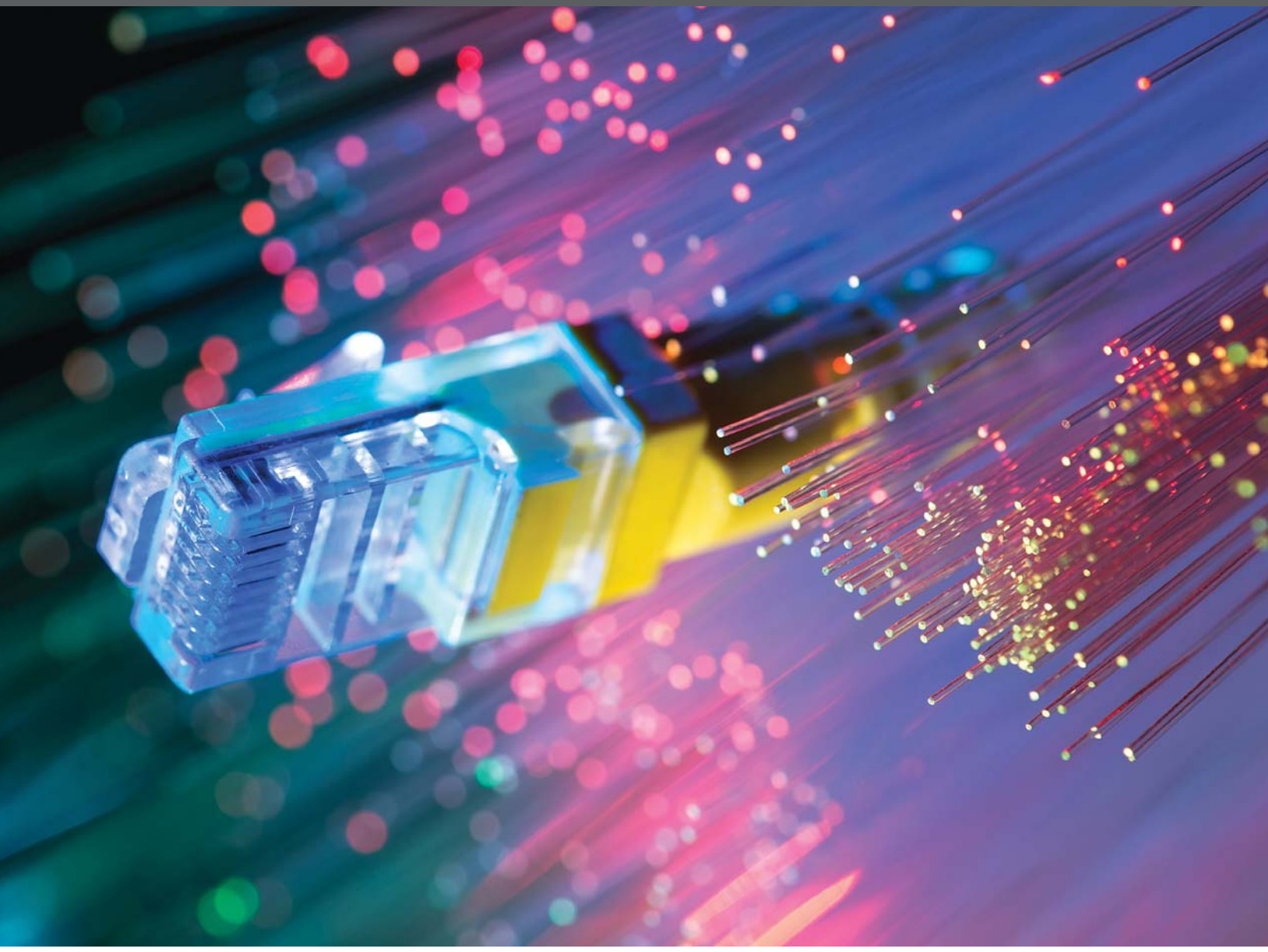
Network and Integrated Product Applications Guide



NOTIFIER®
by Honeywell

www.notifier.com

Protect What Matters Most

NOTIFIER continuously develops new solutions that improve life safety in buildings worldwide—an unwavering commitment for over sixty years.

Together with our premier independent distributors, we design, manufacture, integrate, install and service the world's leading fire, voice evacuation, and advanced detection systems.

Now we lead the way with powerful Emergency Communications Systems (ECS) to save lives and protect property from new and emerging threats using today's most innovative communication and networking technologies.

When lives are at risk, trust NOTIFIER total life safety solutions to protect what matters most.

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Product Introduction

NOTIFIER's ONYX® Series fire alarm control panels are enhanced by network options that deliver graphical annunciation, building systems integration, and remote monitoring capabilities. These applications add flexibility and new options for end-users and require a level of understanding of computer network. This application guide covers various network and Internet technologies and NOTIFIER's implementation of these technologies. The following topics include product overviews, application notes, and high-level requirements for NOTIFIER network and integrated products:

- **NCA-2** Network Control Annunciator
- **NOTI-FIRE-NET**™
  - **NCM-F** Network Communications Module Fiber
  - **NCM-W** Network Communications Module Wire
  - **RPT-F** NOTI-FIRE-NET Network Repeater Fiber
  - **RPT-W** NOTI-FIRE-NET Network Repeater Wire
  - **RPT-WF** NOTI-FIRE-NET Network Repeater Wire/Fiber
  - **SIB-NET** Serial Interface Board (AM2020/AFP-1010)
  - **MIB-F** Media Interface Board Fiber (connects to SIBNET)
  - **MIB-W** Media Interface Board Wire (connects to SIBNET)
  - **NAM-232F** Network Interface Module Fiber (AFP-200/AFP-400)
  - **NAM-232W** Network Interface Module Wire(AFP-200/AFP-400)
- **High Speed NOTI-FIRE-NET**™
  - **HS-NCM-MF** High Speed NOTI-FIRE-NET Network Communications Module Multimode Fiber
  - **HS-NCM-MFSF** High Speed NOTI-FIRE-NET Network Communications Module Multimode/Single-mode Fiber
  - **HS-NCM-SF** High Speed NOTI-FIRE-NET Network Communications Module Single-mode Fiber
  - **HS-NCM-W** High Speed NOTI-FIRE-NET Network Communications Module Wire
  - **HS-NCM-WMF** High Speed NOTI-FIRE-NET Network Communications Module Wire/Multimode Fiber
  - **HS-NCM-WSF** High Speed NOTI-FIRE-NET Network Communications Module Wire/Single-mode Fiber
- **FirstVision** First Responder Display Interface
- **NWS-3** NOTI-FIRE-NET Web Server
- **BACNET-GW-3** BACnet Gateway
- **MODBUS-GW** Modbus Gateway
- **ONYXWORKS** ONYXWorks Graphical Workstation
  - **ONYX-NOTIFY** ONYXWorks Email/Text Notification
  - **DACR-GW** ONYXWorks Digital Alarm Receiver Gateway
  - **NOTIFY-IP** ONYXWorks Voice of IP Paging for ECS (UL2572)
  - **NOTIFY-IP-NOUL** ONYXWorks Voice of IP Paging
- **NFN-GW-EM-3** NOTI-FIRE-NET Embedded Ethernet Gateway
- **CAP-GW** Common Alerting Protocol Gateway
- **LEDSIGN-GW** LED Sign Gateway
  - **OAX2-24V** Digital LED Sign

Glossary of Terms

Fundamental computer and networking terminology is necessary when discussing NOTIFIER's network and integration products with individuals who purchase and support these systems in facilities.

Application Service Providers (ASP) - Vendors that offer individuals or companies access to applications and related services over the Internet, Extranet, or Wide Area Network (WAN). Also known as Enterprise Service Provider (ESP).

Client/Server - A network architecture in which clients and servers are placed independently on a network, possibly on different hardware and operating systems. Servers are computers that manage networks, network traffic, and allow for large networks. Clients are computers on which users run applications.

Ethernet - Standard network communications using either coaxial or twisted pair cable for computers and microprocessor-based embedded products. Allows connection to a local network (LAN) as well as to high-speed Internet access.

Firewall - Hardware or software that prevents unauthorized access to or from a private network. Typically restricts access by limiting the paths (ports) from the outside network (Internet) to the inside network (Intranet).

Internet Service Provider (ISP) - A company that provides individuals and companies access to the Internet for a monthly fee.

Local Area Network (LAN) - A single building or group of buildings Ethernet network that connects computers and microprocessor based embedded products.

Network Address Translation (NAT) - A standard that enables a LAN to use one set of IP addresses for internal traffic and a second set of IP addresses for external traffic.

Peer-to-Peer (P2P) - Communications model in which each computer has the same capabilities and any computer can initiate a communication session for smaller networks without a server.

Transmission Control Protocol/Internet Protocol (TCP/IP) - The basic communication language or protocol of the Intranet (LAN) and Internet (WAN). It can also be used as a communications protocol in a private network (either an intranet or an extranet).

Universal Datagram Protocol (UDP) - Similar to TCP/IP, however, it provides capability for broadcast messages in which a sender can send to all receivers on the IP network.

Virtual Private Network (VPN) - A private data network that makes use of the public telecommunication infrastructure, maintaining privacy through the use of a tunneling protocol and security procedures. It is a private network that uses a public network (usually the Internet) to connect remote sites or users together.

Wide Area Network (WAN) - Two or more local area networks (LANs) typically connected through leased lines or satellites.

NCA-2



OVERVIEW

The NOTIFIER NCA-2 is a second-generation Network Control Annunciator for the NOTI-FIRE-NET™ or High Speed NOTI-FIRE-NET™ networks, compatible for use with ONYX® Series nodes such as the NFS2- 3030, NFS-3030, NFS-320, NFS-640 and NFS2-640 fire alarm control panels, as well as first-generation NCA Network Control Annunciators. Additionally, the NCA-2 may be configured with DVC Series products to create one or more Digital Audio Command Centers on NOTI-FIRE-NET™ or High Speed NOTI-FIRE-NET™. The NCA-2 provides system control and display capabilities for all, or for selected network nodes.

