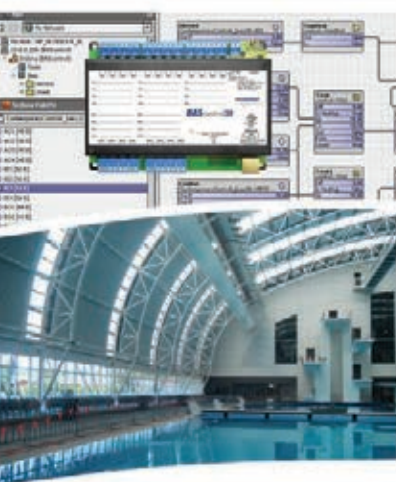


BASautomation®

Building on BACnet®

Control



Integrate



Visualise



Communicate



About **BAS**automation®

Contemporary Controls can complete your BACnet project with solutions that take you from device to the Internet. Freely-programmable Sedona Framework™ controllers, predefined Modbus device profiles that ease integration to BACnet, flexible visualization platforms including Niagara Framework® for alarming, scheduling and trending, BACnet routing to wired and wireless IP networks, and a complete portfolio to our CTRLink® — Ethernet Built for Buildings — infrastructure products that are ideally suited for the BAS industry.

CONTEMPORARY CONTROLS®

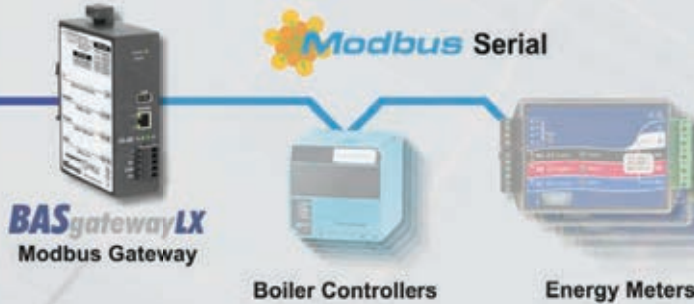
Communicate

BASview
Web-based
Graphical Interface

Visualise



Integrate



BASintegratorAX
Integration Controller



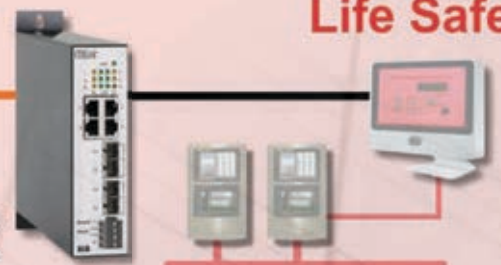
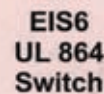
Power
Ethernet

Control



Fibre

Life Safety



The **BASview** offers a simple web-based graphical interface to a web browser for scheduling, trending, alarming, and graphics generation. It requires no specialized training or licensing.

For a more comprehensive head-end, the **BASsupervisorAX** Network Server or the **BASintegratorAX** Integration Controller along with web browsers is the solution. By incorporating Niagara Framework® in our Scalable Building Strategy, any size project is within reach.

Not all building automation devices are BACnet/IP compliant so there is a need for gateways and routers.

The **BASrouterLX** High Performance BACnet Router allows connection of BACnet MS/TP and BACnet Ethernet devices to BACnet/IP. By having BBMD support, the BASrouterLX allows BACnet devices to operate over a sub-netted IP network.

The **BASgatewayLX** Modbus to BACnet Converter interfaces Modbus TCP and Modbus Serial (RTU or ASCII) devices to BACnet/IP. By using predefined Modbus device profiles that were developed by Contemporary Controls, configuration only requires checking off boxes on a web page.

For tougher integration challenges there is the **BASintegratorAX** which can take almost any other protocol up to BACnet/IP. There is no need to worry about that one device in the specification that must be included in the system.

Having controllers at the IP level provides convenient web page configuration and monitoring over an Ethernet network. The **BAScontrol20** is a BACnet/IP compliant 20-point controller that is freely-programmable using Sedona Framework™.

Using a workbench tool, control schemes are developed by dropping and dragging components onto a wiresheet. With less I/O, the **BASremote** provides much the same capability along with a Modbus gateway port. As an option, it can be powered over Ethernet.

In order to connect general purpose networks with life safety Ethernet networks, an intervening Ethernet switch is required. The **EIS** Ethernet Switch series is UL-864 and cUL-864 recognized for Control Units and Accessories for Fire Alarm Systems 9th Edition.

CTRLink®

Ethernet Built for Buildings

Because of Ethernet's popularity in intelligent buildings, Contemporary Controls designed the CTRLink line of Ethernet managed and unmanaged switches, media converters, PoE injectors, splitters and IP routers that meet the unique requirements of the building automation industry. You have all the building blocks needed to get your device up on the Internet economically. All products can be powered from 24 VAC/VDC Class 2 circuits.

DIN-rail or panel mounting options exist. Data rates as high as 1000 Mbps are supported. Cabling options include copper, single-mode and multimode fibre. Wireless technologies such as Wi-Fi and cellular technologies are supported with the installation of USB stick adapters.

