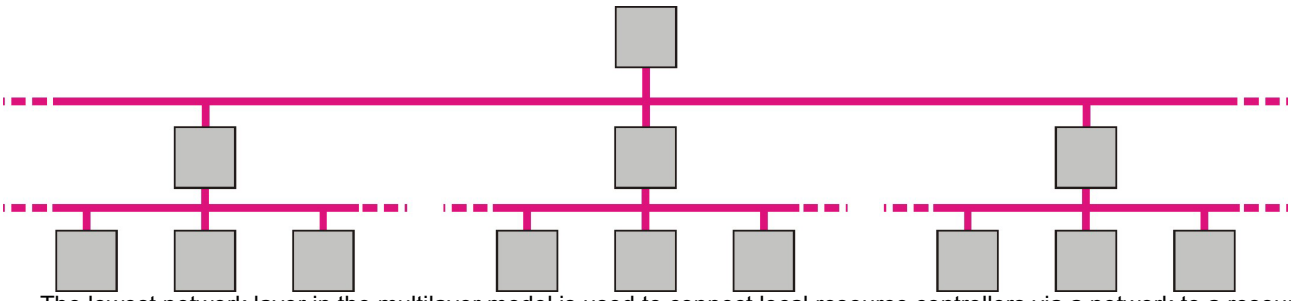
Introduction

The Multilayer Model

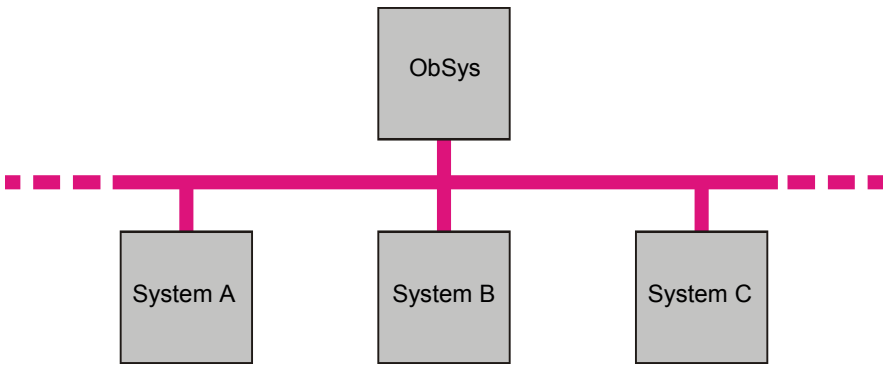
North Building Technologies Ltd. base all their products on a multilayer model, which allows the products to be connected together in a logical way. The model divides different areas of function within a building and links them with a network. Each functional area is again divided into areas, which are again linked with a network. This dividing and linking provides a scalable model, which can extend upwards to include international networks such as the Internet, and downwards to small networks for linking sensors together.



The lowest network layer in the multilayer model is used to connect local resource controllers via a network to a resource controller. The local controllers connect to sensors and actuators in the field, and perform a local control task, such as local temperature control, or local alarm monitoring.

ObSys

ObSys is a PC-based software package that connects to different control systems, communicates with each, and provides graphical views of information from the control systems for the user. ObSys can also be used to pass information onto the higher building-wide network, and add extra functionality to individual control systems.



ObSys Components

ObSys is a collection of different components that run on a PC. An engineer can build different control, interface, and monitoring solutions by combining the components in different ways.
ObSys consists of :-

ObServer, the central communications 'hub'

ObServer Modules, which add interface and enhancement functionality to ObServer

Object Database, which contains information on different types of objects

ObView, which provides both automatic and configurable display pages

Help Assistant, which provides a search facility on the different help documents

ObServer

The ObServer Application, normally called ObServer, is the central communications 'hub' to which all other object software attaches. Software wishing to access values from elsewhere sends it's requests to ObServer, which passes the request to the relevant place.

