



IEC Systems is a distributor of Quark Communication's InetSupervisor Building Automation System "front-end" software package and hardware platforms. This is a software suite that was developed using industry standard web server, database and web animation components that provides an end-to-end Building Automation solution. The LNS LonWorks driver is a direct software driver to the LNS database for maximum compatibility and performance. It provides no hard coded limit to the number of points monitored. InetSupervisor is listed on IEC Systems' Federal Supply Schedule GS-07F-0468T. Additional unlimited number of points can be added via licensing upgrade without requiring additional software installation. The total number of clients as well as the number of clients simultaneously accessing the server is unrestricted without any licensing upgrade, depending on PC hardware limitations.

Users can seamlessly integrate LONWORKS, BACnet IP, and OPC (for Modbus and other protocols) to provide a unified real-time controls network. The suite includes a browser-based (e.g. Windows Internet Explorer, etc.) HMI/Web Intranet front end allowing users to view and manipulate underlying systems. InetSupervisor provides the ability to create a customized user interface that combines intuitive navigation screens with dynamic, real-time displays. Third party graphic images such as png, swf, jpegs, and gif files can be used in the creation of the GUI. The Team will use Dreamweaver and Flash to create the GUI. Unique software technology eliminates the need for page refreshes thereby minimizing required bandwidth. InetSupervisor is designed based on standard IIS web server, MS.NET framework, SQL Database server, and direct LNS drivers for unsurpassed scalability.

Animated graphical web pages will be developed for the building operators to manage the HVAC controls. From floor plan layouts and/or individual pages for each piece of equipment or systems, the operator will be able to implement time schedules, manually start and stop equipment, change set points (temporary or permanent), examine real-time and trended data for trouble shooting, acknowledge and reset alarms and generate reports.

### **Powerful Alarm Handling**

Comprehensive alarm-handling capabilities make InetSupervisor ideal for multi site remote monitoring applications. All alarms are accessible via a web browser. Customized reports and alarm routing can be programmed providing unprecedented flexibility. Alarm panels can trigger graphics as required. Alarms can be directed to:

- Facsimile - optional
- E-mail
- Cellular or digital phones
- Pagers
- Other PC's running a web browser

Alarms can be filtered into different user-definable panels so that alarms from multiple sites or various types of plants can be managed separately.

### **Ultimate Programmability**

InetSupervisor supports VB, Java, ASP scripting, and ASP.NET, which provides ultimate flexibility. This powerful extension of the system allows alarms to be processed, calculations to be made, and project specific functions to be incorporated. Links can also be created to other software, such as Microsoft Excel™, MAXIMO, etc., offering comprehensive and flexible reporting facilities that can be automatically updated. Custom screens can be developed directly at the server or remotely via the WAN or the Internet.

### **Security**

InetSupervisor Security borrows from the operating system. The security can be set up based on Windows XP Pro and Windows 2003 Server login and/or entries in the database. All operations can be logged with user ID, access level, and time.

### **Minimal Training**

Although extremely powerful and full of cutting edge features, an essential requirement for the development of InetSupervisor was simplicity of operation. Preprogrammed web pages are available for alarm handling, trending, point override, and point monitoring.

No costly training courses are required - just sit down and get started immediately. The CD includes step-by-step installation instructions. Your staff can support the InetSupervisor application immediately with minimal training required. This is accomplished by using industry standard database and web technologies.

### **Wireless Access**

Wireless access is supported via a Pocket PC. An engineer, for example, could gain access and manage the site remotely, without the need to use a computer. A user could adjust the comfort settings of his office or adjust the lighting via a Pocket PC. Network management functions are available for HVAC system air-balance, set points, reading and writing network variables.

### **Legacy Systems Interface**

New to version 2.6 InetSupervisor is the support of over twenty legacy system interfaces, which include Alerton, Automated Logic, Andover, Delta, Honeywell, Johnson Controls, Novar, Staefa, Siemens, Solidyne, Trane, Power Logic, Veris, and Acromag. Protocol translators are based on EnFlex technology. InetSupervisor communicates with EnFlex gateways via TCP-IP protocol. Network variables can be shared among legacy systems, LonWorks systems and the client browsers. InetSupervisor server can be used for trending, scheduling, commanding, and reading legacy system variables.

### **Designed for LonWorks™**

InetSupervisor is supplied with a direct LonWorks LNS driver, for seamless integration of LonWorks controllers, which are available from many manufacturers. LNS database import is automated for simple 'points' setup.

### **Scheduling**

An unlimited number of schedules are available. For each schedule, there is a regular schedule (which can include Optimum Start), a Holiday schedule and a Temporary schedule. Each point can have up to fifteen schedules assigned. Override schedules are designed for short term scheduling such as tenant-initiated after-hours occupancy.

