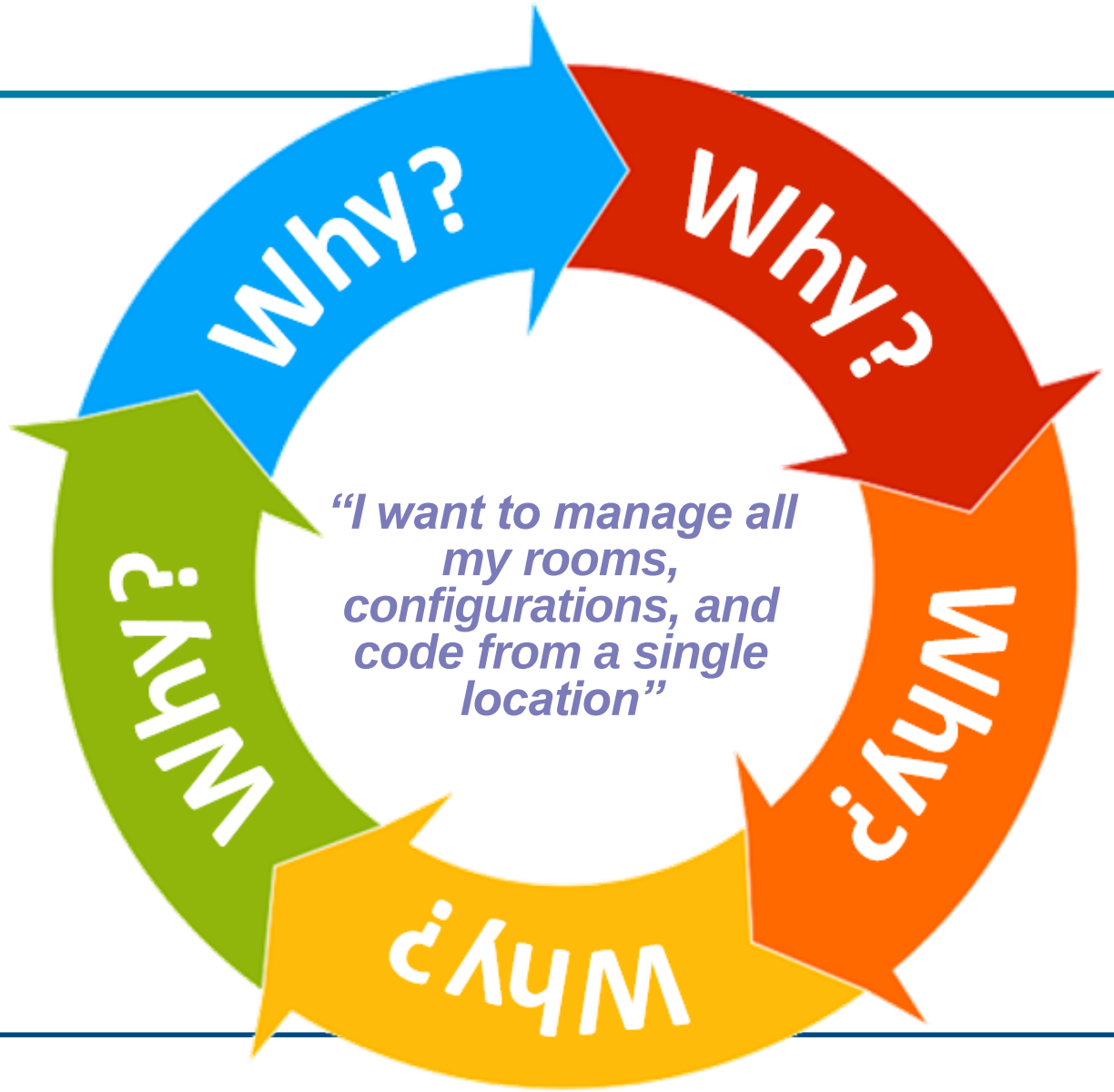

CRESTRON®
Visit us at **Booth 1800**
infocomm

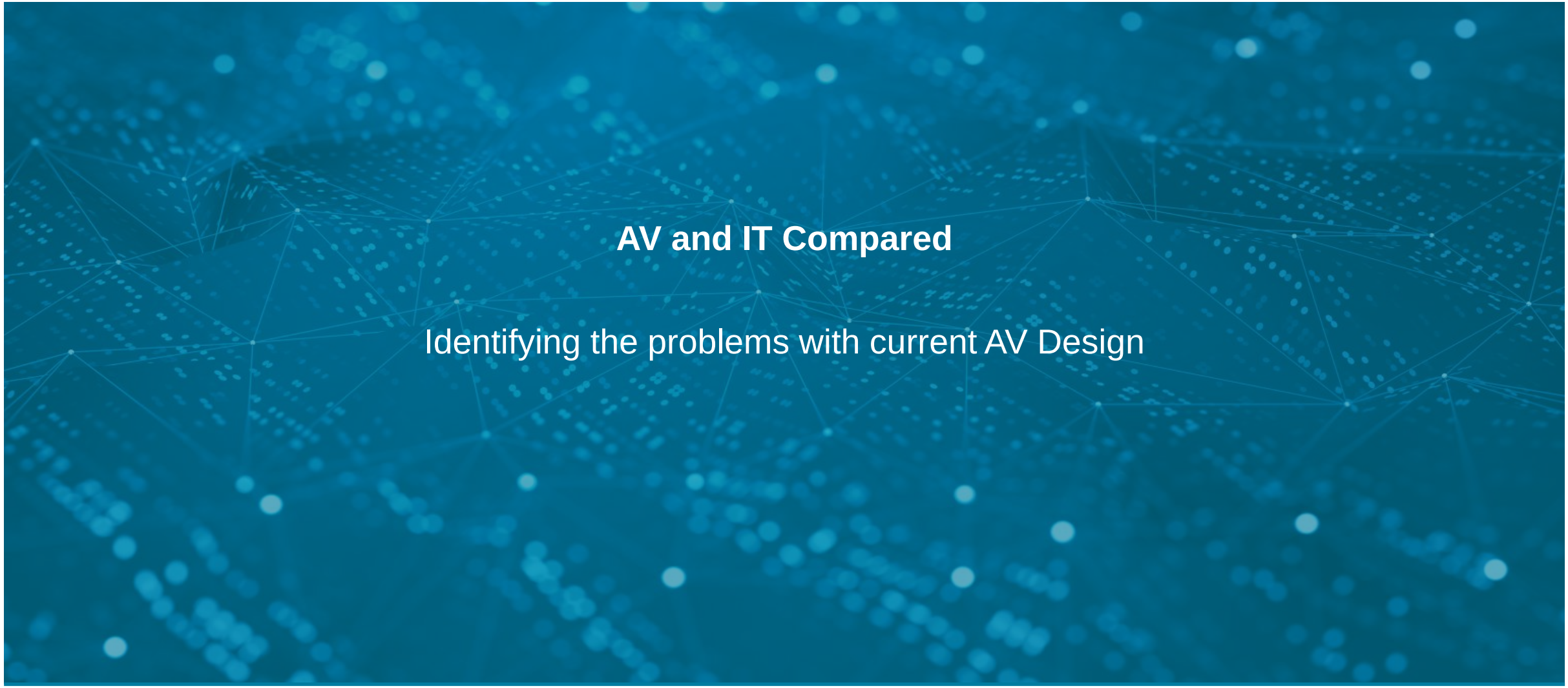
Virtual Control That Works

Instructor: **Tim Gray**

AV the IT Way


Why?
Why?
Why?
Why?
Why?
"I want to manage all my rooms, configurations, and code from a single location"

Virtual Control that Works



IT

- Standard protocols and single vendor and product family solutions
- Easily deploy new systems
- Centrally manage security and configuration policies and push out to systems
- Centrally manage OS patches
- Centrally manage application installation / updates

A/V

- Proprietary protocols, large collection of vendors and product families
- Custom design for every new deployment
- Schedule resources to manually deploy configuration changes to systems
- Schedule resources to manually deploy full OS Updates (no patches)
- Custom programmed, and schedule resources to manually deploy code

IT	A/V
• State of the art security options	• Limited and archaic security options
• All devices centrally monitored / managed with proactive alerts	• Different monitoring/management options for each vendor
• Designed for scalability	• Not scalable
• Elaborate facilities for logging and troubleshooting	• Difficult to troubleshoot, partly due to high number of vendors
• Virtualization	• Physical devices
• Service Oriented Architecture (SOA)	• Proprietary device connections

Virtual Control that Works

Crestron XiO Cloud™ IoT-based platform

Hosted on Microsoft Azure® IoT platform.