APPLICATION NOTES:

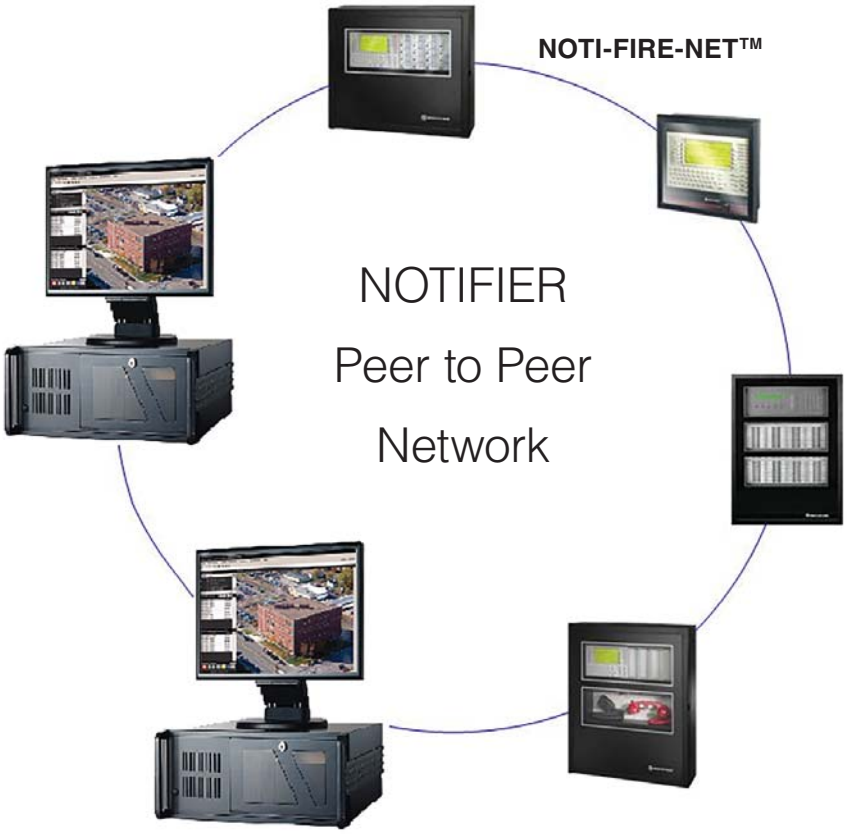
- In small to mid-size installations, the NCA-2 can be used to enhance the functionality of the NFS2-640 by providing a 640 character display and the capability to annunciate the trouble conditions from the DVC-2 (Digital Voice Command), in a stand-alone fire panel configuration (NUP to NUP to NUP) without the need for network communication modules.
- Mid-size to large installations the NCA-2 will be used as a network data gathering interface with complete monitoring and control of entire network. Typical applications include installation of the NCA-2 in the lobby of a building where wall space is limited, aesthetics are a concern or a remote access point is required in places like a guard shack.
- The NCA-2 is for monitoring and control of an individual local NOTI-FIRE-NET™ or High Speed NOTI-FIRE-NET™ network ONLY. The NCA-2 does not support connecting NOTI-FIRE-NET™ and High Speed NOTI-FIRE-NET™ together or the use of the IP based NOTI-FIRE-NET network Gateway (NFN-GW-EM-3).

SYSTEM REQUIREMENTS:

NOTIFIER Equipment

Required		
NCA-2	DN-7047	52482
Optional		
NCM-W/F for network applications	DN-6861	51533
NOTI-FIRE-NET™ network (5.0 or Higher)	DN-6971	51584
HS NCM for High Speed network applications	DN-60454	54014
High Speed NOTI-FIRE-NET™	DN-60455	54013

NOTI-FIRE-NET™ and High Speed NOTI-FIRE-NET™



NOTI-FIRE-NET™ and High Speed NOTI-FIRE-NET™ is the interface which allows NOTIFIER Intelligent Fire Alarm Control Panels to form a network. Each local control panel (network node) maintains its own area of protection, while monitoring and controlling other areas (other network nodes). Local information is displayed at each network node. In areas such as a security office, where the entire network must be monitored.

APPLICATION NOTE:
The NOTI-FIRE-NET™ and High Speed NOTI-FIRE-NET™ are not compatible networks and cannot be combined without the use of ONYXWorks and the Ethernet based gateway (NFN-GW-EM-3).

NOTI-FIRE-NET™(NFN) is a token-pass style network based on the proven ARCNET® local area network technology and supports up to 103 nodes.

APPLICATION NOTE:
- Best practice for installation/programming of the NOTI-FIRE-NET™ network is keeping the nodes physically connected in a sequential order (1,2,3,4,5) or even better practice is to skip a few node numbers (1,5,10,15,20 etc.) in the event that you need to add an additional node in the future. The reasoning behind this approach is the ARCNET token-passing protocol sends messages to the next numerical node number and if they are not in a sequential order the messages will be passed through multiple network cards, therefore creating latency delays and will make troubleshooting the network much harder.

High Speed NOTI•FIRE•NET™(NFN) is a IP based style network based on the local area network technology and supports up to 200 nodes.

APPLICATION NOTE:
- The ordering of the network nodes is not important with the High Speed NOTI•FIRE•NET™, as the messages are sent to the next physical node connected on the network.
- The High Speed NCM's act as repeaters when the node address is set to "0"

NETWORK COMPARISON

Feature	NOTI-FIRE-NET™	High Speed NOTI-FIRE-NET™
Nodes	103	200
Nodes with DVC Support	54	200
Node Addresses per NCM	1	2
Media	Wire Multi-mode fiber	Wire Multi-mode fiber Single-mode fiber
Communication Speed	312.5Kb (wire) 312.5Kb (fiber)	12Mb (wire) 100MB (fiber)
Wire		
Distance	3,000 ft.	3,000 ft.
Guage	14-18 AWG	14-18 AWG
Configuration	Point-to-Point and BUS	Point-to-Point
Multimode Fiber		
62.5/125µm	8 dB Limit	10 dB Limit
50.0/125µm	4.2 dB Limit	6.5 dB Limit
Wavelength	850nm	1310nm
Connector Style	ST	LC
Singlemode Fiber		
9.0/125µm	Discontinued Converters	30dB Limit
Connector Style	ST	LC

NOTI-FIRE-NET™ NETWORK

The NOTI-FIRE-NET™ is a flexible peer-to-peer network for NOTIFIER fire alarm control panels. Each FACP that supports NOTI-FIRE-NET™ has a network card to facilitate the communications. The chart below shows the NOTIFIER fire alarm control panels and their corresponding network cards.

FIRE ALARM CONTROL PANEL	NETWORK CARD
AFP-200	NAM-232W / NAM-232F
AFP-300/400	NAM-232W / NAM-232F
AFP1010/AM2020	SIB-NET w/ MIB-W/F
NFS-640/NFS2-640	NCM-W / NCM-F
NFS-3030/NFS2-3030	NCM-W / NCM-F
NFS-320	NCM-W / NCM-F
ONYXWorks	NFN-GW-PC-F
ONYXWorks	NFN-GW-PC-W

The NOTI-FIRE-NET™ not only supports a peer-to-peer topology, but also supports different types of media and communications. Wire and fiber are the most common media types for a typical NOTI-FIRE-NET™ network (refer to NOTI-FIRE-NET™ manual for details) and can be used in conjunction with telephone lines as shown in the figure below.

NETWORK MEDIA	TYPE	PRODUCT	DESCRIPTION
WIRE	14AWG to 18 AWG twisted pair	NAM, NCM, MIB	Network Cards
FIBER OPTIC	Multi-mode (62.5µm/125µm)	NAM, NCM, MIB	Network Cards
FIBER OPTIC	Multi-mode (50µm/125µm)	NAM, NCM, MIB	Network Cards
WIRE TO FIBER / FIBER TO WIRE	14 AWG to 18 AWG / Multi-mode	RPT-W, RPT-F, RPT-WF	WIRE/FIBER Converter
TELEPHONE LINES	"Dry Copper" leased lines	DPI-232	EIA-232 Modem
ETHERNET	CAT-5	NFN-GW-EM-3	Gateway for ONYX-Works and FirstVision

HIGH SPEED NOTI-FIRE-NET™ NETWORK

The High-Speed NOTI-FIRE-NET™ is a flexible peer-to-peer network for NOTIFIER fire alarm control panels. Each FACP that supports NOTI-FIRE-NET™ has a high-speed network card to facilitate the communications. This high-speed network card increases node count and communication speed. The chart below shows the NOTIFIER fire alarm control panels and their corresponding network cards.

FIRE ALARM CONTROL PANEL	NETWORK CARD
NFS-640/NFS2-640	HS-NCM-W, SF, MF, WSF, WMF, MFSF
NFS-3030/NFS2-3030	HS-NCM-W, SF, MF, WSF, WMF, MFSF
NFS-320	HS-NCM-W, SF, MF, WSF, WMF, MFSF
ONYXWorks	NFN-GW-PC-HNMF
ONYXWorks	NFN-GW-PC-HNSF
ONYXWorks	NFN-GW-PC-HNW

High-Speed NOTI-FIRE-NET™ not only supports a peer-to-peer topology, but also supports different types of media and communications. Wire and fiber are the most common media types for a typical High-Speed NOTI-FIRE-NET™ network (refer to NOTI-FIRE-NET™ manual for details) and can be used in conjunction with telephone lines as shown in the figure below.

NETWORK MEDIA	TYPE	PRODUCT	DESCRIPTION
WIRE	14AWG to 18 AWG twisted pair	HS-NCM-W	Network Cards
FIBER OPTIC	Multi-mode (62.5µm/125µm)	HS-NCM-MF	Network Cards
FIBER OPTIC	Multi-mode (50µm/125µm)	HS-NCM-MF	Network Cards
FIBER OPTIC	Single-mode (9µm/125µm)	HS-NCM-SF	Network Cards
WIRE TO FIBER / FIBER TO WIRE	14 AWG to 18 AWG / Multi-mode / Single-mode	HS-NCM-WSF, WMF	WIRE/FIBER Converter
FIBER TO FIBER	Multi-mode / Single-mode	HS-NCM-MFSF	FIBER/FIBER Converter
ETHERNET	CAT-5	NFN-GW-EM-3	Gateway for ONYXWorks and First-Vision

ONYX FirstVision™



OVERVIEW

ONYX FirstVision™ is a revolutionary wayfinding navigational tool for firefighters and other emergency responders. ONYX FirstVision™, a touch screen, graphically displays critical information on the origin and spread of a fire; allowing firefighters to quickly locate and extinguish the fire.

