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WELCOME

NOTIFIER Product Integration

Dave Tamulevich & Don Austin

October 12-15, 2017

NOTIFIER® by Honeywell

NOTIFIER Product Integration

- NOTIFIER offers many options for integration of its products:
  - Emergency Communication Systems
    - Fire Panel Distributed Audio
    - Voice Over IP (VoIP) Paging
    - LED Signs
    - Giant Voice
    - 3rd Party Audio
    - CAP
  - Industry Standard Protocols
    - BACnet
    - CAP
    - Modbus
  - Non-NOTIFIER Competitive Integration
    - Digital Alarm Communicator Receivers/Transmitters

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NOTIFIER ECS INTEGRATION

NOTIFIER® by Honeywell

NOTIFIER ECS Integration Agenda

- NOTIFIER ECS Integration
  - Local Fire Panel
  - NOTIFY-IP (Voice Over IP)
  - CAP-GW (CAP Integration)
  - Inova (LED signage)
  - Whelen (Giant Voice)
  - 3rd Party Audio



ECS Integration Benefits

- When **TIME** is of the essence in an emergency, a unified and automated solution is **VITAL** to an effective and timely response.

- An integrated **E**mergency **C**ommunication **S**ystem **(ECS)** provides the End-User with a **LIFE SAFETY** system, not just a traditional FIRE system.

- The integrated ECS system can utilize existing network infrastructure and in building technologies like PBX systems.

Who needs ECS or is using it?

- College campuses
- Universities
- Military bases
- Government buildings
- Corporate campuses
- Large manufacturing facilities







NOTIFIER® by Honeywell

Emergency Communications Systems

ONYXWorks ™ with NOTIFY-IP

NOTIFIER 3030 with Digital Voice



Notification Devices (Indoor Voice)



LED Signage



WAN w/Live Voice





Email



Text Messages





WHELEN Outdoor Voice

3rd Party Audio Integration

Net-Centric Management Console

- **Unified Notification**
- **Response Tracking**
- **Scenario Management**
- **Recipients Directory**
- **Reporting Dashboard**
- **Personnel Accountability**

Personal Notification

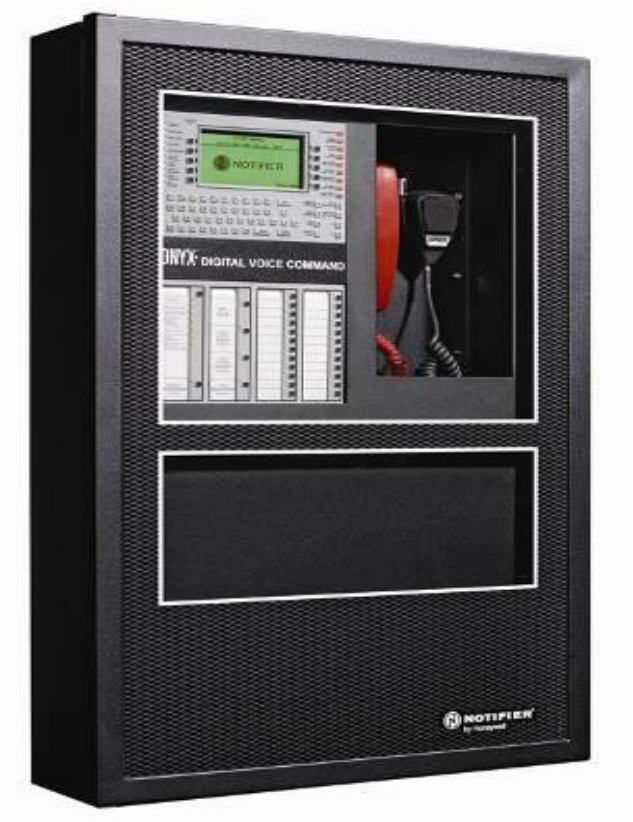


IP-based Mass Communication



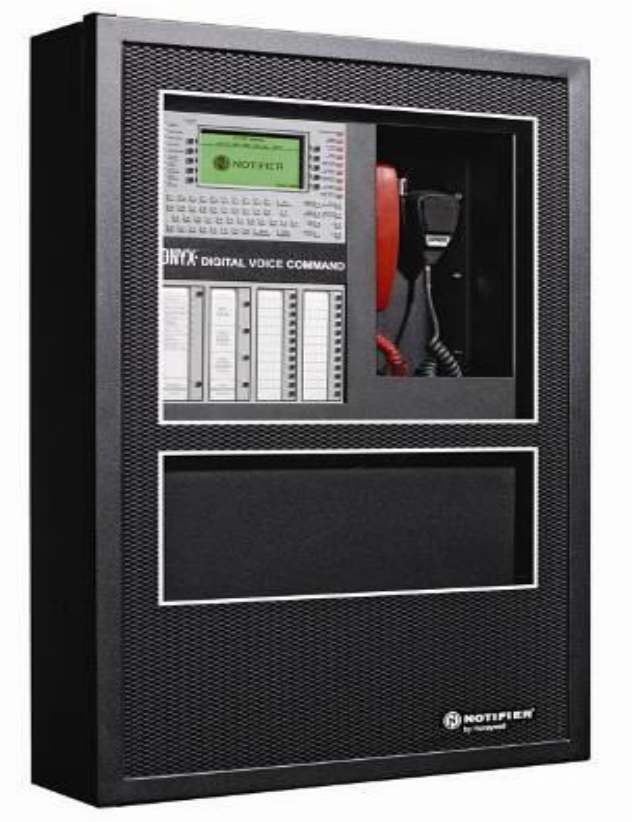
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Local Fire Panel



- Integrated Audio with Digital Voice Command (DVC)
  - Local Paging and Fire Fighter Telephones
  - Indoor and Outdoor Speakers
  - Control-By-Event Logic Equations
  - 3rd Party Audio Integration