Natively built into Crestron solutions.

Deploy quickly

- Reduce installation time by up to 90%

Manage remotely

- Update settings and firmware from anywhere via centralized dashboard

Monitor instantly

- Resolve events remotely to improve device uptime

Evolve confidently

- Make sure your workplace technology supports how people work

Crestron XiO CLOUD™

Microsoft Partner

2018 Partner of the Year

Internet of Things

Virtual Control that Works

Crestron XiO Cloud™ Provisioning Software

Without Crestron XiO Cloud™ Software

1. Dealer orders devices from Crestron
2. Wait for the delivery to arrive
3. Receive devices at dealer HQ
4. Open each box
5. Configure each device (100+ settings) 5 once
6. Box device back up
7. Repeat steps **4-6** for each device
8. Ship devices to install location receives devices
9. Send senior member of team onsite
10. Plug in each device
11. Test the room
12. Troubleshoot and reconfigure once

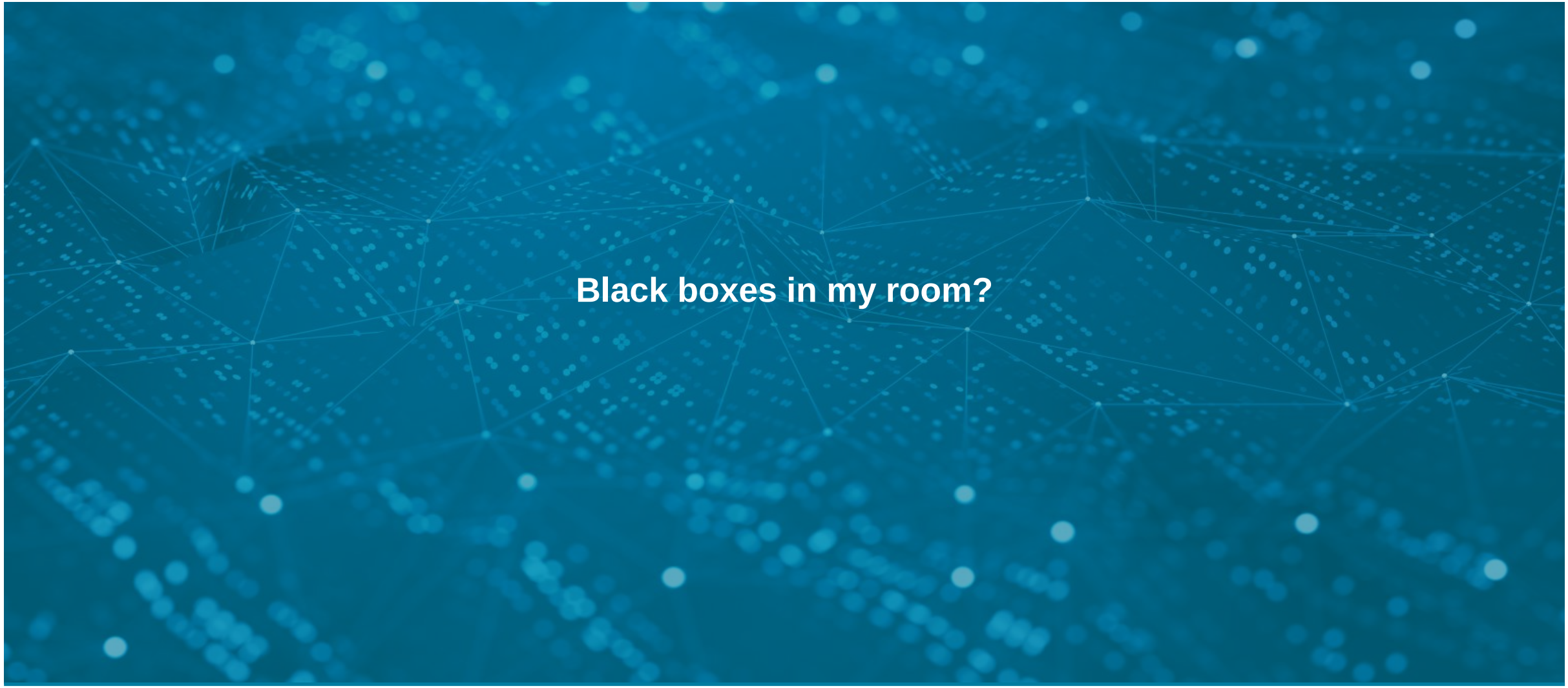
Want to know more about Crestron XiO Cloud™ Provisioning Software?

Visit us at Booth 1800

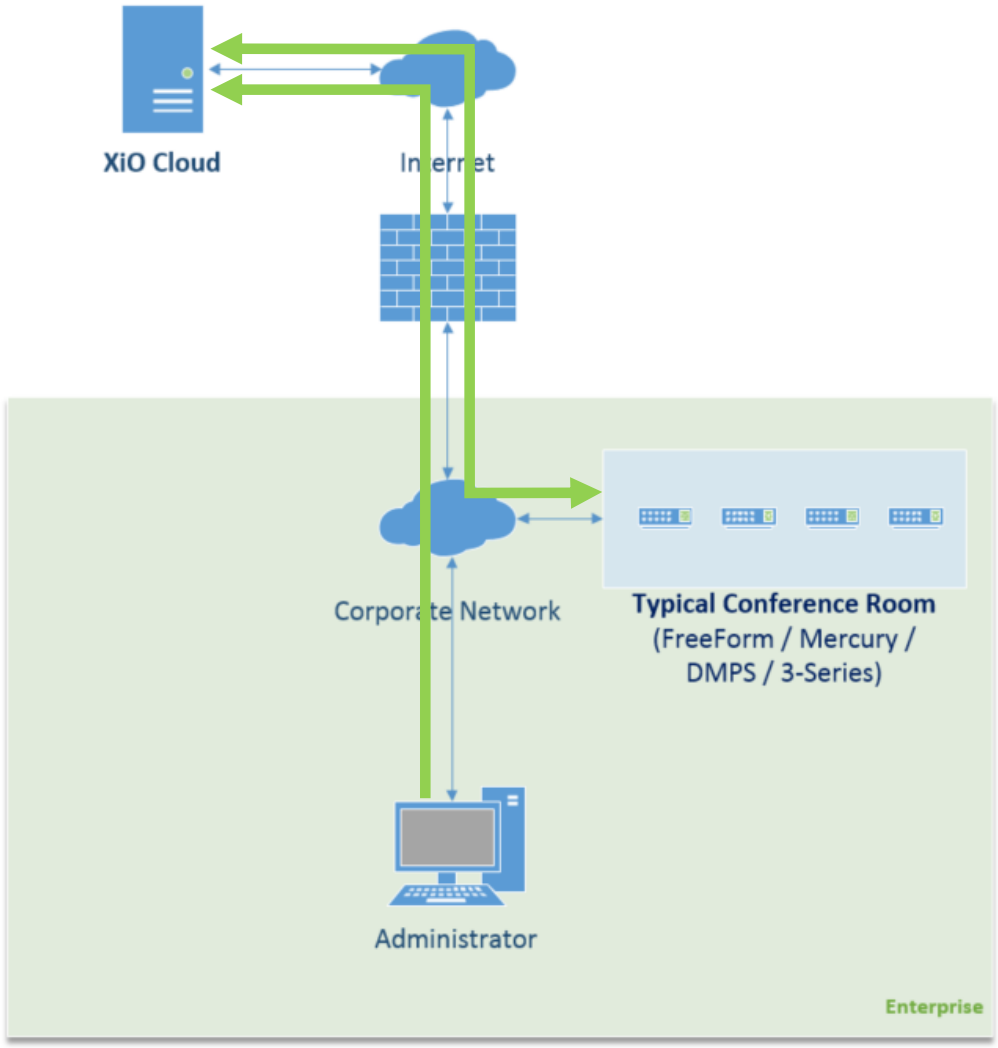
Book on our UC Solutions for every space, for a full demonstration