APPLICATION NOTES:

- The FirstVision annunciator is UL 864 listed for secondary annunciation and does not support any control functionality.
- Mid-size to large installations (e.g. Universities, High-Rise and High ValuedBuildings) that want “Beyond the Code” annunciation.
- The FirstVision can connect to multiple NOTI-FIRE-NET™ and/or High Speed NOTI-FIRE-NET™ networks via the NFN-GW-EM-3.

SYSTEM REQUIREMENTS:

- External 24VDC UL 1481Listed power supply (3A@24VDC)
- UPS (optional)
- NFN Gateway

PORTS:

Port	Type	Direction	Purpose
80*	TCP	In	Web Based Cinfiguration
123*	UDP	Both	SNTP
443*	TCP	In	HTTPS Communications
2017	TCP	In	Connection from Workstation (Events and Commands)
4016*	TCP	In	Upgrade for Embedded Gateway
5000	TCP	In	VeriFire Tools Access
5100	TCP	In	Voice Paging
Typical Worst Case Sustained Bandwidth	50 Workstations	NA	2520 Bytes/Sec = 20160 Bit/Sec ~ 0.020 Mb/Sec
Maximum Worst Case Sustained Bandwidth	50 Workstations + Audio	NA	14670 Bytes/Sec = 117360 Bit/Sec ~ 0.118 Mb/Sec

* These ports are for the embedded NFN Gateway only and should only be documented in the embedded NFN Gateway manual and not the PC NFN Gateway manuals. Port 123 is documented in Workstation information.

ONYX FirstVision™

RESTRICTIONS:

Functionality	Restriction
Infrastructure	Must have a static IP address. DHCP is not supported
Infrastructure	Web access via an HTTP proxy server is not supported.

NOTIFIER EQUIPMENT

Required		
FIRSTVISION-LCD (22” Display)	DN-7051	LS10079-000NF-E
FIRSTVISION-ENC (Enclosure)	DN-7051	LS10079-000NF-E
NFN-GW-EM-3	DN-60499	LS10017-000NF-E
Optional		
NCM-W/F for network applications	DN-6861	51533
NOTI-FIRE-NET network (5.0 or Higher)	DN-6971	51584
HS NCM for High Speed network applications	DN-60454	54014
High Speed NOTI-FIRE-NET	DN-60455	54013

NOTI-FIRE-NET Web Server (NWS)



OVERVIEW

The NOTI-FIRE-NET™ Web Server (NWS) is a web-based device that acts as an HTML server, allowing remote access to the NOTI-FIRE-NET network via the Internet or an Intranet. The NWS interface is well suited for various applications so users can view fire alarm control panel (FACP) event history, event status, device properties and other information. The NWS can be configured to automatically send event information via email or cell phone text messages to a select group of users.

APPLICATION NOTES

- In all small to mid-size applications, the facility manager (site manager) receives emails or text messages for urgent emergency situations. Non-emergency situations can be reported in the same manner for notification purposes to facility personnel.
- Small installations (e.g. private school) can monitor their fire system locally on any business PC. Facility staff and appropriate building personnel have the ability to get fire system status from their office. In addition, the NOTIFIER Web Server is an invaluable tool for remote access and troubleshooting capability and may be included in extended service plans. Fire alarm control panel upload, download, and troubleshooting can all be done through VeriFire Tools.
- Mid-size installations (e.g. hotel and school district) have maintenance personnel that can use the NOTIFIER Web Server for managing daily operational tasks and system issues. The NWS is a cost effective remote monitoring solution for these applications that do not require a graphical computer package.
- NAT devices are not supported.

SYSTEM REQUIREMENTS

- Email Server (email applications)
  - On-site or provided by a Internet Service Provider (ISP)
  - Supports SMTP format only
  - Individual ISP authentication (username/password) not supported
- Ethernet Network:

PORTS:

Port	Type	Direction	Purpose
25	TCP	Out	SMTP
80	TCP	In	Web Based Configuration
443	TCP	In	HTTPS Communications
4016	TCP	In	Upgrades
5000	TCP	In	Veri-fire Access

RESTRICTIONS:

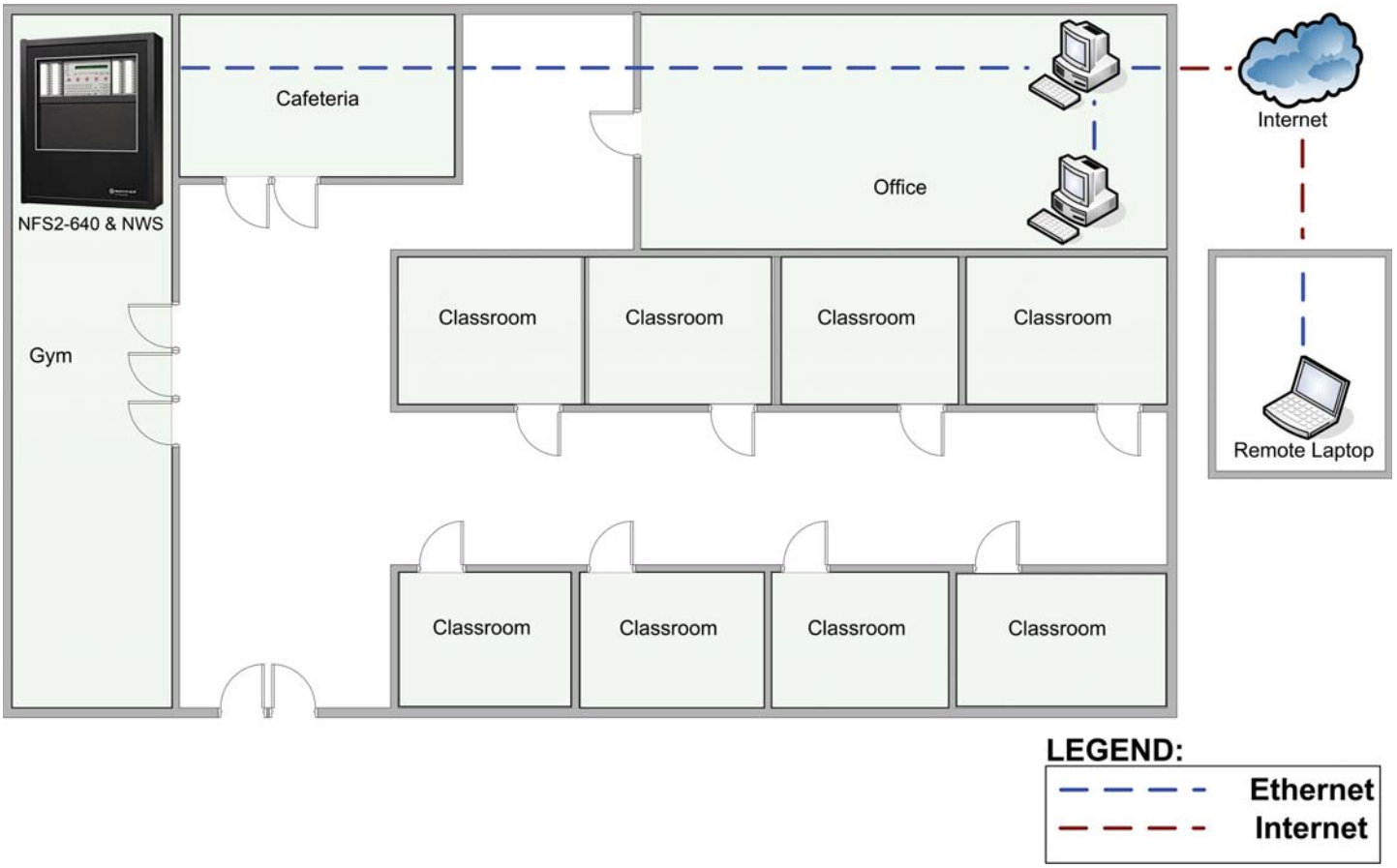
Functionality	Restriction
Infrastructure	Must have a static IP address. DHCP is not supported
Infrastructure	Web access vias an HTTP proxy server is not supported.
Email	The email server must support sending email without authentication.

NOTI-FIRE-NET Web Server (NWS)

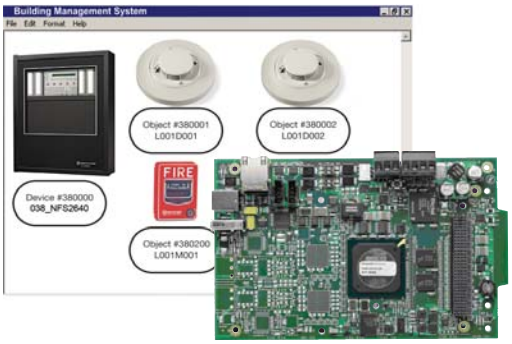
NOTIFIER EQUIPMENT

Required	Data Sheet	Manual
NWS-3	DN-6928	51990
Standalone ONYX panel or NOTI-FIRE-NET network (5.0 or higher)	DN-6971	51584
Optional	**Data Sheet**	**Manual**
NCM-W/F for network applications	DN-6861	51533
NOTI-FIRE-NET network (5.0 or Higher)	DN-6971	51584
HS NCM for High Speed network applications	DN-60454	54014
High Speed NOTI-FIRE-NET	DN-60455	54013

NOTI-FIRE-NET™ WEB SERVER - PRIVATE SCHOOL APPLICATION



BACnet® Gateway



OVERVIEW

A Building Management System (BMS) is typically used in commercial buildings for monitoring of heating, cooling, ventilation, lighting, and other various functions and services. NOTIFIER provides a gateway interface that sends fire alarm events and device status to the BMS using BACnet® protocol over TCP/IP. The BACnet Gateway provides an interface between NOTIFIER's fire alarm control panels (NFS-320, NFS-640, NFS2-640, NFS-3030, NFS2-3030 only) and a network using the BACnet/IP communication protocol. Building systems integrators setup and manage the BMS systems and allow individual manufacturers to use a gateway that complies with the BACnet standard.