Local Fire Panel



- Clear Strobe for Fire



- Amber Strobe for ECS



- Dual Strobe for both



Local Fire Panel



- Indoor Speakers



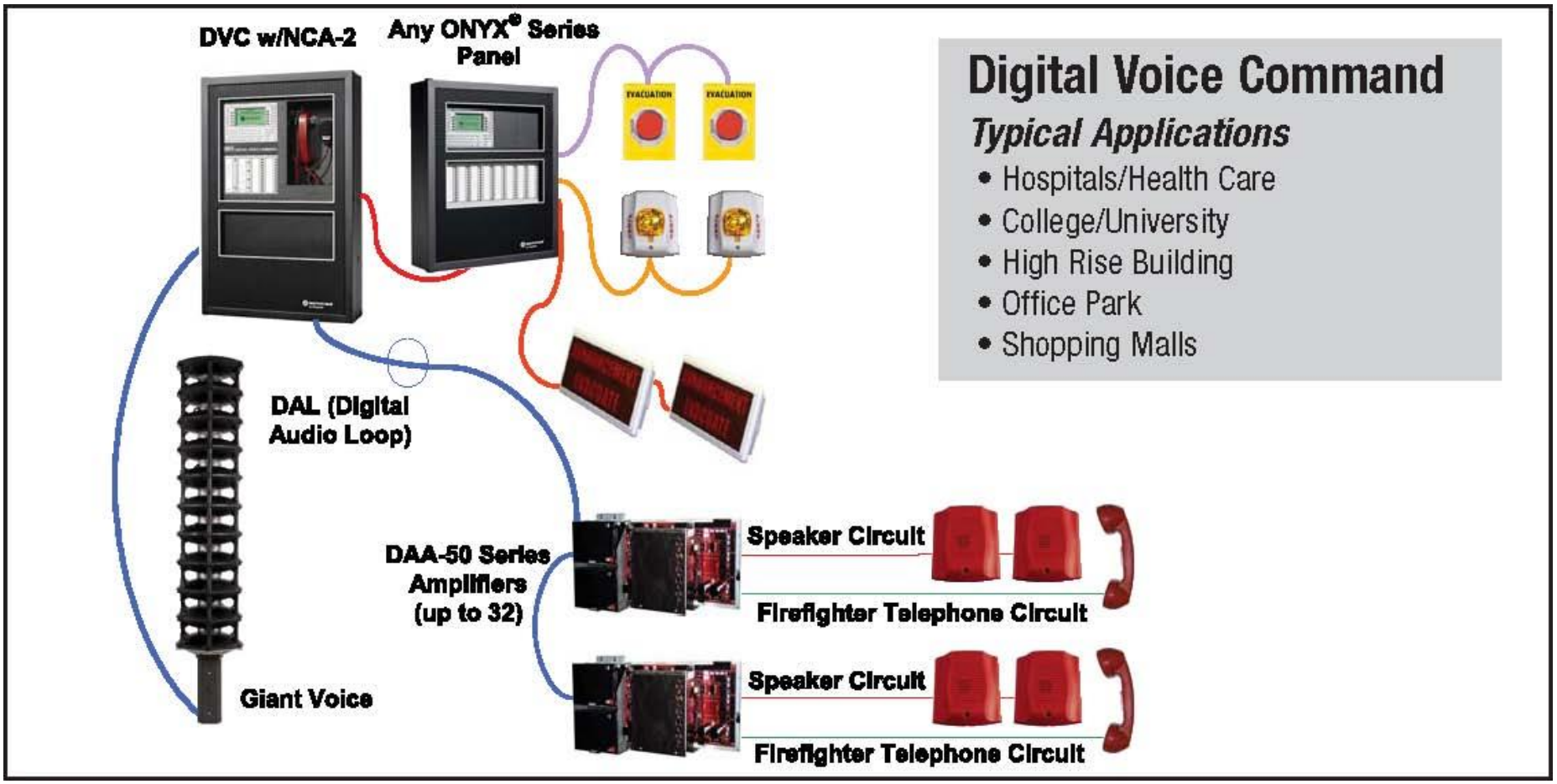


- Outdoor Speakers





ECS Applications



NOTIFY-IP™

NOTIFY-IP

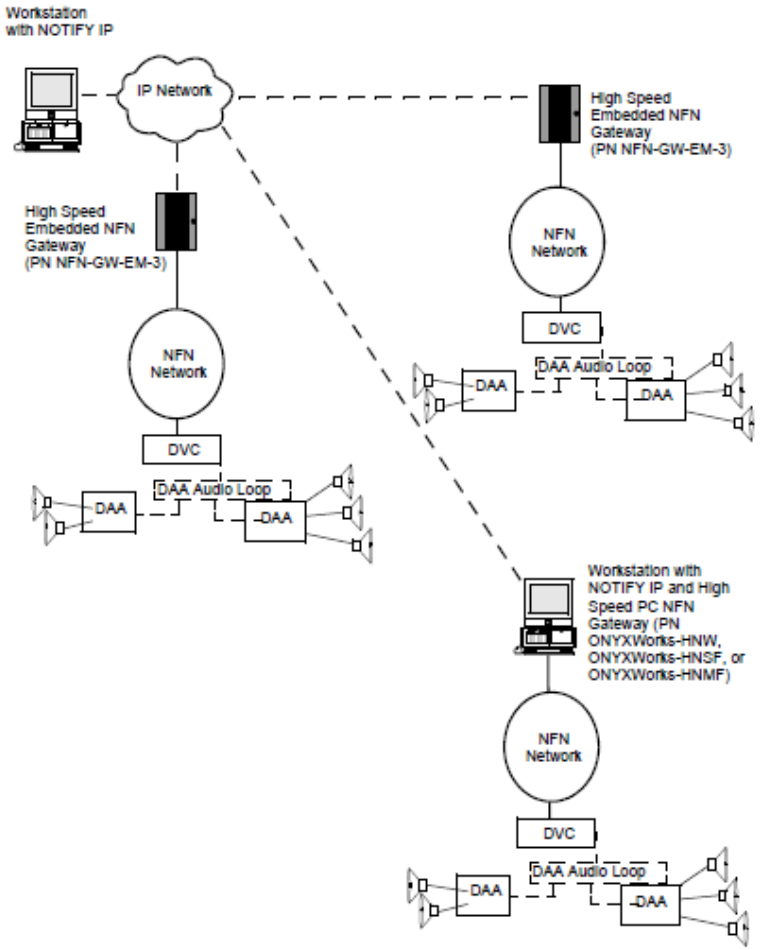
- NOTIFY-IP allows live paging over an IP Ethernet network from the ONYXWorks workstation to the NOTI-FIRE-NET network
- Can connect to 200 NFN gateways
- Live pages can be broadcasted to 50 gateways simultaneously



ONYXWorks® – NOTIFY-IP

- System of interconnected software and hardware that broadcasts live or prerecorded voice messages on DVCs

- NOTIFY-IP gives you:
  - Wide Area Capability
    - Country to Country
    - State to State
    - City to City
    - Large Campuses



ONYXWorks® – ECS and NOTIFY-IP



DVC w/NCA-2



ONYXWorks ™
with NOTIFY-IP



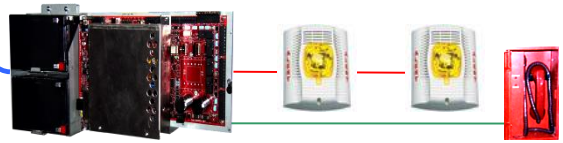
DAL (Digital
Audio Loop)



NOTI-FIRE-NET™

TCPIP

DAA-50 Series
Amplifiers
(up to 32)







DAL (Digital
Audio Loop)



DVC (Digital Voice
Command) with
NFN Gateway

Distributed Recipient Mass Notification Systems (DRMNS)





CAP Integration

- The **C**ommon **A**lerting **P**rotocol (**CAP**) is an **XML**-based data format for exchanging public warnings and emergencies between alerting technologies.

- CAP allows a warning message to be consistently disseminated simultaneously over many warning systems to many applications.

- CAP increases warning effectiveness and simplifies the task of activating a warning for responsible officials.

Common Alerting Protocol (CAP) Gateway

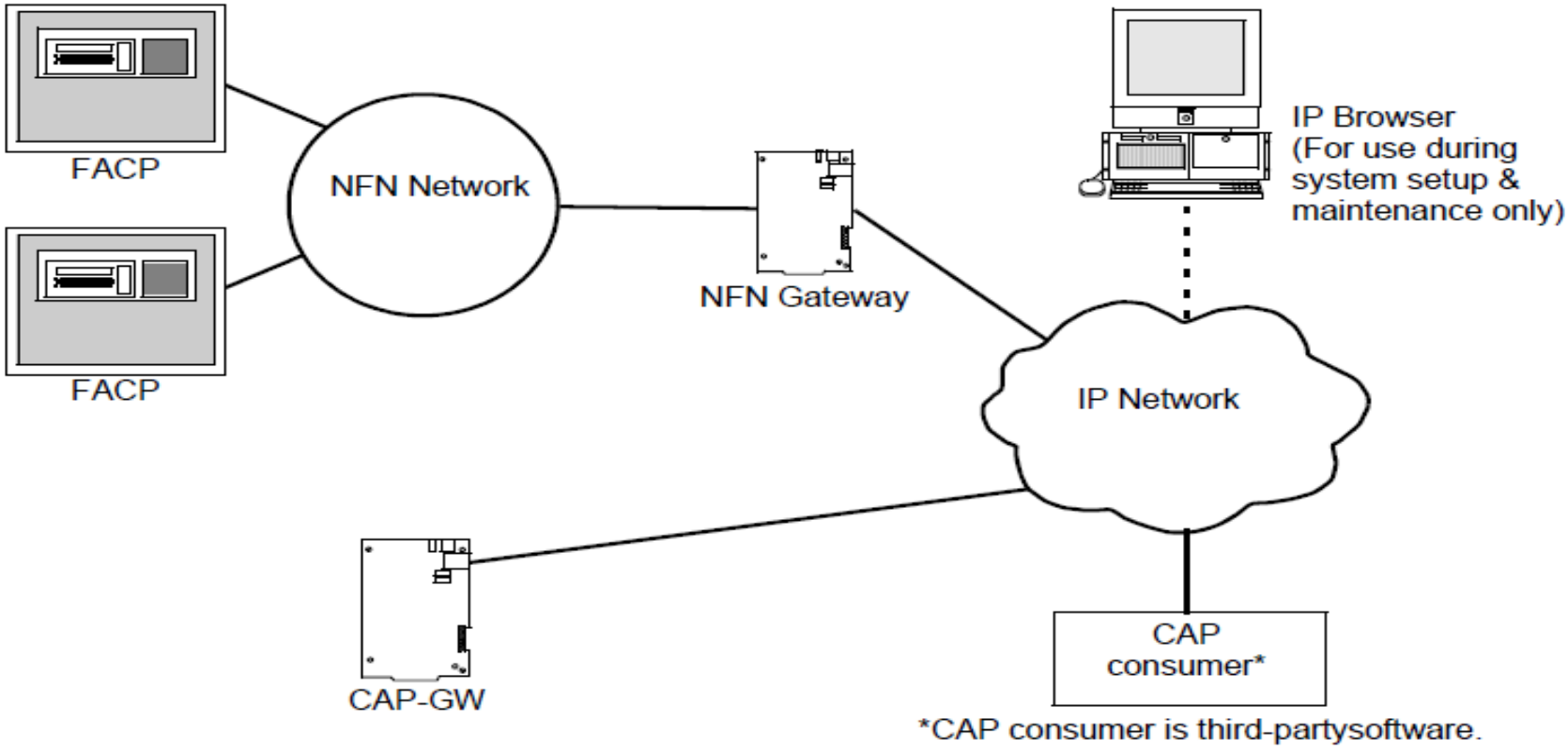
What is it? An XML-based data format for exchanging public warnings and emergencies between alerting technologies.

- NOTIFIER's CAP Gateway is a one-way interface (from NOTIFIER to the CAP-compliant software / product)
- Currently AtHoc is the only software tested and certified for use with the CAP Gateway
- If your customers have existing ECS products – ask if they are CAP compliant v1.2



Common Alerting Protocol Gateway (CAP-GW)

- Translates event information to industry standard CAP messages for use with CAP-compliant systems



CAP Implementers and Supporters

- CAP has been implemented by agencies and firms including:
  - Department of Homeland Security
  - National Weather Service
  - United States Geological Survey
  - California Office of Emergency Services
  - Virginia Department of Transportation
  - Capital Wireless Integrated Network (CapWIN)
  - GeoDecisions, Inc.
  - E Team
  - Blue292
  - Warning Systems, Inc.
  - Comlabs, Inc.
  - mobileFoundations
  - Ship Analytics
  - MyStateUSA
  - IEM, Inc.
  - Oregon RAINS
  - NDS, Ltd.