Book via crestron.com/infocomm

Virtual Control that Works

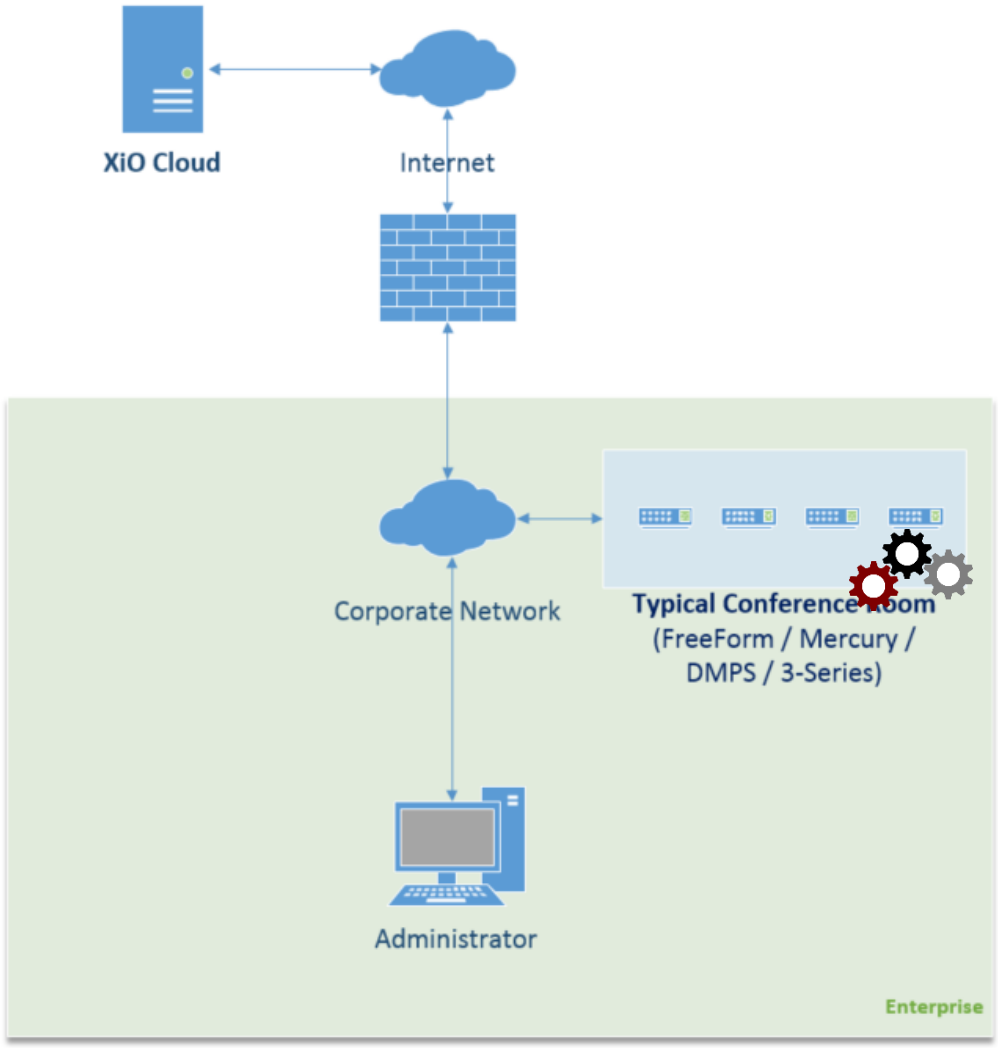


Network Smart / Coordinate AV and IT



- **Management**
  - Server receives updated configuration
  - Pushes out static configuration changes
  - Device configuration and management

Network Smart / Coordinate AV and IT



- **Management**
  - Server receives updated configuration
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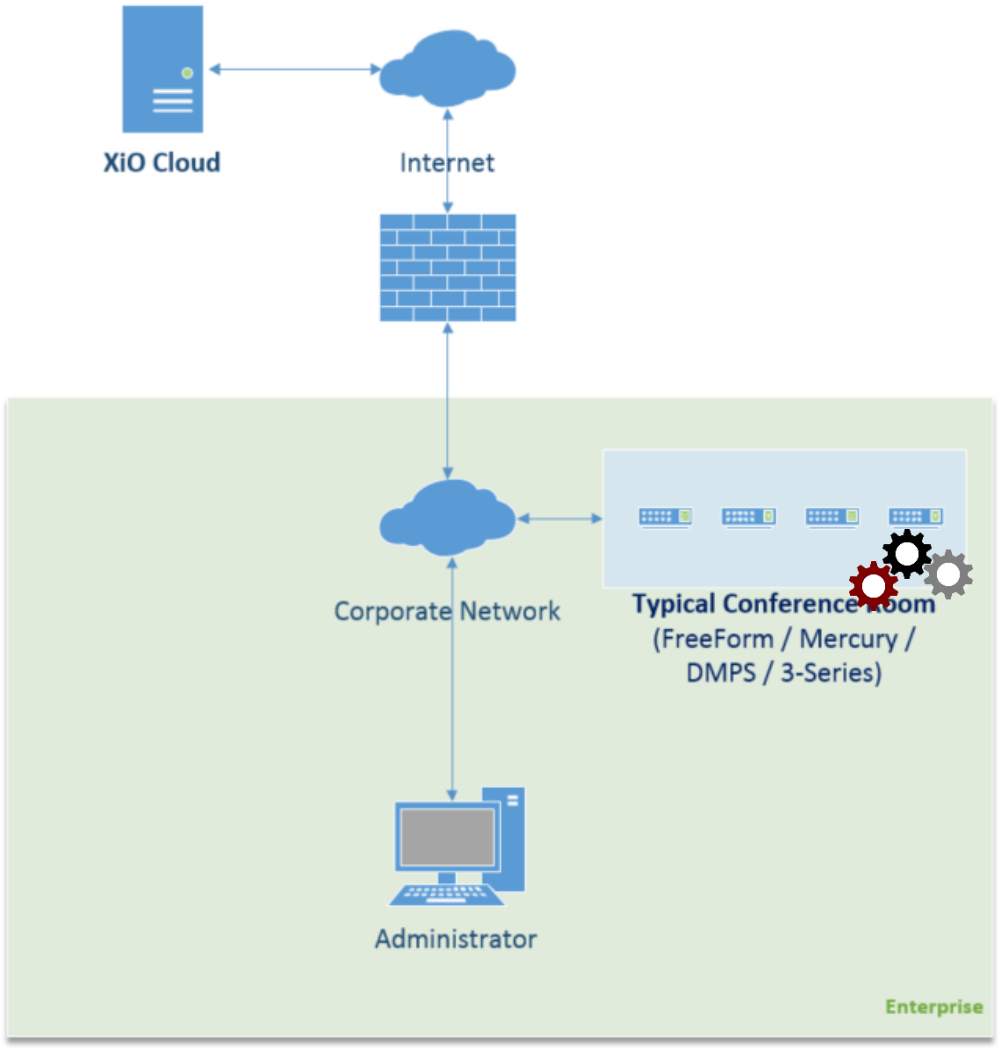
- **Room Usage**
  - Runs autonomously
  - No programming required
    - Crestron Mercury® conference system
    - AirMedia® wireless presentation system
    - DMPS3
    - MPC3
  - Custom programming possible
    - Crestron Studio®
    - C#

Network Smart / Coordinate AV and IT



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Introducing …. Crestron Virtual Control