APPLICATION NOTES

- Mid-size installations (e.g. manufacturing plant and hospital) using a Building Management System that supports BACnet/IP protocol can use a BACnet® Gateway to monitor ONYX Series fire alarm control panels (NFS2-640 or NFS2-3030) in addition to their HVAC systems for ancillary monitoring. The BACnet Gateway can be installed in the same equipment cabinet as the ONYX Series panel and connects directly to the Fire Alarm Control Panel. The gateway requires basic IP address information (provided by the facility's network administrator) and BACnet/IP port information (provided by the building systems integrator).
- Large installations (e.g. university and high-rise office building) using a Building Management System that supports BACnet/IP protocol can use a BACnet® Gateway to monitor NFS2-3030 or a NOTI-FIRE-NET network (up to 14 Fire Alarm Control Panels). Direct connection to the panel for single panel application or an NCM-W/F for a NOTI-FIRE-NET network application. The gateway requires basic IP address information (provided by the facility's network administrator) and BACnet/IP port information (provided by the building systems integrator).
- NAT devices are not supported.

SYSTEM REQUIREMENTS

- Building Management System
  - Supports for BACnet/IP
  - Must conform to BACnet Standard Annex J for IP
  - Support Device Objects, Binary Output Objects, and Multistate Input or Life Safety Points/Zones
  - Support writing to Notification Objects and receiving confirmed/unconfirmed event notification messages
- Ethernet Network:

PORTS:

Port	Type	Direction	Purpose
80	TCP	In	Web Based Configuration
443	TCP	In	HTTPS Communications
4016	TCP	In	Upgrades
47808	UDP	Both	BACnet

RESTRICTIONS:

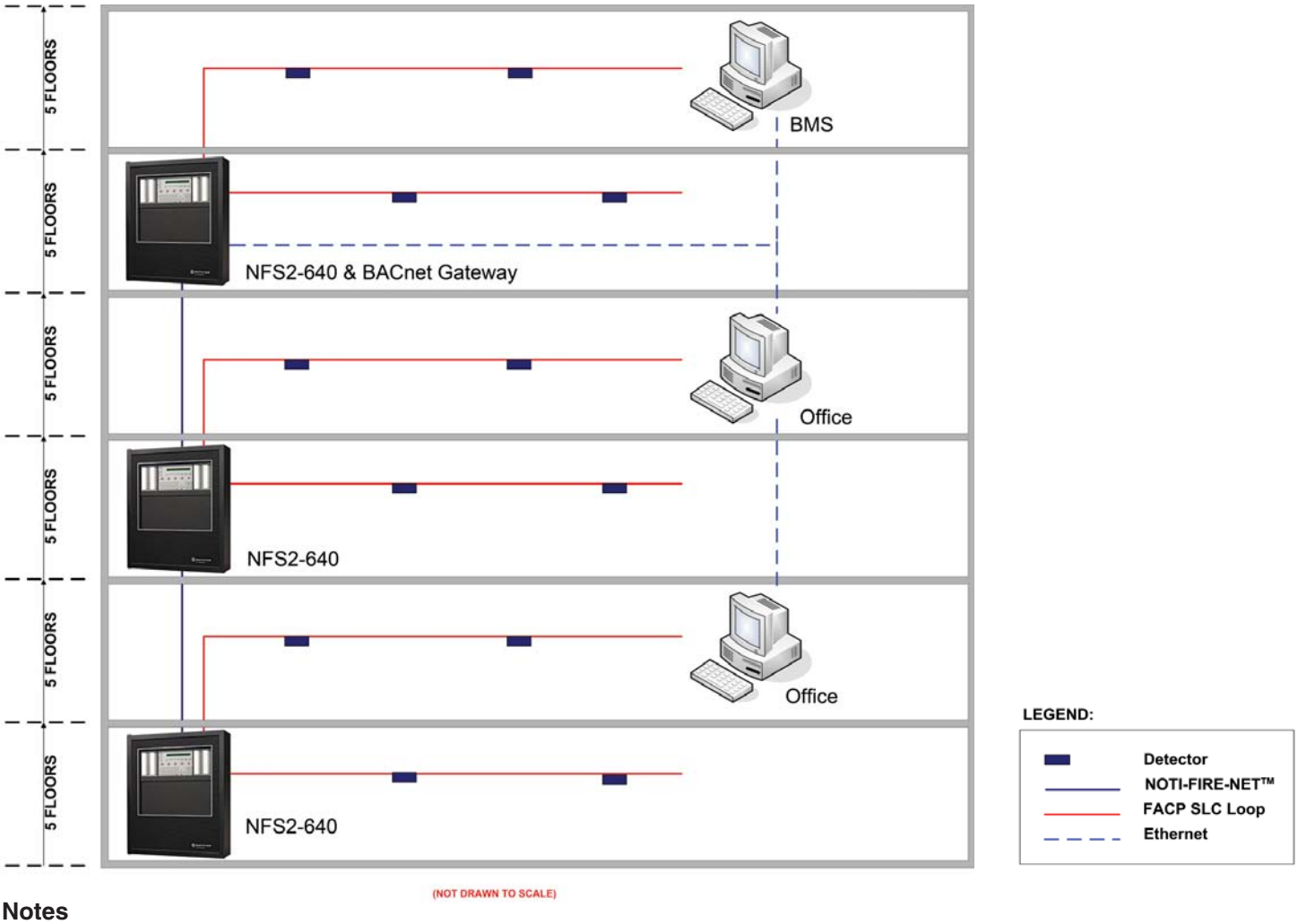
Functionality	Restriction
Infrastructure	Must have a static IP address. DHCP is not supported
Infrastructure	Web access vias an HTTP proxy server is not supported.

BACnet® Gateway

NOTIFIER EQUIPMENT

Required	Data Sheet	Manual
BACNET-GW-3	DN-6928	LS10016-000NF
Standalone ONYX panel or NOTI-FIRE-NET network (5.0 or higher)	DN-6971	51584
Optional	**Data Sheet**	**Manual**
NCM-W/F for network applications	DN-6861	51533
NOTI-FIRE-NET network (5.0 or Higher)	DN-6971	51584
HS NCM for High Speed network applications	DN-60454	54014
High Speed NOTI-FIRE-NET	DN-60455	54013

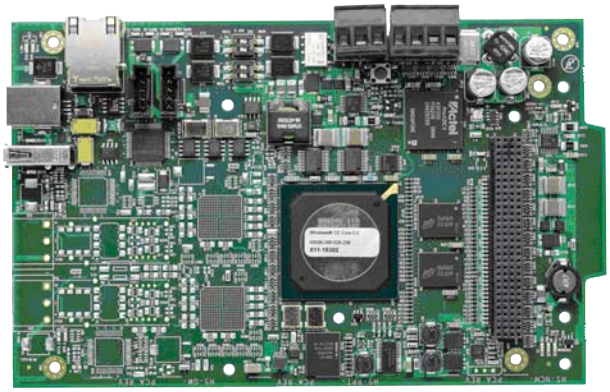
BACNET GATEWAY - COMMERCIAL BUILDING APPLICATION



Notes

1. 30-story commercial building with a local Ethernet network

Modbus-GW™



OVERVIEW

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 NFN network communicates with the Modbus Gateway through the network port on any NCM. The Modbus communication protocol is consistent with Modbus Application Protocol Specification V1.1b. The Modbus Gateway Configuration Tool, a programming utility included with the Modbus Gateway assembly is used to configure the Modbus Gateway. The Modbus needs very little configuration. In most applications, only the TCP/IP settings for the network and the nodes to be monitored need to be entered. The gateway will automatically map all the configured points and supply you with a user friendly comma separated value report that defines the mapping.

APPLICATION NOTES

- Mid-size installations (e.g. manufacturing plant) using Modbus TCP communication protocol can use a Modbus Gateway to monitor ONYX Series fire alarm control panels (NFS2-640 or NFS2-3030) using their Modbus client. The Modbus Gateway can be installed in the same equipment cabinet as the ONYX Series panel and connects directly to the Fire Alarm Control Panel. The gateway requires basic IP address information (provided by the facility's network administrator) and Modbus port information (provided by the building systems integrator).
- Large installations using a Modbus client that supports Modbus TCP communications protocol can use a Modbus Gateway to monitor NFS2-3030 or a NOTI-FIRE-NET network (up to four FACPs). Multiple Modbus Gateways can be used for large installations using a direct connection to the panel for single panel application or an NCM for a NOTI-FIRE-NET network application. The gateway requires basic IP address information (provided by the facility's network administrator) and BACnet/IP port information (provided by the building systems integrator).
- NAT devices are not supported.

SYSTEM REQUIREMENTS

- Ethernet Network:

PORTS:

Port	Type	Direction	Purpose
80	TCP	In	Web Based Configuration
443	TCP	In	HTTPS Communications
502	TCP	In	Modbus
4016	TCP	In	Upgrades

RESTRICTIONS:

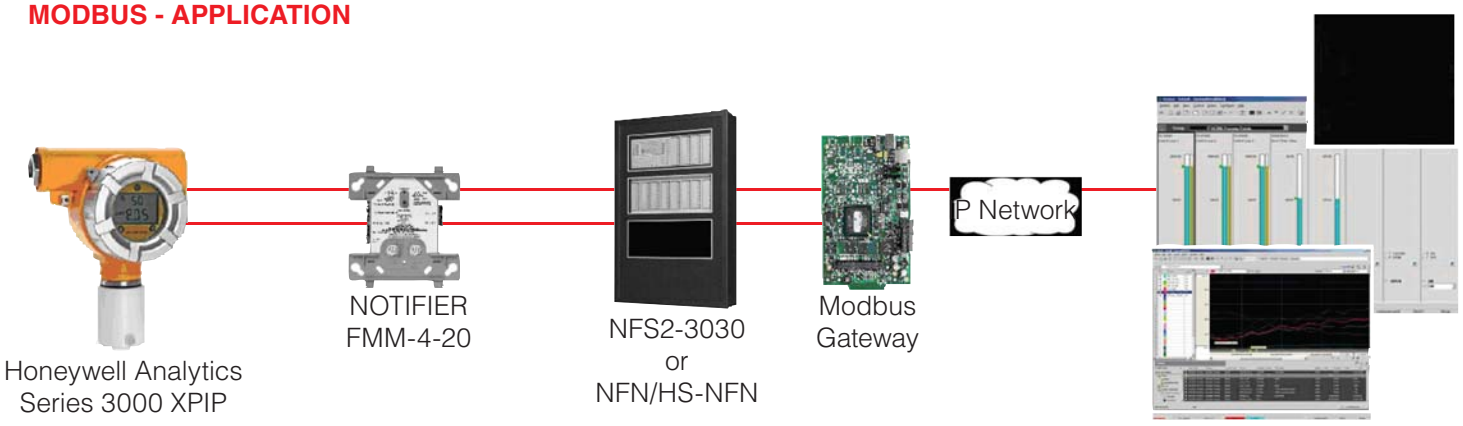
Functionality	Restriction
Infrastructure	Must have a static IP address. DHCP is not supported
Infrastructure	Web access vias an HTTP proxy server is not supported.

