

FasBAC for INNCOM User's Manual



A division of Fastek International Inc.
245 Riviera Drive
Unit 1
Markham, ON L3R 5J9
Canada
905.474.0909
www.afdtek.com

Table of Contents

Introduction	4
Theory of Operation	4
FasBAC Platform Requirements	5
Computer	5
Operating System	6
INNCOM Software Requirements	6
FasBAC for Inncomm Reinstallation or Upgrade	6
FasBAC for Inncom Installation	6
License Manager	8
Obtain the Machine ID	9
Install a License	9
Activate a License	10
Deactivate a License	11
FasBAC Configuration	12
INNcontrol Communications	12
BACnet Communications	12
BACnet Object Generation	13
Description of Operation	13
Monitoring and Control	15
Discovering Room Devices	15
Monitoring Room points	15
Monitoring INNcontrol Communications Status	15
Commanding Room Points	16
Global Outside Air Temperature	16
FasBAC Object Definition File	16
Structure of the Object Definition File	17
Editing the Object Definition File	17
Delete a Room	17
Add a Room	18
Delete a Point from a Room	18
Add a Point to a Room	18
Modify the Default Room Name	18
Modify the Default Point Name	19
Force a Room Auto Discovery Process	19
BACnet Communications Settings	20
BACnet Device IDs, BACnet Router Device Name, Network ID	20
Editing	21
Virtual Device BACnet Names and Point Object BACnet Names	22
Editing	24

WinP5PT Communications Settings	25
Starting and Stopping the FasBAC Service.....	26
Service Stop.....	26
Service Start.....	26
Automatic Start Enable.....	26
Automatic Start Disable	26
Licensing Troubleshooting	27
Event Log Troubleshooting.....	27
Normal Startup Events	28
AutoDiscovery Startup Events	28
WinP5PT Error Events.....	29
Configuration File Error Events	29
BACnet Error Events.....	30

Introduction

FasBAC for INNCOM (FasBAC) provides for integration of the INNCOM International Inc. INNcontrol system to BACnet BACnet/IP networks. The INNcontrol system provides Energy Management, Integrated Room Automation and Common Area Control for the global lodging, healthcare, and educational housing markets.

FasBAC is a Microsoft Windows application that runs in the background as a Windows service. It can be deployed on any Intel-based PC running a 32-bit Windows operating system.

Theory of Operation

The INNcontrol system is a standalone system designed primarily to manage the in-room systems of a hotel or similar multi-guest facility. Such a facility normally has a separate Building Automation System (BAS) for control of the environmental systems for common areas, utility spaces, garages, restaurants, etc. By integrating the guest services system with the BAS, management strategies for the entire facility are possible.

Given the room occupied state, the BAS can manage strategies for unoccupied rooms to include:

- Automatically lower the heating setpoint
- Automatically raise the cooling setpoint
- Turn off lights or other discretionary electrical loads
- Enable security on doors and windows

The INNcontrol system is built on a proprietary network architecture known as CINET. INNCOM provides a proprietary integration interface for this architecture that is known as WinP5PT.

FasBAC is a BACnet device designed to connect the INNcontrol system to a BACnet network the via the WinP5PT interface. BACnet is a standard communications protocol widely supported in the building automation system (BAS) industry. By using FasBAC, any BACnet based BAS may be used to implement facility wide energy management strategies that take into account guest room usage.

The INNcontrol system architecture integrated with a BACnet system is illustrated in Figure 1.

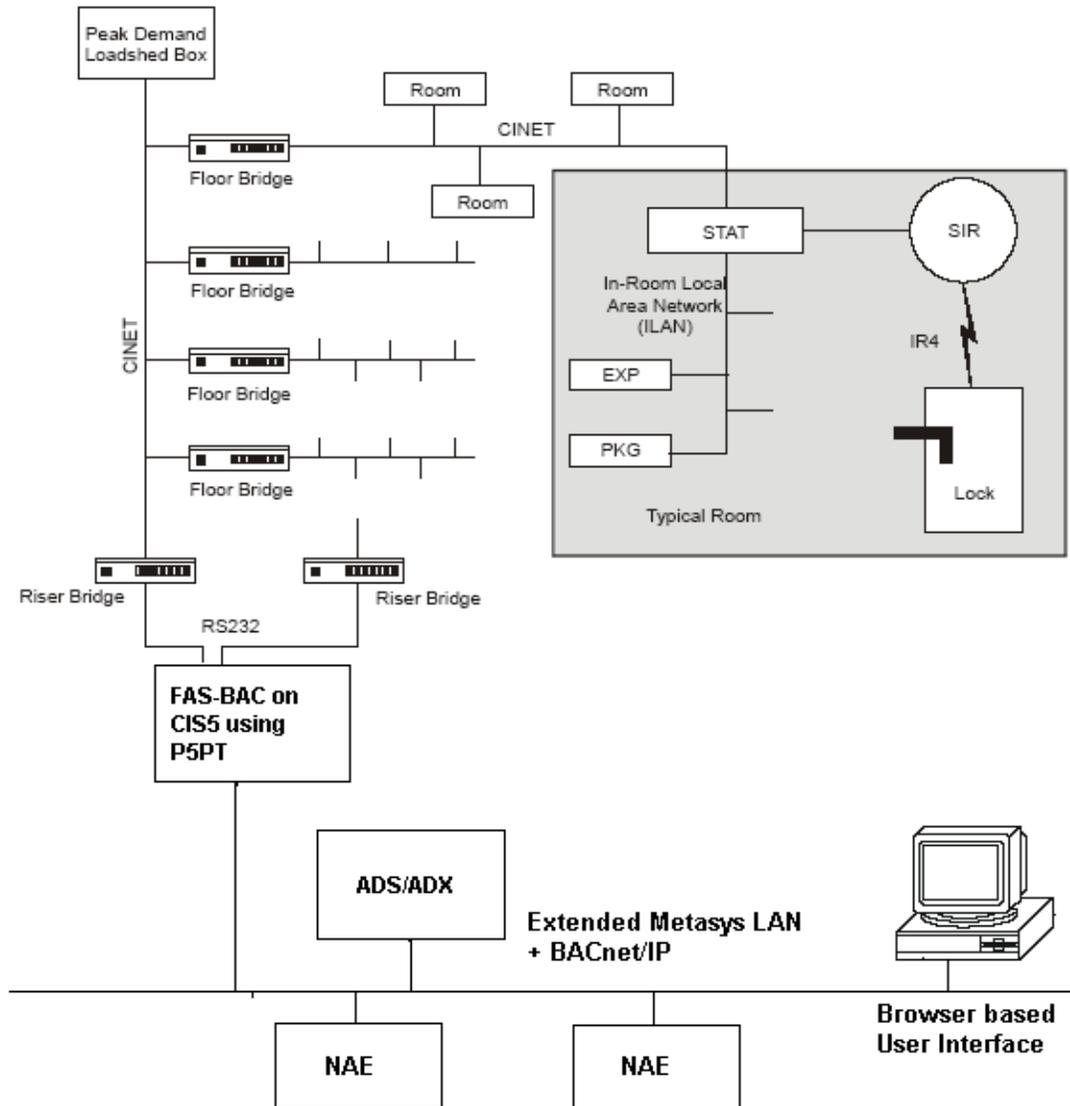


Figure 1. Property Management System Architecture with Integrated BAS

Note: Figure 1 shows Johnson Controls Metasys controllers as examples of BACnet network devices. FasBAC for INNCOM is not limited to application only with a Johnson Controls BACnet network nor is its functionality restricted or limited in any way when used with other vendor's BACnet networks or BACnet devices.