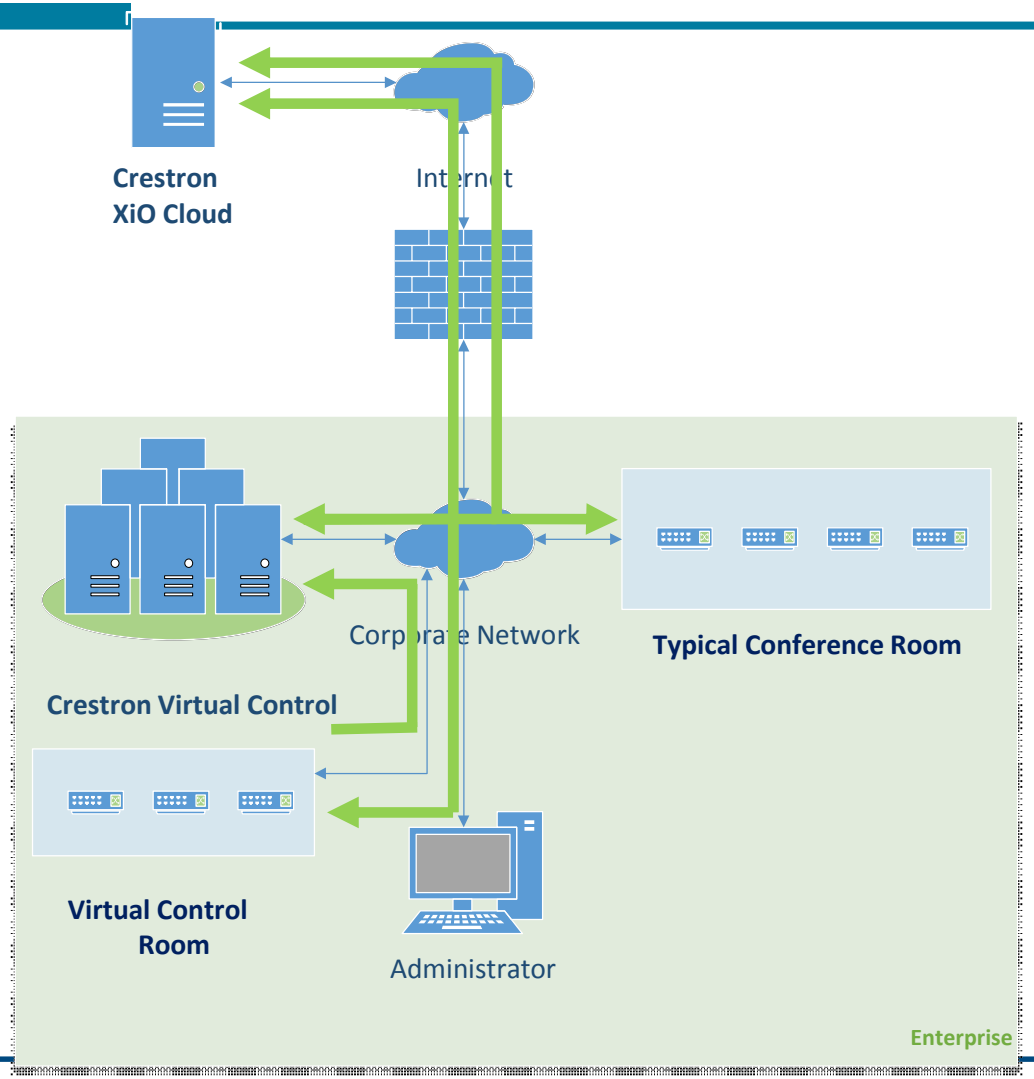
Control System on a Server

- Runs on Linux® OS
- Runs on a VM or physical machine
- On Premise, or in Private Cloud
- Fully Managed from Crestron XiO Cloud™ Service
- Secure, and Authenticated Device Connections
- Custom Programming Available:
  - Native C#
  - Current version of Microsoft Visual Studio
- Not the **only** solution: a compliment to our 3-Series!

With Virtual Control AV and IT are Converged!

- ✓ Runs on computers that you already have, **saving you money.**
- ✓ Software-based, so it's **easy to install, configure, and manage.**
- ✓ Network-smart, so you can **do anything from anywhere.**
- ✓ Virtualized and hosted on your network for **cost-efficiency and security.**
- ✓ Allows you to consolidate and **coordinate AV and IT** resources.
- ✓ Delivers AV control to your users **the way they want it.**