- CAP-capable applications have been deployed in multi-vendor events and field trials in Washington, D.C., Virginia, Florida, Nevada and California. CAP data elements have been incorporated in the U.S. Department of Justice's "Global Justice XML Data Model".

- CAP has been endorsed by the National Emergency Management Association's Preparedness Committee, the Partnership for Public Warning, the ComCARE Alliance, the Emergency Interoperability Consortium and the Capital Wireless Integrated Network (CapWIN).

Inova Solutions Integration



Inova Solutions Sign

- Inova Solutions Sign
  - 2 line multi-color LED sign
    - Red/Yellow/Green
  - 24VDC or POE (Power Over Ethernet)
  - Encrypted communications to the sign
  - Bright LEDs with wide viewing angle
  - Anti-glare coating
  - Roman Alphabet Only
    - English, Spanish
    - French/Portuguese – minus the accents

- NEW LEDSIGN 2Q2018
  - LEDSIGN Gateway will support new and existing LED Signs with software upgrade

LEDSIGN-GW Inova Solutions Features

- LEDSIGN-GW
  - Will be originally designed with Inova Solutions
  - Others manufactures will be considered
- Communicate with the Inova Solutions 2 line LED signs via IP
- Maximum of 10 Inova Solutions LED signs per gateway
- 1 NFN Gateway can support 250 LEDSIGN Gateways
- Each sign can display a unique message based on programming



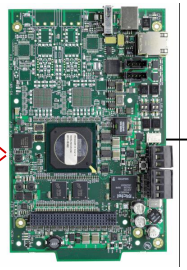
LEDSIGN-GW Integration



NFN

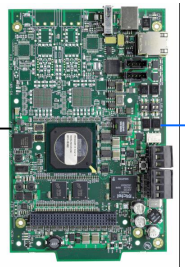


ONYXWorks
(optional)



NCM/
HSNCM

NUP/
USB



LEDSIGN-GW

TCP/IP



LED Signs

Whelen Integration



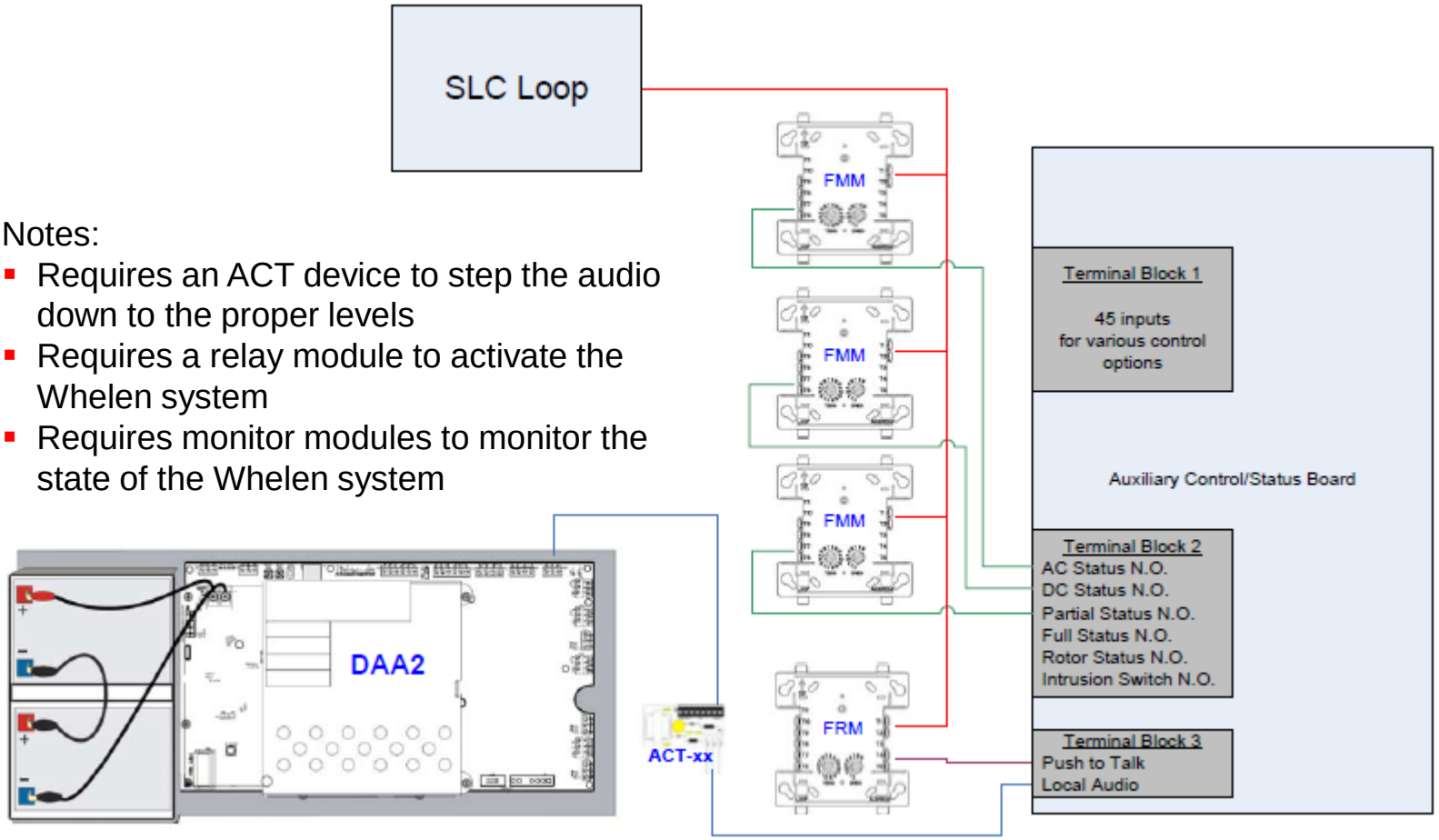
Whelen Giant Voice

- Requires Analog Low-Level Audio source
  - Analog output
  - Amplified output with transformer interface
- 109 dBc to 129 dBc @ 100’
- 1 to 10 Omni-directional speakers
- 400 watt driver per cell
- Input cables
  - Up to 4000’ on at least 26AWG
  - Shielded twisted pair



Whelen Integration Example

Connection using existing equipment

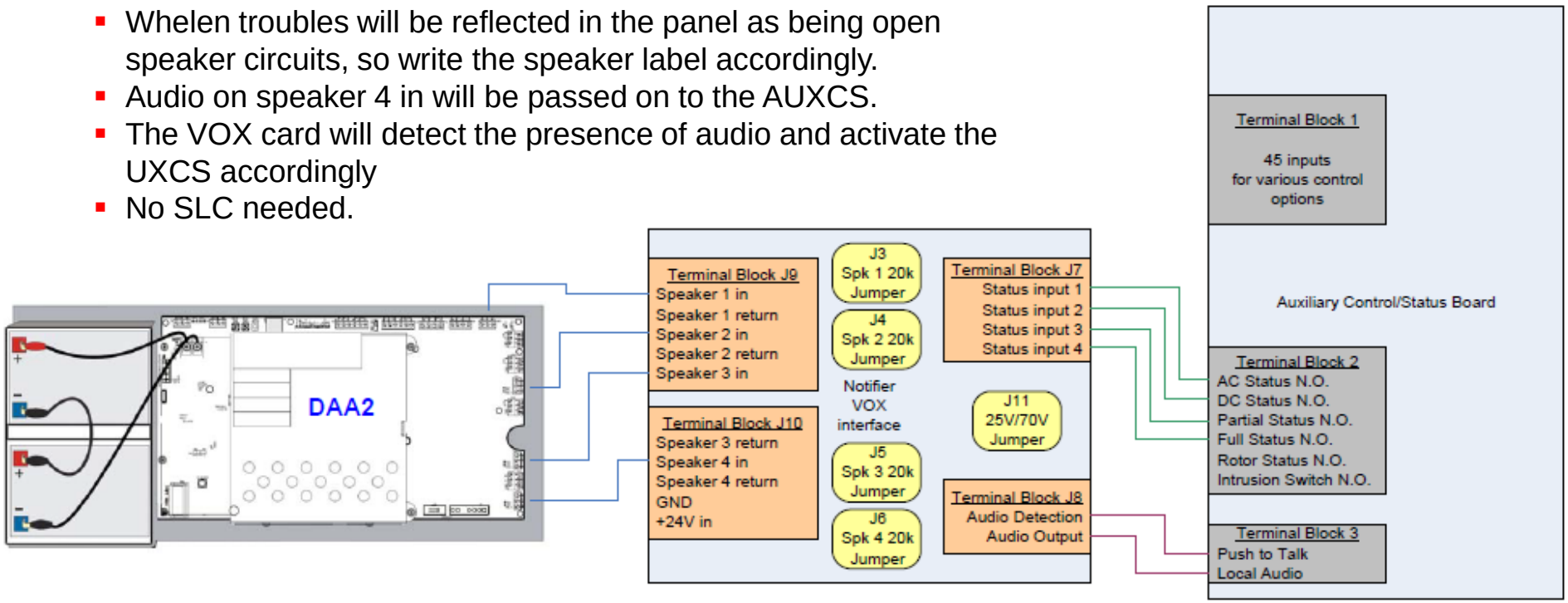


- Notes:
  - Requires an ACT device to step the audio down to the proper levels
  - Requires a relay module to activate the Whelen system
  - Requires monitor modules to monitor the state of the Whelen system

Whelen Integration Example

Connection using the VOX interface

- Notes:
  - Whelen troubles will be reflected in the panel as being open speaker circuits, so write the speaker label accordingly.
  - Audio on speaker 4 in will be passed on to the AUXCS.
  - The VOX card will detect the presence of audio and activate the UXCS accordingly
  - No SLC needed.



