1. Alerton Overview

Alerton recognized the benefits of BACnet and introduced the industry's first native BACnet system, BACtalk. This forward thinking is consistent with Alerton's rich history of technology innovation. BACtalk is BACnet implemented at all system levels.   From the remarkable Windows®-based operator workstations, to network controllers and routers, to central plant controllers. Even a complete family of unitary and zone controllers. Such a total BACnet-based system gives operators ultimate flexibility to integrate other BACnet-based systems and components.

A BACtalk system can fit buildings of any type or size, from office buildings, schools, and hospitals, to universities, factories, and military installations. And because BACtalk is based on BACnet, owners are assured of a system that will interoperate with systems of the future.

BACnet

The BACnet protocol is comprehensive in scope and complex in detail. Built upon an international standards base, it has undergone extensive revisions to accommodate solicited and unsolicited structural ideas from all sectors of our industry. As intricate as it is, however, BACnet's design readily permits future modifications by ASHRAE as building automation requirements change. As our industry, and Alerton in particular, embraces this significant and positive development in building automation, we look forward to serving our customers with even better choices and higher levels of quality facility management. BACnet opens the door to true systems integration.

BACtalk Highlights

Vivid Custom Graphics—3-D animation and colorful graphics respond to real-time data and provide easy point-and-click control. Customize displays for each site with graphics from CAD programs or scanned-in photographs, and images.

Versatile Architecture and Connection Options—Expandable architecture, BACnet-compliant Ethernet LAN, and point-to-point (PTP) serial and modem connections. Monitor and control multiple buildings or sites from a single location.

Energy and Time-saving Tools—Graphical setup of schedules, device manager, programming, trendlogs, reports, energy management, and operator activity logs. Extensive library of device and equipment diagnostic displays.

Campus and Wide Area Network Support—Supports native BACnet/IP for connections across intranets and enterprise-wide IP networks.

WEBtalk and the **BCM-WEB** provide Internet access to the control system that combines the powerful features of BACtalk with the familiarity of a web browser interface and the flexibility of TCP/IP connectivity. These give users site access to real-time building systems data from anywhere there is Internet access.

Customized Graphical Data Displays

Alerton control products are robust, easy to use, and innovative. Alerton's focus is on designing and building innovative products, but they never sacrifice ease of use or reliability. Envision for BACtalk is a comprehensive Microsoft Windows-based software package for managing the building automation systems. The Envision software is installed on a local PC workstation and acts as the main interface between the facility manage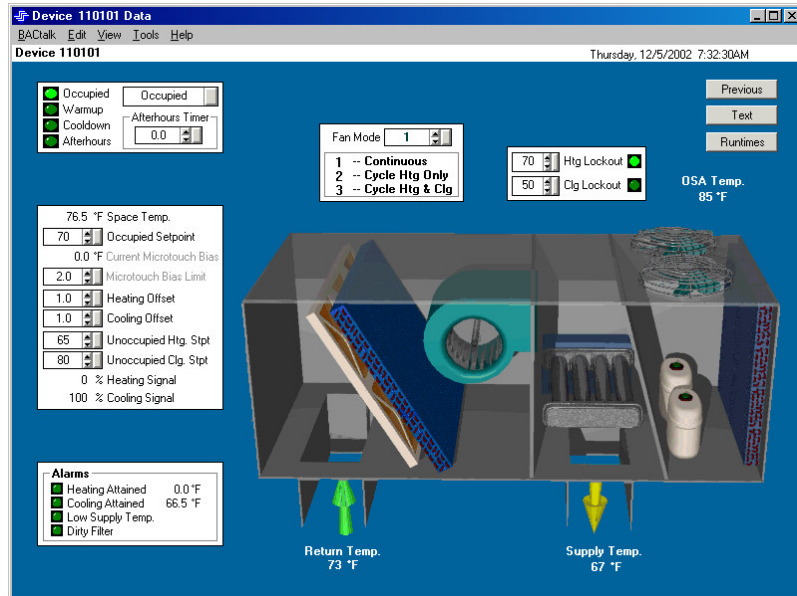r and the system. These data displays are customized for a user so that they can easily access site data in a way that makes sense to them.