ObServer Modules

ObServer Modules (OSMs) plug in to ObServer and add extra functionality. Some OSMs connect control and monitoring systems to ObServer, some collect data from other OSMs for use later, some connect ObServer to high-level networks such as Ethernet, PSTN, etc.
The following list gives an idea of the range of functionality provided by OSMs. The complete list of OSMs can be viewed using ObSys Help Assistant – which is described below.
TrendIQ OSM connects ObServer to a Trend IQ Network, via a Trend CNC, and allows values from the IQ controllers to be viewed and modified
StfaNico OSM connects ObServer to a Staefa NICO, and allows values from AS1000 controllers to be viewed and modified.
PAC OSM connects ObServer to a PAC door access controller, and allows events on the PAC system to be passed to ObServer
TransMax OSM passes values from one place to another. Values can be read from any system and passed to any other system.
LogMax OSM collects data periodically from any system, and records the value to disk. Other object software can then view this logged data at any time
CalTimer OSM acts as a multiple time-switch, switching functions within any of the systems attached to ObServer
AlmAck OSM stores unacknowledged alarms, which can be acknowledged later by other object software
IpBus OSM connects several ObServers together via a TCP/IP network, allowing these ObServers to share any number of values
ObHttp OSM serves HTML to an intranet.
North Building Technologies Ltd. release new OSMs every month, so no complete list can be provided here as. The latest list is available at www.northcomms.com

Object Database

The Object Database contains information of every object accessible using ObServer. The database includes information on the types of objects that can be accessed within each different system, and views for each type of object. Object documentation is also held by the database.
Most of the object database is supplied with ObSys, but site-specific information, such as the number of devices on a network must be determined for the particular site, either by automatically scanning the object, or by manually defining the object.
The engineer can use the following applications to generate the database
ObSearch for searching for objects, and automatically generating the database
ObEdit for manually generating the database

ObView

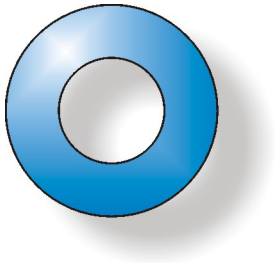
The ObView Application, normally called ObView, is the main display tool of ObSys. It uses the Object Database to determine the objects that are available, and builds views for these objects automatically. ObView can also display pre-defined views for objects. If necessary, the engineer can build new views for types of objects using ObView. These new views are stored in the Object Database, for use whenever necessary.
ObView uses a set of support applications, which have been written for use with specific types of objects. These include
LogView for viewing logged data
ObStream for providing terminal support for systems
AlmView for allowing the user to view unacknowledged alarms
Calendar for viewing and modifying day-type calendars

Help Assistant

The North Help Assistant application, Helper.exe is used to search for Engineering and User Guides. Filtering of keywords allows particular documents to be found quickly.
The Help Assistant uses the words of each available document to build a list. Type the first letters of a word shows documents with that word within their title. Double-click a document to view the document.

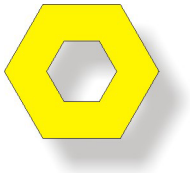
Example Solutions

ObSys can be used to solve many different problems. Some example solutions are shown below. The following symbols are used in the diagrams



ObServer Application

Symbol used to represent ObServer, to which all other object software attaches



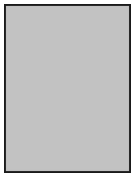
ObServer Module (OSM)

Symbol used to represent an OSM that is plugged in to ObServer. Some OSMs connect to external systems and perform protocol conversion between the system and ObServer; some OSMs connect only to ObServer but communicate with other systems

Connections and Links

Symbol used to represent a connection between different products, windows, applications and OSMs

Control/Monitoring Systems

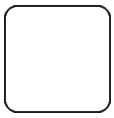


Symbol used to represent an external control or monitoring system

ObView Application

Symbol used to represent an ObView Application

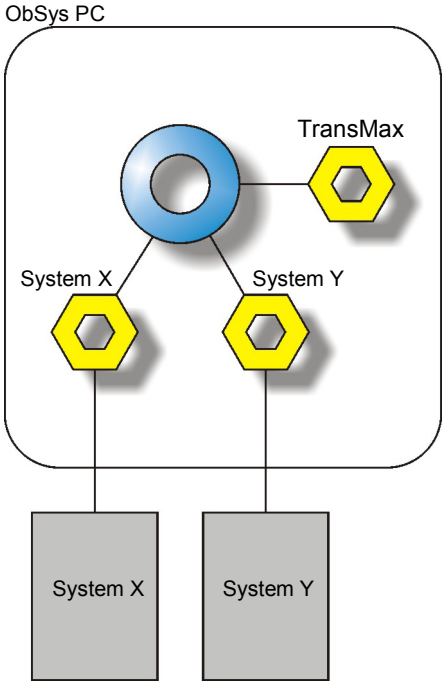
ObSys PC



Symbol used to represent the PC that ObSys is installed on

System Integration

Some OSMs are designed to link ObServer to an external control or monitoring system. They have protocol converters and internal tables as necessary to provide seamless conversion from one system to another.