FasBAC Platform Requirements

Computer

FasBAC may be installed on any computer that is not running other BACnet software. Possible platforms include the INCOMM CIS5 server. The FasBAC software default configuration is configured for installation on the CIS5 server. The minimum requirements for available hardware resources are:

Processor Speed: 2GHz

Memory: 512MB

Disk space: 40GB

Network connectivity for support of BACnet/IP and TCP/IP

Operating System

32bit Windows XP SP3 or a later 32bit Windows version.

Note: The use of AMD-based PCs is currently not supported and is therefore not recommended.

INNCOM Software Requirements

FasBAC communicates with the INNcontrol system through the INNCOM WinP5PT server. The INNCOM WinP5PT server is a component of the INNCOM INNcontrol system and is provided by INNCOM with the INNcontrol system. It resides on the INNCOM CIS5 server.

The INNCOM WinP5PT server must be version 2.37 or later.

FasBAC for Inncomm Reinstallation or Upgrade

If you are re-installing FasBAC for Inncom or are upgrading from an earlier release, you will need to un-install the previous installation before you can install the new version. Please follow these steps prior to installing a new version of FasBAC for Inncom:

1. Uninstalling FasBAC for Inncom will remove the existing fasbac.ini file. If you have customized fasbac.ini, make a copy of the file before executing the uninstall.
2. Uninstalling FasBAC for Inncom will remove the existing fasbac.lic file (i.e. the license file). If your existing installation is a version 2, the existing license can be reused. Make a copy of the license file before executing the uninstall program. If the existing installation is a version 1, a new license file will be required. After installing the new version, contact AFDtek for a new license file.
3. Uninstallation will not remove the existing FasBACCINET.csv. When the new version of FasBAC for Inncom is installed, it can reuse the existing FasBACCINET.csv file from the previous installation.
4. Uninstallation will not remove bacdoc.ini from the windows folder. However, when the new version of FasBAC for Inncom is installed, it will rename bacdoc.ini and install its own version of bacdoc.ini. The new version of bacdoc.ini must be used.
5. Uninstall the old FasBAC for Inncom using the Add/Remove Programs applet in Windows Control Panel.
6. Restart the computer to complete the removal of the FasBAC service.

FasBAC for Inncom Installation

Before installing FasBAC, be sure your Windows user ID has Windows administrative rights.

FasBAC for INNCOM is distributed as either a downloaded “zip” file or as an installation CD. If you are installing from the “zip” file, unzip the file to a temporary folder before proceeding. If you have auto-start enabled on the computer, the installation CD will start the installation process automatically when the disk is inserted.

If auto-start is not enabled or you are installing from the “zip” file, navigate Windows Explorer to the ‘install’ folder of the installation package and execute Setup.exe. Follow the onscreen instructions.

Note:

The first phase of the installation will install the Microsoft Visual C++ Runtime Libraries. This phase may appear to “hang” for several minutes during installation. Be patient. Do not cancel the installation of the Runtime Libraries.

After successful installation, the install package will display the dialog box shown in Figure 2.

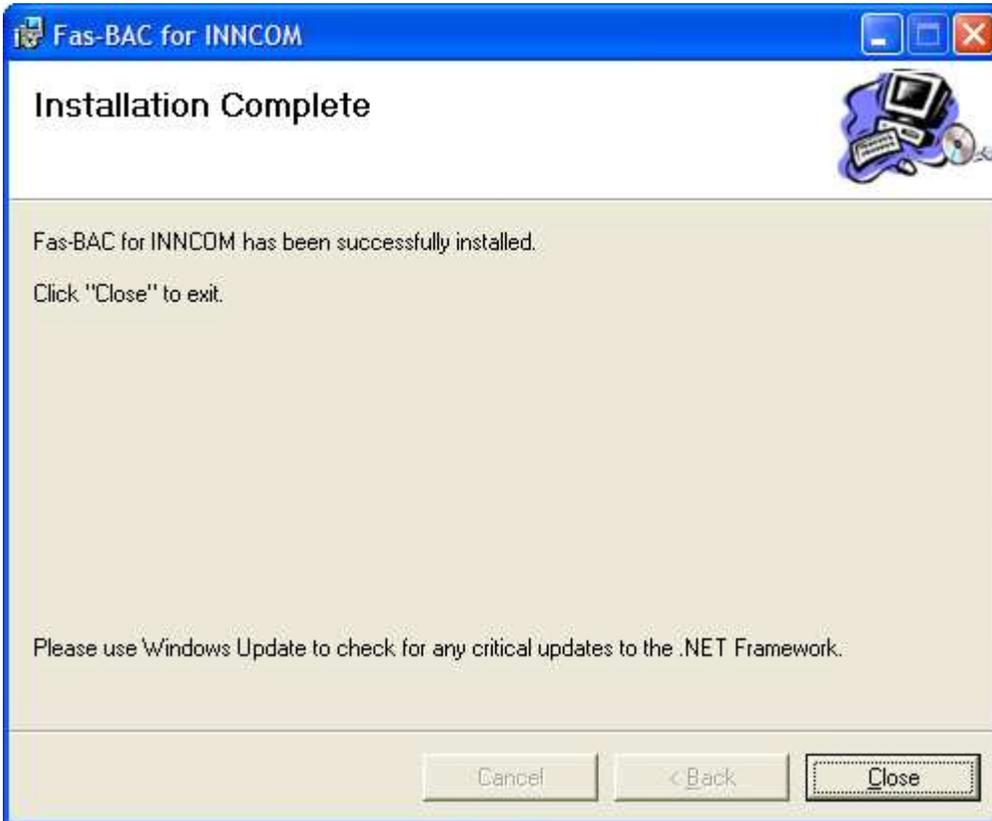


Figure 2. Successful Installation Completion

FasBAC for Inncom is installed as a Windows service. The initial installed state of the service will be:

- Manual Mode
- Not Running

Before starting the service, some application parameters must be configured. These are described in sections: **BACnet Communications Settings** and **WinP5PT Communications Settings**.

If FasBAC is installed on the INNcontrol server, the most common scenario, the majority of the default communications settings will be suitable. The exceptions are the BACnet communications IP address settings. Before starting the service, the BACnet IP address must be set. If they are not set prior to running the service, the service will stop shortly after starting. An error number -139 will be logged in the Windows Application Event file. If this should occur, enter the IP parameters in the BACdoc.INI file and then restart the service.

To start the service, see the instructions in section: **Starting and Stopping the FasBAC Service - Automatic Start Enable**.

A short time after starting the service, the FasBAC splash screen shown in Figure 3 will be displayed.



Figure 3. FasBAC Splash Screen

The splash screen is displayed after installation because FasBAC is installed with a demonstration license. The demonstration version is limited to maximum of 10 rooms and is time limited. The period of evaluation is 2 hours, at which point the FasBAC service will automatically stop working. Click on the Activate Later button to close the splash screen and begin the two hour runtime.

FasBAC may be restarted any number of times for another two hour run period. FasBAC can be restarted from the Windows Services applet. See the section 'Starting and Stopping the FasBAC Service' for details. After you have licensed FasBAC, the splash screen will no longer be displayed and FasBAC will run indefinitely. See the section 'License Manager' for details about obtaining and installing a license.