Figure 1. Equipment Graphic Representation.

Envision for BACtalk is a powerful, easy-to-use, graphical workstation software program that allows users to view, monitor, and control all levels of a building management system. Envision for BACtalk gives facility managers complete control to manage individual or multiple sites throughout the world.
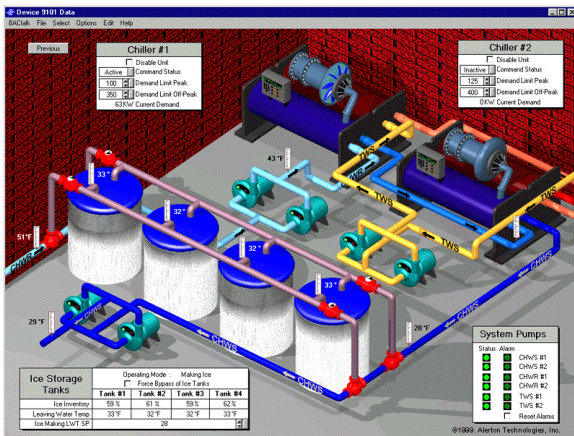

Figure 2. Boiler Loop Graphic

The Alerton Envision software uses 3-D animation and full-color graphics to display real-time data and energy management features. Customized as-built drawings, floor plans, and specific graphics of HVAC equipment for each site make it intuitive and simple to monitor and control the HVAC system. The menu structure, which was designed to closely follow Windows application conventions, enables operators to organize control inputs and outputs intuitively. Items on a display graphically depict equipment operation through animation, provide user feedback and control of operating parameters, or provide access to other data displays. Data displays are typically used to depict campus layouts, risers, floor plans, and central systems.

Alerton has designed their products to lead the industry in being cost-effective as well as dramatically improving energy efficiency and tenant comfort. In addition, they design products to be easy to install, maintain, and service. Alerton offers customized software packages that can be tailored for different specific application, monitoring, and control needs. Alerton provides solutions that create optimal comfort levels while using the least amount of energy.

Alerton BACnet System Architecture

The Alerton BACnet system architecture is designed to allow for seamless expansion and integration. In addition, the architecture is structured so to maximize communication speeds and limit bandwidth consumption.

The Alerton BACnet system architecture can be easily understood according to its four levels:

- The Management Level
- The Integration Level
- The Field Controller Level
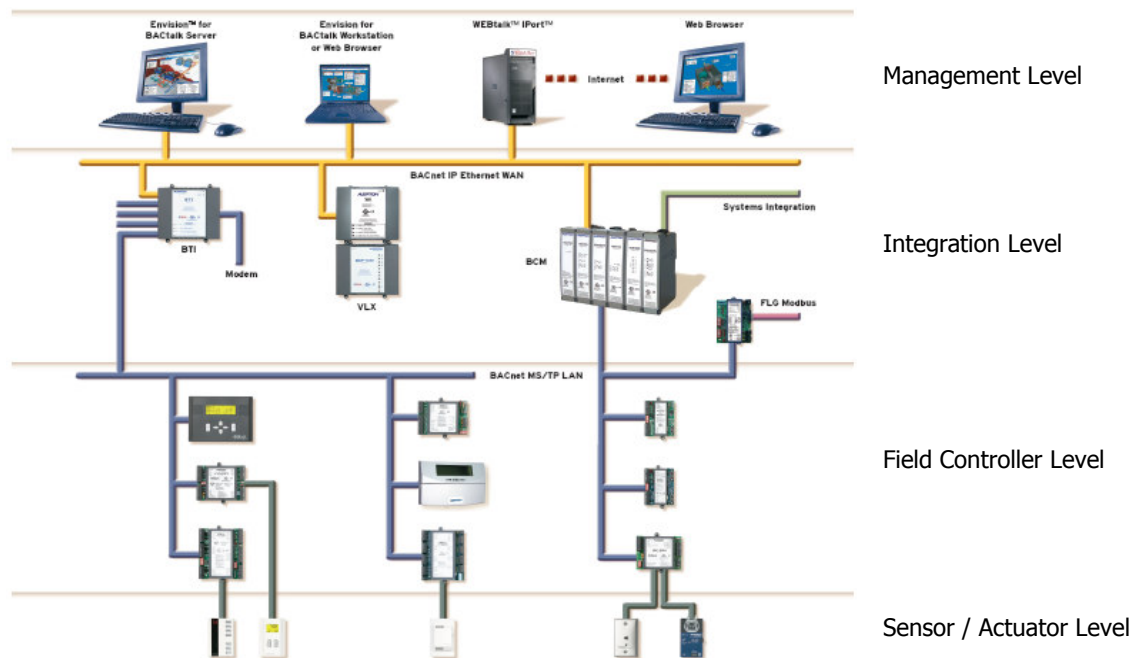- The Sensor/Actuator Level