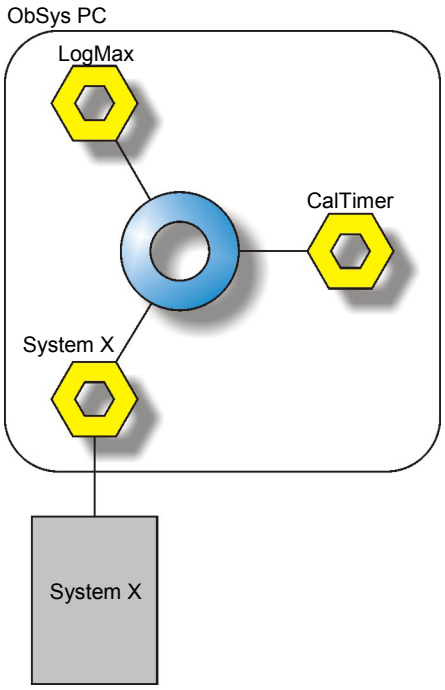
In this example, Observer is connected to System X using System X OSM, and System Y using System Y OSM, allowing ObServer to communicate with both. The TransMax OSM, which is also connected to ObServer, it is configured to request values from System X, and write the values to System Y.

The TransMax OSM can transfer up to 1000 values. More than one TransMax OSM could be added to increase the number of possible transfers.

Although this diagram shows only two systems, more can be added if necessary, as TransMax OSMs can transfer values from anywhere to anywhere.

System Enhancement

Some OSMs are designed to enhance other systems. If a control system has no time switches, this extra functionality can be added to ObServer, to compliment the control system.



In this example, ObServer is connected to System X using System X OSM. The CalTimer OSM has been pre-configured with normal week occupation times, and passes the occupancy state to System X. The LogMax OSM periodicaly reads and stores values from System X. If necessary the values can be archived.

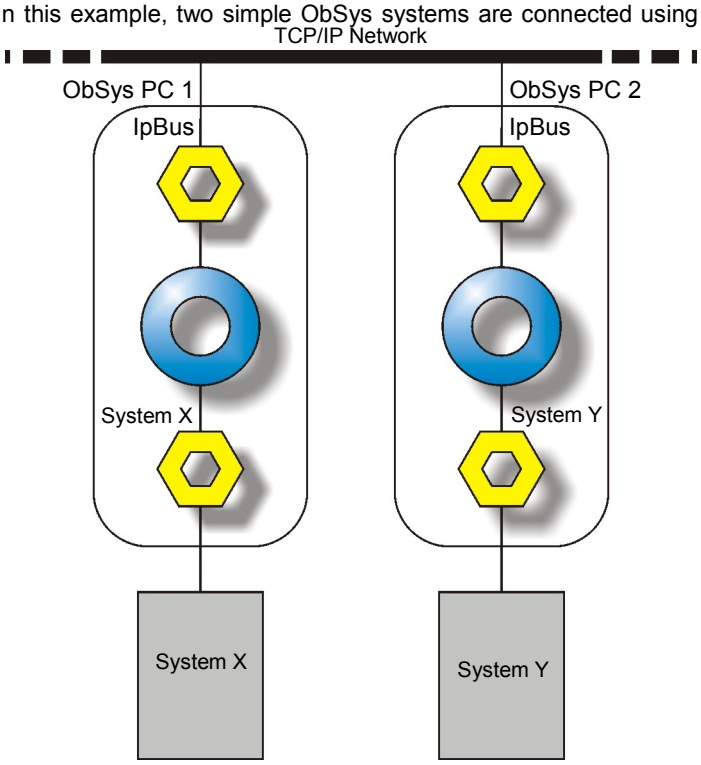
The CalTimer OSM provides up to 100 time-switched values, but if more are needed, another CalTimer OSM can be added to ObServer.

