



## Introduction

Opendiem is a suite of software applications designed to monitor and control the systems that keep your buildings running at peak efficiency while ensuring the comfort and safety of its occupants. The Opendiem Suite works with lighting and temperature control, energy management, physical security, alarm monitoring, digital video, industrial processes and more.

Based on proven communications standards and using existing IT network infrastructure, Opendiem allows building operators to access critical systems using a familiar web centric graphical user interface. Whether onsite, or working from a remote location manage your enterprise in real time from the internet using a web client like a standard web browser or terminal.



## Overview

The Opendiem Suite runs on your preferred Windows®-based hardware platform including 32- and 64-bit versions of: 10, 8, 7 Professional, Server 2012, 2008, 2003, or XP Professional. Building control systems communicate through *Opendiem Connect's* set of communication drivers. *Opendiem Engine* collects and manages the flow of data to a web client via TCP/IP including Alarming, Trending, and Time Schedules. Web-based graphical human machine interface (HMI) screens are created using *Opendiem Designer*.

# The Opendiem Software Suite

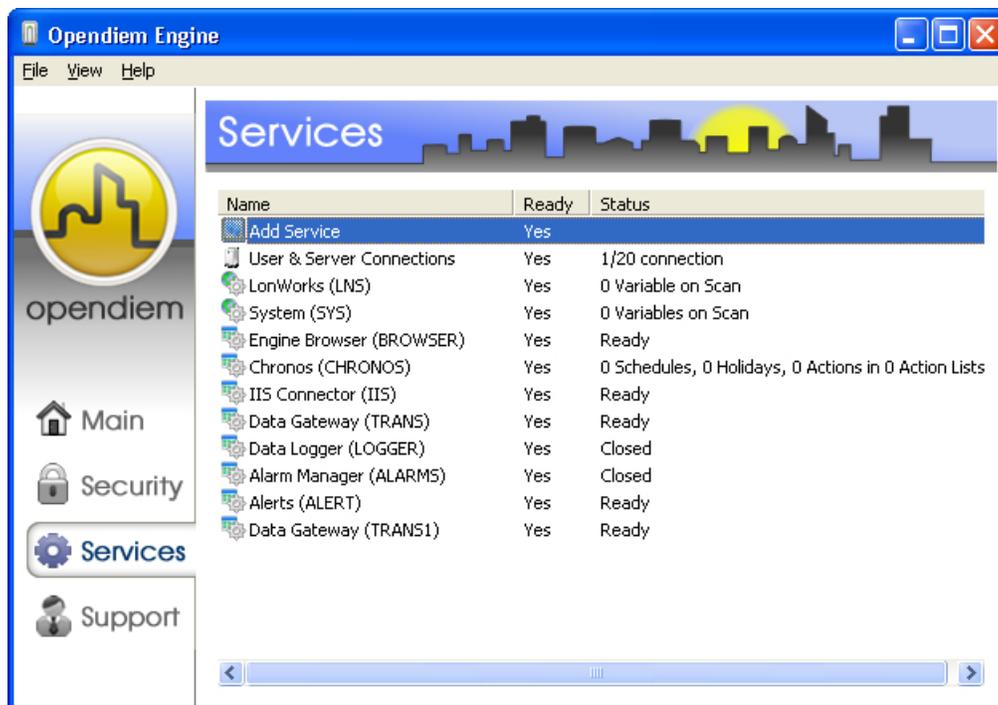


## Opendiem Engine

Opendiem Engine handles the flow of information between the connected services. All transactions between the Services are passed to the Manager, which then routes the information to the appropriate receiving Service(s) and web clients.

Typically, data is read from the communication drivers and passed through to the Web Clients and displayed as text, indicator lights, buttons and switches, or animated graphics. Security credentials ascertain user's permissions to read or write to selected data. Data may be read from the drivers and logged periodically into a database. Some data values may also be written to, for example by a user clicking a button or using a graphical slider on a web page. Other data values may be set periodically with a scheduled event by one of the scheduler services.