License Manager

To purchase a full license contact the AFDtek office and submit to them the Machine ID of the computer running FasBAC. A purchased license is simply added to the demo installation. It is not necessary to install a different version of FasBAC. Any configuration that has been done to the demo version will be preserved and will continue to function after licensing has been completed.

Licenses offered by AFDtek are available in 4 standard sizes:

1. 200 room limit
2. 500 room limit
3. 1000 room limit
4. Unlimited

By special request, licenses can be provided with other room limits.

Obtain the Machine ID

Use the License Manager to obtain the Machine ID.

To launch the License Manager, go to the Windows Start menu and select the FasBAC for INNCOM -> FasBAC License Manager command.

The License Manager window will open as shown in Figure 4.



Figure 4. License Manager Application

Select *License* from the top menu then click the *Generate Machine ID* command. A message box will be displayed containing the Machine ID, as shown in Figure 5.



Figure 5. Machine ID Message Box

Use the Windows clipboard to copy and paste the Machine ID to an email or text file and submit the machine ID to AFDtek with your license purchase.

Install a License

After an appropriate license has been purchased, AFDtek will supply you with a license file and an activation code based on the provided Machine ID.

Following the receipt of the license file and the activation code from AFDtek, open the License Manager to install the license file.

1. Click on the *License* menu and select the *Install* command.

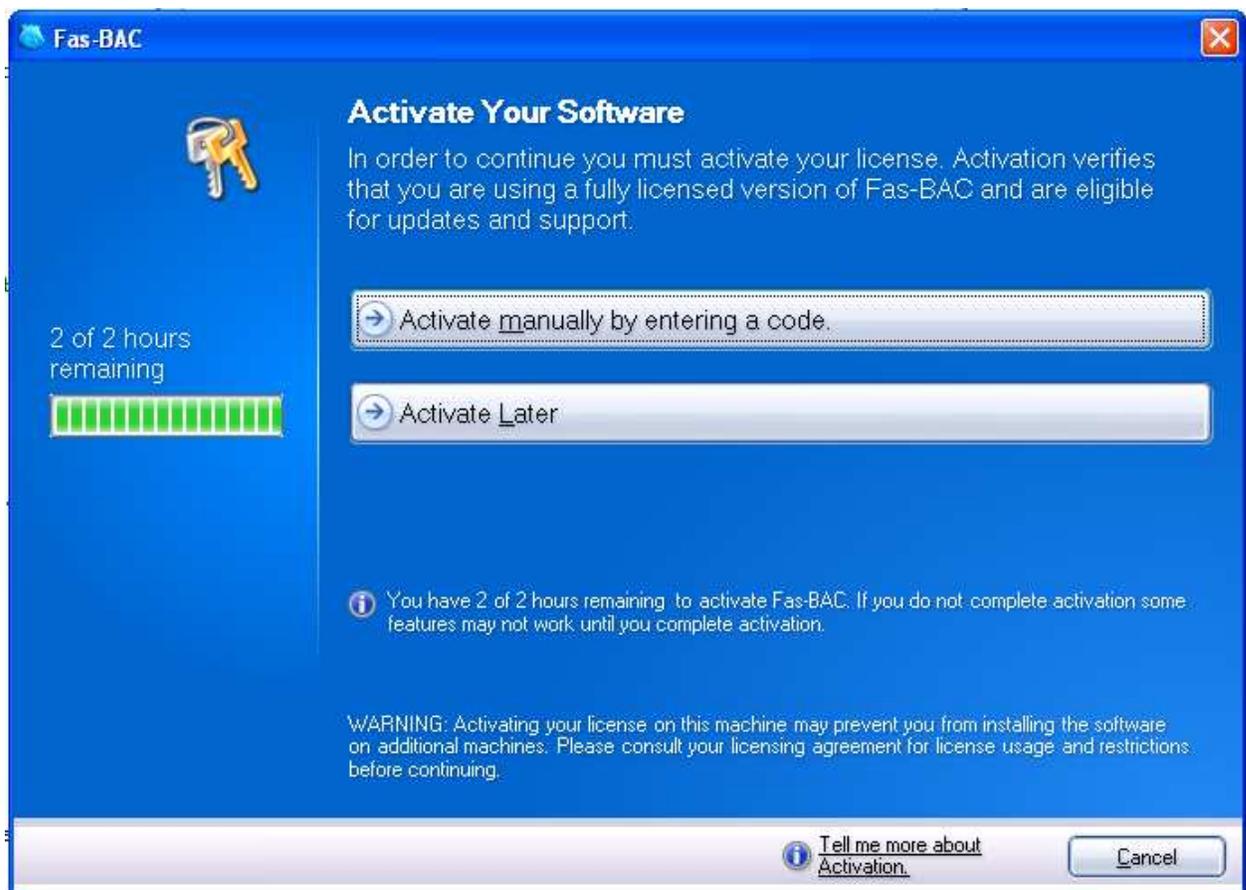
2. Follow the on screen instructions.

If the installed license is not activated, the license will act as if it is a demo license. It will allow only 2 hours of run time before shutting down FasBAC. FasBAC may be restarted as many times as desired.