The LogMax can be configured to have from 1 log of 15000 readings to 30 logs of 500 reading – again, if more logging is needed another LogMax OSM can be added to ObServer

Links Across IT Networks

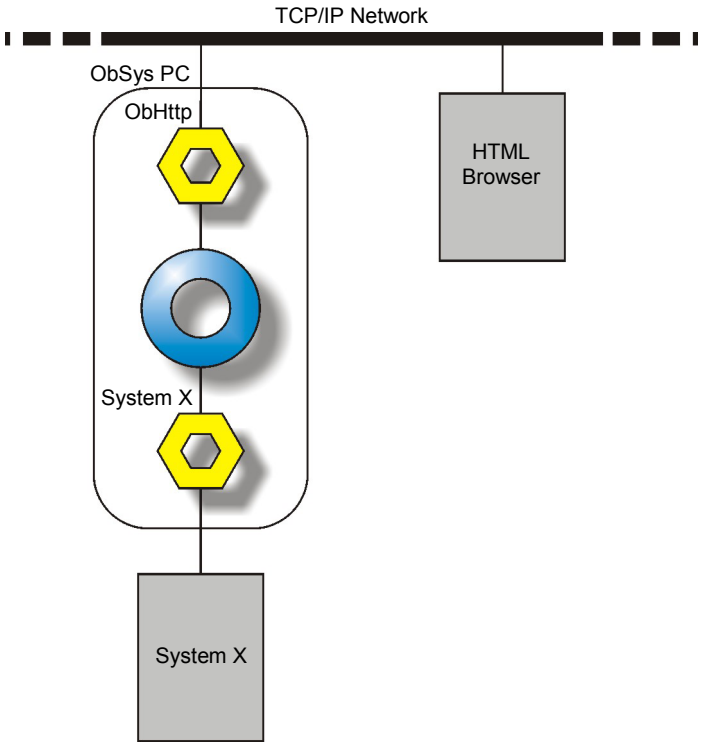
Some OSMs are designed to link ObServer to IT networks. If a control system is designed for local operation only, yet the requirements call for a link to It networks, then this can be performed .

In this example, two simple ObSys systems are connected using TCP/IP protocol. Any object requests from System X are routed by the ObServer in Platform 1 across the TCP/IP network to ObServer 2, and onwards to System Y. Similarly, any requests from System Y are routed through to System X.



Client/Server Solutions

ObSys can be used to build Server solutions for multiple client access. OSMs are available that act as HTML servers, allowing browsers, such as Microsoft Internet Explorer, to access information via ObServer.

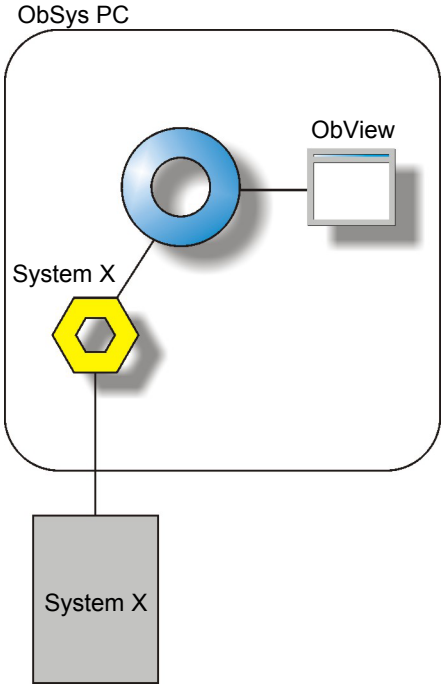


In this example, ObServer connects System X to the TCP/IP network. Pages of data from within System X can be viewed, and settings altered, using the browser.

If necessary, ObServer can connect to more that one system. ‘System Enhancement’ OSMs can also be added, and can provide extra data to browsers as needed.

Data Displays and Supervisors

ObServer and ObView work together to build display systems. Pre-defined views and new engineered views can be used together to display information to users.



In this example, ObView links to ObServer, and is used to view data from System X.

Several copies of ObView can be used at once, allowing the user to monitor different parts of the system. ObView can display data from any of the ObSys components connected to ObServer, including logger OSMs and calendar OSMs.

ObView can also be used to view data from other ObSys PCs connected via a network. This allows one ObSys PC to act as a server for another