Figure 3. Alerton BACnet System Architecture.

Network Connections:

Devices at the management and integration level communicate over Ethernet, with devices at the integration level supporting 10Base-T/100Base-TX connections using a standard RJ-45 jack. BACtalk systems are unique in their ability to utilize existing network infrastructures—fiber-optic cabling, switches, routers, security, firewalls, etc.—for BAS communications.

BACtalk's implementation of BACnet/IP enables operator workstations throughout a WAN to connect to the BAS as they would any other office application.

Devices at the field controller level take advantage of the low cost and reliability of the BACnet MS/TP LAN, which is based on a simple, twisted-pair, multi-drop EIA-485 configuration that runs at 76.8 Kbps.

Management Level:

The Envision for BACtalk software and operator workstations are representative of the management level. These easy-to-use, graphical tools provide access to real-time data and energy management features. The management level is where you set up, monitor, and control how your building works. One computer, usually of server-class hardware, functions as the server, with other workstations connected over an Ethernet LAN or WAN as necessary, and with customizable access privileges. Alerton offers scalable solutions from very small sites to very large networks utilizing SQL databases. Browser-based access is also available on a scalable basis with the Alerton Building Suite.

Integration Level:

Components such as global controllers and building controllers reside at the integration level. These intelligent BACnet programmable devices work with the components at the management level to implement control strategies for an entire facility or multiple sites. They are capable of stand-alone operation without connection to devices at the management level, if necessary, and have automation features to coordinate synchronization and data backups with operator workstations and other integration-level devices.

Field Controller Level:

Alerton field controllers (VLCs) are native BACnet logic controllers. These programmable devices support a range of applications to control equipment such as air handling units, terminal units such as VAV boxes, heat pumps, and air conditioning units. These units are fully capable of stand-alone operation.

Sensor/Actuator Level:

This level includes devices, such as sensors, which can serve as both tenant control centers and field service tools. Alerton's standard Microset and Microset II are examples of this type of device. The BACtalk system also supports traditional sensors and actuators commonly used in building automation.

Energy & Time-saving Tools

Application Programming

All BACtalk controllers are capable of custom programming created with Alerton's exclusive graphical programming language, VisualLogic®. Time spent programming application sequences for one controller can be leveraged into other controllers.