By using CTRLink to make connections to your chosen BASautomation devices, you can provide a complete solution for your client.

INTEGRATE

The BASrouter, portable BASrouter and BASrouterLX provide stand-alone routing between BACnet networks such as BACnet/IP, BACnet Ethernet, and BACnet MS/TP, allowing a mix of BACnet network technologies within a single BACnet internetwork.

All models have a 10/100 Mbps Ethernet port for BACnet/IP and BACnet/Ethernet, and an isolated EIA-485 port for BACnet MS/TP. A total of 31 full-load or 63 half-load devices can be attached to the MS/TP network over a shared two or three wire EIA-485 network. Data rates from 19.2 to 76.8 kbps are supported with the BASrouterLX supporting the higher 115.2 kbps rate. Commissioning of all BASrouters is accomplished using a standard web browser.

For basic BACnet routing, the BASrouter can be used with support for 5 BBMD entries in its BDT (Broadcast Distribution Table).

This small unit can be DIN-rail mounted and powered from a low-voltage 24 VAC/VDC supply.

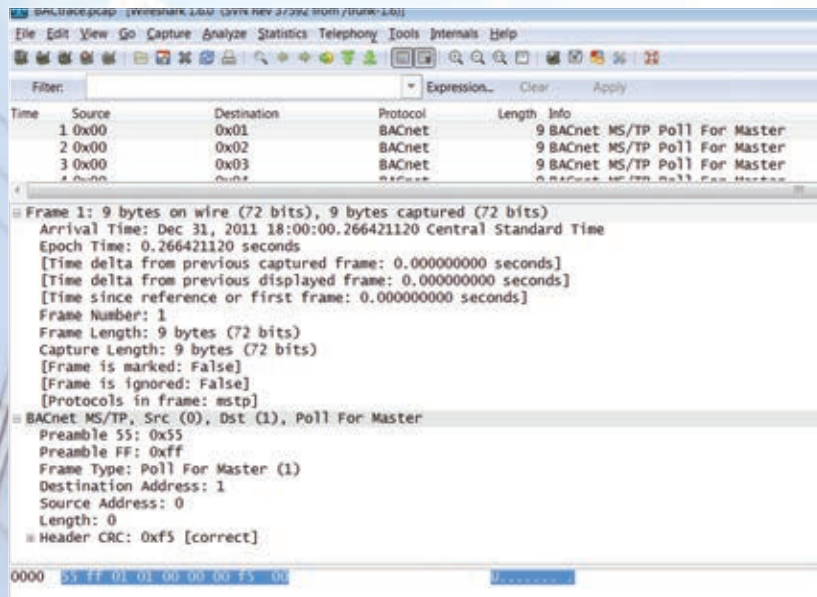
For temporary connections while commissioning or troubleshooting a MS/TP network, the Portable BASrouter can be used. With the portable unit, power is derived from the USB port on a laptop computer although data communications occur over the laptop's Ethernet port.

The BASrouterLX differs in that it supports both master and slave BACnet MS/TP devices, has a larger BDT table for up to 50 entries and has higher performance due to its faster processor and larger memory. As an aid in troubleshooting MS/TP issues, it can capture MS/TP traffic which can be viewed using Wireshark®.

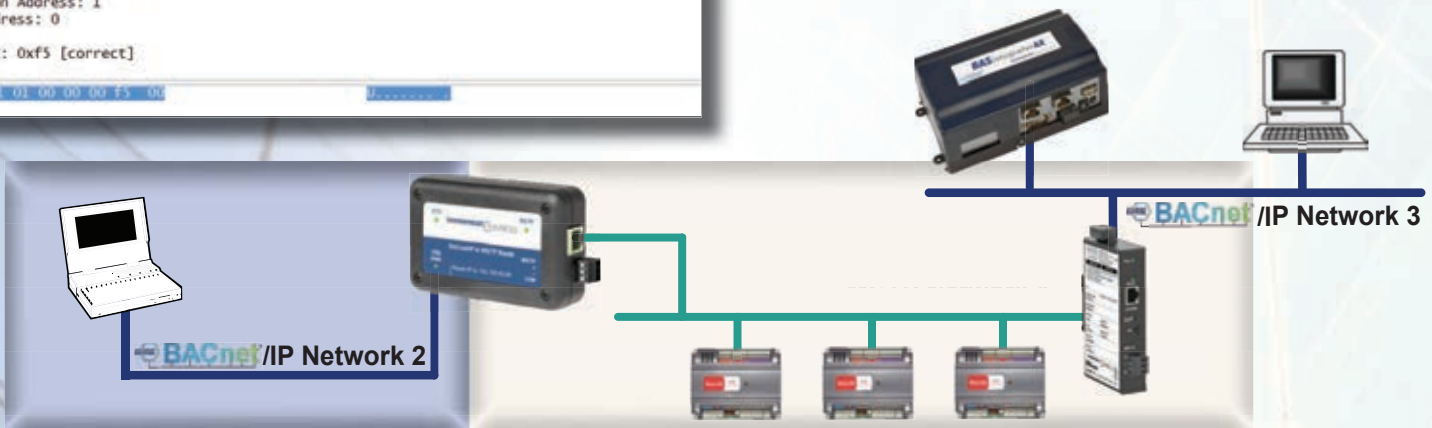
BACnet Routing — Routing Between BACnet/IP, BACnet Ethernet and BACnet MS/TP



