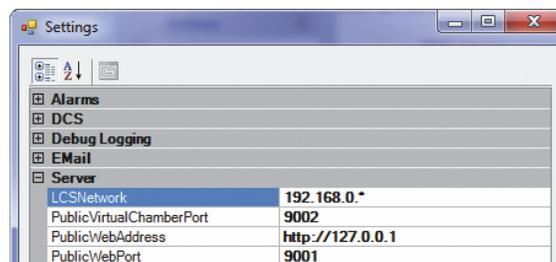
Figure 7-34   Server Settings

Contact your IT department and have them assign a static TCPIP address for the Building Network adapter.

If external (Internet) access is to be provided, a default gateway and DNS server addresses may be required (Figure 7-35).

> ⚠️ All settings are site-specific. Consult your onsite IT Administrator for more information.
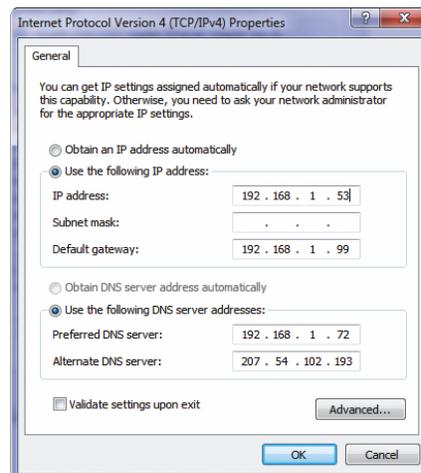
Figure 7-35   Building Network (example only)

7.6   Virtual Chamber Settings

7.6.1   Central Management Client

The Virtual Chamber, as part of the Central Management software package, uses the settings of the Central Management for locating the chambers by address.

When you right-click on a thumbnail display and select **Virtual Chamber**, Central Management passes the network address and chamber number to the Virtual Chamber. No additional configuration is possible.

7.7 Firewall Settings

7.7.1 Default Central Management Settings

Firewall settings are shown as a reference in Table 7-7. Windows Firewall is enabled (by default) on the Conviron Central Management system.

Table 7-7   Microsoft Firewall Settings

Name	Profile	Enable	Action	Programs \Program Files (x86)\CM\	Local & Remote Address	Protocol	Local Port	Remote Port
Central Management	All	Yes	Allow	CentralManagement .exe	Any	TCP	Any	Any
CM Service	All	Yes	Allow	CMService.exe	Any	TCP	Any	Any
CM Web Reports	All	Yes	Allow	Any Web Browser	Any	TCP	9001	Any
Remote Control	All	Yes	Allow	RemoteControl.exe	Any	TCP	161	Any
Virtual Chamber	All	Yes	Allow	VC.exe	Any	TCP	Any	Any
Remote Desktop	All	Yes	Allow	System	Any	TCP	3389	Any

Other security related programs will control the applications and external ports that are allowed to communicate with the outside world. This is normal behavior; however, these programs must have either permit rules or exceptions so you can authorize your communications program to use these ports to communicate.

Settings similar to those set for the firewall will enable Central Management programs to communicate through the Intranet and Internet. At the Enterprise Firewall, the port **9001** must be forwarded to the Central Management system, to allow remote Internet users to be able to view the Web Reports (port 9001).

Microsoft Remote Desktop protocol (3389) can be used to do a Central Management takeover and is recommended to be restricted to users with Administration level access. Microsoft software allows a single logon session at any given moment. When the remote desktop session is active, the Central Management console cannot be used, without disconnecting the remote user. Conversely, locally logging on to the Central Management system during a remote session will disconnect the remote user.

7.7.2   Third-party Client Software

The following programs require attention to ensure Central Management and the alerting mechanisms are operating correctly and completely.

- McAfee Antivirus and Intrusion Prevention
- Trend Micro Antivirus and AntiSpyware

This is not an exclusive list; certainly, other Security programs will require similar rules or exceptions to be added for Central Management operation.