Crestron Enterprise Solution



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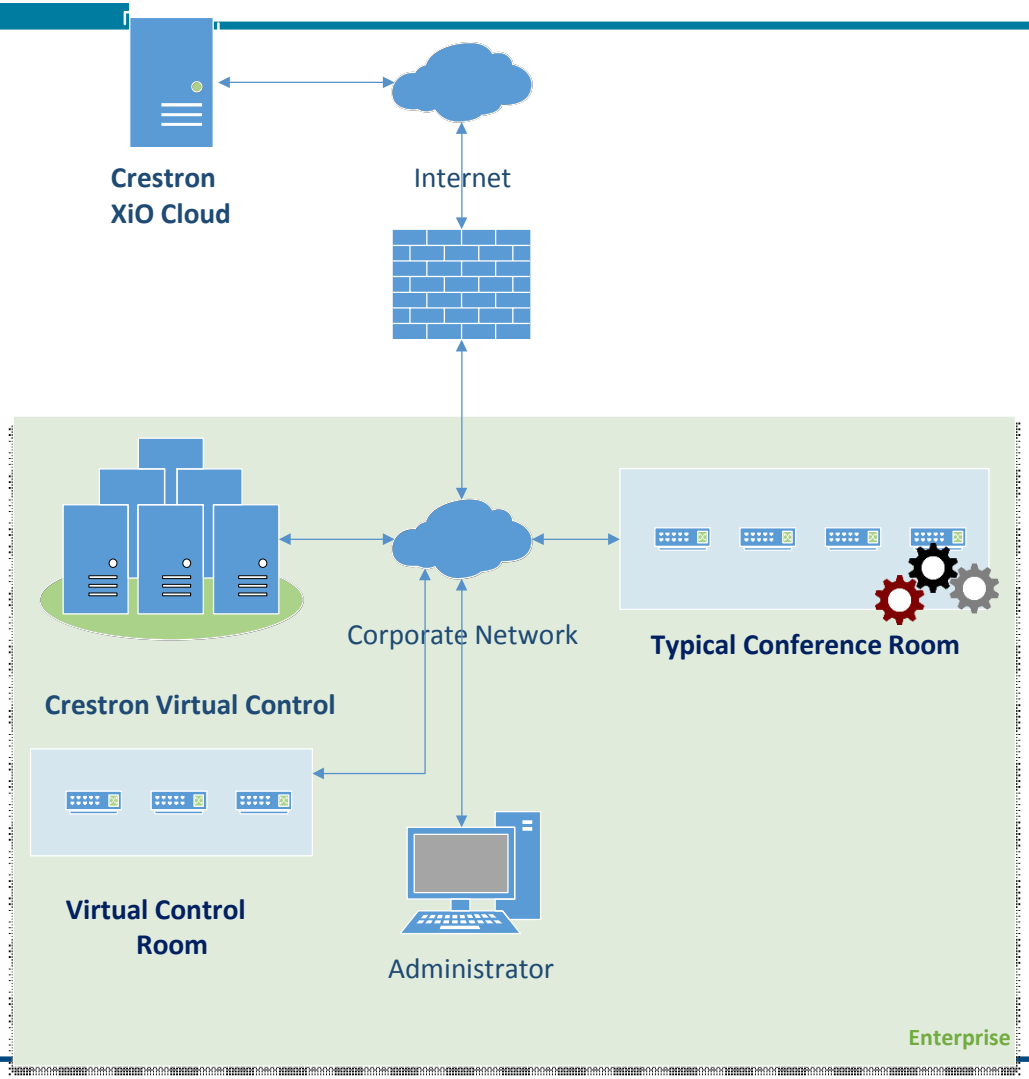
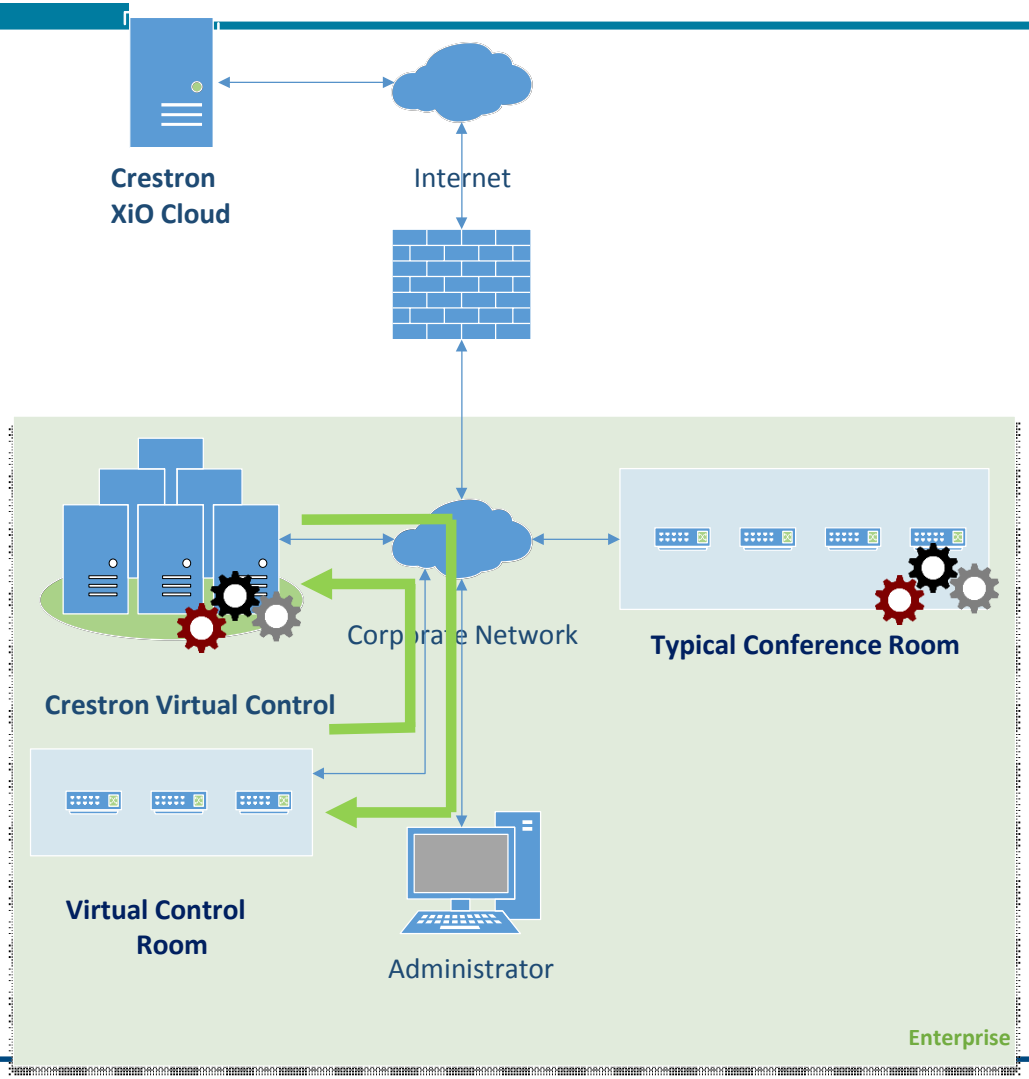
Crestron Enterprise Solution



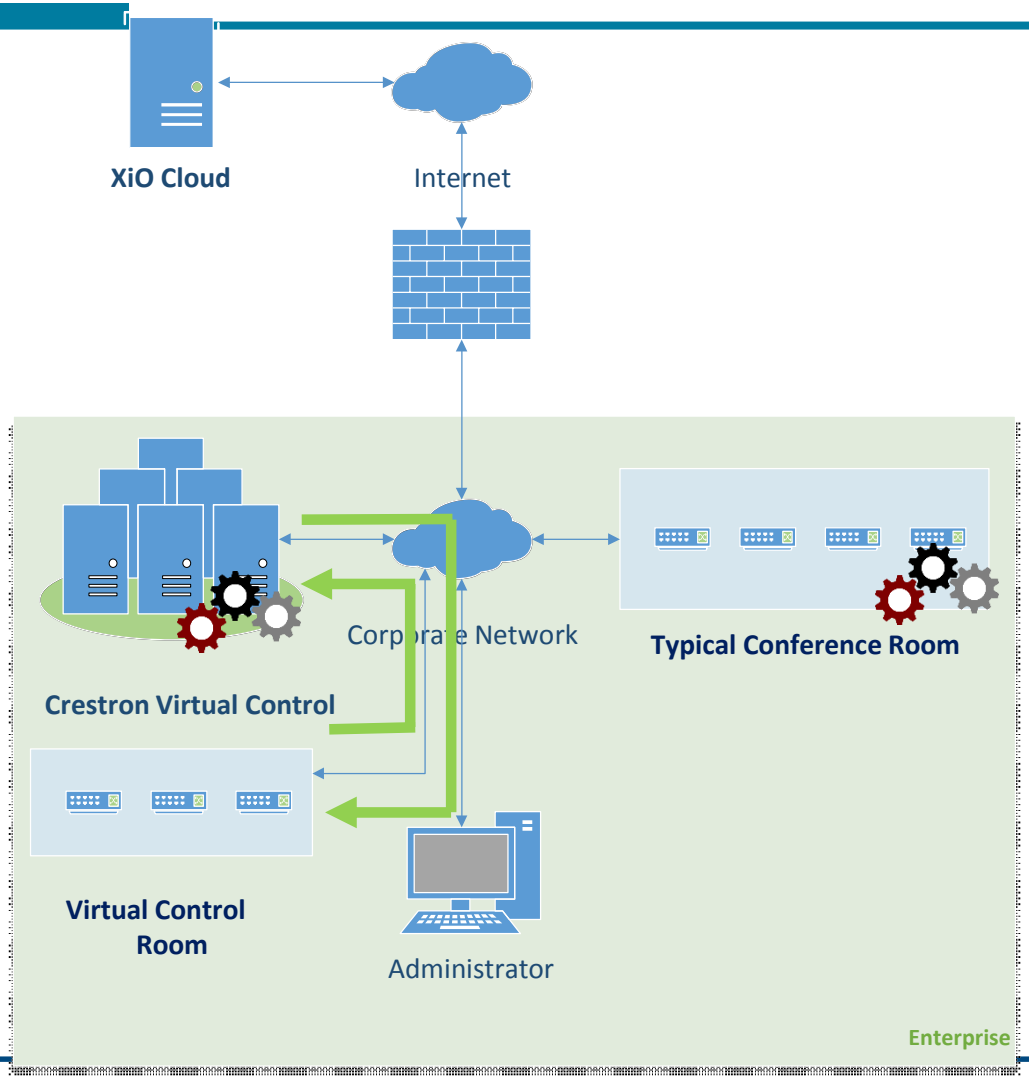
- **Management**
  - Server receives updated configuration
  - Pushes out static configuration changes
  - Device configuration and management
- **Distributed Room Usage**
  - Runs autonomously

Crestron Enterprise Solution



- **Management**
  - Server receives updated configuration
  - Pushes out static configuration changes
  - Device configuration and management
- **Distributed Room Usage**
  - Runs autonomously
- **Server Controlled Room**
  - Devices are connecting to server
    - Status always up-to-date
    - Secure
    - Authenticated
  - Every user interaction makes a roundtrip to the server
  - Configuration based rooms with .AV Framework™ technology
  - Bespoke programming in C#
  - Server runs business logic

Crestron Enterprise Solution



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Control AV The Way the User Wants It

Crestron:

- **The way they want it:**
  - Run on a dedicated appliance, or on a server
  - Runs regardless of network status
  - Control with iPad® tablet, dedicated touch screen, computer, web, and voice
  - Uses secured network connections
  - Single point of management (Crestron XiO Cloud™ Provisioning Software)

Benefits of Crestron’s Solution

- **Virtual Control allows to run code on a server**
  - C#: No more sandbox
  - Scalable
  - C#: Current development Tool
  - REST API For integration
  - Managed from Crestron XiO Cloud™ Provisioning Software

- **3-Series appliance runs code locally in a room**
  - .AV Framework™ technology : no programming
  - SIMPL or Crestron Studio® software
  - C#
  - Managed from Crestron XiO Cloud™ Provisioning Software

Benefits of Crestron's Solution

Offers a centralized server-based alternative to individual hardware-based control systems in every room.