BASrouter **BASrouterLX**



BASrouter
Portable



Modbus to BACnet Conversion

Modbus remains a popular network technology. It is commonly found on jobs such as boiler control, variable speed drives, and metering applications, but these devices lack BACnet compliance. To make Modbus devices appear as individual BACnet devices a BASgatewayLX is used. This device has one 10/100 Mbps Ethernet for both Modbus TCP and BACnet/IP and an opto-isolated Modbus EIA-485 serial port for Modbus RTU or Modbus ASCII devices. Up to 30 Modbus serial devices (represented by up to 1000 polled points) can share the single Modbus port on the BASgatewayLX.

The virtual routing feature in the BASgatewayLX allows each connected Modbus device to appear as an individual BACnet-compliant device. What is needed is a device profile for each Modbus type device. Contemporary Controls maintains a library of common device profiles. If one is not available, Contemporary Controls will provide it upon request. Custom device profiles can be uploaded to the BASgateway.

Using web pages and a resident database of common Modbus device profiles, Modbus data points from Modbus Serial or Modbus TCP devices can be mapped to BACnet objects.

BASgatewayLX



Device Name: ND350

Modbus Address: 10 (1 to 246)

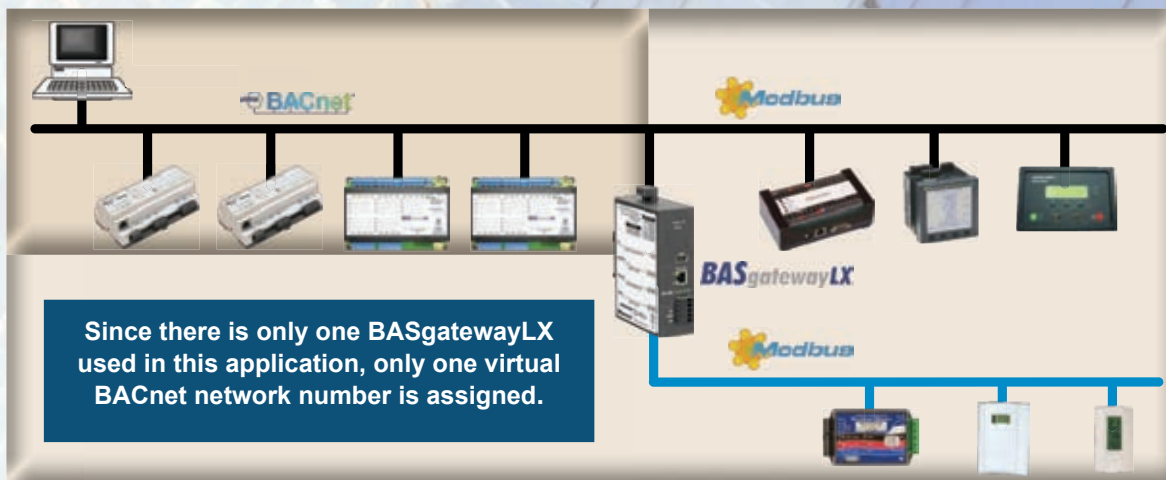
Modbus IP Address: 0.0.0.0

Device Instance: 2450010

Modbus Registers (Max 1000):

- 400513 eScale Energy Register
- 400515 kWh Energy Register
- 400517 kVAh Energy Register
- 400519 kvarh Inductive Energy Register
- 400521 kvarh Capacitive Energy Register
- 400523 Import kvarh Energy Register
- 400525 Export kWh Energy Register
- 400527 Export kvarh Energy Register

Application Example — Mixing Modbus TCP and Modbus Serial



A single BASgatewayLX can handle both Modbus TCP devices and Modbus Serial devices simultaneously as long as the 30 device/1000 polled point limit is maintained. In this application the Modbus TCP connection is called a “one-armed gateway” because both Modbus TCP and BACnet/IP messages transfer through the same Ethernet port.

Configuration is similar to that of a Modbus serial device. However, this time the IP address of the Modbus TCP device must be entered as well as a Modbus slave address. Notice that all Modbus devices — TCP and serial — are assigned to a unique BACnet network number.