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3RD PART AUDIO INTEGRATION

NOTIFIER® by Honeywell

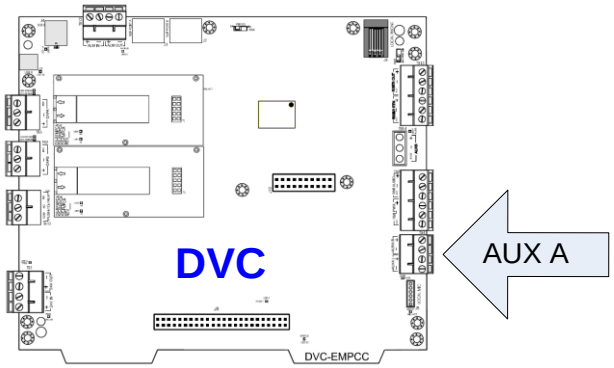
Audio into System – AUX A introduction

- The AUX A was designed into the DVC to provide a point for auxiliary audio to enter the system.
- Applications include but are not limited to:
  - PBX systems
  - Background music systems
    - iPod
    - CD Players
    - Radio
    - MP3 players
  - Existing Fire Alarm systems
    - Expansion
    - Retrofit
    - Phase in replacements
  - Other paging systems



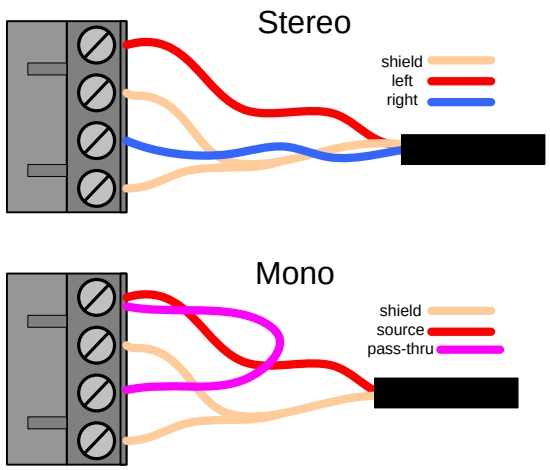
Audio into System – AUX A

- AUX A on the DVC is a line level input with a left and right channel



- The DVC is a mono device; left and right channels are merged.
- AUX A is transformer coupled to provide isolation from ground faults.
- The maximum input before clipping is 3.2Vp-p (peak to peak) for a single input or 1.6Vp-p for left and right channels.
- Signals that are “line level”, 1Vrms, or 1Vp-p are suitable for the AUX A input.
- Volume control for the AUX A is available in read status/point programming of the DVC with “Auxiliary Volume”, settings 0 (min) to 15 (max).
  - Please note volume control is shared with AUX B.

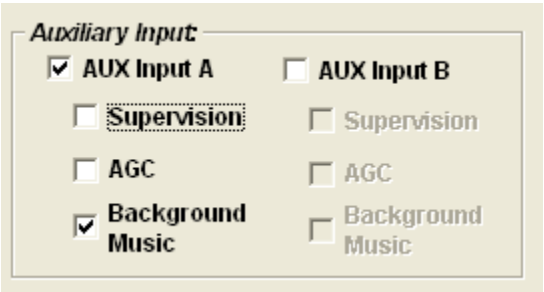
AUX A – Background Music Example



AUX input wiring options

- Use a standard headphone or RCA plug depending on the source
- Cut back and strip one end to connect to the DVC
- Left and Right are interchangeable since the DVC is mono and they will be added together.
- Use both when available to avoid losing the channel.
- For mono sources, connect to both the left and right inputs to get the most volume

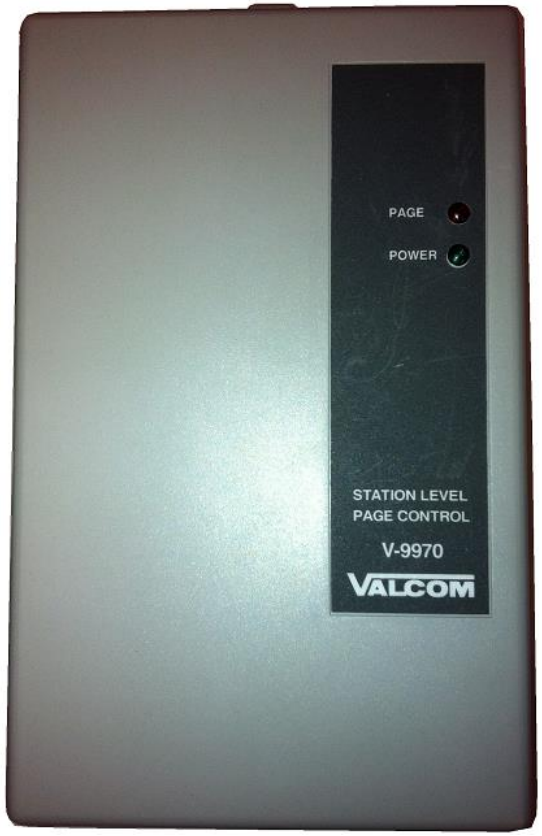
- Program via VeriFire tools
  - Supervision would cause a trouble whenever the input is idle, Do not use this setting for background music
  - AGC not recommended for background music
  - Select Background Music to prevent the Audio system activating during AC fail and drawing from standby battery power



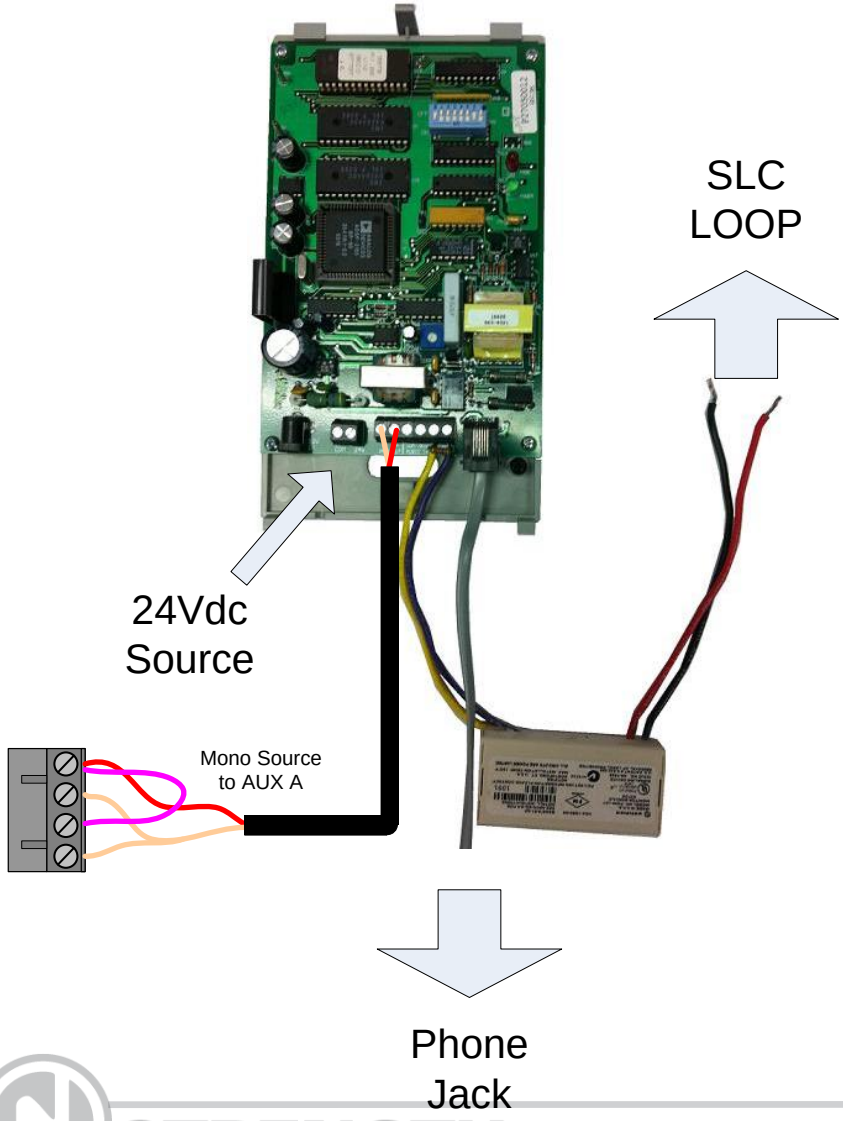
VeriFire Tools - DVC Auxiliary Settings

AUX A – Paging System Example

- Some PBX or paging systems will use a line level output that is acceptable for AUX A
  - In this example we will be using a Valcom V-9970
    - Input from a standard phone line.
    - Rated for a -10dBm (0.693Vp-p) output.
    - 24Vdc input
    - User Relay Contacts to detect activity