- Provides a "virtual control system" for each room over the network
- Increases space, time, and energy efficiency
- Streamlines deployment, maintenance, and management
- Supports Crestron XiO Cloud™ cloud-based deployment, management, and monitoring
- Integrates directly with IP controllable devices over the network
- Enables server redundancy for increased reliability
- Employs enterprise-grade security to ensure maximum reliability and privacy

Crestron Server Based Control

- **What separates Crestron's offering from the others:**
  - Inbound device connections, rather than outbound
    - More scalable
    - Less overhead
  - Secure and authenticated device connections
  - Configured systems via .AV Framework™ technology
    - Crestron Mercury® conference system
    - AirMedia® wireless presentation system
    - DMPS3
    - MPC3
  - Custom programming using Crestron Studio® or C#
    - Automatically update all rooms running single code base
  - RESTful API for integration and management
  - Deploy local code where needed, run code on server where it makes sense
  - Inter-program communications

I Want a Control System on a Server!!!

- **That's Crestron!**
  - Crestron XiO Cloud™ Provisioning software to monitor, manage, configure all Crestron devices
  - Programming free AirMedia®, Crestron Mercury®, and DMPS3
  - 3-Series® control systems for custom code
  - **And now also!**
    - Virtual Control server based system

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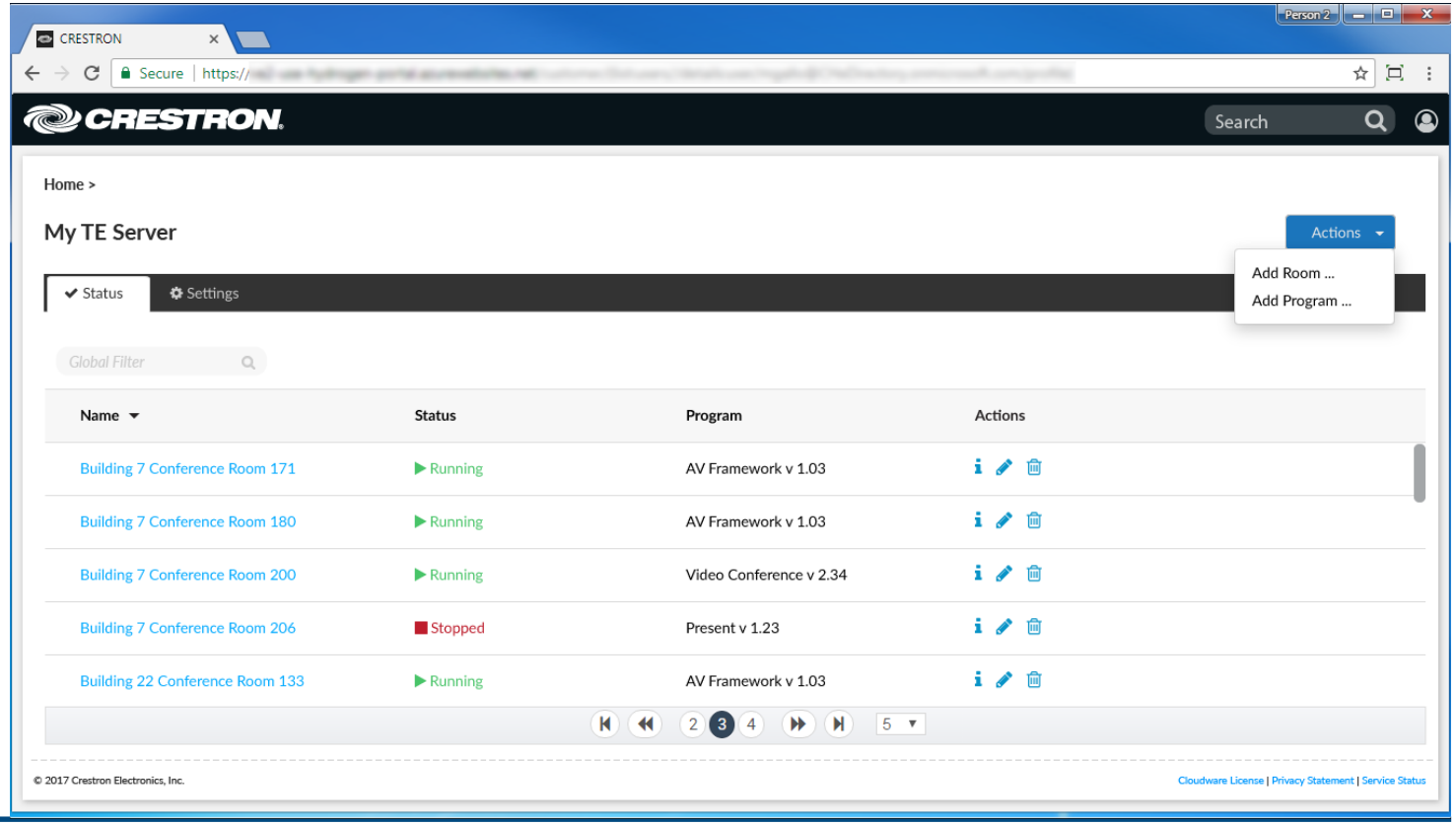
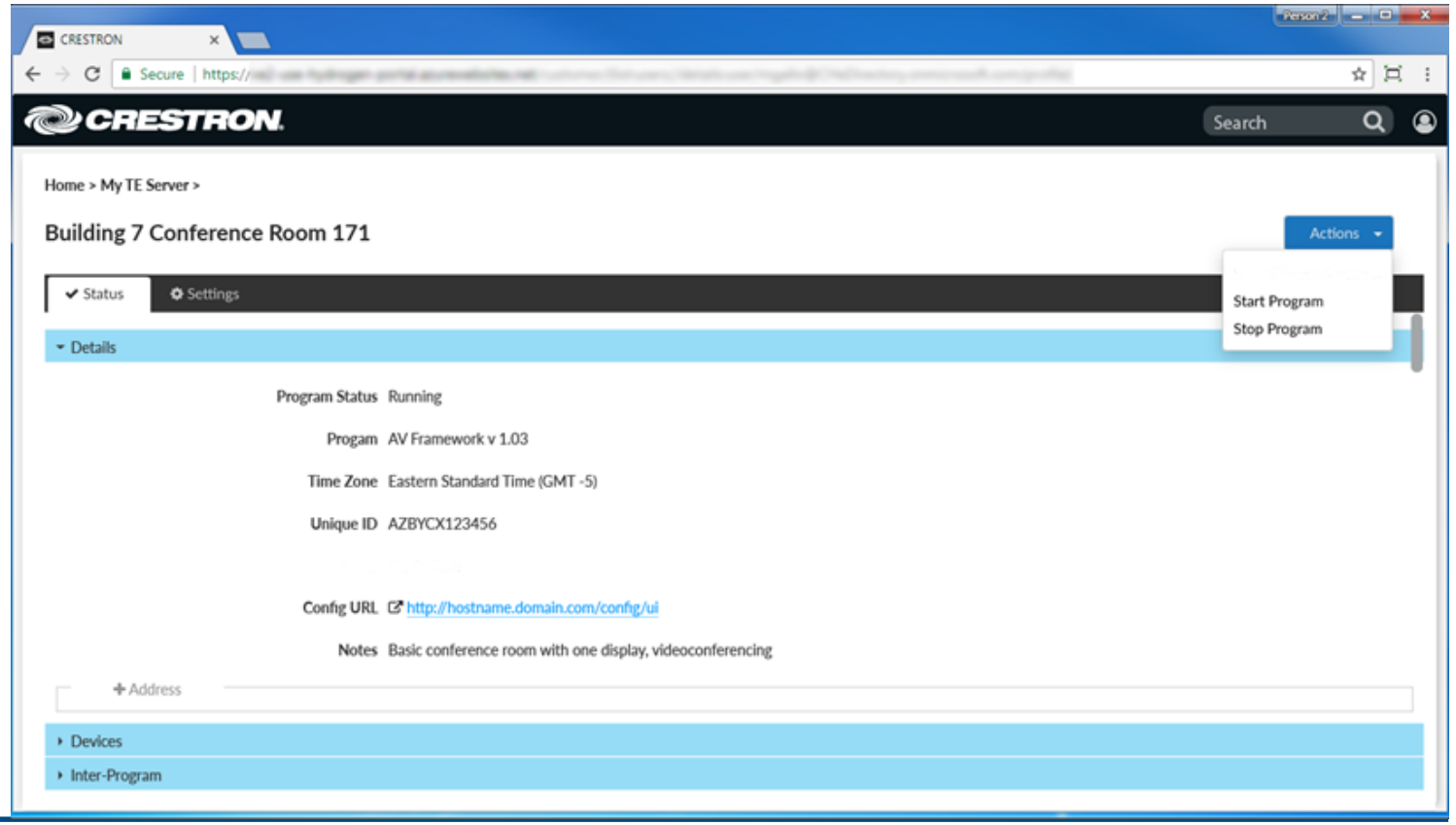
Crestron Server Based Control