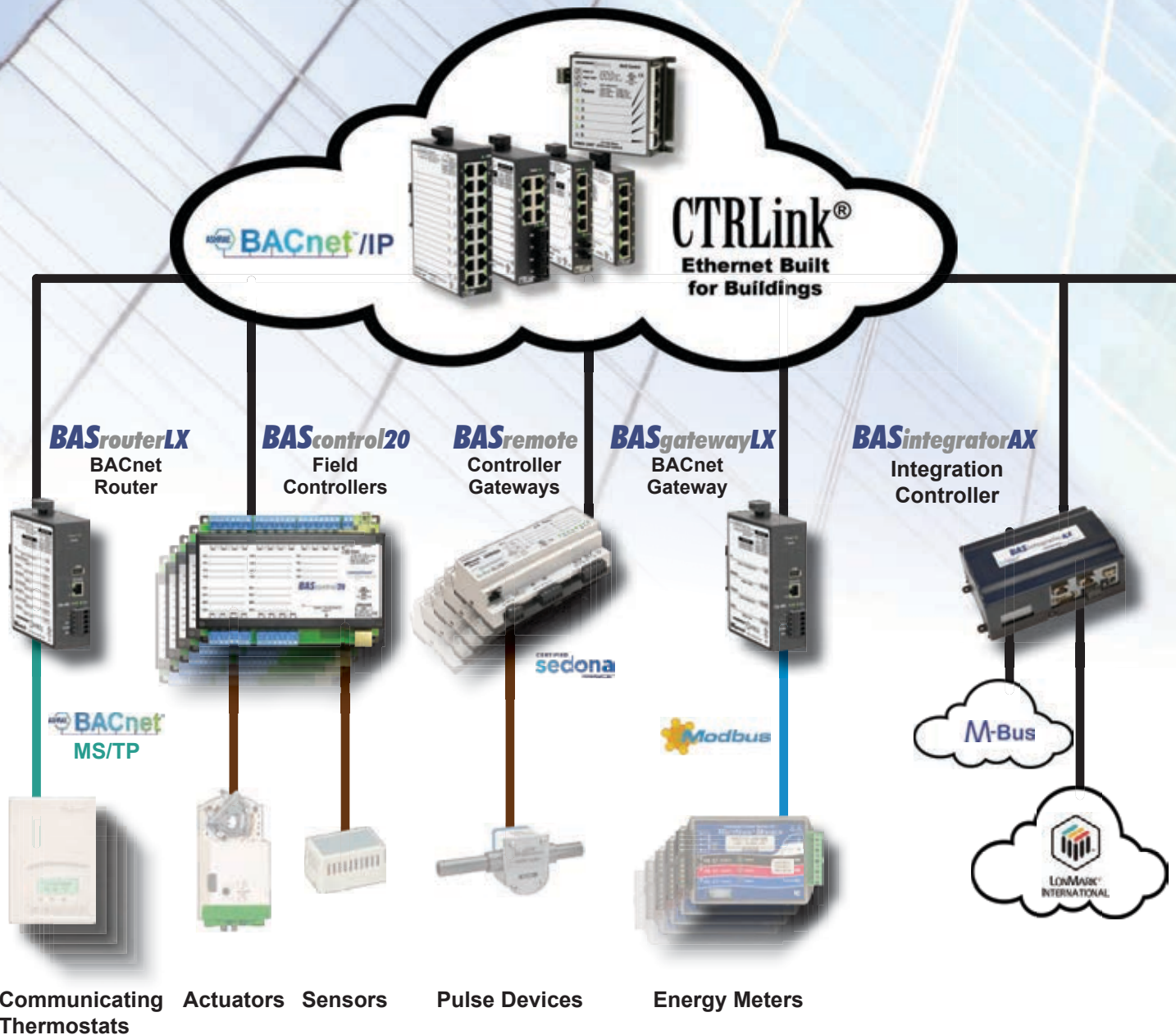
VISUALISE

Scalable Building Strategy — complete building automation solution

Contemporary Controls has developed a Scalable Building Strategy that incorporates Niagara^{AX} Framework and Sedona Framework in a modern device-to-Internet solution that is suitable for any size project. Using a BACnet/IP backbone of wired and wireless Ethernet, Contemporary Controls has assembled a complete solution with all the necessary building automation elements — communication, integration, control and visualization.

An Opportunity for Electrical-Mechanical Contractors

As a licensee of Niagara^{AX} Framework from Tridium, Contemporary Controls has created an Authorized Systems Integrator Program to recruit contractors that will purchase, install and commission building automation systems for end users. This is an opportunity for electrical and mechanical contractors to gain access to one of the most popular building automation technologies while allowing them to bid on the controls portion of a project.