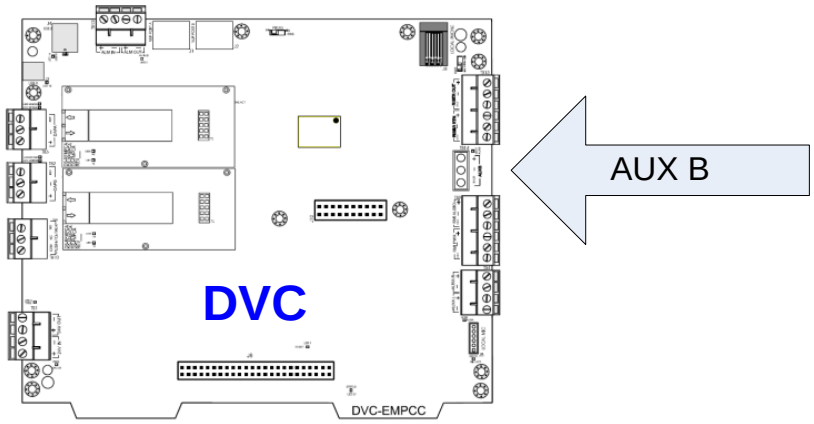
AUX A – Paging System Example Wiring

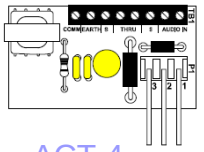


- Use a monitor module to detect a closure of the User Relay Contacts to detect when the unit is active
- Connect the paging system telephone input into the building phone system
- Connect the Audio output to the DVC using a Mono-connection.
- Supply 24Vdc to the unit from anywhere in the system.
  - This particular unit is rated at 165mA

Audio into System – AUX B

- AUX B on the DVC is a “Notifier Low Level” input





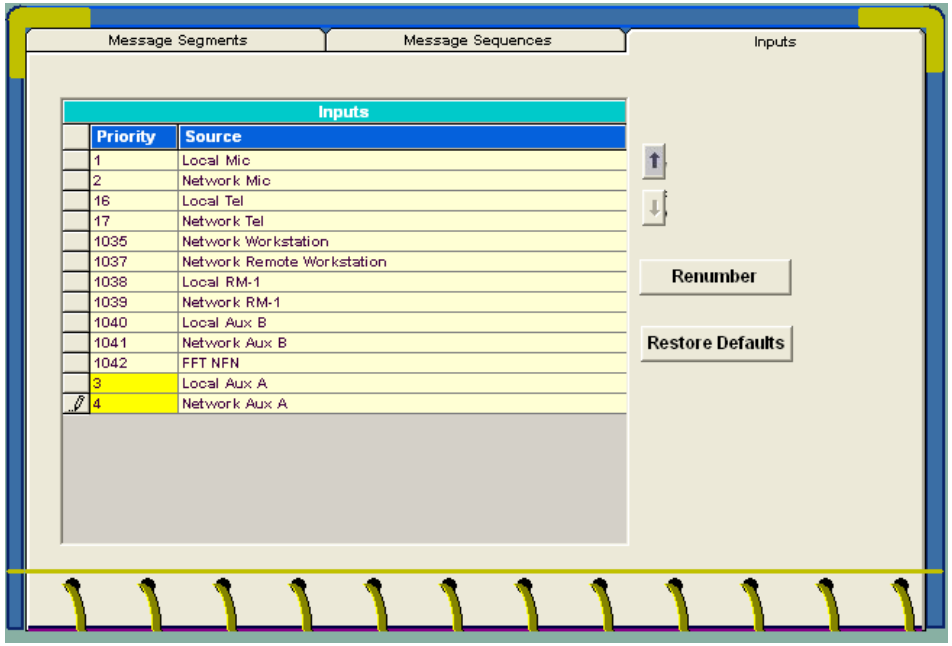
ACT-4

- Nominal level is 3.5Vrms
- AUX B is not isolated, use an ACT-4 for a 1:1 isolation.
- ACT-25 is designed to step down and isolate a 25Vrms line to the appropriate level
- ACT-70 is designed to step down and isolate a 70Vrms line to the appropriate level
- Volume control for the AUX B is available in read status of the DVC with “Auxiliary Volume”, settings 0 (min) to 15 (max). (Volume control is shared with AUX A)
- This is the recommended input for any 3rd party systems with a 25V or 70V output

Audio into the System –Aux In Notes

- The AUX A and AUX B can be used concurrently

- **The Priority on the inputs can be adjusted to be higher or lower**
  - **If the requirements specify that the 3rd party system needs to have a higher priority than the local microphone or automated messages, the priority of all inputs can be renumbered in VeriFire tools**

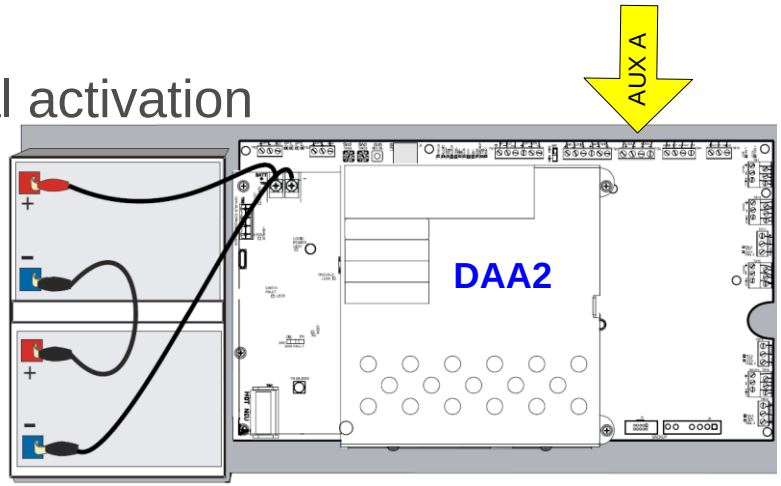


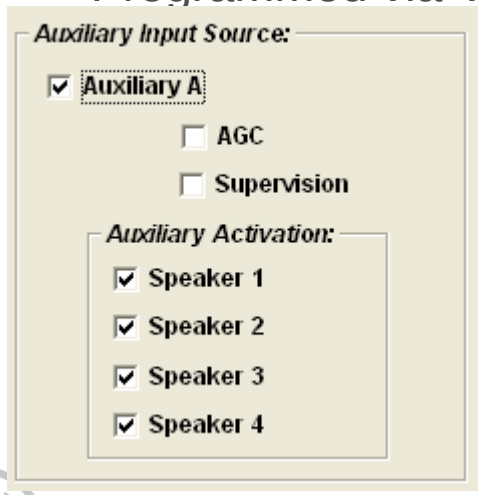
VeriFire Tools - Audio Message Programming

- **A DVC design for multi-channel (standard fidelity) can play the AUX A, AUX B, Local Mic, Messages, etc. all at the same time to different outputs**

Audio into System – DAA2 inputs

- The DAA2 has an AUX A input for local activation
  - Same specifications as DVC AUX A
    - Left and Right channels are merged
    - Input is isolated
    - The maximum input before clipping is 3.2Vp-p for a single input or 1.6Vp-p for left and right channels.
    - Signals that are “line level”, 1Vrms, or 1V peak to peak are suitable for the AUX A input.
  - Programmed via VeriFire Tools





VeriFire Tools - DAA2 Auxiliary Input Programming

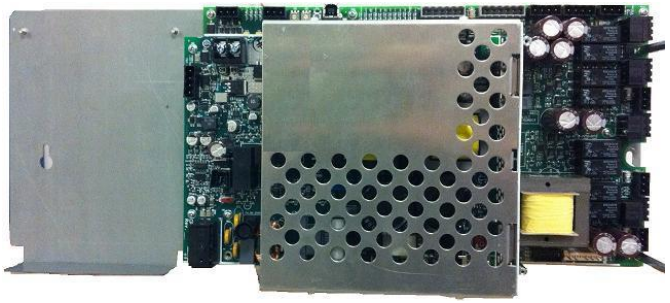
- Automatically activates as the lowest priority when audio is detected
- AGC (Automatic Gain Control)
- Supervision will create a trouble when audio is not detected
- Select the speaker circuits that will participate
- Audio is not available at other outputs or DVC
- Software volume control for AUX input in read status/point programming of the DAA2 from 0 (min) to 15 (max)

Audio out of System – Digital Amplifiers

- All Digital Amplifiers (DAA, DAA2, DAX) provide 25Vrms or 70Vrms outputs.
  - This signal can be used to drive other audio systems
  - This signal needs a load that is capacitively coupled which prevents a short circuit of speaker circuit supervision
  - The DVC can activate a general zone to indicate when the speaker circuit goes active to turn on a relay or control module to notify a 3rd party system when it is active.
  - Using an ACT-70 on a 25V amplifier output will attenuate and isolate the signal down to near line level voltages.
  - Volume can be adjusted in software with point programming of the DVC (master volume) or the amplifier.