Add rules to *allow* the programs listed in Table 7-8 to have unrestricted access to the Central Control System Network. If Internet communications is utilized, then allow full Internet access.

Table 7-8   Central Management Applications

CentralManagement.exe	RemoteControl.exe
CMService.exe	VC.exe

To enable Internet access for Email, Virtual Chamber, and WebReports, open the following ports through any Firewall software:

Table 7-9   Central Management Port Requirements

SMTP (port 25) – Email	SNMP (port 161)
HTTP (port 9001) – Web Reports	Port 9002 – VC Routing

Call your onsite IT support before altering any security software settings.

7.8   Central Management Backup

7.8.1   Central Management Software-only

The software-only installation provides the optional backup scripts that are provided with the Conviron Central Management full-hardware system.

The required files for the automated backup system are provided in the `C:\Program Files (x86)\CM\Util` directory. These files need to be imported into the Windows task scheduler:

- CMbak2_RestoreDrive.xm
- Backup CMv84 Data to D partition.xml

Before testing the backup system, first ensure that the appropriate hardware is in place and the Tasks are activated.

7.8.2 Central Management Hardware

The Central Management application uses Windows Task Scheduler and Windows Backup to automatically enable backup tasks for hardware-based installations only.

7.8.3 Task Scheduler

The task "Backup CMv84 Data to D partition.xml" is used to run a command script (CMv84bak2D.bat) twice per hour to "backup" the application log files from C:\Program Files (x86)\CM directory and all the CHAMBERS and SITES subdirectories contents, to the D drive partition.

Once per day the D drive directory CMbak is backed-up by the task "CMbak2_RestoreDrive.xml" to the Conviron Restore Drive (Drive H:).

The Conviron command scripts can be modified to suit any special requirements. These files ASSUME a hardware setup of a C and D partition of the hard drive and a Conviron Restore Drive installed. Windows Backup™ software copies only the updated files from the D:\CMbak directory.

7.8.4 Backup Scripts

```
@echo off

rem Copyright 2016 Controlled Environments Limited, All Rights
Reserved.bmc

rem CMv84bak2D.bat for 64 bit Windows 7-10

rem V1.7 5/20/2016

echo %date%_%time%_Backup V84 to D drive started >> "C:\Program Files
(x86)\CM\ActivityLogs\backup.log"

xcopy "C:\Program Files (x86)\CM\Chambers\*.*" D:\CMbak\Chambers\ /E /D
/C /K /Y

xcopy "C:\Program Files (x86)\CM\Sites\*.*" D:\CMbak\Sites\ /E /D /C /K
/Y

xcopy "C:\Program Files (x86)\CM\ActivityLogs\*.log"
D:\CMbak\ActivityLogs\ /C /K /Y

xcopy "C:\Program Files (x86)\CM\AppLogs\*.log" D:\CMbak\AppLogs\ /C /K
/Y

xcopy "C:\Program Files (x86)\CM\*.license" D:\CMbak\ /C /K /Y

xcopy "C:\Program Files (x86)\CM\*.mdb" D:\CMbak\ /C /K /Y
```

```
xcopy "C:\Program Files (x86)\CM\CCSNetwork.dll.config" D:\CMbak\ /C /K
/Y

xcopy "C:\Program Files (x86)\CM\CMService.exe.config" D:\CMbak\ /C /K
/Y

xcopy "C:\Program Files (x86)\CM\RemoteControl.exe.config" D:\CMbak\ /C
/K /Y

xcopy "C:\Program Files (x86)\CM\VC.exe.config" D:\CMbak\ /C /K /Y

xcopy "C:\Program Files (x86)\CM\VC.vshost.exe.config" D:\CMbak\ /C /K
/Y

xcopy "C:\Program Files (x86)\CM\CentralManagement.xml" D:\CMbak\ /C /K
/Y

xcopy "C:\Program Files (x86)\CM\CMSettings.xml" D:\CMbak\ /C /K /Y

xcopy "C:\Program Files (x86)\CM\CMService.xml" D:\CMbak\ /C /K /Y

xcopy "C:\Program Files (x86)\CM\folders.xml" D:\CMbak\ /C /K /Y

xcopy "C:\Program Files (x86)\CM\VCClient.xml" D:\CMbak\ /C /K /Y

xcopy "C:\Program Files (x86)\CM\Chambers.txt" D:\CMbak\ /C /K /Y

echo %date%_%time%_Backup V84 to D drive completed >> "C:\Program Files
(x86)\CM\

ActivityLogs\backup.log"
```