### **Trending**

There is Trending capacity to store up to 6,000 trend samples every minute for 10 years.

### **Peak Demand Control**

The Electric Meter will be monitored and real-time peak demand control will be implemented for the building. InetSupervisor can communicate over TCP/IP networks using XML/SOAP, OBIX and/or WCF. When connected to the Internet, WAN or wireless, real-time feeds from the Utility Company will allow real-time pricing and Demand Response applications.

## **Reports**

Custom reports will be developed for Electrical Power Usage, Electrical Peak

Demand Predictions, Alarms, Overrides, and Equipment Usage. These reports will mostly be developed as sophisticated EXCEL spreadsheets.

## **XML and SOAP**

InetSupervisor is built on the Microsoft .NET platform with XML SOAP as an integral part of the architecture. XML SOAP Web Services are used for communication with external applications. External applications can read, write, schedule, check alarms, retrieve trends, etc. via XML SOAP calls.

## **Versatile System Architecture**

There are several ways to attach InetSupervisor to the controls network. If the MS Windows XP machine running InetSupervisor was installed within close proximity to a FTT-10 (CEA-709.1B) network in which the network can be routed to the PC and a network interface card or USB device allows the network to be attached directly to the PC. Some buildings require more nodes than allowed by FTT-10 protocol standards, or the distance between devices is greater than allowed the Team would utilize FTT-10 to IP-852 Routers. This is where InetSupervisor shall be virtually connected to the CEA709.1B (FTT-10) network via the IP-852 router installed and the InetSupervisor is directed to gather information from this point via TCP/IP connection. Multiple routers may be used for expansion throughout a large building or complex. In this mode the PC running InetSupervisor is not limited in location in any way other than being required to be on the same TCP/IP network as all the IP-852 routers to be included in the LNS network. (i.e. The front end could be in any building on an installation and communicate across existing TCP/IP infrastructure to the controllers located in a building controlling and reporting HVAC systems and subsystems within the building.)

## **Enterprise Mode**

The enterprise mode for InetSupervisor/RHEA brings exciting new features to the industry. For the first time you can fully distribute LonWorks LNS networks including the LNS itself. Gain performance of a 'small network' on a large or very large network. Keep the simplicity of a small network no matter how large the network gets. Gain all advantages while still keeping the OPEN LNS networks and open architecture throughout. This architecture maximizes network speed and functionality by replacing the IP-852 routers with Rhea's (small embedded XP computers running the InetSupervisor software creating multiple small databases that are updated on a more frequent basis. The enterprise server (a properly equipped MS XP or MS Server 2003 machine running the InetSupervisor software) shall be directed to export the data from the distributed databases

utilizing standard data transmission protocols for TCP/IP networks into one centralized database for a complete view of the entire installation. Trends, alarms, and reports can be generated and viewed from the enterprise level as well as each distributed location. In this instance, all software used by the Team shall reside on the enterprise level machine with the Team configuring each software component for use on the entire system.

Advantages:

- When LNS databases are kept small the performance is exceptional.
- On a large network the small and distributed databases are much easier to manage especially when different integrators take care of different buildings or sites.
- XML, SOAP, WCF and OBIX work very well over the Internet, WAN or wireless networks. They are not as sensitive to network timeouts and scale up very well.
- The enterprise level front-end can access all small networks simultaneously using multi-threaded architecture.
- Each small RHEA network can exchange point values peer to peer with another RHEA network or the enterprise server.
- Enterprise traffic is placed on high speed TCPIP network using open standards such as soap/xml, WCF, OBIX.
- Web browsing, scheduling, trending still works the same as if you were on a single small network. You can issue a single click 'snow day' holiday command, etc.
- All LNS networks still can be managed from a single location by logging in as a Light Weight LNS Client.
- The RHEA takes place of a LonWorks router or RNI.

Notes:

XML – standard way of transferring data by structured text. It's a human readable format that is also cross platform compatible.

SOAP – way to use XML to serialize objects.

WCF – Windows Communications Foundation builds up on SOAP and XML and provides security, encryption, and two-way data exchange. WCF also allows to for easy switching from text to binary protocol for high performance boost.

OBIX – standardizes how we use XML to communicate automation system information.

The enterprise device (a properly equipped MS XP machine running the InetSupervisor software) shall be directed to export the data from the distributed databases utilizing standard data transmission protocols for TCP/IP networks into one centralized database for a complete view of the entire installation. Trends, alarms, and reports can be generated and viewed from the enterprise level as well as each distributed location. In this instance, all software used by the Team

shall reside on the enterprise level machine with the Team configuring each software component for use on the entire system.