- **High level overview of all running programs**
- **Easily sort and filter by any criteria**



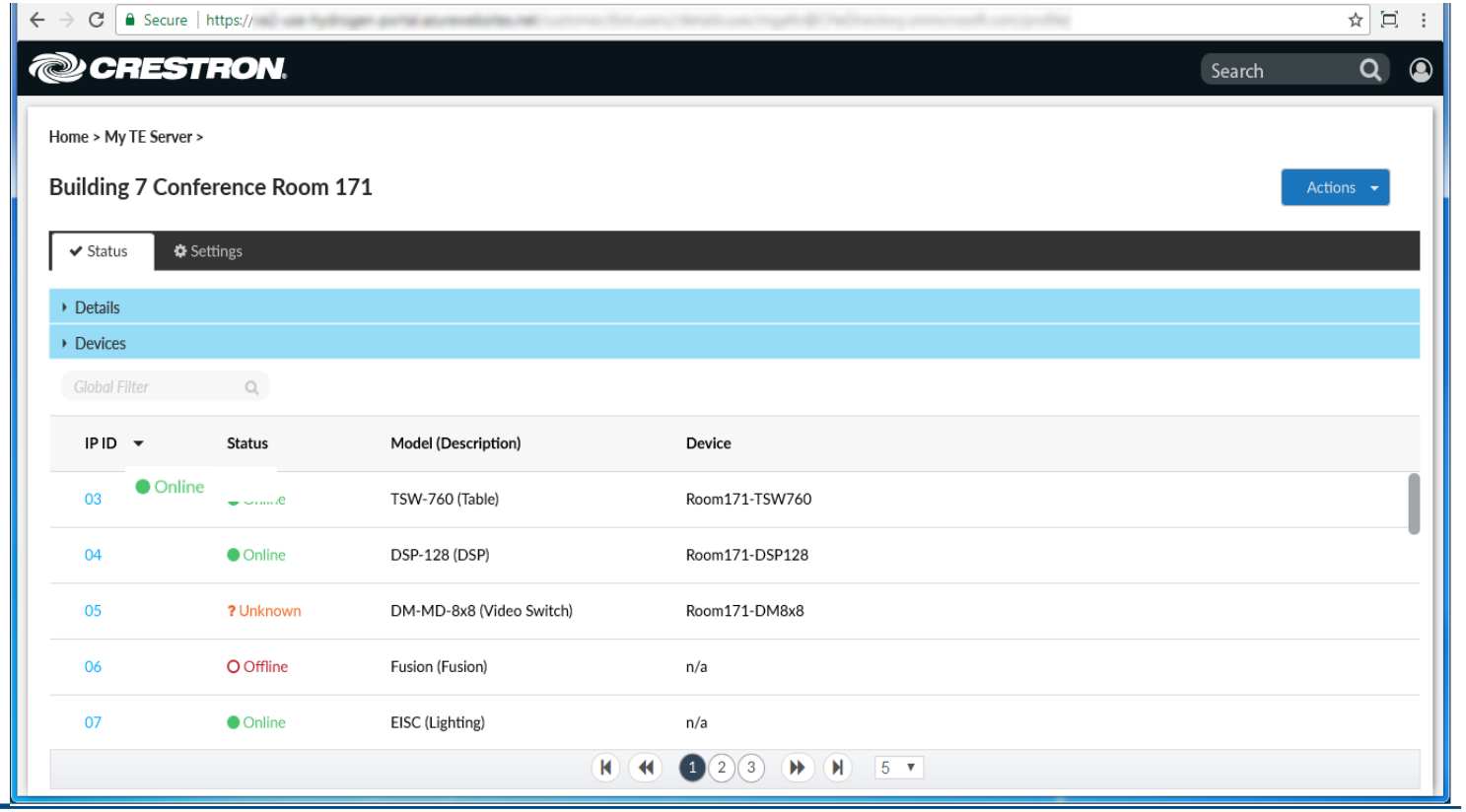
Crestron Server Based Control

- **Details of a single program**
- **Easily stop or start this program**



Crestron Server Based Control

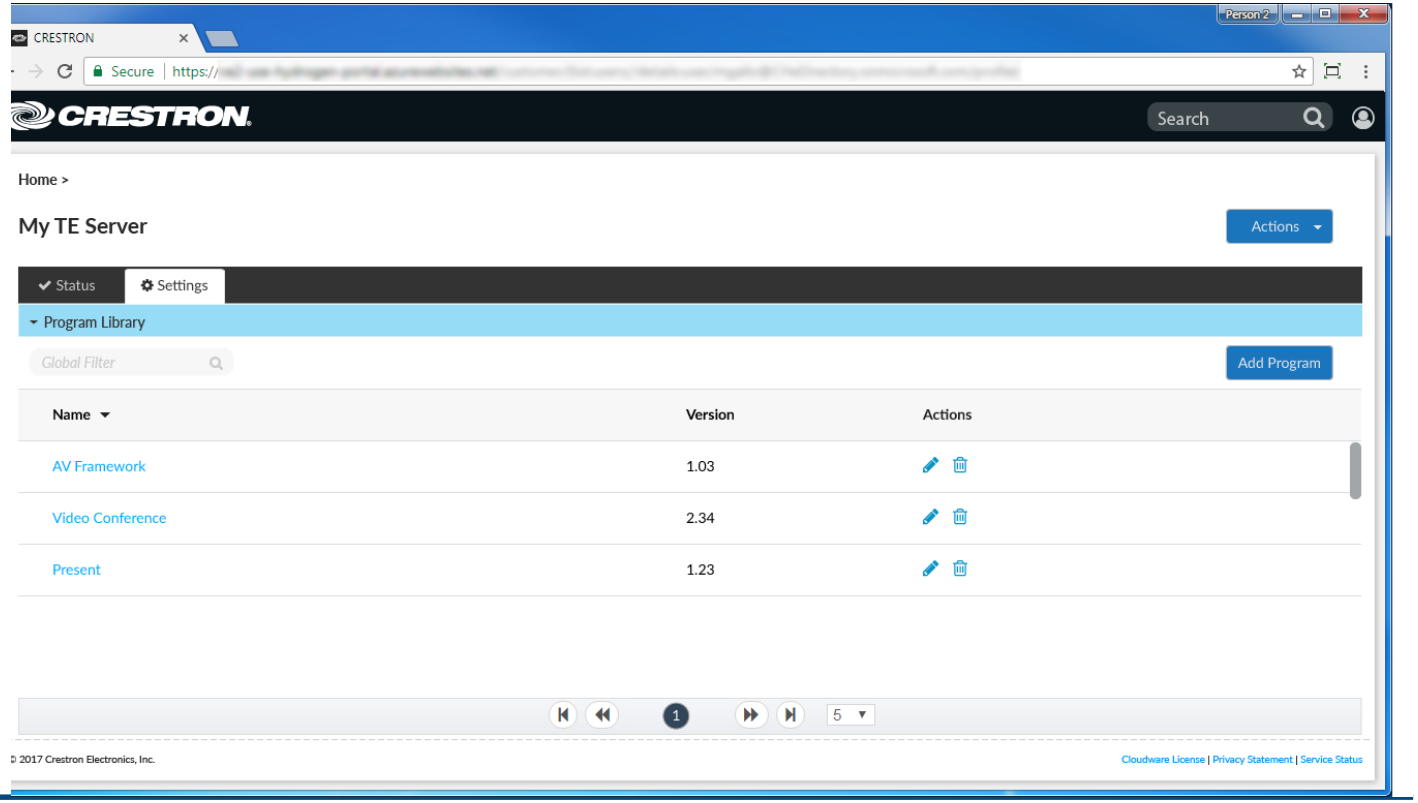
- **Details of a devices connected to this program**
- **Green status indication for connected devices**
- **Red for offline devices**