7.8.5 Xcopy Command Syntax

Copies files and directory trees and is used in the backup scripts to quickly update the backups. This command tool may be modified to the client's needs.

XCOPY source [destination] [/A | /M] [/D[:date]] [/P] [/S [/E]] [/W] [/C] [/I] [/Q] [/F] [/L] [/H] [/R] [/T] [/U] [/K] [/N]

Options	Description
source	Specifies the file(s) to copy
destination	Specifies the location and/or name of new files
/A	Copies files with the archive attribute set; doesn't change the attribute
/M	Copies files with the archive attribute set; turns off the archive attribute
/D:date	Copies files changed on or after the specified date. If no date is given; copies only those files whose source time is newer than the destination time

Options	Description
/P	Prompts you before creating each destination file
/S	Copies directories and subdirectories except empty ones
/E	Copies directories and subdirectories, including empty ones. Same as /S /E. May be used to modify /T.
/W	Prompts you to press a key before copying
/C	Continues copying even if errors occur
/I	If destination does not exist and copying more than one file, assumes that destination must be a directory.
/Q	Does not display file names while copying
/F	Displays full source and destination file names while copying
/L	Displays files that would be copied
/H	Also copies hidden and system files
/R	Overwrites read-only files
/T	Creates directory structure, but does not copy files. Does not include empty directories or subdirectories. /T /E include empty directories and subdirectories.
/U	Updates the files that already exist in destination
/K	Copies attributes. Normal Xcopy will reset read-only attributes.
/Y	Overwrites existing files without prompting
/-Y	Prompts you before overwriting existing files
/N	Copy using the generated short names

7.9 Software Restore

7.9.1 Restore Overview

> ⚠️ All software is preloaded into the PC. The following information is required *only* for emergency reinstallation.

First, restart the CM system and boot into the Restore Drive.

Second, select the System Image restore and choose the image from the Conviron Restore drive.

Finally, reload your personal applications added to Central Management after original delivery. Example: Anti-Virus program.

Backup all critical data *before* using the Restore Process, as the C:\ drive will be erased. All changes to the Central Management PC since initial startup will be lost. Chamber data is stored in the **C:\Program Files (x86)\CM\Chambers** directory. It is recommended to save all files in the **CM** directory with the file extensions of LOG, XML, MDB, PGM, ALE, CP4, LICENSE and TXT. By default, the Autobackup application has saved all the chamber data to the D: drive (partition) and H: Conviron Restore drive.

Only drive C:\ is affected by the restore process.

7.9.2   Restore Procedures

Procedure for CM software versions prior to v8.5 and non-Dell hardware:

1.   On your computer, select the **Start** > **Shut Down** > **Restart** (Figure 7-36).
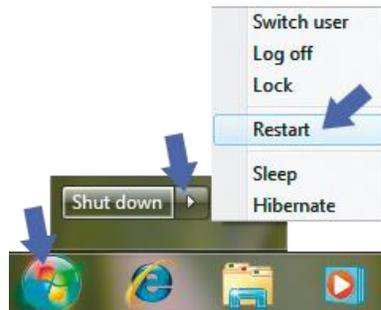
Figure 7-36   Restart Sequence, Prior to CM v8.5 and Non-Dell Hardware

2.   As soon as the system's beep is heard, press the **F8** key a couple times slowly to start the **Boot** menu. If you miss the timing to start the Boot menu, wait until the system has fully started, restart the computer again, and repeat the process.