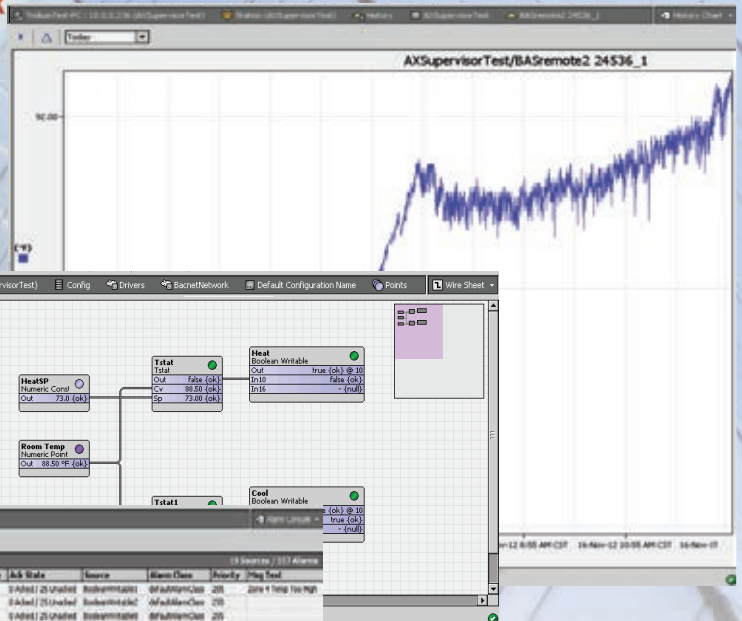


Powered by Niagara^{AX} Framework[®]

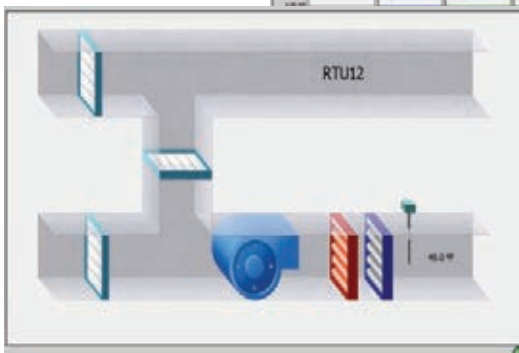
The NiagaraAX Framework[®] is a software platform that integrates diverse systems and devices regardless of manufacturer, or communication protocol into a unified platform that can be easily managed and controlled over the Internet using a standard web browser. By integrating diverse building systems such as environmental controls, security, lighting, energy, video, fire and life safety, Niagara is creating better buildings — buildings that are smarter, use less energy, are more efficient.

Contemporary Controls utilizes NiagaraAX Framework in its **Scalable Building Strategy** because of the wealth of integration options and its flexible control hierarchy. The BASupervisorAX network server provides centralized data logging, alarming, scheduling and real-time displays to web browser clients. The BASintegratorAX building controller provides local supervision over BACnet routers, gateways and Powered by Sedona Framework field controllers. Control programming and configuration are accomplished using a single tool — BASworkbenchAX.

BASupervisorAX Network Server



TimeStamp	Source	State	Ack State	Source	Alarm Class	Priority	Msg Text
14-Oct-07 12:42:56 PM CST	OffNormal	Added	25 Unacked	BoilerRoomTemp1	OffNormalClass	208	Zone 1 Temp Too High
14-Oct-07 12:42:56 PM CST	OffNormal	Added	25 Unacked	BoilerRoomTemp2	OffNormalClass	208	
14-Oct-07 12:42:56 PM CST	OffNormal	Added	25 Unacked	BoilerRoomTemp3	OffNormalClass	208	
14-Oct-07 12:42:56 PM CST	OffNormal	Added	25 Unacked	BoilerRoomTemp4	OffNormalClass	208	
14-Oct-07 12:42:56 PM CST	OffNormal	Added	25 Unacked	BoilerRoomTemp5	OffNormalClass	208	
14-Oct-07 12:42:56 PM CST	OffNormal	Added	25 Unacked	BoilerRoomTemp6	OffNormalClass	208	
14-Oct-07 12:42:56 PM CST	OffNormal	Added	25 Unacked	BoilerRoomTemp7	OffNormalClass	208	
14-Oct-07 12:42:56 PM CST	OffNormal	Added	25 Unacked	BoilerRoomTemp8	OffNormalClass	208	
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14-Oct-07 12:42:56 PM CST	OffNormal	Added	25 Unacked	BoilerRoomTemp48	OffNormalClass	208	
14-Oct-07 12:42:56 PM CST	OffNormal	Added	25 Unacked	BoilerRoomTemp49	OffNormalClass	208	
14-Oct-07 12:42:56 PM CST	OffNormal	Added	25 Unacked	BoilerRoomTemp50	OffNormalClass	208	



CONTROL

The BASremote and BAScontrol20 provide a direct connection to an IP/Ethernet network. Ideally suited for structured wiring systems, both controllers are BACnet/IP compliant with a B-ASC device profile. Having a resident Sedona Virtual Machine (SVM), the units are freely programmable using tools such as Niagara Workbench or Sedona Workbench.

The BAScontrol20 provides a convenient mix of universal inputs, binary inputs and outputs as well as analog outputs. Models exist for both triac and relay binary outputs. The unit is ideal for unitary control or for expanding I/O points in the field via an Ethernet connection. The BASremote has fewer I/O points but can serve as a Modbus gateway to BACnet.