Crestron Server Based Control

- List of all uploaded programs
- Ready for .AV Framework™ technology
- Each program can be running multiple times

- Update program here, all running instances will be automatically updated



Crestron’s Solution

Server Licensing model only purchase what you need, add more licenses as you expand.

Virtual Control Server Software – Core License for up to 5 “rooms” / Virtual control systems

Above 5 rooms individual license’s required per room,

one license is required per room.

Price breaks

- VC-Room-100+
- VC-Room-50-99
- VC-Room-1-49

Environment

Linux® server

- Ubuntu® server

Deployment

- Bare metal
- Virtual machine

Minimum requirements

- 4 core
- 16 GB RAM (more is better)
- 500GB disk space

Check crestron.com for specification of number of room V CPU and RAM requirements

Minimum Server Requirements

Operating System: Ubuntu Server 16.04 LTS
Network Interface: 1 Gbps
Hard Drive: 1 TB

CPU Cores:

Number of Rooms:	Average Number of Devices per Room																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
50 Rooms	4																	8		
100 Rooms	4								8										16	
200 Rooms	4				8					16										
300 Rooms	4		8																	
400 Rooms	4		8		16															
500 Rooms	4	8		16																

RAM:

Number of Rooms:	Average Number of Devices per Room																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
50 Rooms	4 GB		8 GB			16 GB					32 GB									
100 Rooms	4 GB	8 GB		16 GB				32 GB				64 GB								
200 Rooms	8 GB	16 GB		32 GB				64 GB												
300 Rooms	16 GB		32 GB			64 GB														
400 Rooms	16 GB	32 GB		64 GB																
500 Rooms	16 GB	32 GB		64 GB																

Getting Started

Complete 22 page installation guide

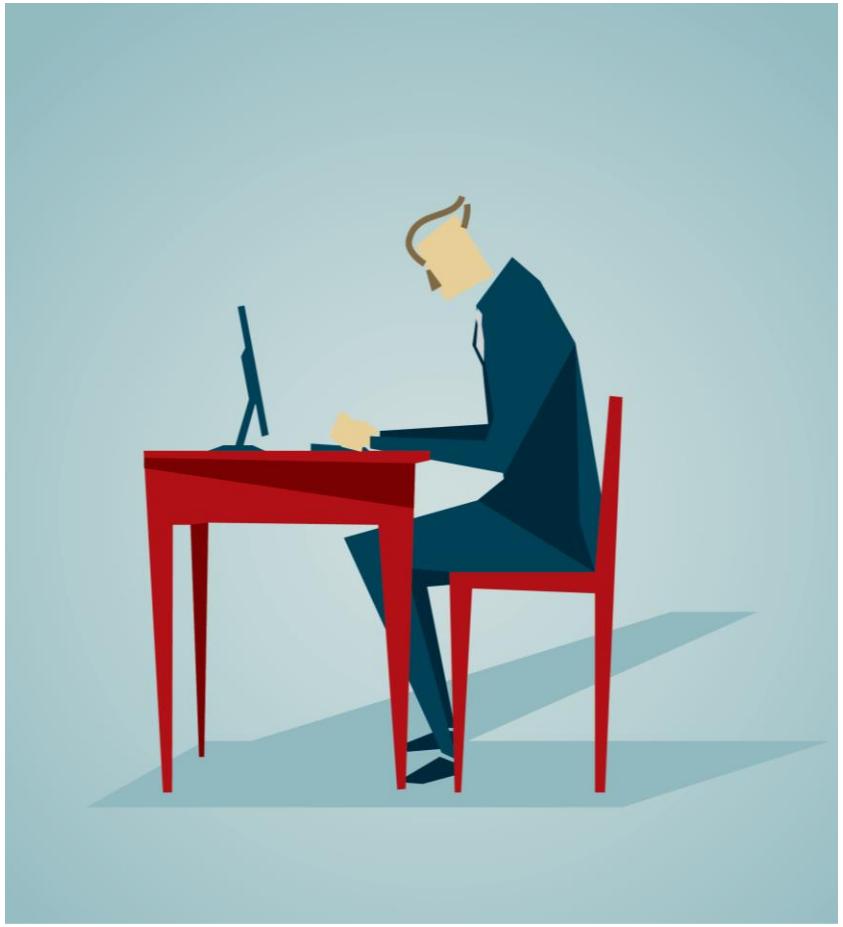
Full Deployment Guide

Virtual Control REST API Guide is also available.

Virtual Control that Works

Programming

- **C# (Mono 5.4)**
  - No more sandbox
  - Can still use crestron namespaces
  - Access to LDAP, etc.
  - Tasks, actions, async and await to support asynchronous programming
  - Null conditional operator (?)
  - Tuple



Hardware control

- **Ethernet**
  - All Crestron Ethernet devices
  - Wireless Crestron devices may also be integrated via an infiNET EX® wireless gateway
  - Third Party Ethernet Devices

What If you want some hardware control?

- IR / RS232 use the existing built in ports from such as DigitalMedia™ or DM NVX™ endpoints.
- CEN-IO expanders
- CEN-CI Card interfaces
- DIN-CENCN-2 Cresnet® bridge

Hardware control : CEN-IO Expanders

Wired PoE Ethernet I/O modules using the Crestron IFE micro form factor Surface or DIN rail mountable

CEN-IO-RY-104

- Four low voltage relays

CEN-IO-COM-102

- Two RS232 ports

CEN-IO-DIGIN-104

- Four Digital Inputs

CEN-IO-IR-104

- Four IR/1-way Serial ports

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Hardware control : CEN-CI Card Interfaces

CEN-CI3-1-POE or CEN-CI3-3 rack mountable card Interface’s

`

C3COM-3 Card

- 3 COM Ports

C3IO-16 Card

- 16 Versiport I/O Ports

C3IR-8 Card

- 8 IR Ports

C3RY-16 Card

- 16 Relay Ports

C3RY-8 Card

- 8 Relay Ports

Hardware control : Ethernet to Cresnet® Bridge

DIN-CENCN-2

Din Rail Ethernet to Cresnet® Bridge

Works with Crestron Virtual Control to allow any Cresnet® Device to work with Virtual Control server programs.

- Keypads
- Occupancy Sensors
- Motor Controllers
- Lighting

Features two isolated Cresnet® subnets,

built-in network diagnostics,

and versatile power management.

Currently not supported

- BACnet
- AutoUpdate
- SystemMonitor
- SIMPL
- Console
- Console commands

Virtual Control that Works