The VisualLogic programming environment is based on the familiar Microsoft Visio platform, so users can intuitively navigate the menus. It offers a completely Graphical DDC Authoring Environment. Users can drag, drop, and link a versatile library of more than 40 Direct Digital Control (DDC) functions.
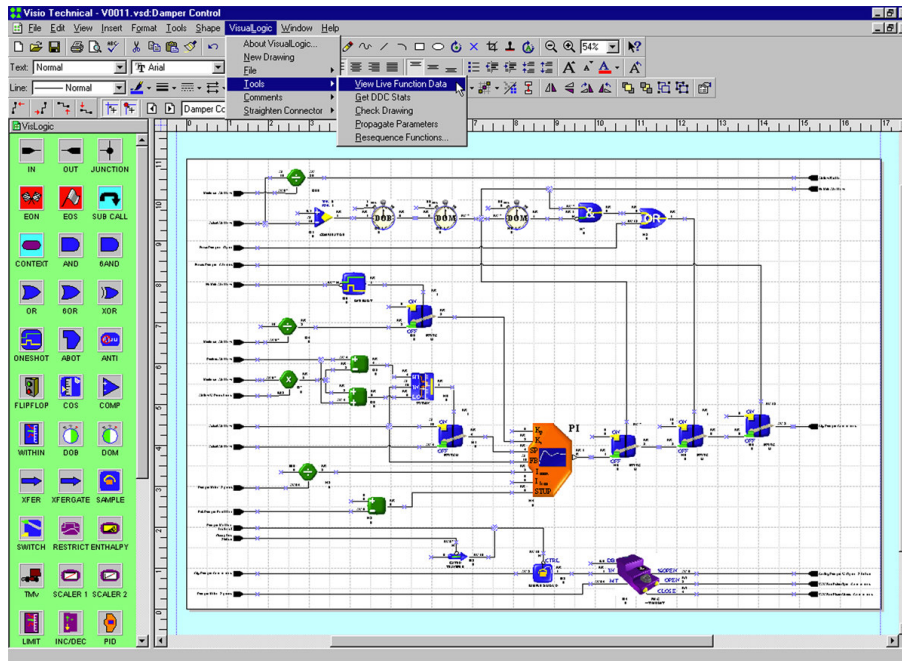

Figure 4. VisualLogic programming sequence.

With VisualLogic, the documentation is finished along with your program. Simply print the VisualLogic drawing. Even add comments, which are saved with the program, and then export them to generate a sequence of operations automatically.

If desired, you can manage DDC files on disk and in field controllers. With a click of the mouse, operators can send DDC directly to BACtalk controllers. You can also read DDC from BACtalk field controllers—VisualLogic recreates the drawing for you.

VisualLogic reads data in real time directly from BACtalk controllers and displays values live as the DDC executes, helping operators to test and verify sequences.

An extensive pre-programmed application library is at an operator's fingertips. Users can search by key words to find factory-developed DDC for common system applications—variable air volume (VAV), hydronic heat pump, central plant, and more. Load the program that most closely fits your application and make minor adjustments. Days or weeks of programming work is reduced to hours, if not minutes.

Time-saving developer tools enable users to check the program for errors, automatically assign I/Os, check memory usage, and more. A full complement of developer tools helps you deliver high-quality, debugged DDC programs the first time.

Device Manager

Device Manager is a BACtalk feature that helps users identify the location and function of all of the devices in a facility and then manage their operations. Device Manager presents devices in a simple, tabular format, making it easy to manage devices and programming at-a-glance, without having to learn advanced database and programming techniques.

Figure 5. Device Manager table, showing a list of device descriptions
and the DDC application associated with them.

Device Manager is a powerful and easy tool for operators to manage devices. It greatly expedites the setup, checkout, and maintenance of controls equipment.