Modbus-GW™

NOTIFIER EQUIPMENT

Required	Data Sheet	Manual
MODBUS-GW-NFN	DN-60533	LS10015-000NF-E
MODBUS Configuration Tool	PID-53632	-
Optional	**Data Sheet**	**Manual**
NCM-W/F for network applications	DN-6861	51533
NOTI-FIRE-NET network (5.0 or Higher)	DN-6971	51584
HS NCM for High Speed network applications	DN-60454	54014
High Speed NOTI-FIRE-NET	DN-60455	54013

MODBUS - APPLICATION



ONYXWORKS for Local Monitoring



OVERVIEW

ONYXWORKS serves as a fire command center when monitoring a local NOTI-FIRE-NET™ fire system. It complies with the protected premises code requirements and interfaces to NOTIFIER control panels by using the NFN Gateway interface (PC or Embedded version). The ONYXWorks/NFN Gateway combination gives operators the ability to monitor, control, maintain, and upgrade the fire system from a single workstation. NOTI-FIRE-NET™ monitoring offers a wide range of advantages and flexibility and still maintains the high standards of a life safety fire system.

APPLICATION NOTES

- Mid-size installations with NOTIFIER only systems include hospitals, colleges, and commercial facilities. In this single building application, NOTI-FIRE-NET™ is the primary network with the capability to network up to 103 fire alarm control panels and wire/fiber network media. ONYXWORKS can easily monitor this network as the primary annunciator. The network allows for long media runs and expansion by supporting fiber (single mode & multimode) and network repeaters.
- Mid-size installations with redundancy and system survivability requirements can be obtained by adding a second ONYXWORKS-NW/NF for a true peer-to-peer network.
- Large installations with multiple monitoring stations (e.g. security office, fire command center) will require remote monitoring and control capability with or without the need for redundant systems. This is accomplished by adding ONYXWORKS (Workstation only) with an Ethernet (TCP/IP) connection to the ONYXWORKS fire command center and complies with the supervising station code requirements. This connection between the two systems can be a dedicated or shared Ethernet network.
- In larger installations and networks using digital audio, the High Speed NOTI-FIRE-NET™ NCM card expands the network capacity to 200 nodes and increases the network speed (up to 12 MB for wire and 100 MB for fiber).
- NAT devices are not supported. A UL 864 Listed Switch is required between the business network and each ONYXWorks Workstation or gateway.

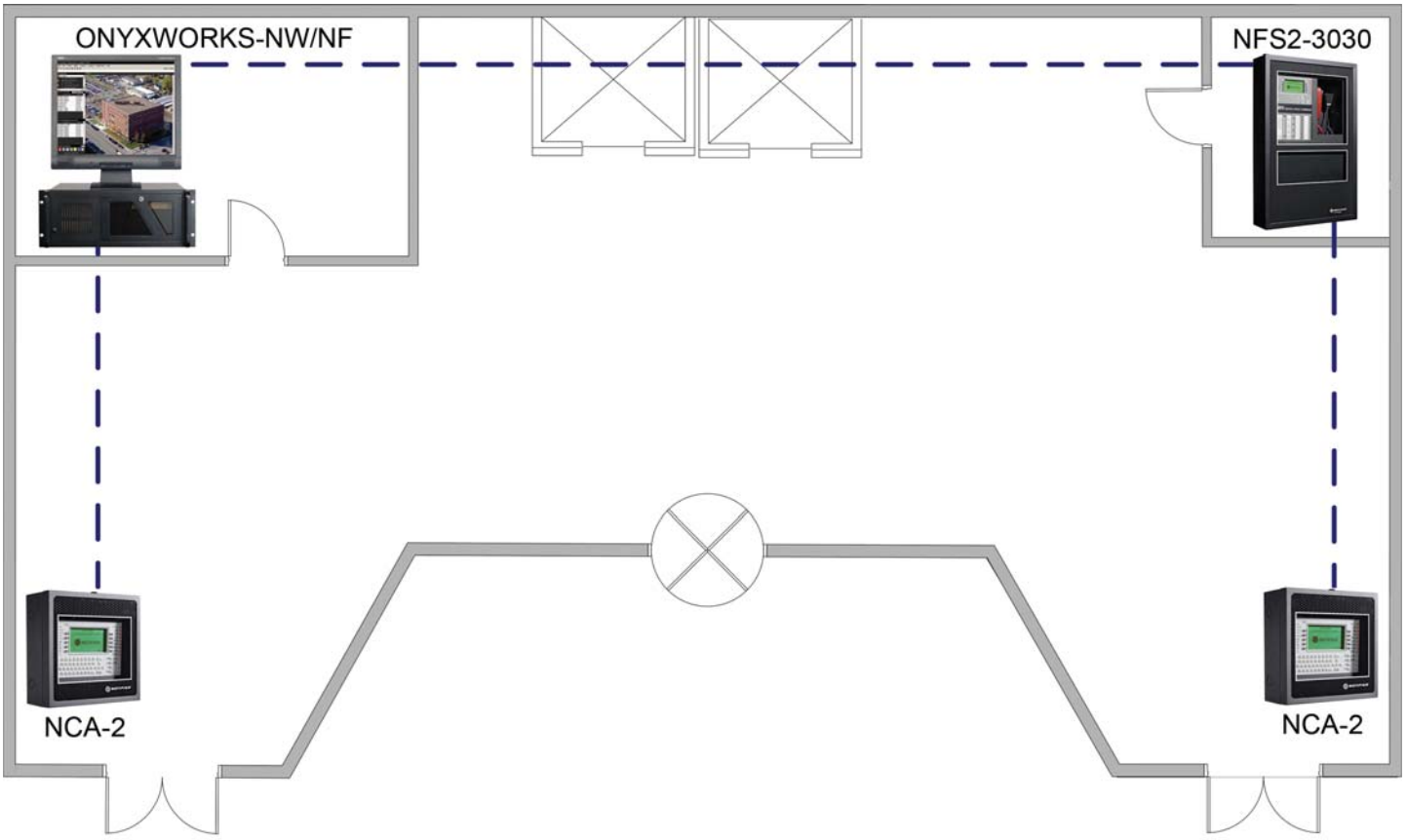
SYSTEM REQUIREMENTS

- **Ethernet Network**

NOTIFIER EQUIPMENT

Required	**Data Sheet**	**Manual**
ONYXWORKS	DN-7048	LS10050-000NF
Optional	**Data Sheet**	**Manual**
NCM-W/F for network applications	DN-6861	51533
NOTI-FIRE-NET network (5.0 or Higher)	DN-6971	51584
HS NCM for High Speed network applications	DN-60454	54014
High Speed NOTI-FIRE-NET	DN-60455	54013

ONYXWORKS for Local Monitoring



LEGEND:

NOTI-FIRE-NET™

ONYXWorks® & Gateways



OVERVIEW

ONYXWorks® is built on client/server architecture. The server receives, interprets, and processes information, and then passes it along to be displayed to the user on a client application. ONYXWorks uses intelligent gateways as a server to interface to various networks and technologies. These gateways come in the form of hardware (PC and embedded) or software. The hardware version of the gateway is installed in a workstation PC (PC version) or with the monitored equipment (embedded version). The software version of the gateway operates on a workstation (software only) and typically receives its information through a serial port or through TCP/IP Ethernet protocol.

The gateway processes events and sends that information to a client using TCP/IP Ethernet protocol. The ONYXWorks client that receives and displays events for operators is the Workstation application. Since the gateway can reside on the same computer as the client, the information is simply transmitted from the gateway application to the workstation application over TCP/IP. To enable this communication, a computer IP address is required for all workstations and embedded gateways.

APPLICATION NOTES

- Supports up to 200 NOTI-FIRE-NET™ Gateways (NFN-GW-EM-3)
- A static IP address is required for each client (ONYXWorks workstation) and server (ONYXWorks gateway) for communications on a private or shared Ethernet network.
- Mid-size installations can use embedded and software only gateways for low-cost solutions and minimizing required hardware.
- Large installations can take advantage of a single ONYXWorks workstation supports multiple PC version gateways (hardware installed in the PC) to combine different networks onto one platform.
- NAT devices are not supported.

SYSTEM REQUIREMENTS

- Ethernet Network (Workstation, NetLogic, PC Monitor)

ONYXWorks® & Gateways

PORTS:

Port	Type	Direction	Purpose
25	TCP	Out	SMTP
123	UDP	Both	SNTP
2002	TCP	In	(China Only) Event access for the Remote Access Client
2004	TCP	NA	(Internal) Workstation Plug-in Access
2014	TCP	Out	Connection to DACR Gateway
2017	TCP	Out	Connection to NFN Gateway
2029	TCP	Out	Workstation Output Appliances (Signs)
4016	TCP	In	Database Import/Export
20016	UDP	Both	Detect other Workstations for Database Import
Typical Worst Case Sustained Bandwidth	200 Gateways	NA	3360 Bytes/Sec = 26800 Bit/Sec ~ 0.027Mb/Sec
Maximum Worst Case Sustained Bandwidth	200 Gateways + 50 Gw Audio	NA	617,580 Bytes/Sec = 4,940,640 Bit/Sec ~ 5 Mb/Sec

RESTRICTIONS:

Functionality	Restriction
Infrastructure	Workstations cannot access gateways or other workstations through Network Address Translation or IP Masquerading
Infrastructure	Must have a static IP address. DHCP is not supported
Infrastructure	Multiple IP Addresses are not supported, either due to multiple enabled network adapters, or due to a multi-homed adaptor.