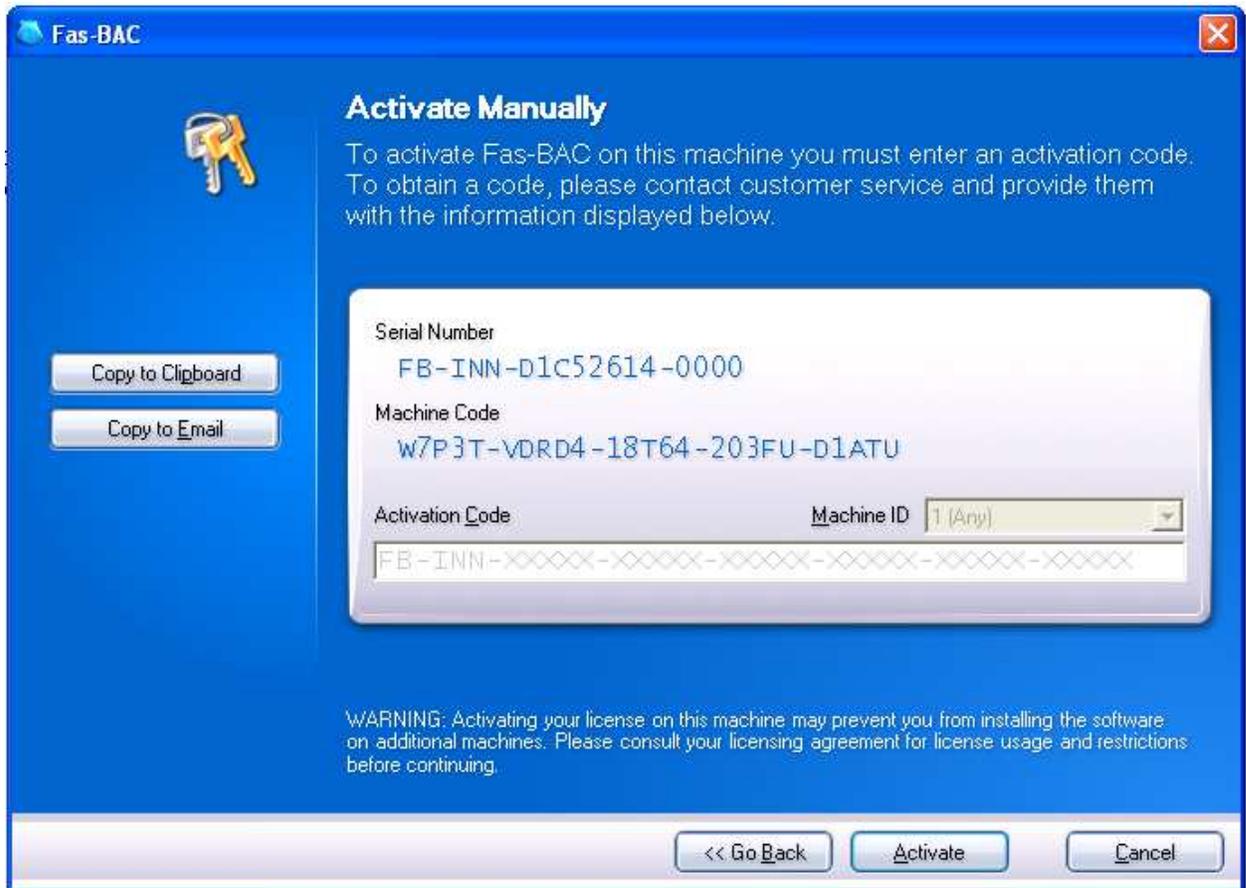
Activate a License

License activation can be done when installing the license file or at any later time up to the expiration date of the activation code. To activate the license:

1. Open the License Manager.
2. Select the license in the main window of the License Manager.
3. Click on the *License* menu and select *Activate*.
4. The 'Activate Your Software' dialog will be displayed:



5. Click on 'Activate manually by entering a code'. The activation input dialog will be displayed:



6. Note the Machine Code is displayed in the dialog box. This code must match the Machine Code submitted to AFDtek for licensing the product. Enter the activation code provided by AFDtek and click on the Activate button.
7. The activation acknowledgement will be displayed:



Deactivate a License

The license can also be deactivated to allow for re-location of the FasBAC software to another machine. To deactivate a license:

1. Open the License Manager.
2. Select the license in the main window of the License Manager.
3. Click on the *License* menu and select *Deactivate*.
4. Follow the on screen instructions.

It will be necessary to generate a machine ID on the new machine and obtain a new license file and activation code.

Note: If at any time you require more help, select Help in the License Manager top menu and click on Contents to launch a full featured help file.

FasBAC Configuration

INNcontrol Communications

FasBAC is installed with default values for communications with the INNcontrol system that are compatible with an installation of FasBAC on the INNCOM CIS5 server. The key values are:

WinP5PT IP Address: 127.0.0.1

WinP5PT TCP Port: 2012

WinP5PT is the integration interface component of the INNCOM INNcontrol system. The default WinP5PT address is the IP “Local Machine” address. If FasBAC is installed on a computer other than the INNCOM CIS5 server, this address must be changed to the actual IP address of the INNCOM CIS5 server.

Verify the default WinP5PT TCP port number matches the TCP port defined in the WinP5PT startup script file on the INNCOM CIS5 server (see INCOMM documentation for details of the script file). If the TCP port defined in the WinP5PT startup script file is different from the FasBAC default value, modify the FasBAC WinP5PT TCP port value to be the same value.

The FasBAC values for the WinP5PT address and the WinP5PT TCP port are defined in the FasBAC.INI file. See section ‘WinP5PT Communications Settings’ for details on how to change these values and the WinP5PT communications tuning parameters.

BACnet Communications

FasBAC will appear to the BACnet network as multiple BACnet devices. There will be a minimum of two devices plus as many devices as there are rooms in the INNcontrol system. The initial two devices are a BACnet router device and a BACnet device that represents the INNcontrol system. The BACnet router device is the primary device of FasBAC. The BACnet devices representing the INNcontrol system and the INNcontrol rooms are virtual devices that appear on a virtual BACnet subnetwork “on the other side” of the router.

BACnet requires that the BACnet name of a device and the BACnet ID of a device are unique on the BACnet network. Furthermore, BACnet requires that all BACnet subnetworks of the BACnet network, including the virtual BACnet network of FasBAC, must have a unique BACnet network ID.

FasBAC is installed with default values for these properties. The default values are:

BACnet Router Device Name: FasBAC for INNcontrol

BACnet Router Device ID: 80000

Virtual BACnet subnetwork ID: 4321

INNcontrol system Device Name: INNcontrol System

INNcontrol system Device ID: 80001

Room Thermostat Device Name: Room + *INNcontrol room number*

Room Thermostat Device ID: 80002 to *n*

The device IDs beginning with 80001 and increasing from there will be on the virtual BACnet subnetwork. Room thermostat device IDs are automatically assigned beginning at 80002 and continuing consecutively from there.

Should there be a second FasBAC for INNCOM installation on the BACnet network, the default device names, device IDs and subnetwork IDs will conflict. The default values for the second and subsequent copies of FasBAC for INNCOM will need to be modified before they are connected to the BACnet network.

It would also be possible for the default names or IDs to conflict with non FasBAC devices on the BACnet network. In particular, be sure that none of the IDs automatically assigned by FasBAC in the range from 80000 to 80000 + n conflict with another device.

See the section 'BACnet Communications Settings' for details of modifying the default BACnet names and IDs.

BACnet Object Generation

When FasBAC connects to the INNcontrol system for the first time, it will automatically discover all the room thermostats in the INNcontrol system. For a property with a large number of rooms, this can be a lengthy process. You should allow up to 20 minutes for this room auto discovery process to complete.

When the room auto discovery process completes, the data file FasBACCINET.CSV will be created in the FasBAC program folder. This data file will contain information for every room discovered in the INNcontrol system and will list the default BACnet object point object information for each thermostat. After this initial discovery process and on subsequent starts of FasBAC, FasBAC will use the data in the FasBACCINET.CSV file to configure its BACnet object set.

The room auto discovery process will execute only if the FasBACCINET.CSV file is not present in the FasBAC program folder. Once the file exists, subsequent starts of FasBAC will skip the room auto discovery process. If an INNcontrol system thermostat was offline at the time the room auto discovery process ran, it would not have been discovered and a BACnet device would not be created for it. The room would not be available to the BACnet network. The room auto discovery process can be forced to run once more by deleting the FasBACCINET.CSV file and restarting FasBAC. See the section 'Force a Room Auto Discovery Process' for details.

In a large property with many rooms, the FasBACCINET.CSV file generated by the room auto discovery process will contain definitions for thousands of BACnet objects. For example, by default FasBAC will automatically generate for each room thermostat all 15 BACnet objects listed in Table 1. In a 1,000 room hotel, this will be 10,000 objects. The number of BACnet objects can be managed in two ways; settings in the FasBAC.INI file can be changed to modify the set of BACnet objects automatically created for all thermostats, or the generated FasBACCINET.CSV file can be edited to delete unneeded BACnet objects, leaving only those of interest to the building automation system.

See the section 'FasBAC Object Definition File' for details of customizing the BACnet object set.

Description of Operation

FasBAC functions as a BACnet router for a virtual BACnet network on which reside virtual BACnet thermostat devices, one for each INNcontrol room thermostat. Each BACnet thermostat device hosts a set of BACnet objects corresponding to points in the INNcontrol room thermostat (as listed in Table 1).