Trending

BACtalk systems offer an easy-to-use interface for trending. Data point histories can be viewed in either graph or tabular format, and customized for a users viewing and data preferences.
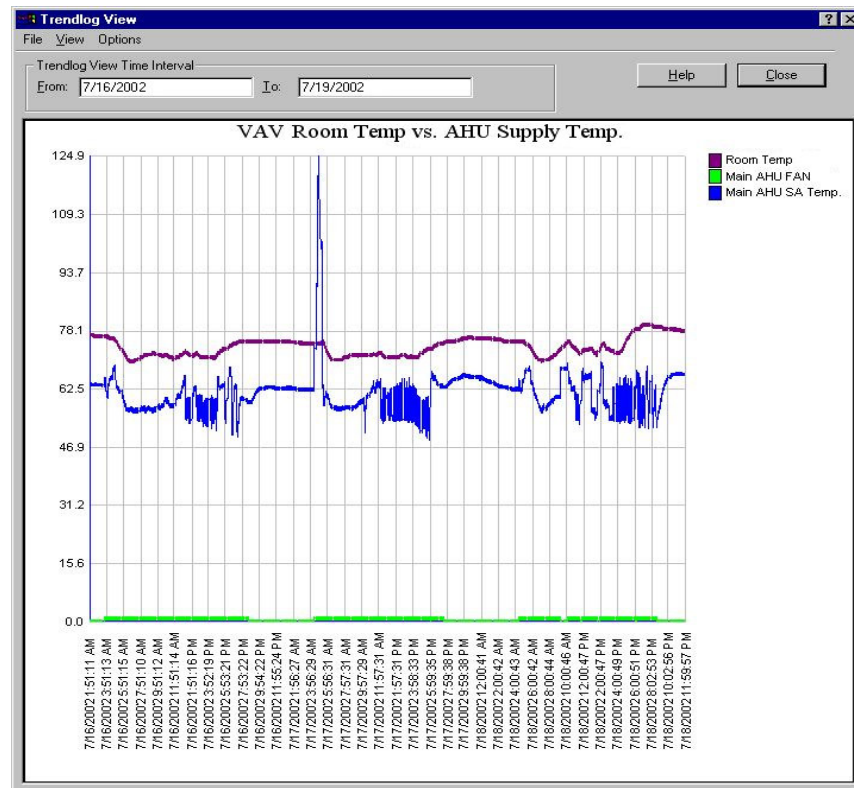

Figure 6. Trendlog Display

To set up a new trend log for a data point or view an existing data log, a user simply right-clicks an item on a data display and chooses Trendlog Manager.

Reporting

The Envision for BACtalk reports feature provides a quick way for users to set up and edit printed reports for a BACtalk system. If more sophisticated reporting is required, BACtalk supports an ActiveX interface to other Windows-based applications, which can be used to dynamically exchange BAS data with other analysis and reporting tools.

With the BACtalk reports feature, users can create a report for alarm histories, device summaries, energy logs, and trendlog variables. Users can also choose to output report data to a rich text file (*.rtf) or into Excel spreadsheet format (*.xls).

Users can structure a report for a particular set of variables using a filter. They can specify a print time and date, a print frequency, and the sort order of the variables within the report. The Report Generator uses Crystal Reports to generate reports. On large networks utilizing enterprise-level software and an SQL database, the reporting options are even more numerous with the added ability to use a multitude of 3rd party reporting tools designed for SQL databases.

Energy Management Features

Envision for BACtalk offers improved energy management system features to help facility managers control costs. These features include demand limiting, optimum start, and a tenant activity program.

Demand limiting allows building managers to monitor and shed energy loads as energy demand approaches a predetermined level. An operator can watch the demand limiting program work in real time. A dynamic graph shows loads being shed and restored and their effect on energy demand over time.

The optimum start feature tunes equipment start times to be most efficient given current operating conditions and past performance. Warm-up and cooldown operations start precisely when they need to for occupancy, thereby saving operating time and money.

The tenant activity feature helps facility managers track tenants or certain divisions in a building for after-hours equipment usage. The system automatically detects any after-hours tenant override in a zone and logs the activity by time, tenant location, and duration.

2. Product Data Sheets

Please see the following attached PDF Alerton Product Data Sheets for more details on the Alerton BACtalk product line and specifications.

- Envision for BACtalk
- Alerton Building Suite
- WEBtalk
- BACtalk Control Modules (BCMs)
- BCM-WEB
- VLX and VLX Platinum
- EXP's
- VisualLogic Controllers (VLCs)
- VisualLogic Display (VLD)
- FLG-7350 / T-7350
- Temperature Sensors