Powered by Sedona Framework™

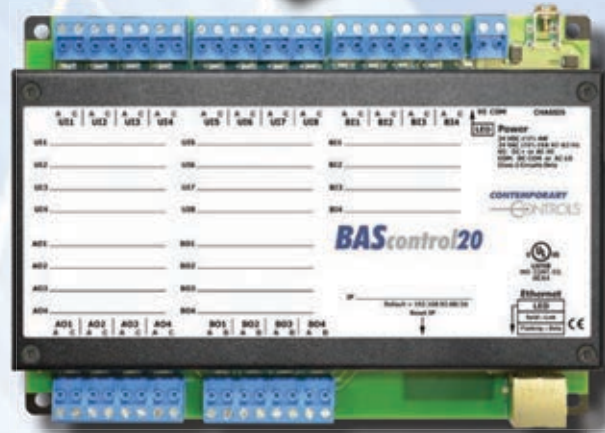
Sedona Framework is a software environment designed to make it easy to build smart, networked, embedded devices which are well suited for implementing control applications. For those familiar with NiagaraAX Framework®, understanding Sedona Framework will be easy. The system integrator's role is to create a freely programmable control sequence by assembling components on a wire sheet and connecting and configuring these components using a graphical programming tool such as BASworkbenchSX or BASworkbenchAX.

There are over 70 predefined components to choose from and it is possible to develop custom components if they are needed. Applications can be developed live on a target device such as the BASremote or BAScontrol20, or offline and then saved and uploaded via an IP connection. Because the BASremote and BAScontrol20 are both BACnet/IP compatible, these Sedona Framework compatible devices will operate in both BACnet and Niagara Framework environments.

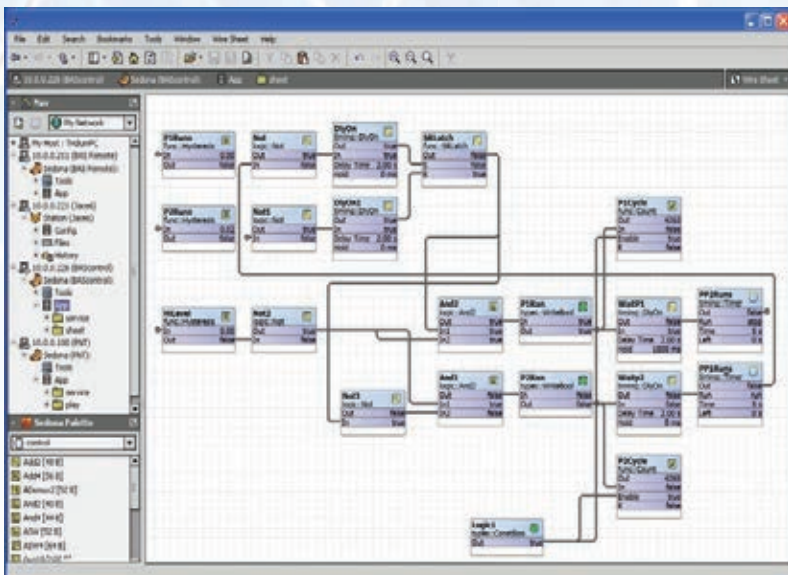
CERTIFIED
sedona
FRAMEWORK™



BASremote



BAScontrol20



Manage Your Entire System with Just One Tool!

By combining Niagara and Sedona Framework technologies together in a scalable building strategy, only one management tool is required. The BASworkbenchAX is all that is needed to manage Niagara and Sedona Framework device databases, develop control applications on wire sheets, and to develop real-time graphics in assisting operators in monitoring and controlling their buildings.

A single tool offers convenience and minimizes training needs. For simply programming Powered by Sedona Framework controllers, the BASworkbenchSX is sufficient.

Simple Web-based Interface

BASview is a stand-alone, embedded, web-based graphical interface for building automation and process automation systems. It can be accessed from any web browser — providing client functionality to any BACnet/IP or Modbus TCP system. By using Contemporary Controls' BASrouter or BASgateway products, additional protocols such as BACnet MS/TP and Modbus RTU and Modbus ASCII are supported. Additional USB modules are available which allow the BASview to communicate directly with MS/TP, Modbus RTU and LON devices.

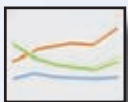
The BASview is simple to install and use. A 10/100 Mbps Ethernet connection is all that is needed. Client features include animated graphic screens, scheduling, historical trending, runtime accumulation and alarm monitoring. BASview will automatically toggle outputs and change setpoints on schedule, collect runtime and trend data, and monitor alarm conditions. As an embedded device, BASview uses Flash memory for internal storage instead of a hard disk to maintain its ruggedness. The BASview is totally self-contained, requiring no external PC or application for its use. Any number of web browser users can access the device. The only requirement is the installation of an Adobe Flash player in the browser. There are no other licensing requirements to use the product. The BASview also supports an HTML-only view which can be used for devices which do not support FLASH, such as cell phones and some tablets.

The BASview is ideal for small to medium sized buildings or processes that require a simple-to-use graphical interface with no licensing requirements.