Table 1. INNcontrol Thermostat Points mapped as BACnet Objects

Room Data Point / BACnet Object Name	BACnet Object Type	BACnet Object Values	Read/Write
Rented Status	BV	"Not Rented", "Rented"	R/W
Checked In Status	BV	"Checked In", "Checked Out"	R/W
Occupancy	BV	"Not Occupied", "Occupied"	R
Do Not Disturb	BV	"Off", "Do Not Disturb"	R
Make Up Room	BV	"Off", "Make Up Room"	R
Window Status	BV	"Closed", "Open"	R
Temp.	AV	-50 to 205 °F	R
Target Temp.	AV	40 to 103 °F	R/W
AC Mode	MV	"Off,Fan Only,Fan Fixed,Auto"	R/W
Manual Fan Speed	MV	"Off,Low,Medium,High"	R/W
Actual Fan Speed	MV	"Off,Low,Medium,High"	R
Humidity Value	AV	0 – 100 %	R
Heating Valve Position	AV	0 – 100 %	R
Cooling Valve Position	AV	0 – 100 %	R
Eco Mode	BV	"Off", "On"	R

In addition to creating the BACnet thermostat device objects, FasBAC creates two other BACnet devices. One is the BACnet router device. The other is a BACnet device containing the BACnet objects listed in Table 2.

Table 2. Global BACnet Objects

Global BACnet object	BACnet Object Type	BACnet Object Values	Read/Write
Outside Air Temp.	AV	-50 to 205 °F	R/W
INNcontrol Link Status	BV	"Offline, Online"	R
Total Rooms Cooling	AV	0 – number of rooms	R
Total Rooms Heating	AV	0 – number of rooms	R
Total Rooms EcoMode	AV	0 – number of rooms	R

The Outside Air Temperature object may be used to set the Outside Temperature point for all the room thermostats. The INNcontrol Link Status object value shows the connection status between FasBAC and the INNcontrol system.

When FasBAC starts running, it will synchronize the BACnet objects with the room thermostats. The FasBAC initialization will perform the following steps:

1. Read the BACnet object definitions from the FasBACCINET.CSV file.
2. Create a virtual BACnet device for each thermostat and create BACnet objects in those devices for each thermostat point.
3. Update the INNcontrol Link Status object with the status of communications with the INNcontrol system.
4. Update the Present Value property of all BACnet objects of all rooms.

Monitoring and Control

Discovering Room Devices

FasBAC creates a virtual BACnetIP device for each room defined in the FasBACCINET.CSV file. These BACnet devices can be automatically discovered by BACnet clients in the same way they discover any other BACnet devices. However, the system integrator should take note that a hospitality property can have hundreds of rooms. Not all BACnet clients are able to automatically discover hundreds of BACnet devices. In some installations, it may be necessary to manually define the room devices in the BACnet client.

Furthermore, the default configuration creates 15 child objects per room. Not all BACnet clients can handle thousands of objects. In some installations, it may be necessary to limit the number of objects created for each room. See the section: **FasBAC Object Definition File** for details on how to manage the number of BACnet objects created.

Monitoring Room points

Room points are monitored using the corresponding BACnet objects presented by FasBAC.

For each room listed in the FasBACCINET.CSV file, a virtual BACnet device is created. Within each BACnet device are created BACnet objects for each room point listed under the room in the FasBACCINET.CSV file. Refer to **Table 1** for the point list and its corresponding BACnet object type and units.

When FasBAC initially connects to the INNcontrol system, it will wait for a “Process Image” (PI) message from a room thermostat to arrive. Rooms will typically send a PI message within every 10 minutes. While FasBAC is waiting for the first PI, the Present_Value properties of the room objects are initialized with value ‘0’ and the Reliability properties are initialized as UNRELIABLE_OTHER. When the first PI from a room is received, the Present_Value properties of all the BACnet objects of the room are updated and the Reliability properties are set to RELIABLE.

The BACnet room object values are periodically updated, as FasBAC receives the next PI.

Monitoring INNcontrol Communications Status

FasBAC automatically creates a BACnet device to represent the INNcontrol system itself and within it a BACnet object dedicated to monitoring the status of its connection to the INNcontrol system.

The default name of the BACnet device for the INNcontrol system is “CINET Interface”. The name of the connection status object is “P5PT Link Status”. Refer to **Table 2** for the list of objects in the INNcontrol system BACnet device.

Commanding Room Points

Some room points can be commanded from their BACnet objects. The room points that can be commanded are indicated in **Table 1** by a W in the Read/Write column.

When a BACnet WriteProperty Request is received for a thermostat object and the object's Reliability property is RELIABLE, the BACnet object value will be immediately updated with the new value and the command will be queued to send to the thermostat on the INNcontrol system. Queued commands are sent to the INNcontrol system within 100ms of being queued.

Except for the command to change the rented status, commands sent to the INNcontrol system are acknowledged by the INNcontrol system. If the INNcontrol system fails to acknowledge the command, the command will be retried. The default command timeout period is 30 seconds. The default number of command retries is 3. When retries are exhausted, FasBAC will discard the command.

If the INNcontrol system response is that the room does not exist, FasBAC will discard the command and that object and all other BACnet objects associated with the room will have their Reliability property value set to UNRELIABLE_OTHER. The value will be restored to RELIABLE the next time a PI message for that room is received by FasBAC.

When a BACnet WriteProperty Request is received for a thermostat object and the object's Reliability property is UNRELIABLE_OTHER, the BACnet object value will be immediately updated with the new value but the command will not be queued or sent to the room.

When writing a thermostat temperature set point value, the value sent from BACnet will be rounded to the closest whole number. WinP5PT does not support writing fractional values. For example, a set point value of 72.4°F will be rounded to 72°F. A value of 72.5°F will be rounded to 73°F.

Global Outside Air Temperature

FasBAC has special handling built-in to propagate an Outside Air Temperature value from the BACnet network to all thermostats on the INNcontrol system. The BACnet network needs only to write outside air temperature value updates to the ‘Outside Air Temp.’ object in the “CINET Interface” device. FasBAC will broadcast the update to the INNcontrol system.

When writing an outdoor temperature value, the value sent from BACnet will be rounded to the closest whole number. WinP5PT does not support writing fractional values. For example, an outdoor temperature value of 78.4°F will be rounded to 78°F. A value of 78.5°F will be rounded to 79°F.

FasBAC Object Definition File

FasBAC stores the room information and its corresponding BACnet information in an object definition file called FasBACCINET.CSV. The FasBACCINET.CSV file is automatically generated by FasBAC during the room auto discovery process it executes the first time it connects to the INNcontrol system. The FasBACCINET.CSV file is located in the folder in which the FasBAC for INNCOM program files were installed. The default location for the FasBACCINET.CSV file is:

C:\Program Files\AFDtek\FasBAC for INNCOM\FasBACCINET.CSV

Structure of the Object Definition File

Each room is defined by a set of lines in the FasBACCINET.CSV file.

The first line in the set gives the CINET Room ID followed by the name of the BACnet device object that will correspond to the room thermostat. The CINET Room ID will be the same as the Room ID in the roomdef.txt file used by the WinP5PT server. FasBAC can accept Room IDs up to 99999. The largest room ID from INNcontrol is **65535**.

The BACnet device name is automatically constructed by FasBAC by concatenating a Room_Name_Prefix with the CINET Room ID. Each set begins with a line of the following format:

Format:

CINET_Room_ID, BACnet_Device_Name

Where: BACnet_Device_Name = Room-BACnetDevice-NamePrefix + CINET_Room_ID

Example: 211, Room211

In the above example 'Room' is the prefix and '211' is the CINET Room ID. The default prefix is defined by the "Room-BACnetDevice-NamePrefix" key in the FasBAC.INI file.