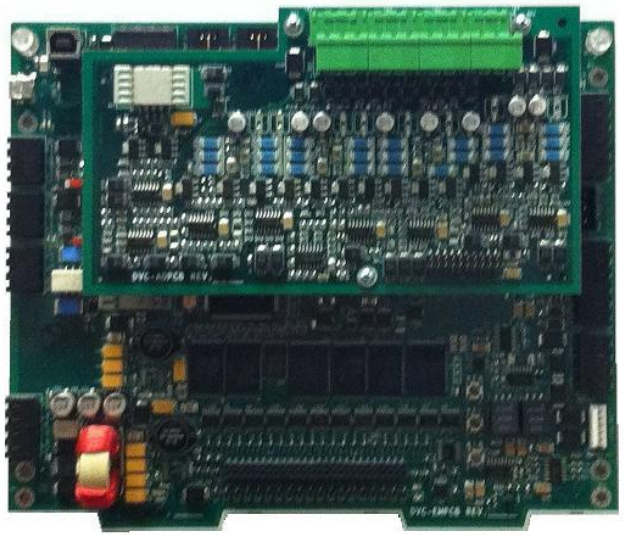
DAX-3570



DAA2-5070

Audio out of the System – Analog Outputs

- The DVC-AO can be mounted on the DVC to provide 4 analog outputs
  - Output levels of “Notifier Low Level” 3.5Vrms
  - Constant 200Hz idle tone when AO is inactive
    - provides supervision for Notifier Analog Amplifiers
  - Class B or Class A output
  - ACT-4 will provide isolation and will not interfere with DVC-AO class A wiring



DVC-EM with DVC-AO

Additional Information

- Refer to 52411 – DVC Manual for installation and programming instructions of the DVC
- Refer to 53265 – DAA2/DAX Amplifier manual for Specifications and installation/programming instructions for the amplifiers.
- For additional questions contact your RSM or Technical Support
  - Notifier.Tech@Honeywell.com
  - (800) 289-3473

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BACNET GATEWAY

NOTIFIER® by Honeywell

BACnet Gateway

- The BACNET-GW-3 provides an interface between NOTIFIER's fire panel network NOTI•FIRE•NET (either the standard or the high-speed version) and a network using the BACnet/IP communication protocol.

- The BACNET-GW-3 application represents physical fire devices as BACnet objects and manages the object database. As events occur, the object properties are updated in real-time, and messages are sent to the appropriate BACnet client workstation.



- **NOTE:** The BACnet Gateway is recognized by UL as an ancillary reporting device for Monitoring ONLY

BACnet Gateway – Protocol Determination

- The BACnet client workstation front end must conform to BACnet Standard Annex J for IP and support Device Objects, Binary Output Objects, and Multi-state Input or Life Safety Points/Zones.
- It is also required to write to Notification Objects and receive confirmed/unconfirmed event notification messages.
- BACnet clients may make requests to read properties of the BACnet objects. Those properties are the values of the device status and programming.
- The user subscribes to Event Notification objects per FACP, and the BACnet device receives events from objects on the FACP as a result of this subscription.

BACnet Gateway Features

The BACnet Gateway:

- Compatible with ONYX Series panels (direct connection): NFS2-3030, NFS2-640, NFS-320, NFS-3030, NFS-640.
- Compatible with NOTI•FIRE•NET devices: NFS2-3030, NFS2-640, NFS-320, NCA-2, DVC, and ONYXWorks; NFS-3030, NFS-640.
- The BACNET-GW-3 can monitor up to 14 NOTI•FIRE•NET nodes with a maximum combined object count of 15,000 (object count includes all detectors, monitor modules, notification appliance circuits, software zones, etc.).

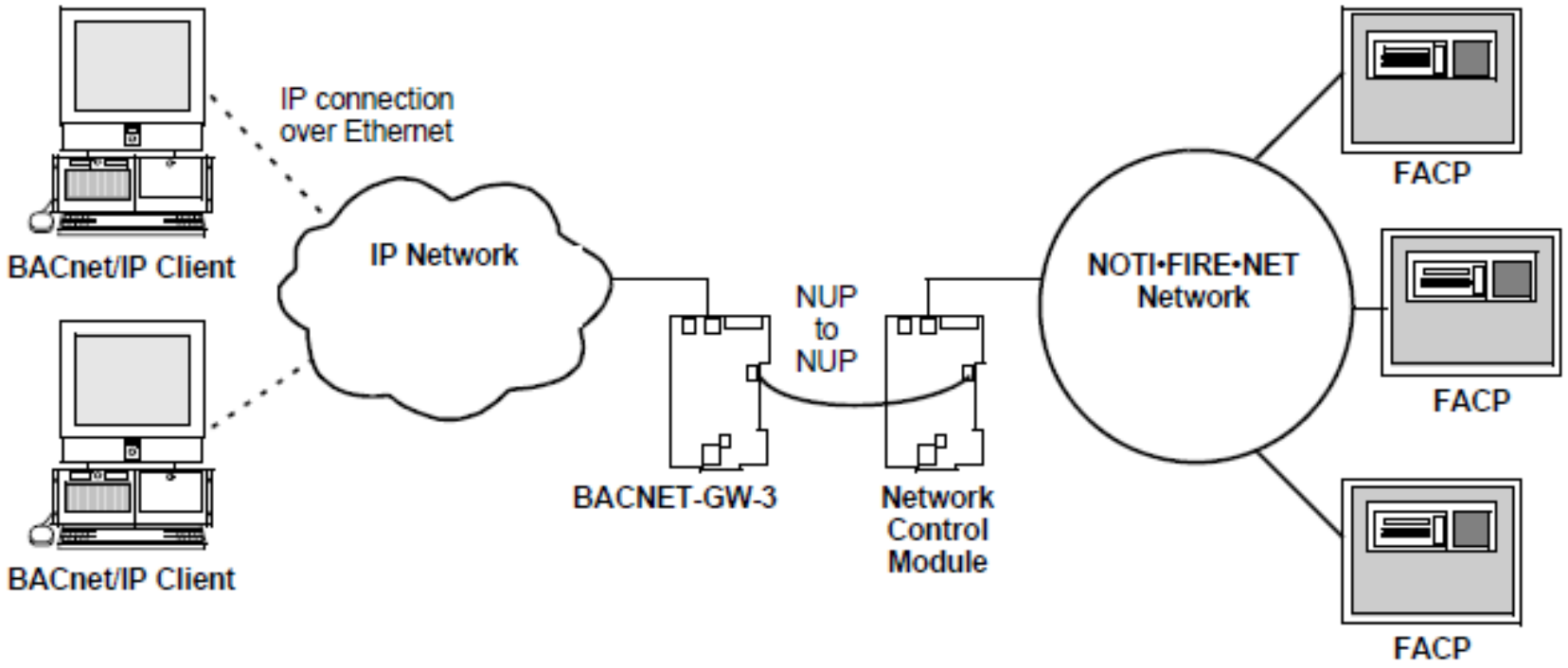
BACnet Gateway Features

- Multiple BACNET-GW-3s can be used for large networks (more than 14 nodes or 15,000 points total).

- PC programmable using the integrated BACNET Configuration Tool. The BACnet Gateway can be upgraded and configured without loading additional software.

BACnet Gateway Connections

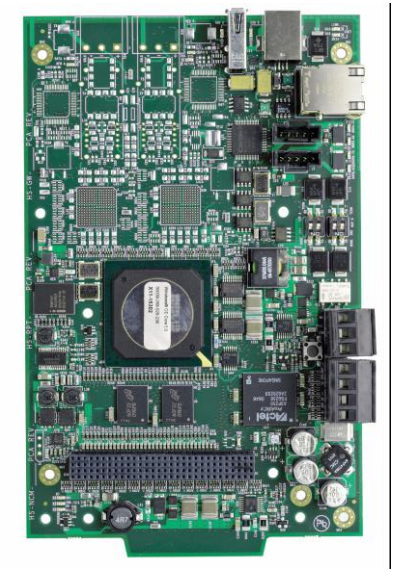
- The BACNET-GW-3 is connected to NOTI•FIRE•NET via the network port on the network control module to the Gateway.
- BACNET-GW-3 is connected to the BACnet front end via a standard RJ45 Ethernet connector.



BACnet Gateway – Application

- The BACnet Gateway is a TCP interface to third party Industrial Control/ Building Automation systems
  - Works with workstations that uses BACnet Standard Annex J for IP and support Device Objects, Binary Output Objects, and Multi-state Input or Life Safety Points/Zones.