VISUALISE



Schedules — Allows for control of several points based on the time of day.



Trends — Automatically records point values at specified intervals to allow for later viewing.



Alarms — Monitors specified conditions and then generates alarm message and optional email alerts.



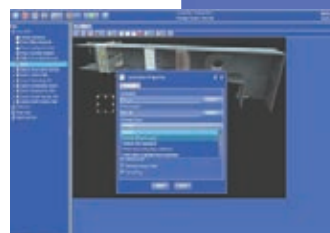
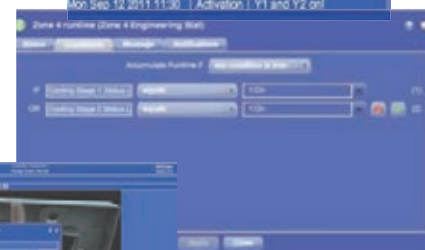
Runtimes — Monitors specific conditions and accumulates the amount of time the conditions are true, and generates a message and optional email alerts when a limit is reached.



Graphics — Used to display information from the system and to control equipment.



Time	Type	Message
Mon Sep 12 2011 11:45	Activation	Zone-4 air on for 1 minute
Mon Sep 12 2011 11:37	Activation	Y1 and Y2 on
Mon Sep 12 2011 11:32	Clear	Cooling Off
Mon Sep 12 2011 11:30	Activation	Y1 and Y2 on



COMMUNICATE

CTRLink[®] Ethernet Built for Buildings



Skorpion Unmanaged Ethernet Switches



BASswitch Low-Profile Switches



Managed Ethernet Switches



PoE Injector or Splitter

Wired or Wireless IP Routers



Ethernet Media Converters

Fire and Smoke Rated Switches



Ethernet has become the network of choice for intelligent buildings due to its high speed, familiarity among users, ease in connecting to wireless networks, support for structured wiring, the ability to share power and data over one cable, and its use with Internet protocols. The equipment must be inexpensive but robust, reliable, and also easy to install, maintain and use. It must carry proper regulatory approvals and, in some instances, withstand outdoor temperatures. Office-grade equipment, with its frequent model changes and inconvenient mounting, will not do.

For simple systems, Plug-and-Play Switches will suffice. These products operate “right out of the box” and can be put into service without adjustments. Auto-negotiation is standard where data rate (10/100/1000 Mbps) and duplex (half or full) are set between link partners without user intervention. LED indicators identify link status. DIN-rail and panel-mounting are available, as is 24 VAC/VDC power.

The Skorpion series provides a wide range of options from 5 to 16 copper ports, including models specifically intended to monitor the BACnet/IP protocol using Wireshark[®]. For campus installations with the need to interconnect distant buildings, copper/fibre models exist supporting either multimode or single mode fibre with distances up to 15 km. The BASswitch series is intended for shallow depth control panels where the devices are either panel or DIN-rail mounted. With either series, power can be derived from a shared DC power supply or Class 2 transformer.

More demanding applications require Managed Switches that support the simple network management protocol (SNMP) — providing data on the network’s health and the ability to configure the network to meet the needs of the system. Advanced functions like RapidRing[®] cable redundancy to guard against a single cable break, IGMP snooping, virtual local-area-networks (VLANs), port mirroring for connecting a network analyser, and priority tagging can be found in managed switches from Contemporary Controls.

For long runs up to 15 km and inherent immunity to electromagnetic interference, media converters with low latency can be used between copper ports. Both single-mode and multimode fibre are supported. For powering a single-port Power-over-Ethernet (PoE) device, a PoE Injector can be used. For generating power from a PoE source, a PoE Splitter can be used.

An IP Router connects two Internet Protocol (IP) networks, passing necessary traffic while blocking all other traffic. Ethernet-to-Ethernet routing is supported via a four-port internal switch. For passing messages over the cellular or Wi-Fi network, a USB adapter can be installed.