- Ethernet Network (Configuration Tool)

PORTS:

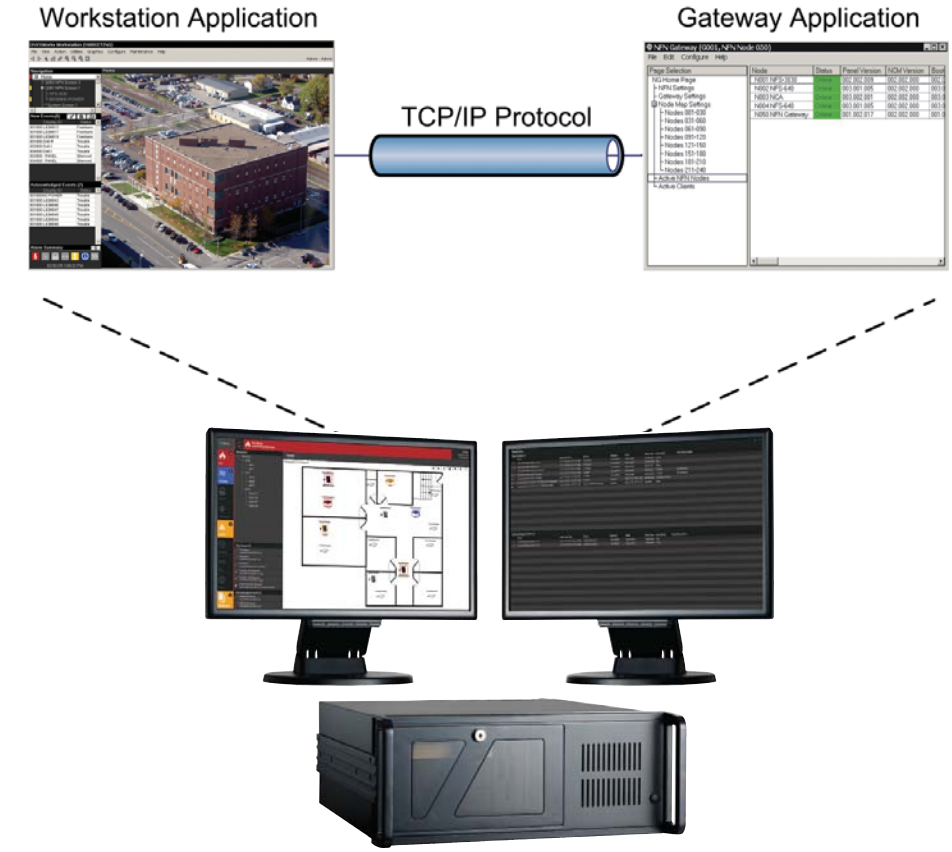
Port	Type	Direction	Purpose
20025	UDP	Both	(Optional) Sends broadcast messages to determine the Workstations available to import data from.

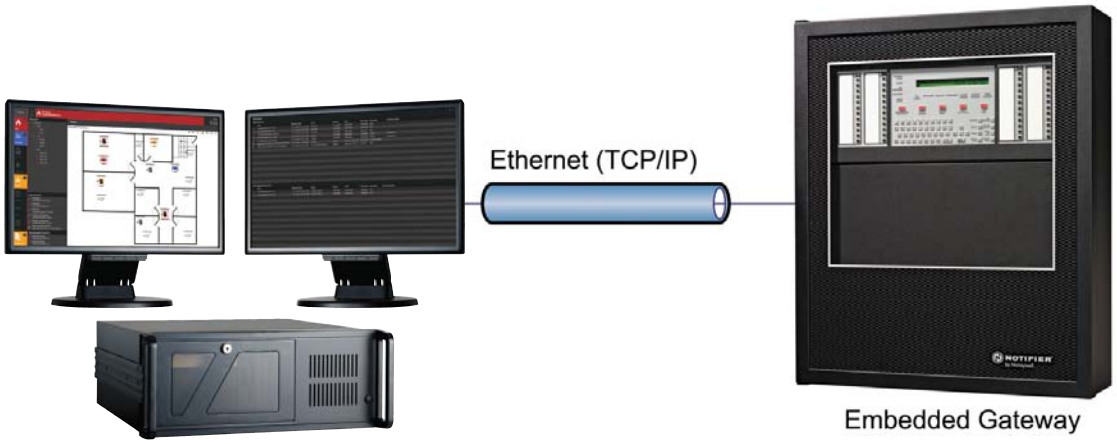
NOTE: When launching gateway configuration tools additional ports may be required. Please see the port listing for the gateways to determine ports needed by the configuration tools.

NOTIFIER EQUIPMENT

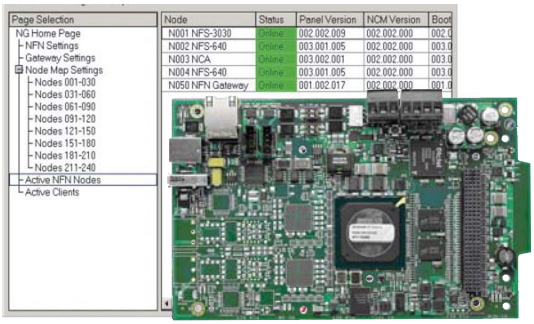
Required	Data Sheet	Manual
ONYXWORKS	DN-7048	LS10050-000NF-E
NFN-GW-EM-3	DN-60499	LS10017-000NF-E

ONYXWorks® & Gateways





ONYXWorks - Embedded NFN Gateway for Remote Applications



OVERVIEW

The ONYXWorks architecture allows easy expansion and monitoring of a contiguous property or non-contiguous properties. The major advantage of this architecture is the ability to span the system in a local or a remote area using the existing Intranet and Internet infrastructure. Remote monitoring over the Internet (classified as Shared IP by UL) is facilitated by the Workstation and Gateways. Each building can contain a single NFS2-640 or NFS2-3030 and up to a network of 103 NOTIFIER fire panels on NOTI-FIRE-NET™ network or 200 NOTIFIER fire panels on High Speed NOTI-FIRE-NET™ network and report to a central office using the low-cost embedded NFN Gateway (NFN-GW-EM-3).

APPLICATION NOTES

- Mid-size installations with NOTIFIER only systems include school districts, retail chains, and commercial facilities. In this multi-building application, an embedded NFN gateway is installed in each location along with a NOTIFIER fire panel.
- Large installations with NOTIFIER only systems require more than a single fire alarm panel to cover multiple floors. In this multi-story application, an embedded NFN gateway is installed in each location along with NOTI-FIRE-NET.
- NAT devices are not supported.

SYSTEM REQUIREMENTS

- **Ethernet Network**

NFN Gateway

PORTS:

Port	Type	Direction	Purpose
80*	TCP	In	Web Based Configuration
123*	UDP	Out	SMTP
443*	TCP	In	HTTPS Communications
2017	TCP	In	Connection from Workstation (Events and Commands)
4016*	TCP	In	Upgrade for embedded gateway
5000	TCP	In	VeriFire Tools Access
5100	TCP	In	Voice Paging
Typical Worst Case Sustained Bandwidth	50 Workstations	NA	2520 Bytes/Sec = 20160 Bit/Sec ~ 0.020 Mb/Sec
Maximum Worst Case Sustained Bandwidth	50 Workstations + Audio	NA	14670 Bytes/Sec = 117,360 Bit/Sec ~ 0.118 Mb/Sec

* These ports are for the embedded NFN Gateway only and should only be documented in the embedded NFN Gateway manual and not the PC NFN Gateway manuals. Port 123 is documented in Workstation information.

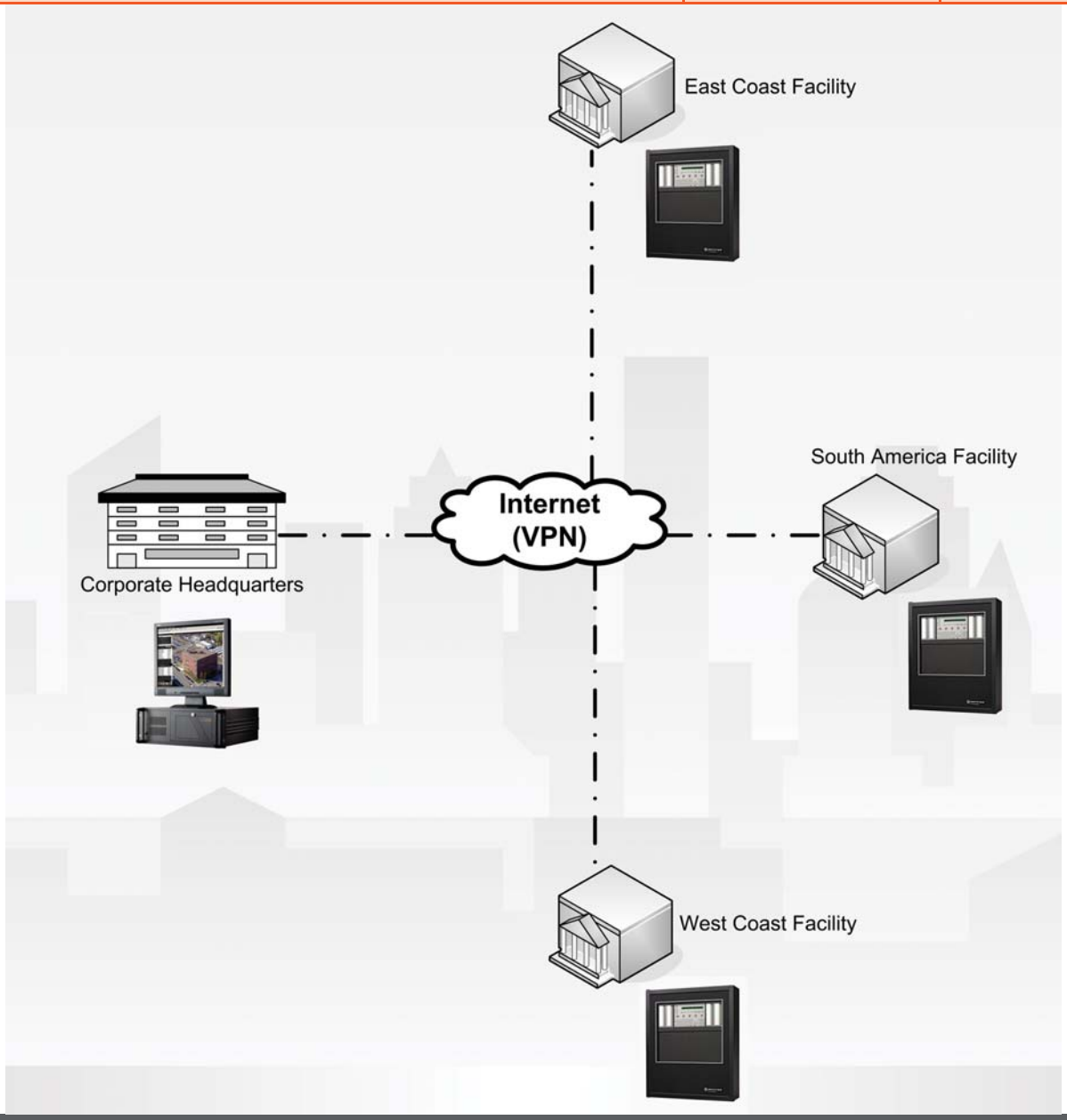
RESTRICTIONS:

Functionality	Restriction
Infrastructure	Must have a static IP address. DHCP is not supported.
Infrastructure	Web access via an HTTP proxy server is not supported.