3.   Select the Conviron Restore Drive. Wait until the system starts.

4.   From the **Select a keyboard input method** menu, ensure that **US** is selected, and then click **Next**.

5.   In the following message that appears, click **No**. Do *not* click **Repair and Restart**.

6.   Select **Restore your computer using a system image**, and then click **Next**.

7. Select **Use the latest available system image**, and ensure that location is specified to the **Conviron Restore** drive.

8. Click **Next**. When the software reinstallation is complete, the computer restarts. The chambers automatically log on within a period of ten minutes.

9. Once the system has been restored, copy backup data from either **D:\CMbak** or **Conviron Restore Drive\CMbak** (Auto backup) backups to the Central Management installation location on C drive. This step updates your system's data from the factory settings up to the date of your last backup.

10. Reload your personal applications added to Central Management after the original delivery. For example, an Anti-Virus program.

> ⚠️ Call 1-800-363-6451 or +1-204-786-6451 for Conviron Technical Services, if assistance is required.

Procedure CM software v8.5 and Dell-Windows 10 systems:

1. Connect the "Windows 10 Pro OS Recovery" USB device to the CM PC and select the **Start Menu->Shutdown->Restart**.

2. As soon as the system beep is heard, tap the F8 key a couple times slowly. This will start the Boot Menu. If you miss the timing to start the boot menu, wait until the system has fully started up, then repeat the "Restart" process until you view the **Boot Menu**.

3. Select the Windows 10 Pro OS Recovery USB drive. Wait until the system starts.

4. Select **TROUBLESHOOT,** then **ADVANCED OPTIONS,** then **SYSTEM IMAGE RECOVERY** (Figure 7-37).

Figure 7-37   System Image Recovery Sequence, CM v8.5 and Dell-Windows 10 Hardware

5. At the **System Recovery Options** dialog, select **"Keyboard"** leave "US" highlighted and Select **"Next".**

6. At the System Recovery Options dialog **"Windows found problems."**, select **"No"**. *Do Not Select* **"Repair and Restart"**.

7. At the next System Recovery Options dialog, select **"Restore your computer using a system image"** and select "**Next**".

8. At the System Recovery Options dialog, **"Select a System Image Backup"**, select **"Use the latest available system image"**, *Location must be "Conviron Restore" drive,* then select **"Next"**.
    With Windows 10 you may need to search for the drive/location, as it is not on the boot drive.

9. Once image is identified, select **"Next"** and follow the default prompts to complete the process.

10. If the previous procedure did not automatically restart the PC, do so now. Once the system is running login and ensure CM applications are working.

11. Lastly, when the software is shown to be correctly installed, copy the backup data (chamber logs and CM configuration) into the C drive CM application directory.
    Windows updates and any third party software can now also be updated or reinstalled.

7.10 Creating a New System Restore Image

Remember to replace the restore image after any major changes, such as an application installation.

1. Follow the Microsoft Backup instructions to make a *System Image* of the C drive (including the system partition, which is the default setting).

2. Save the system image to a DVD or external drive and store the media safely for future use.

> You may replace the "factory system image" on the Conviron Restore Drive, but do this at your own risk. Once it has been replaced, you have *only* your current image for recovery options.