The Opendiem Engine can run one or more communications drivers providing access to many open, proprietary and legacy protocols. The architecture is based upon services that perform specific functions and run as separate tasks, ensuring that the performance of one service does not affect the others. This modular architecture improves reliability and maintainability of the system.



**The Opendiem Services Engine: For managing and configuring your data services.**

The Opendiem Web Client is a Java based application capable of running within any compatible web browser (i.e. Internet Explorer, Firefox, Chrome, Safari, and any browser supporting the Java Virtual Machine (JVM) see [www.java.com](http://www.java.com) for more information).

Smartphones and tablet computers with this capability can also interact with Opendiem and offer a useful mobile tool that enables operators to control and monitor buildings from any location. The Opendiem Web Client provides a Human Machine Interface (HMI) graphical presentation for simple and effective interaction with the connected controls systems. The client receives data from the Opendiem Server providing real-time updates of the controls networks in the web browser.

The application resides on the server where Opendiem is installed and is automatically downloaded by the web browser. This removes the need for any additional software to be installed on the client PC and allows for multiple, simultaneous users to access the system.

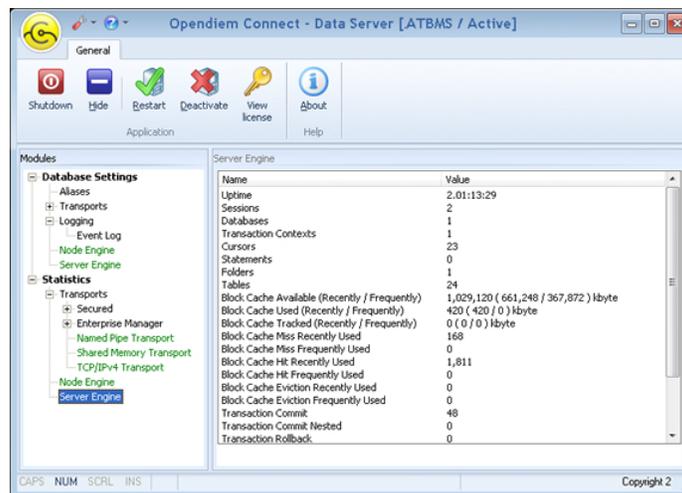
All transactions between the server and user are subject to security procedures that ensure the data on the system is protected from unauthorized access. . Data may be set to Read Only, Read/Write (full access) or no access.

Security is based on users and groups; each user has an individual profile (user name, logon ID, password, etc.) and may belong to one or more groups. Each group is then granted access to areas of the system as required.



## Opendiem Connect

Opendiem Connect provides the interface between the server, your building systems and connected devices (even other Opendiem Systems). The physical connection between the server and the building's systems can be Ethernet, Wi-Fi, Serial (RS232, RS485), USB, etc. and the server can be located on-site or at a secure off-site location (virtually anywhere).



**The Opendiem Connect Data Server maintains data flow to the Engine**

Software drivers allow Opendiem Connect to supply the Opendiem Engine with useful data. Drivers are available for: LonWorks (LNS), BACnet, OPC, Modbus, TAC I/NET, SOAP, XML, Siemens, Barber Colman, Invensys, Johnson Controls, Trend, SAIA and others.

## Opendiem Designer

Opendiem Designer is the project configuration and management tool that contains a wealth of features and allows integrators to rapidly build complete system web pages (HMI) for real-time monitoring and controlling of building systems.

Opendiem Designer incorporates all of the features needed to design and publish your projects through a simple drag and drop environment – without complex scripting or coding. Web screen elements have configurable properties such as color, position, style, image import and animation, assignable actions, etc.



## Client Services

### **Data logging of historical values**

The Opendiem Data Logger is a powerful distributed data collection, logging, charting, reporting and analysis system. The Data Logger provides all of the tools required to keep track of important information throughout your system.