The remaining room definition lines define the names of the BACnet objects corresponding to the points in the room thermostat. These lines have the following format:

Format:

, BACnet_Object_Name

Where: BACnet_Object_Name = BACnet_Device_Name + "-" + Point_Name

Example: , Room211-Rented Status

Note the place holder comma at the beginning of the object definition line. This indicates the CINET_Room_ID is "carried down" from the first line.

In the above example, the Point_Name is a place holder for one of the point names. The point names are defined by keys in the FasBAC.INI file. "Rented Status" is a room thermostat point name from the set documented in Table 1.

Editing the Object Definition File

After the FasBACCINET.CSV file has been automatically created by the room auto discovery process, it can be edited to manually add or delete rooms or add or remove point objects from selected rooms. Changes made to the FasBACCINET.CSV file will take effect the next time the FasBAC service is started. See the section 'Starting and Stopping the FasBAC Service' for details of restarting the service.

Some of the edits that can be done are:

- Delete a room that was automatically discovered but will not be managed from BACnet
- Add rooms that were not online at the time the room auto discover process ran
- Selectively remove points from selected rooms
- Selectively add points to selected rooms
- Change the default room name for selected rooms

Delete a Room

To delete a room, simply delete the entire set of lines that define it.

Add a Room

To add a room, copy and paste one of the existing rooms that most closely match the new room, then edit the new room to ensure the CINET room ID is unique in the FasBACCINET.CSV file and matches the CINET Room ID in the roomdef.txt file used by the WinP5PT server.

Edit the new room to ensure the BACnet device object name is unique on the BACnet network.

The following naming rules must be followed:

1. The BACnet device object name cannot be longer than 13 characters.
2. Update the names of all the thermostat point BACnet objects belonging to the BACnet device such that they maintain the naming convention of BACnet_Device_Name + "-" + Room_Thermostat_Point_Name.

Note: The dash between the device name and thermostat point name is required.

Delete a Point from a Room

To delete one or more points from a room, you may either simply delete the line from the room definition or you may comment out the line. To comment out a line, prefix it with a double slash (//).

Note: If the point needs to be deleted from most or all rooms, it might be more efficient to update the default point set defined in the FasBAC.ini file and then recreate the FasBACCINET.CSV file by deleting the FasBACCINET.CSV file and then restarting the FasBAC service to begin the room auto discovery process.

Add a Point to a Room

The set of points automatically generated for all rooms is defined in the FasBAC.INI file. By default, this definition defines all points listed in Table 1. However, the FasBAC.INI file can be edited to reduce the set of points automatically created, to be a sub-set of the set in Table 1. You may then want to add one or more of the points back to selected rooms.

When adding a room point manually to the FasBACCINET.CSV file, it is not necessary for the room point type to be enabled in the FasBAC.ini file. However, if you use this feature, you may not modify the default point name.

NOTE: If the point needs to be added to most or all rooms, it might be more efficient to update the default point set defined in the FasBAC.ini file and then recreate the FasBACCINET.CSV file by deleting the FasBACCINET.CSV file and then restarting the FasBAC service to begin the room auto discovery process.

Modify the Default Room Name

The default device object name of selected rooms may be modified.

The following naming rules must be followed:

1. The BACnet device object name cannot be longer than 13 characters.
2. Update the names of all the thermostat point BACnet objects belonging to the BACnet device such that they maintain the naming convention of BACnet_Device_Name + "-" + Room_Thermostat_Point_Name.

NOTE: The dash between the device name and thermostat point name is required.

Modify the Default Point Name

The default thermostat point name portion of the BACnet object name may be modified. The following naming rules must be followed:

1. The thermostat point name in the FasBAC.ini file for the thermostat point must be changed to the desired point name.
2. The thermostat point name in the FasBAC.ini file for the thermostat point must be enabled.
3. The thermostat point name portion cannot be longer than 17 characters.
4. The name change must be applied to *all* point objects of the same kind.

Force a Room Auto Discovery Process

The FasBACCINET.CSV file is automatically generated once by FasBAC, during the room auto discovery process it executes the first time it connects to the INNcontrol system. FasBAC is designed to do this in order to reduce the engineering time required to configure the FasBAC for INNCOM integration. The bulk of the room mappings are automatically generated. Once FasBAC has created this file, it can be modified to customize the objects for selected rooms.

You may need to force FasBAC to recreate the FasBACCINET.CSV file. Reasons for doing this include:

- The first time FasBAC connected to the INNcontrol system, not all the rooms were defined in that system
- You have modified the FasBAC.ini file to define a reduced set of point objects
- The FasBACCINET.CSV has been damaged

To force FasBAC to create the FasBACCINET.CSV file, perform the following steps:

1. Stop the FasBAC service.
2. Delete the FasBACCINET.CSV file (if one exists).
3. Make sure the key AutoDiscoveryEnabled in the FasBAC.INI file is set to 1.
4. Check the list of enabled room thermostat points listed in room thermostat point keys in the FasBAC.INI file. By default all room points listed in Table 1 are enabled.
 - a. All room points that are enabled will be listed as part of the room device set in the FasBACCINET.CSV file.
 - b. To disable a room thermostat point, place a semi-colon at the beginning of the line in the FasBAC.INI file that defines the room thermostat point.
 - c. A disabled room point will not be added to any of the room sets created.
5. Start the service.
6. Let the service run for 20 minutes.
7. Stop the service.
8. Review the FasBACCINET.CSV file to verify all expected rooms are listed. If the property has many rooms, it is possible that 20 minutes is not sufficient time for the INNcontrol system to report all rooms at least once. In this case, delete the FasBACCINET.CSV file again and restart the FasBAC service. Let it run for a longer time before reviewing the FasBACCINET.CSV file.

9. **NOTE:** Do not open the file while FasBAC may still be adding rooms to it. If you have the file open while FasBAC is attempting to add a room to it, the room add process will fail to add the room.

BACnet Communications Settings

FasBAC will appear to the BACnet network as multiple BACnet devices. There will be a minimum of two devices plus as many devices as there are rooms in the INNcontrol system.

Parameters for defining the BACnet devices are located in two configuration files:

BACDOC.INI

FasBAC.INI

The file BACDOC.INI is located in the Windows folder.

The file FasBAC.INI is located in the folder where the application was installed. The default file location is:

C:\Program Files\AFDtek\FasBAC for INNCOM\FasBAC.INI

BACnet Device IDs, BACnet Router Device Name, Network ID

The initial two devices are a BACnet router device and a BACnet device that represents the INNcontrol system. The device ID and device name of the BACnet router device are defined by the 'OurInstance' and 'OurPeerName' keys in Table 3.

The 'OurInstance' key value is also the root device object ID for all the virtual devices created. The BACnet device object IDs of all the virtual devices are automatically assigned consecutively, beginning with the value of 'OurInstance' + 1. Care must be taken that the default device ID and the automatically assigned device IDs do not conflict with other devices on the BACnet network. If necessary, FasBAC's range of device IDs can be changed by editing the 'OurInstance' key value.

The ID of the virtual BACnet subnetwork is defined by the 'MultiServerNetwork' key in Table 3. Care must be taken that the default subnetwork ID is not the same as any other BACnet subnetwork. The parameters in Table 3 are defined in the BACDOC.INI file found in the Windows folder. All keywords are found under the [GENERAL] section.