ONYXWorks - Embedded NFN Gateway for Remote Applications

NOTIFIER EQUIPMENT

Required	Data Sheet	Manual
ONYXWORKS	DN-7048	52342
NFN-GW-EM-3	DN-60499	53369
Standalone ONYX panel or NOTI-FIRE-NET™ network (5.0 or higher)	DN-6971	51584
Optional	**Data Sheet**	**Manual**
NCM-W/F for network applications with the NFN-GW-EM-3	DN-6861	51533
HS-NCM for High Speed Network Applications	DN-60454	54014



ONYXWorks & Business Networks

OVERVIEW



The ONYXWorks client/server architecture and Ethernet (TCP/IP) support allows for communications with monitored equipment over business Ethernet networks. Many types of connections are permissible for use with ONYXWorks for various networking applications. Modern and retrofit facilities have an Intranet setup throughout the building and in many cases an Internet connection. These networks are maintained by IT departments, which have their own policies and requirements.

APPLICATION NOTES

- Mid-size installations with two Workstations or a Workstation with an embedded gateway will typically use a dedicated Ethernet (TCP/IP) network using a single CAT 5 crossover cable connection. This connection is between the two workstations or workstation and gateway with a maximum distance of 280 feet. For longer distances or more components, standard CAT 5 cables are required for the dedicated Ethernet (TCP/IP) network along with a UL 864 Listed Switch.
- Large installations with multiple workstations and/or gateways can take advantage of a shared Ethernet (TCP/IP) network. Use existing CAT 5 cable and Ethernet ports in the facility to eliminate the need to install new network cable for ONYX-Works. A UL 864 Listed Switch is required between the business network and each ONYXWorks Workstation or gateway.
- Enterprise installations with multiple facilities have a private Ethernet (TCP/IP) network over standard Internet connections. These private Ethernet networks are made possible by VPN or Frame Relay System type connections that connect the remote buildings together using the Internet. Simple installs can include VPN Routers at each building and more complex installations employ the Frame Relay System.

A UL-Listed ethernet (TCP/IP) switch is required between a shared IP network and the ONYXWorks equipment. Contemporary Control Systems, Inc. (www.ctrlink.com) has several UL864 recognized switching hubs.

SYSTEM REQUIREMENTS

- Ethernet Network (Workstation, NetLogic, PC Monitor)

Port	Type	Direction	Purpose
25	TCP	Out	SMTP
123	UDP	Both	SNTP
2002	TCP	In	(China Only) Event access for the Remote Access Client
2004	TCP	NA	(Internal) Workstation Plug-in Access
2014	TCP	Out	Connection to DACR Gateway
2017	TCP	Out	Connection to NFN Gateway
2029	TCP	Out	Workstation Output Appliances (Signs)
4016	TCP	In	Database Import/Export
20016	UDP	Both	Detect other Workstations for Database Import
Typical Worst Case Sustained Bandwidth	200 Gateways	NA	3360 Bytes/Sec = 26800 Bit/Sec ~ 0.027Mb/Sec
Maximum Worst Case Sustained Bandwidth	200 Gateways + 50 Gw Audio	NA	617,580 Bytes/Sec = 4,940,640 Bit/Sec ~ 5 Mb/Sec

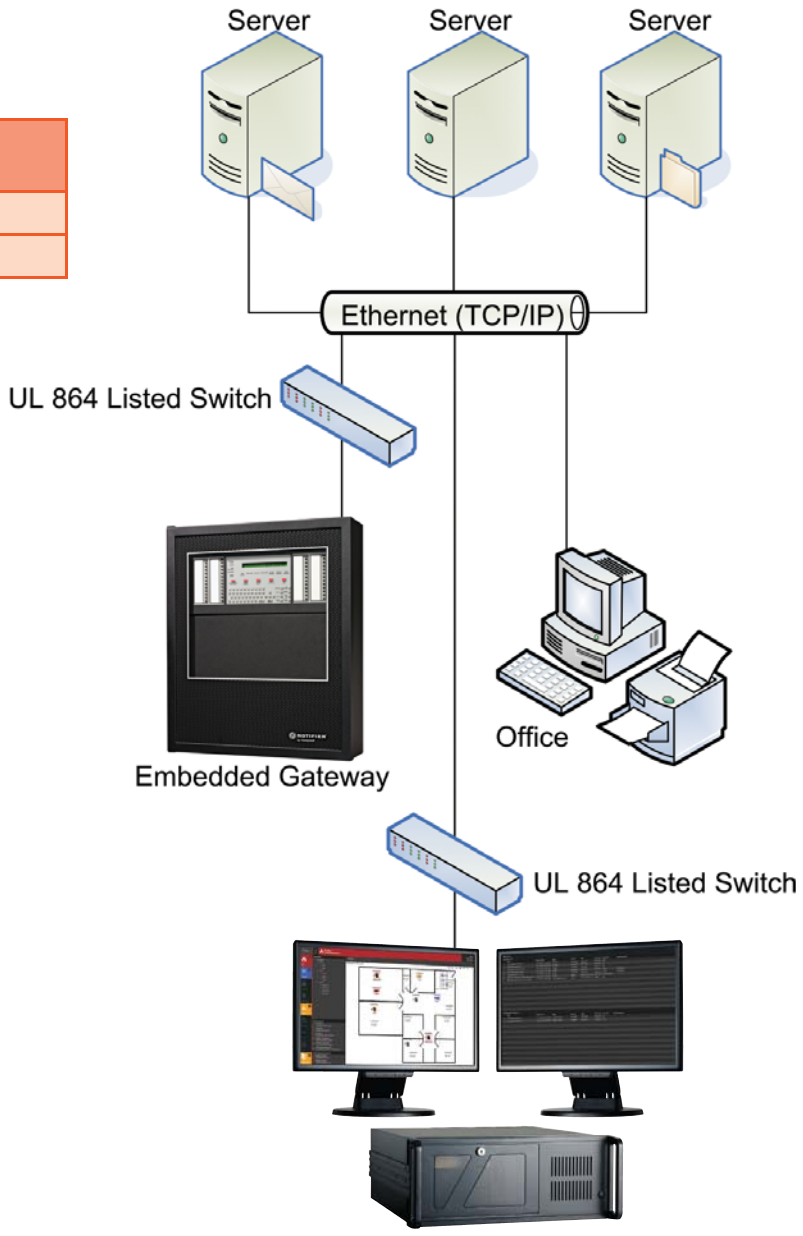
ONYXWorks & Business Networks

RESTRICTIONS:

Functionality	Restriction
Infrastructure	Workstations cannot access gateways or other workstations through Network Address Translation or IP Masquerading
Infrastructure	Must have a static IP address. DHCP is not supported
Infrastructure	Multiple IP Addresses are not supported, either due to multiple enabled network adapters, or due to a multi-homed adaptor.

NOTIFIER EQUIPMENT

Required	Data Sheet	Manual
ONYXWORKS	DN-7048	LS10050-000NF-E
NFN-GW-EM-3	DN-60499	LS10017-000NF-E



ONYXWorks Receivers Gateway

OVERVIEW



The Receivers Gateway is an intelligent gateway interface to digital alarm communicator receivers (DACR-GW) for the ONYXworks® facilities monitoring workstation. This gateway facilitates monitoring of all events transmitted by fire alarm and security control panels equipped with digital alarm communicator transmitters (DACT). The Receivers Gateway eliminates the need to add leased lines or Internet connections to many remote buildings and combine various fire alarm control panels onto a single platform.

APPLICATION NOTES

- Mid-size to large applications (e.g. Universities, Multi-Building Corporate Campus, etc) where integration to NON-NOTIFIER fire panels are required to be brought to one central monitoring workstation.
- Uses standard CONTACT ID format from Digital Alarm Commuincator Transmitters (DACT)

SYSTEM REQUIREMENTS

- ONYXWorks Workstation with DACR-GW software key function enabled
- Compatible Digital Alarm Communicator Receivers (see datasheet)
- Must be within 200' (RS-232 COM PORT to COM PORT connection)

NOTIFIER EQUIPMENT

Required	Data Sheet	Manual
ONYXWORKS	DN-7048	LS10050-000NF-E
DACR-GW (software key feature)	DN-7061	53208

PORTS:

Port	Type	Direction	Purpose
2014	TCP	In	Events and Commands
Typical Worst Case Sustained Bandwidth	50 Workstations	NA	2520 Bytes/Sec = 20160 Bit/Sec ~ 0.020 Mb/Sec

RESTRICTIONS:

Functionality	Restriction
Infrastructure	Must have a static IP address. DHCP is not supported.
Infrastructure	Web access via an HTTP proxy server is not supported.



ONYXWorks – NOTIFY-IP for Emergency Communications Systems (ECS)

OVERVIEW

NOTIFY-IP, an option in ONYXWorks, delivers and receives live voice messages via the internet and is used for mass notification over the building's fire alarm speakers. Control is not permitted over non-contiguous properties (or the Internet per ULC) unless approved by a local AHJ. NOTIFY-IP distributes real-time audio messages during emergency situations via Internet to local, national, and international facilities. This feature will reduce the risk of mass casualties by notifying building occupants of threats and what should be done in response to those threats.

APPLICATION NOTES

- Government and corporate installations can monitor events, perform maintenance functions, and send live, global voice instructions to remote buildings for life preservation via the Internet during an emergency with NOTIFY-IP. NOTIFY-IP (mass notification solution) is a feature of ONYXWorks used during a security or other emergency via the Internet for paging citywide, nationwide, or worldwide.
- NOTIFY-IP is a software/hardware feature for applications where UL2572 is required for Emergency Communication Systems. Includes a UL approved PC microphone, audio card and the ability to show the status of ALL audio zones.
- NOTIFY-IP-NOUL is a software feature for paging to Fire audio zones where U2572 is not required. No special hardware is required.
- Paging is allowed up to 50 simultaneous gateways.