- Web based data logger configuration with a wide selection of logging triggers.
- Data captured can be stored in Microsoft SQL Server®, Microsoft SQL Express®, Microsoft Access®, MySQL or any ODBC compliant database, locally or remotely across an IP network.
- Save reports and schedule runtimes.
- Track energy usage with eProfiler.

Web browser based data reporting and charting capabilities allow you to present the data in a wide variety of tabular and graphical formats.





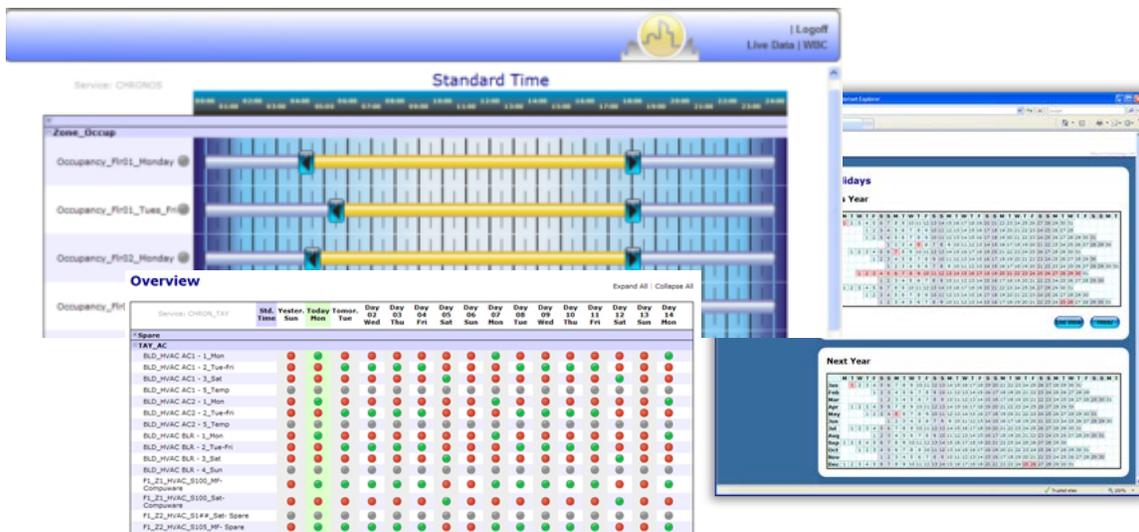
## Alarm and Alerts Management

Modern systems have the ability to generate a wealth of data to highlight impending problems or malfunctions. With Opendiem, both current and historic alarms can be viewed through any web browser for remote monitoring 24x7. Alarm handling is unified and synchronized through one cohesive alarm management system. With only one place to look, and the simplicity of a browser interface, maintenance is easier to implement and response to emergencies is more focused. Opendiem enables alarms to be grouped into classifications to better direct alerts to the appropriate responders. A variety of standard and custom filters allow you to view the alarms most important to you, without the clutter of lower priority events. Selectable features such as forcing the operator to enter comments when acknowledging an alarm, escalation of alerts to backup personnel, and hot links to operational procedures to follow for each alarm help ensure that alarms are correctly processed. Alerts are sent as emails and/or SMS text messages and configured using templates which can be easily tailored to provide all necessary alarm details to the operator.



## Scheduling

Scheduling is a key component for enabling the reduction of energy consumption and optimization of plant operation. The Opendiem scheduler contains the simplest user interface available; to adjust a time schedule a user simply drags the handles for the start and stop times. Schedules can contain up to four start/stop periods per day, each can trigger actions (e.g. turn an item on) or control whole sequences of events offering maximum flexibility. Temporary time scheduling enables the advance configuration of special events up to two weeks ahead, while offering the assurance that normal time settings will resume without further intervention from the user. A two-year graphical time planner allows holidays and special events to be configured ahead of time.