Table 3. Configurable BACnet Communication Parameters in BACDOC.INI

Keyword	Description	Range	Default Value
OurInstance	The device object ID of the BACnet router device and the root BACnet device object ID for the virtual BACnet devices	1 – 4,194,302	80000
OurPeerName	The BACnet router device name	up to 31 characters	FasBAC for INNcontrol
ModelName	The BACnet router device ModelName property value	up to 31 characters	FasBAC for INNcontrol
Description	The BACnet router device Description property value	Up to 64 characters	

Keyword	Description	Range	Default Value
Location	The BACnet router device Location property value	Up to 64 characters	
MultiServerNetwork	The BACnet network number for the virtual network where the virtual BACnet devices reside	1 - 65535	4321
BACnetIPport	The UDP port used for BACnet/IP	1024 - 49151	47808 *
BACnetIPaddress	The IP address FasBAC will use on the network. ** This address must be the IP address of the primary Ethernet port of the computer.	Example: 192.168.1.23	FasBAC will normally automatically determine this value and add it to the bacdoc.ini file
BACnetIPsubnet	The IP mask for the IP address above.	Example: 255.255.255.0	FasBAC will normally automatically determine this value and add it to the bacdoc.ini file

* If the OS has firewall software running, it is imperative that the BACnet UDP port is opened and allowed. If this is not done, other devices on the BACnet network will not be able to discover the FasBAC devices. Please consult your firewall software documents on how open specific ports.

** If the computer has multiple Ethernet ports or is a virtual machine, FasBAC will be unable to automatically determine the correct IP address. If this situation occurs, an error Number -139 will be recorded in the Windows Event file. To resolve this situation, manually enter the correct IP address.

Editing

All parameters found in BACDOC.INI are required parameters.

To change parameters listed in Table 3, do the following:

1. Open the file BACDOC.INI (found in the Windows folder) with a text editor such as Notepad.
2. Change the value of the key in the BACDOC.INI file as described in Table 3.
3. Save BACDOC.INI file and close it.
4. Stop the FasBAC service.
5. Restart the FasBAC service.

Note: Changes only become effective after restarting FasBAC.

Virtual Device BACnet Names and Point Object BACnet Names

The name of the INNcontrol BACnet device name, the root name of the thermostat BACnet device names and the root name of the point objects are defined by the keys in Table 4. The parameters in Table 4 are defined in the FasBAC.INI file, found in the folder where the application was installed.

Table 4. AutoDiscovery Section Parameters

Keyword	Description	Range	Default Value
AutoDiscoveryEnabled	To enable the Room Auto Discovery process if the FasBACCINET.csv does not exist. 0 = disabled, 1 = enabled	0 or 1	1
Interface-BACnetDevice-Name	The name of the interface BACnet device representing the INNcontrol system.	Up to 11 characters	"INNcom Link"
WinP5PTLinkStatusPoint	Defines the BACnet object name for the link status point in the interface device. This name will be prefixed with the interface device name.	Up to 19 characters	"Link Status"
OutsideTemperaturePoint	Defines the BACnet object name for the global outside air temperature point in the interface device. This name will be prefixed with the interface device name.	Up to 19 characters	"Outside Temp."
CoolingTotalPoint	Defines the BACnet object name for an object that shows the total number of thermostats that are in cooling mode. This object will be in the interface device. This name will be prefixed with the interface device name.	Up to 19 characters	"Total Rooms Cooling"
HeatingTotalPoint	Defines the BACnet object name for an object that shows the total number of thermostats that are in heating mode. This object will be in the interface device. This name will be prefixed with the interface device name.	Up to 19 characters	"Total Rooms Heating"
EcoModeTotalPoint	Defines the BACnet object name for an object that shows the total number of thermostats that are in EcoMode. This object will be in the interface device. This name will be prefixed with the interface device name.	Up to 19 characters	"Total Rooms EcoMode"
Room-BACnetDevice-NamePrefix	Defines the name prefix for all BACnet devices created for each room. After the prefix the CINET room number is added (For room 211, the BACnet device name will be Room211)	Up to 7 characters	"Room"

Keyword	Description	Range	Default Value
Thermostat Point Names			
TemperaturePoint	Defines a thermostat point object name. This name will be prefixed by the thermostat device object name.	Up to 18 characters	"Temperature"
TargetTemperaturePoint	Defines a thermostat point object name. This name will be prefixed by the thermostat device object name.	Up to 18 characters	"Target Temp."
RentedStatusPoint	Defines a thermostat point object name. This name will be prefixed by the thermostat device object name.	Up to 18 characters	"Rented Status"
CheckedInStatusPoint	Defines a thermostat point object name. This name will be prefixed by the thermostat device object name.	Up to 18 characters	"Checked In Status"
OccupancyPoint	Defines a thermostat point object name. This name will be prefixed by the thermostat device object name.	Up to 18 characters	"Occupancy"
DoNotDisturbPoint	Defines a thermostat point object name. This name will be prefixed by the thermostat device object name.	Up to 18 characters	"Do Not Disturb"
MakeUpRoomPoint	Defines a thermostat point object name. This name will be prefixed by the thermostat device object name.	Up to 18 characters	"Make Up Room"
WindowStatusPoint	Defines a thermostat point object name. This name will be prefixed by the thermostat device object name.	Up to 18 characters	"Window Status"
ACModePoint	Defines a thermostat point object name. This name will be prefixed by the thermostat device object name.	Up to 18 characters	"AC Mode"
ManualFanSpeedPoint	Defines a thermostat point object name. This name will be prefixed by the thermostat device object name.	Up to 18 characters	"Manual Fan Speed"
ActualFanSpeedPoint	Defines a thermostat point object name. This name will be prefixed by the thermostat device object name.	Up to 18 characters	"Actual Fan Speed"
HumidityValuePoint	Defines a thermostat point object name. This name will be prefixed by the thermostat device object name.	Up to 18 characters	"Humidity Value"
HeatingValvePositionPoint	Defines a thermostat point object name. This name will be prefixed by the thermostat device object name.	Up to 18 characters	"Heating Valve Pos"

Keyword	Description	Range	Default Value
CoolingValvePositionPoint	Defines a thermostat point object name. This name will be prefixed by the thermostat device object name.	Up to 18 characters	"Cooling Valve Pos"
EcoModePoint	Defines a thermostat point object name. This name will be prefixed by the thermostat device object name.	Up to 18 characters	Eco Mode

The room auto discovery process will automatically run if the FasBACCINET.CSV is not detected when FasBAC starts up. Normally this will happen only once. The 'AutoDiscoveryEnabled' key can be used to disable this behaviour. Setting it to 0 will completely disable the room auto discovery process.

The name for the BACnet device that represents the interface to the INNcontrol system is defined by the 'Interface-BACnetDevice-Name' key in Table 4. The device ID for this device will be the value of the 'OurInstance' key described in Table 3 + 1. Therefore its default value will be 80001.

The two point objects in the interface device will have BACnet object names constructed in the following manner:

BACnet_Object_Name = Interface-BACnetDevice-Name + "-" + Point_Name

Example: INNcontrol System-Outside Air Temp.