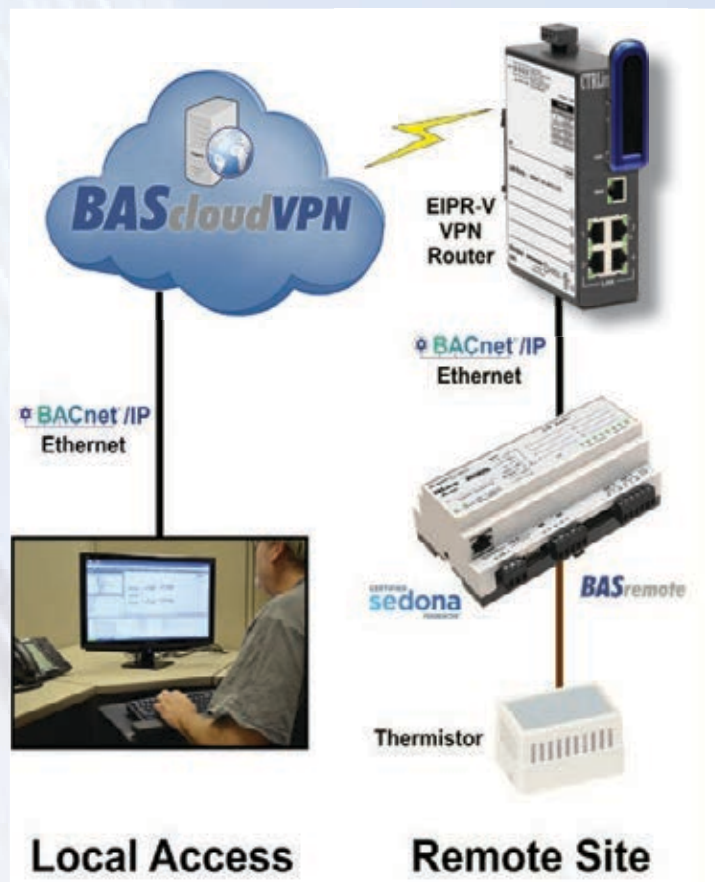
Contemporary Controls has worked with OEMs in obtaining UL 864 Control Units and Accessories for Fire Alarm Systems compliance using our Ethernet switches. By specifying a fire and smoke rated switch, achieving UL 864 system compliance is made easier.

BAScloudVPN - Secure Remote Communication Over the Internet

Accessing machines at remote sites over the Internet can be a challenge since firewalls block messages that originate from the Internet. Although it is possible to open up ports in the firewall using Port Forwarding, IT professionals are reluctant to compromise the security of their network and usually decline this type of request. Without consent from the IT department, the systems integrator is left with few options. However, one solution to this problem is to incorporate a Virtual Private Network (VPN). By hosting a VPN server in the cloud, simplified secure remote communication over the Internet is possible.

The BAScloudVPN is a service offered by Contemporary Controls that allows systems integrators remote access to systems from the convenience of the systems integrator's home or office. A cloud-based VPN server hosted by Contemporary Controls provides the critical connection between two VPN clients – one installed on the systems integrator's PC and the other permanently installed on our VPN router located at the remote location. Using this approach, two secure VPN tunnels are created with no concern for intervening firewalls. Contemporary Controls provides a remote monitoring solution by supplying cellular routers, hosting the Cloud-based VPN server and by recommending a data plan from a cellular provider.

Contemporary Controls' EIPR-V Skorpion wireless router provides VPN communications. It has a USB port for connecting cellular modems to allow it to communicate to the Internet. It also has an Ethernet WAN port which can also be used to communicate through a wired connection to the Internet. Our **BAScloudVPNServer** is hosted on the Internet which allows the BAScloudVPN devices to communicate together. The server is maintained by Contemporary Controls. You only need an account on the server in order to utilize the BAScloudVPN service. The **OpenVPN client software** runs behind the scenes and allows you to use any program which communicates via TCP/IP to use the **BAScloudVPN**. The OpenVPN client can be downloaded from OpenVPN.net or, for your Android devices, via the Google playstore or, for your iOS devices, via the Apple App Store. This allows many devices to be able to access the **BAScloudVPN**.



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Original Design Manufacturing Service

Let us provide the product you require under your brand. With over 35 years of experience in electronics design, development and manufacturing, we have a rich inventory of intellectual property that can be tapped for your next project. Two design and manufacturing locations provide private label, ODM and electronics manufacturing services. Leverage our design and manufacturing resources to reduce your costs and time-to-market.

Design to Worldwide Standards

Two design centres — one in China and the other in the United States — cooperate on product designs from concept to production. Capabilities include:

- Schematic capture and printed circuit board layout
- Firmware and programmable logic development
- Mechanical design
- Design for Test (DFT)
- Design for Manufacturing (DFM)
- Environmental testing
- Electromagnetic Compatibility (EMC)
- Safety and performance testing

We assist in obtaining regulatory approvals, including UL, CE and CCC markings.

Worldwide Electronics Manufacturing

Contemporary Controls offers lead-free surface-mount technology (SMT) electronics manufacturing in the United States and China while complying with the requirements for the Restriction of Hazardous Substances (RoHS) European Union directive. Through-hole assembly and wave soldering are also supported. Contemporary Controls adheres to the workmanship standards established by IPC — Association Connecting Electronics Industries.

The Downers Grove, IL, manufacturing plant focuses on lower-volume, higher-mix products or those products requiring Made-in-America compliance or a North American Free Trade Agreement (NAFTA) certificate.

For higher-volume, lower-mix, cost-sensitive requirements, our Suzhou, PRC plant offers the highest production capacity as well as global logistics support. This plant is ISO 9001:2008 registered.

Both plants are under Underwriters Laboratories (UL) surveillance. Your intellectual property (IP) is protected at either plant location.



WorldWide Locations



Contemporary Controls Ltd

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QUALITY POLICY

Contemporary Controls develops, manufactures and markets innovative networking and control products to the benefit of our automation customers worldwide. We are committed to delivering products and services that meet customer requirements and strive to exceed their expectations through our continuous improvement efforts.