7.11 About Information

To determine the Central Management version number, from the **Help** menu, select **About** (Figure 7-38).
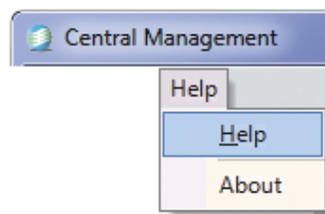
Figure 7-38   **CM Version Sequence**

The version numbers appear on the upper half of the About Central Management dialog box (Figure 7-39).
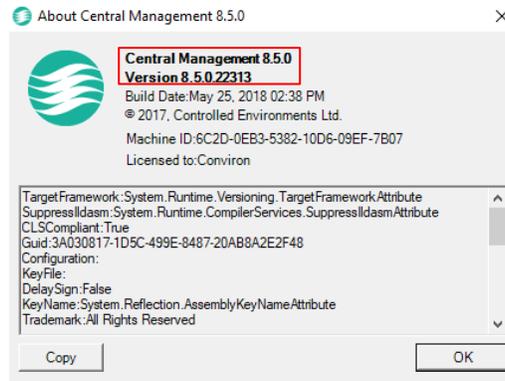
Figure 7-39   About Central Management, Version

To locate the Central Management serial number, check the side of the PC for a card similar to Figure 7-40.

Figure 7-40   Serial Number

8 INSTALLING CENTRAL MANAGEMENT

8.1 Central Management v8.5 Install Procedure

The Central Management Software is provided differently depending on how it is purchased. Software-Only purchasers are provided with a download link to the current version. Those who purchase the full hardware turn-key system have all the OEM software on the Restore Drive of the CM systems, in both Image and Installation forms.

Note: The software has several requirements.

- The login ID of the first user is to be **conviron**.
- All CM users must have local machine administration privileges.
- Local machine user must have full access to the CM directory.
- User Access Controls (UAC) must be disabled.
- Windows Firewall rules must be added for CM processes - see the Operator's Manual for more information.

8.2 Software Only

1. After downloading the files, copy the Central Management v8.x Installation software CONVIRON INSTALL SOFTWARE.ZIP supplied by Conviron to your target computer desktop.

2. Open the ZIP archive and extract the contents to the desktop with Windows Explorer.

3. Open the OEM INSTALL SOFTWARE folder and open the file *ReadMe1st-85.txt*.

4. Select and install using the recommended install software.

   a. Set TCP/IP address for ON-Board Ethernet (Chamber Network), as indicated by the installation program. (Typically address 192.168.0.100 and netmask 255.255.255.0).

   b. A second Network card (Building Network) can be installed and could be configured by on site I.T. staff to be used on the local client Network.

   c. Install the current version of Adobe Reader to be able to view the Conviron Operator's Manuals.

   d. To verify that the installation is successful, open the *Central Management Operator's Manual*, and navigate to Section 2.4 Starting and Quitting Central Management to start Central Management.
   ActivationCentral Management Software will operate as TrialWare and will expire in 30 days, after which a license file is needed to continue using it. You can activate Central Management at any time, by running help.about.license.

5. Copy and send the machine ID to Conviron by email or phone at:
   centralmanagement@conviron.com or phone 204-786-6451
   Conviron emails the license file

6. Copy the license file to the Central Management installation directory: C:\Program Files\CM or C:\Program Files (x86)\CM

8.3 Activation

Central Management Software will operate as TrialWare and will expire in 30 days, after which a license file is needed to continue using it.

1. To activate Central Management, double-click **Help-About-License**.
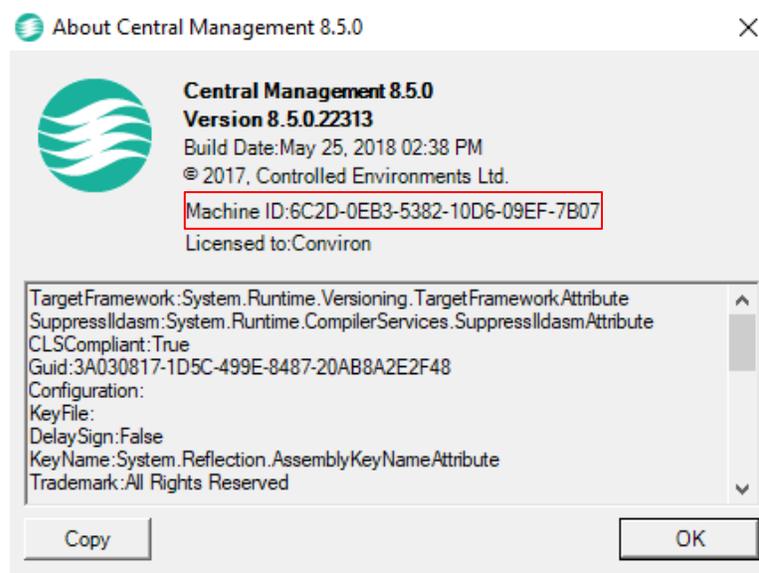
Figure 8-1   About Central Management, Machine ID