SYSTEM REQUIREMENTS

- Ethernet Network (Workstation, NetLogic, PC Monitor)

Port	Type	Direction	Purpose
25	TCP	Out	SMTP
123	UDP	Both	SNTP
2002	TCP	In	(China Only) Event access for the Remote Access Client
2004	TCP	NA	(Internal) Workstation Plug-in Access
2014	TCP	Out	Connection to DACR Gateway
2017	TCP	Out	Connection to NFN Gateway
2029	TCP	Out	Workstation Output Appliances (Signs)
4016	TCP	In	Database Import/Export
20016	UDP	Both	Detect other Workstations for Database Import
Typical Worst Case Sustained Bandwidth	200 Gateways	NA	3360 Bytes/Sec = 26800 Bit/Sec ~ 0.027Mb/Sec
Maximum Worst Case Sustained Bandwidth	200 Gateways + 50 Gw Audio	NA	617,580 Bytes/Sec = 4,940,640 Bit/Sec ~ 5 Mb/Sec

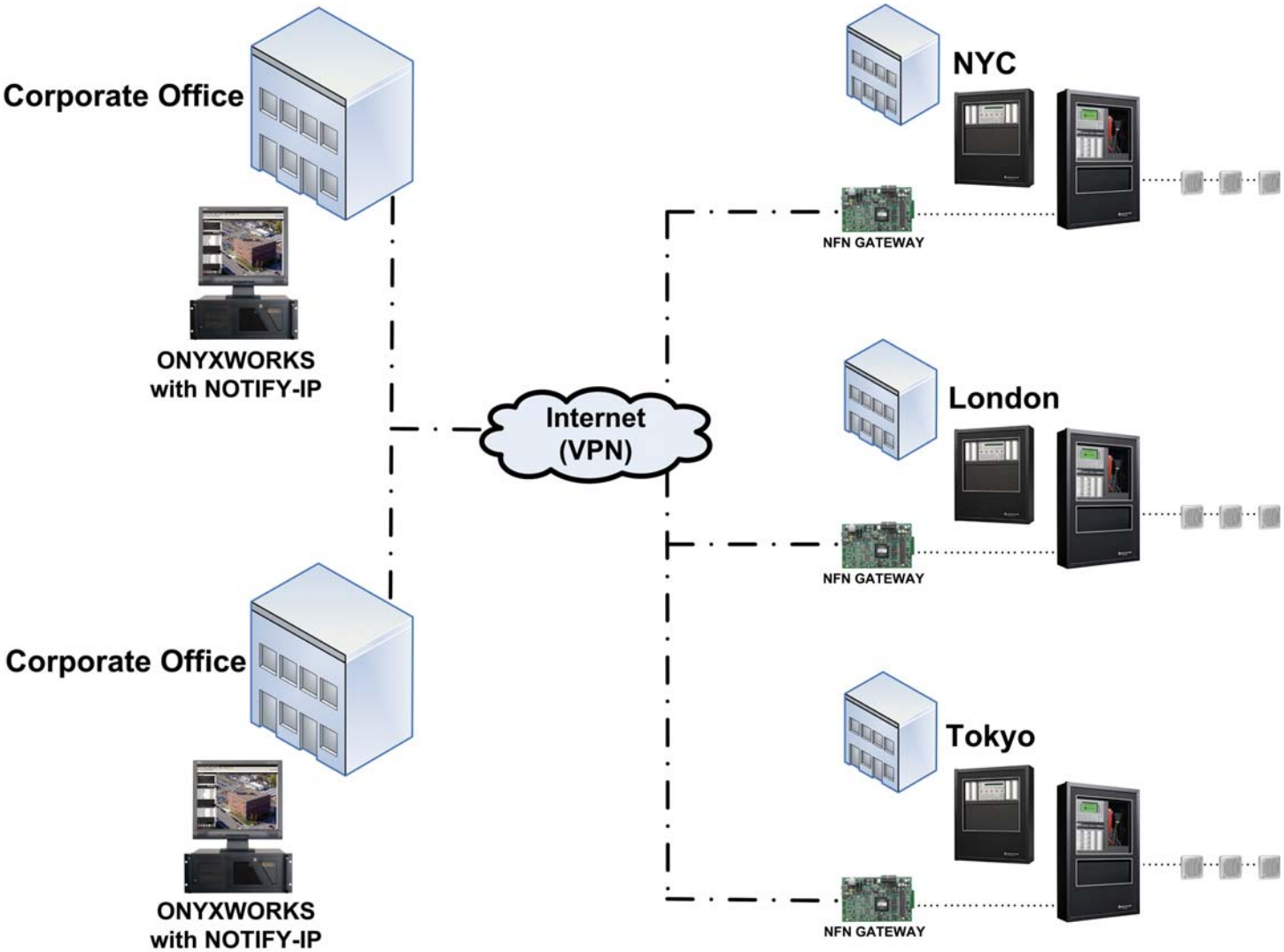
RESTRICTIONS:

Functionality	Restriction
Infrastructure	Workstations cannot access gateways or other workstations through Network Address Translation or IP Masquerading
Infrastructure	Must have a static IP address. DHCP is not supported
Infrastructure	Multiple IP Addresses are not supported, either due to multiple enabled network adapters, or due to a multi-homed adaptor.

ONYXWorks – NOTFY-IP for Emergency Communictions Systems (ECS)

NOTIFIER EQUIPMENT

Required	Data Sheet	Manual
ONYXWORKS	DN-7048	L10050-000NF-E
NOTIFY-IP	DN-7048	53620
NOTIFY-IP-NOUL	DN-7048	L10050-000NF-E
Optional	**Data Sheet**	**Manual**
NFN-GW-EM-3	DN-60499	LS10017-000NF-E
NCM-W/F for network applications	DN-6861	51533
NOTI-FIRE-NET network (5.0 or Higher)	DN-6971	51584
HS NCM for High Speed network applications	DN-60454	54014
High Speed NOTI-FIRE-NET	DN-60455	54013



* Live Voice paging to a maximum of 50 gateways simultaneously.

LEDSIGN-GW and OAX2-24V for Emergency Communictions Systems (ECS)





OVERVIEW

The LEDSIGN-GW Sign Interface is a key part of an Emergency Communications System (ECS). The LEDSIGNGW monitors events on one or more NFN network(s) and generates appropriate messages for up to ten OAX2-24V LED Displays. The NFN networks communicate with the LEDSIGN-GW Sign Interface through NFN Gateways over TCP/IP. Multiple sign gateways can communicate on the same NFN network if more than 10 signs are required.

The OAX2-24V LED sign is a UL-listed display that integrates seamlessly with NOTIFIER fire alarm control panels, NOTI•FIRE•NET networks, and ONYXWorks®. In the event of an emergency, the signs will automatically display emergency messages along with optional color changes that demand attention. These messages can be securely controlled from the NOTIFIER fire alarm control panel (FACP) through encrypted network protocols.

SYSTEM REQUIREMENTS

NOTIFIER Equipment

Required	Data Sheet	Manual
LEDSIGN-GW	DN-60679	LS10019-000NF-E
OAX2-24V	DN-60679	LS10024-051NF-E
NFN-GW-EM-3	DN-60499	LS10017-000NF-E
Optional	**Data Sheet**	**Manual**
NCM-W/F for network applications	DN-6861	51533
NOTI-FIRE-NET network (5.0 or Higher)	DN-6971	51584
HS NCM for High Speed network applications	DN-60454	54014
High Speed NOTI-FIRE-NET	DN-60455	54013

SIGN INTERFACE

Ports:

Port	Type	Direction	Purpose
22	TCP	Out	SSH connection to sign
80	TCP	In	Web Based Configuration
123	UDP	Out	SNTP
443	TCP	In	HTTPS Communications
2029	TCP	In	Communications from Workstation
4016	TCP	In	Upgrades

Restrictions:

Functionality	Restriction
Infrastructure	Must have a static IP address. DHCP is not supported
Infrastructure	Web access via an HTTP proxy server is not supported

The CAP Gateway for Emergency Communictions Systems (ECS)



OVERVIEW

The CAP (Common Alerting Protocol) Gateway is a UL-864 listed product for supplementary use that is a key part of an Emergency Communication System (ECS) which integrates seamlessly with NOTIFIER fire alarm control panels (FACPs) and NOTI-FIRE-NET™ (NFN) networks.

APPLICATION NOTES

- The CAP Gateway translates zone activations on a NFN network or a high-speed NFN network to industry standard CAP messages for CAP-compliant consumers. The information is then presented to a third party's Distributed Recipient Mass Notification System (DRMNS) as part of a multi-modal approach to emergency notification as defined by NFPA 72, chapter 24.
- The CAP messages are made available in multiple source types, which can be read by CAP compliant consumer supporting transit via atom feeds or HTTP directory listing.
- Complies with CAP version 1.2

SYSTEM REQUIREMENTS

NOTIFIER Equipment

Required	Data Sheet	Manual
CAP-GW	DN-60756	LS10021-000NF-E
NFN-GW-EM-3	DN-60499	LS10017-000NF-E
Optional	**Data Sheet**	**Manual**
NCM-W/F for network applications	DN-6861	51533
NOTI-FIRE-NET network (5.0 or Higher)	DN-6971	51584
HS NCM for High Speed network applications	DN-60454	54014
High Speed NOTI-FIRE-NET	DN-60455	54013

CAP GATEWAY

Ports:

Port	Type	Direction	Purpose
80	TCP	In	Web Based Configuration
123	UDP	Out	SNTP
443	TCP	In	HTTPS Communications
4016	TCP	In	Upgrades

Restrictions:

Functionality	Restriction
Infrastructure	Must have a static IP address. DHCP is not supported
Infrastructure	Web access via an HTTP proxy server is not supported

NOTIFIER®
by Honeywell

For over **60 years**, NOTIFIER has been a **leader** in the fire alarm industry. Today, we are the **largest manufacturer** of engineered fire alarm systems with over **400 distributors worldwide**, and regional support operations on **every continent** for the flexibility and options your business needs.

NOTIFIER – Fully Connected, Fully Protected.

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