- Industries:
  - Commercial
  - High Rise Buildings
  - Manufacturing
  - Hospitals



Case Study – St. Anthony's Hospital

- Operating Rooms within St. Anthony's Hospital in Lakewood, Colorado.
- The NOTIFIER BACnet Gateway is connected to the Johnson Controls Metasys BAS system.
- Communication is accomplished between the BACnet Gateway and the JCI NAE-5510 using the building automation Ethernet backbone.
- The information received from the NOTIFIER BACnet Gateway is used to command various VAV terminal units and air handlers to respective states depending upon fire alarm events.
- Zone Logic equations between both NFS2-3030 panels for damper/fan activation of Operating Rooms.
  - It requires two smoke alarms to make the OR become negative pressure to contain smoke from exiting the room.
  - Operating Rooms are normally positive pressure to keep contamination down.

BACnet Gateway – Compliance

National Fire Protection Association

- NFPA 72—National Fire Alarm Code

Underwriters Laboratories

- UL-864—Control Units for Fire Alarm Systems, Ninth Edition
- UL-2017—General-Purpose Signaling Devices and Systems, First Edition

Underwriters Laboratories Canada

- CAN/ULC-S527-99—Standard for Control Units for Fire Alarm Systems, Second Edition

NOTE: The BACnet Gateway is recognized by UL as an ancillary reporting device for Monitoring ONLY.

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MODBUS GATEWAY

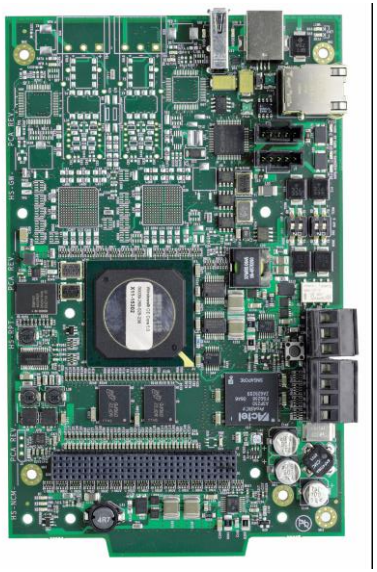
NOTIFIER® by Honeywell

Modbus Gateway

- The Modbus Gateway provides a communication link between networks that use the Modbus/TCP communication protocol and Fire Alarm Control Panels (FACPs) resident on an NFN network.

- The Modbus communication protocol is consistent with Modbus Application Protocol Specification V1.1b.

- **NOTE:** The Modbus Gateway is recognized by UL as an ancillary reporting device for Monitoring ONLY.



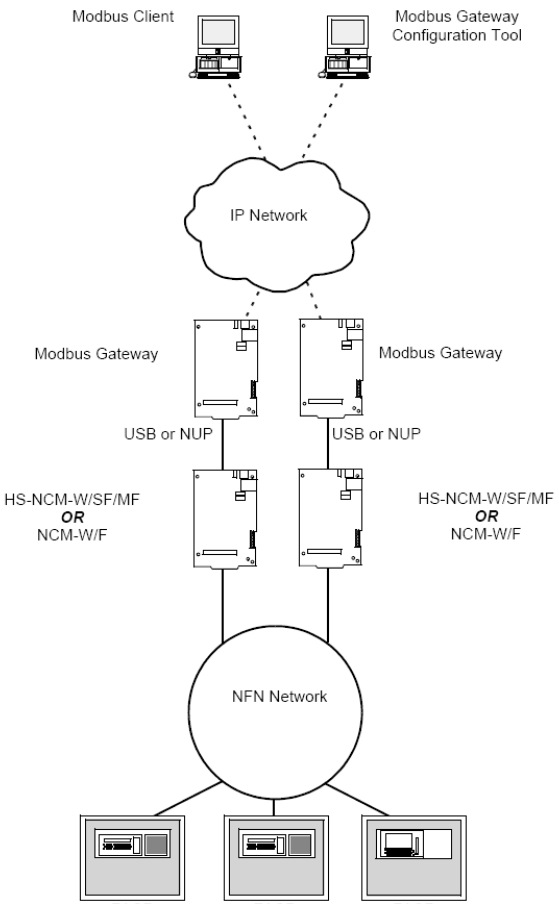
Modbus Gateway Features

The Modbus Gateway has the ability to:

- Monitor four compatible NFN or HS-NFN nodes not including the Modbus Gateway node itself
- Support reads of up to 100 registers at a time. Analog values can be read 10 registers at a time
- Receive configuration data from the Modbus Gateway Configuration Tool
- Log diagnostic information
- Send standard Modbus Exception Responses
- Reduce configuration time by self configuring all nodes and points
- Support standard Command Functions

Modbus Gateway Features

- Redundancy
- Compatible w/ Modbus TCP/IP systems
- Objects Supported
  - Devices/Modules/Gen Zones/Logic Zones/Trouble Zones/Releasing Zones/Panel Circuits
- Data/Information Available
  - Enable/Disable State
  - Active Event Type
  - Trouble
  - Prealarm
  - Device Type
  - Analog Value on 4-20ma modules
  - System Troubles
  - Debug data
- Gateway supports four ONYX Series FACP



Modbus Gateway – Compatibility

Panels

- NFS-320
- NFS-640
- NFS2-640
- NFS-3030
- NFS2-3030

NFN Network Boards Supported

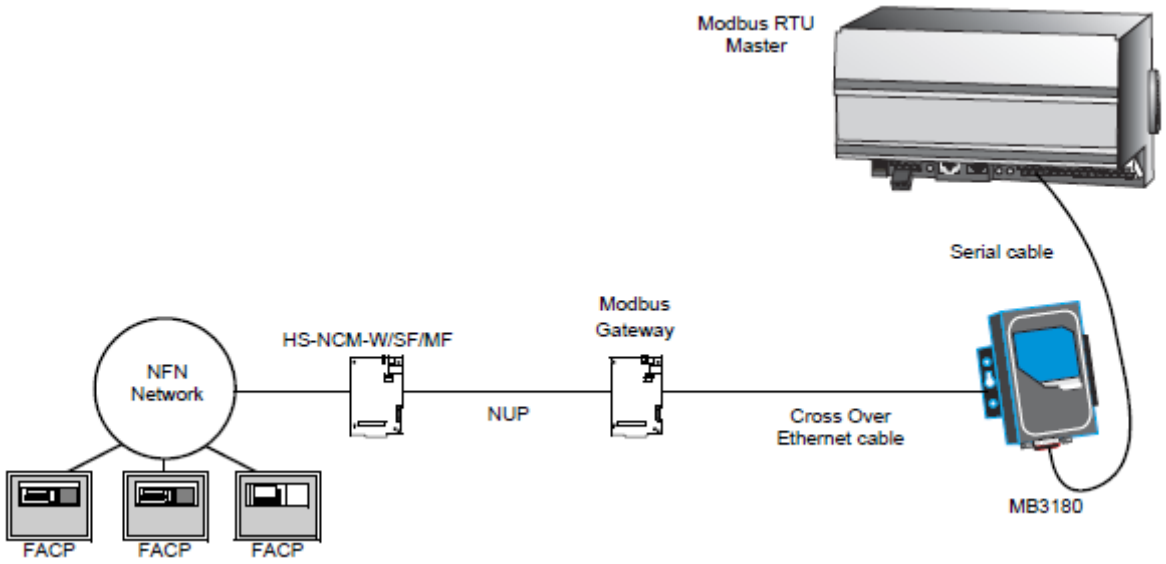
- The Modbus Gateway support both the NFN and HS-NFN communication cards.

Note: The NFS(2)-3030 can not be in receive mode.

NOTE: The Modbus Gateway is recognized by UL as an ancillary reporting device for Monitoring ONLY.

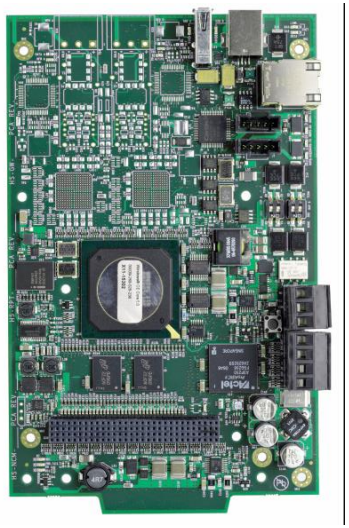
Modbus Gateway - Compatibility

- Modbus Gateway (acting as a Modbus slave) interfaces with a Modbus master through Modbus TCP protocol.
- The Moxa MGate MB3180 can be used to convert Modbus TCP protocol to Modbus RTU (Serial) protocol so that a Modbus RTU master can interface with Modbus Gateway.