2. Copy and send the machine ID to Conviron by email or phone:
   centralmanagement@conviron.com or phone 204-786-6451
   Conviron supplies a license file.

3. Copy the license file to the Central Management installation directory: C:\Program Files (x86)\CM.

8.4 Starting

To start the Central Management program:

- On the computer desktop, double-click the **Central Management** icon .
- On the computer, select **Start** > **Conviron** > **Central Management**.

9 GLOSSARY

Term	Definition
Building Network	The existing premise computer network
Cascade	To arrange open windows on the desktop so that they overlap each other
CCS	Central Control system – the monitoring program of legacy chambers
Central Management	Application software designed by Conviron for total Phytotron management
Central Management network	The physical connection of growth chambers to the central control computer
Cell	The smallest unit of information on a program table
Chamber	The growth chamber unit, including the control system, growth area, and control systems
Chamber program	A series of time lines which are entered into the program table telling the control system how to set conditions in the growth chamber over a 24-hour period
CMP	Conviron Microprocessor Programmer
Controller	The computer that sets, directs, and records the conditions in the growth chamber
Conviron Restore Drive	Hard Drive permitting a Bootable Windows 7 Repair system including the Operating System Image and the latest CM application data backup
DCS	Dry Contact System; relay contacts for alarm indications to auxiliary systems
Download	Sending data to the Central Management system from a Chamber control system
Ethernet	The type of local area network used by the Central Management system to connect to the chambers
Export	To copy and convert a file to a different format so that it can be opened by another application
Extract	To copy or display selected records

CONVIRON

Term	Definition
Host	The Central Control System – legacy chamber monitoring program
Icon	A small graphic that represents a Windows element such as a program, directory, window, or any file
Import	To open and convert a file that has a format different from an application's standard format
Label	The name used by the control system for an output or alarm
Load	To install software
LCS	Local control system or Conviron Chamber control system
Menu bar	The horizontal bar located near the top of the program window containing the program's menus. You can access all of the programs commands from the menu bar.
Output	Switches that control specific equipment or conditions within the chamber
Phytotron	A controlled environment facility with plant growth chambers and/or controlled greenhouses for scientific research
Program spreadsheet	See program table
Program table	A series of columns and rows for entering program time lines on the chamber's Program Spreadsheet or the VC's Program Editor
Reinstall	To run an application software installation after it has been completely removed
Remote control	Chamber operations accessed remotely using the Remote Control software, for Programming and Schedule operations
Restore	Complete operating system and application replacement to an image created at an earlier date. A fast complete recovery method.
Thumbnail	An icon located in the Central Management system or Web Reporting's Chamber Status window that display the current conditions of a growth chamber connected to the network.
Toolbar	The horizontal bar located near the top of the program window containing icons for commonly used commands

Term	Definition
Upgrade	To load a new software version
Upload	To send data from a chamber control system to the Central Management system
Virtual chamber	Chamber operations using the chamber touch screen remotely using the VC software, "viewing" the actual chamber screens in real time
Zone	An area of the growth chamber that is controlled and/or monitored by the control system

CONVIRON

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