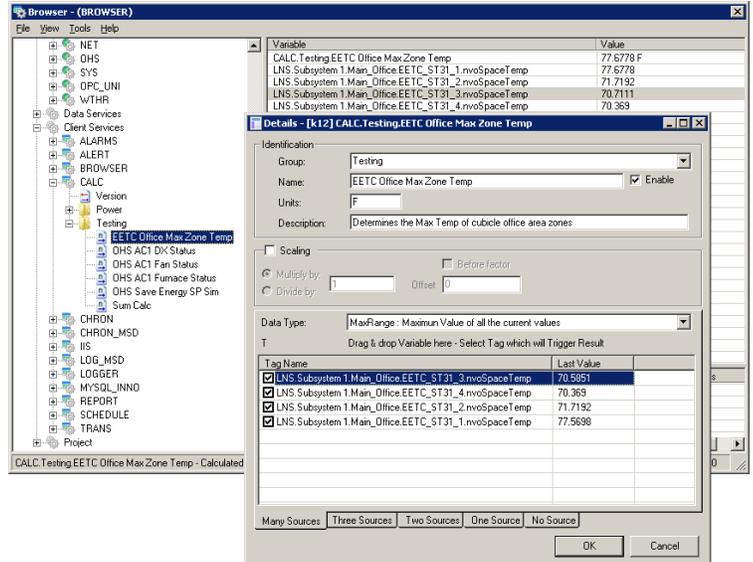


## Client Services

### Calculator

Perform advanced mathematical calculations on any system variable(s) resulting in a new data point for your system. From simple arithmetic to complex Boolean expressions and statistics, you'll be able to utilize your data in ways you only dreamed of before.

- Compare zone temperatures and return an average, or output the high or low zone temperature.
- Calculate and track kWh usage and energy costs from current sensors (amps).
- Show live carbon offset data on your web screens or public displays.
- Create ASCII or Unicode text from source variables.
- Calculate flow data from velocity pressure readings.
- Add, subtract, multiply, divide.
- Less than, greater than, scale, offset, format, compare, if-then-else.
- Cascade calculations together and more.



The calculator service runs within the Opendiem Engine. Calculated tags can be viewed using the Opendiem Engine Browser, trended in the data logger, monitored with the alarm manager, used as variables in additional calculations, and displayed on graphical web screens or WBC reports.

### Weather Service

Graphically display live and 5-day forecast weather data based on your Building Management System's zip code. Use data to trigger system startup times based on forecast high and low temperatures or expected precipitation to control irrigation systems.



Customize weather icons to display current conditions graphically on your BMS screens. Reliable weather data from weatherunderground.com® becomes a tag within the Opendiem system for monitoring, actionable control, trending, alarming, etc.

## System Configuration and Ordering

**Base system configuration includes:** Two (2) concurrent users; 125 tags; Opendiem Designer; Opendiem Engine; Alarm Manager; Alert Service; Browser; Data Gateway; Data Logger; IIS Interface for Web Based Configuration (WBC); Messenger; Reporter; Scheduler; Scrolling Charts; Standard Functions Data; CSV Read; DDE 50; Lonworks LNS; i.LON Driver; NetMon; OPC Client; Universal OPC Client (w/OPC XML-DA); Calculator; System Data.

**Configuration options:** Additional users (up to a total of 20); Lon Nodes; Additional tags; Secure Logon; Scripting Service (Java or Visual Basic); Peer to Peer Connections; eProfiler; Additional i.LON Services (up to 10, 2000 tags max); Additional copy of Designer.

**Intermediate Driver Options:** Modbus Driver; CSV Read + Write; DDE50 50+ Driver; SQL Data Driver.

**Advanced Driver Options:** Trend IQ1, IQ2, IQ3; Siemens Apogee, S600; TAC I/NET BMS and Security; Barber Colman Network 8000; Andover Infinity; SAIA Ether-S-Bus; SOAP/XML Web Service, WattTime, Skycentrics, Enphase, Energy Star, other APIs upon request.

For pricing and configuration assistance contact Building Clouds™ or your Authorized Opendiem Integrator