Modbus Gateway – Application

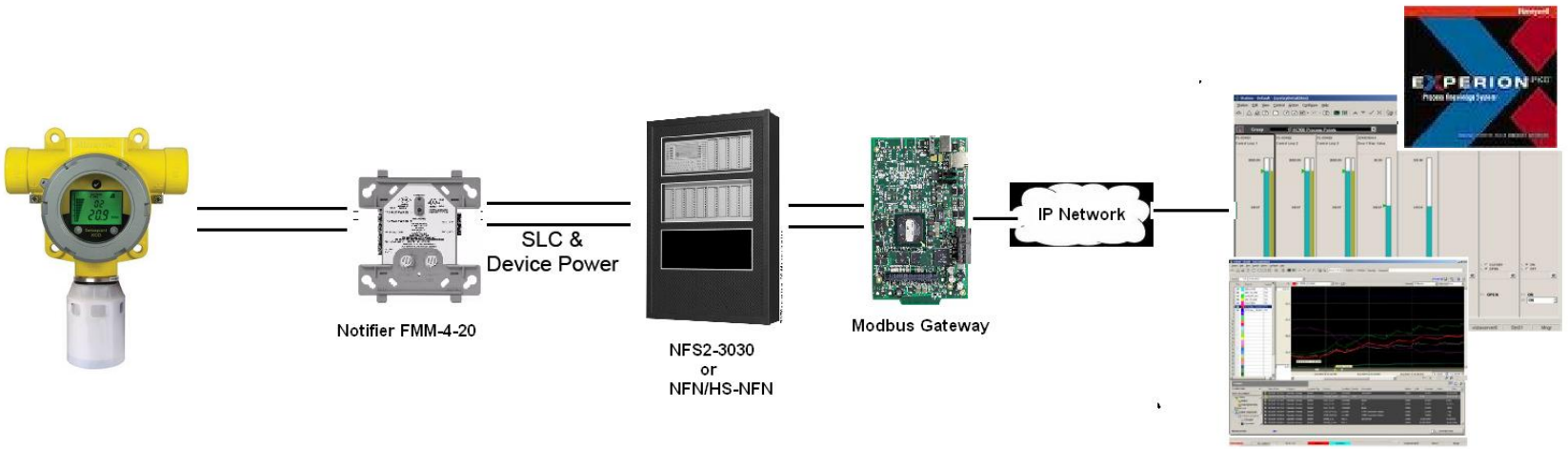
- The Modbus Gateway is a TCP interface to third party Industrial Control/ Building Automation systems
  - Note: There are many types of Modbus Gateways and our gateway only support Modbus TCP. A converter is needed for RTU monitoring.
  - Modbus is the most widely supported, easiest to implement and understand open network in the world today
  - Industrial applications / Building Automation
  - Works with Supervisory Control And Data Acquisition (SCADA) workstations



- Industries:
  - Mines
  - Gas Detections
  - Solar Charging Systems
  - Water Districts
  - Any that uses Modbus TCP/RTU with a SCADA Workstation

- Supports our integration with Honeywell Analytics
  - FMM-4-20 module - Gas detection

Modbus Gateway – Application

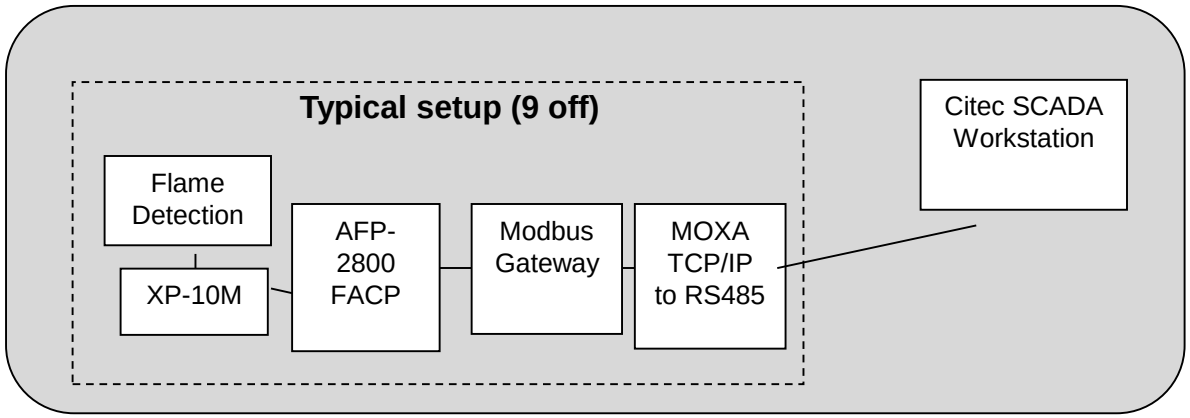


Case Study – Ridgway Deeps

- Underground gold mine in Central New South Wales, Australia .
- Citec SCADA workstation used for monitoring as well as provide limited control.
- Requirement was for Modbus RTU, so a Moxa TCP to RS485 converter was installed.

Lessons Learned:

- Mining and industrial applications: Modbus preferred over BACnet.
- Modbus over RS485 is preferred over TCP.



RIDGWAY DEEPS

Modbus Gateway – Compliance

National Fire Protection Association

- **NFPA 72**—National Fire Alarm Code

Underwriters Laboratories

- **UL-864**—Control Units for Fire Alarm Systems, Ninth Edition
- **UL-2017**—General-Purpose Signaling Devices and Systems, First Edition

Underwriters Laboratories Canada

- **CAN/ULC-S527-99**—Standard for Control Units for Fire Alarm Systems, Second Edition
- **CAN/ULC-S559-04**—Equipment for Fire Signal Receiving Centres and Systems, First Edition

NOTE: The Modbus Gateway is recognized by UL as an ancillary reporting device for Monitoring ONLY.

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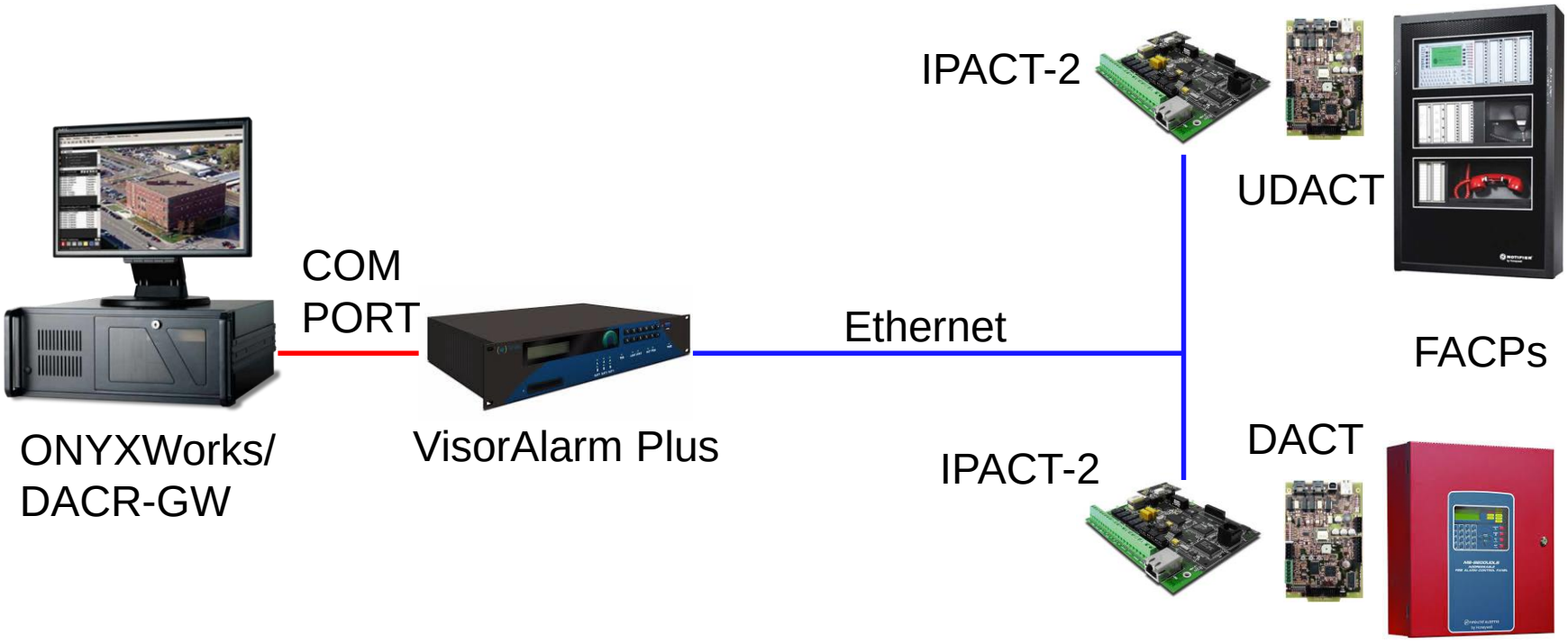




Receivers Gateway with ONYXWorks

- An intelligent gateway interface to digital alarm communicator receivers (DACR) for the ONYXWorks facilities monitoring workstation
- Enables the ONYXWorks workstation to monitor remote fire and security panels equipped with Contact ID capable digital alarm communicator transmitters (DACT) for real-time events
- Compatible with the Ademco 685, Silent Knight 9500 and 9800, Bosch D6600, and the Teldat Visor Alarm

Digital Alarm Communications (DACT/DACR)



Integrate NON-NOTIFIER products into a common network for a Single Interface

Applications

- Universities/Colleges
  - This is a GREAT opportunity for site takeovers
  - Provide a migration path to NOTIFIER FACPS
  - Long-term commitment

- Commercial Multi-Site Companies
  - Centralized monitoring of multiple facilities
  - Headquarters as Global Command Center

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THANK YOU

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