The root device name of all room thermostat BACnet devices consists of the name prefix defined with the 'Room-BACnetDevice-NamePrefix' key concatenated with the CINET room number. The assignment of device IDs for the room thermostat BACnet devices begins with the value of the 'OurInstance' key described in Table 3 + 2. Assignment continues consecutively from this value. Therefore the default value for the first thermostat ID will be 80002. If there were 100 thermostats, the last one would have an ID of 80101.

The thermostat device objects will have BACnet object names constructed in the following manner:

STAT_BACnet_Device_Name = Room-BACnetDevice-NamePrefix + CINET_Room_ID

Example: Room211

The point objects in the thermostat devices will have BACnet object names constructed in the following manner:

BACnet_Object_Name = STAT_BACnet_Device_Name + "-" + Point_Name

Example: Room211-Rented Status

Editing

The thermostat point object names found in Table 4 are optional, all other parameters listed in the table are required. The automatic generation of a thermostat point object by the room auto discovery process can be disabled by commenting out the line defining the point object name. A line is commented out by placing a semi-colon (;) at the beginning of the line. For example, the following line is commented out:

```
;DoNotDisturbPoint=Do Not Disturb
```

To change parameters listed in Table 4, do the following:

1. Open the file FasBAC.INI (found in the Windows folder) with a text editor such as Notepad.
2. Change the value of the key in the FasBAC.INI file as described in Table 4.
3. Save FasBAC.INI file and close it.

Note: Changes only become effective after the 'Force a Room Auto Discovery Process' procedure has been executed.

WinP5PT Communications Settings

Certain parameters used with WinP5PT communications can be modified. They are described in Table 5.

Table 5. WinP5PT Communication Parameters in FasBAC.INI file

Name	Description	Range	Default Value
IPAddress	The IP address of the machine on which the WinP5PT Server software is running. The default value is the value for "Local Machine"		127.0.0.1
TCPPort	The TCP Port on which WinP5PT Server software is listening for client connections. This must be the same value as defined in the INNCOM .p5s script file.	1024 – 49151	2002
LinkCheckTimeInSec	Defines the period interval at which FasBAC will send the Link Beacon message to WinP5PT Server.	60-3600 (seconds)	60
CommandIntervallInMS	Defines the period interval at which FasBAC will send room point command messages to WinP5PT Server.	10-10000 (milliseconds)	100
CommandResponseTimeoutInSec	Defines the period FasBAC will wait for a response from WinP5PT Server for a room point command message.	5-60 (seconds)	30
CommandMaxResend	Defines the maximum number of retries FasBAC will do after a timeout occurs on a room point command message sent to WinP5PT Server.	0-10	3
Slunits	Defines whether the Temperature, Target Temperature and Outside Air Temperature BACnet objects will display temperature in Celsius or Fahrenheit degrees. 0 = Fahrenheit, 1 = Celsius	0-1	0

To change parameters listed in Table 5, do the following:

1. Open FasBAC.INI file (found in the folder where the application was installed) with a text editor such as Notepad.

2. Change the value of the key in the FasBAC.INI file.
3. Save FasBAC.INI file and close it.
4. Stop the FasBAC service.
5. Restart the FasBAC service.

Note: Changes only become effective after restarting FasBAC.

Starting and Stopping the FasBAC Service

FasBAC runs as a Windows service. It starts automatically with the start of the operating system. The FasBAC service can be manually stopped and started using the Windows Services applet.

To open the Service applet, do the following steps:

1. From the Windows Start Menu, open Control Panel.
2. From Control Panel, open Administrative Tools.
3. From Administrative Tools, open Component Services.
4. In Component Services tree panel, click on the Services applet.
5. In the service pane, select the 'FasBAC - CINET to BACnet Service' service.

Service Stop

The service can be stopped by clicking on the stop button on the Services applet menu or by right clicking on the service and selecting stop.

Service Start

The service can be started by clicking on the start button on the Services applet menu or by right clicking on the service and selecting start.

Automatic Start Enable

Normally you will want the FasBAC service to automatically start when the computer is started. FasBAC will wait indefinitely for the Inncom service WinP5PT to become available and will automatically connect to it when it does become available. FasBAC will try to connect to WinP5PT at one minute intervals.

To set FasBAC to start automatically when the computer is started, set the 'startup type' property to 'Automatic'. To do this, right click on the service and select Properties. In the properties dialog box, change the selection of the 'startup type' to 'Automatic'.

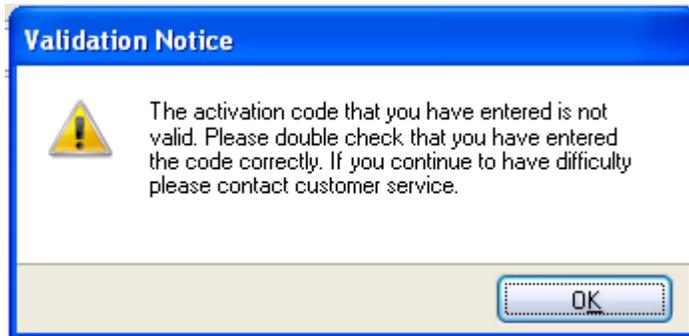
If the service is currently not started, start the service by clicking on the start button on the Services applet menu or by right clicking on the service and selecting start.

Automatic Start Disable

If a situation arises where it is necessary to prevent FasBAC from automatically starting when the computer is started, set the 'startup type' property to 'Manual'. To do this, right click on the service and select Properties. In the properties dialog box, change the set of the 'startup type'.

Licensing Troubleshooting

If the license activation is unsuccessful, a Validation Notice will be displayed – indicating the activation failed.



Possible causes for a validation failure include:

1. The validation grace period has expired.
2. When the activation code was issued by AFDtek, the code was valid for a limited period of time. The expiry date of the activation code was given by AFDtek with the code. The code will expire at midnight of the expiration date. Contact AFDtek for a new activation code.
3. The Machine Code does not match the Machine Code the activation code was generated with.
4. If the computer's hardware has changed since the Machine Code was retrieved from the computer or if the software was re-installed on a different computer, the Machine Code will be different. The license and license activation code is tied to the Machine Code. Contact AFDtek for a new license file and activation code.
5. The activation code has already been used to activate a license.
6. An activation code may only be used once. Contact AFDtek for a new activation code.
7. The activation code has the same expiry date as an activation code previously used on the computer.
Contact AFDtek for a new activation code.

Event Log Troubleshooting

FasBAC uses the Windows Application Event log for reporting errors and status messages. The message format follows Windows conventions for Windows event logging.

To view the Log File, do the following steps:

1. From the Windows Start Menu, open Control Panel.
2. From Control Panel, open Administrative Tools.
3. From Administrative Tools, open Component Services.
4. In Component Services, expand the Event Viewer and select Application.
5. In the right hand pane view messages with source column having value "FasBAC-for-CINET".

To ensure latest log messages are available, do the following:

1. Right click on the Application (step 4 above) and select Properties.
2. In the General tab in the Log size section, select the option 'Override events as needed'.

Event log messages will be generated for the following conditions:

Normal Startup Events

The following events should always be logged after a FasBAC startup.

Event Description	Action to be taken
Starting FasBAC service.	None
BACnet BACdoc library initialized.	None
Started processing the FasBACCINET.csv file.	None
Finished processing the FasBACCINET.csv file. The number of rooms is <i>n</i> .	None <i>n</i> will be replaced with the actual number of room devices created.
Connected to the WinP5PT server.	If this message does not appear, check the IPAddress and TCPPort settings as described in Table 5. Also check if the WinP5PT server is running.

AutoDiscovery Startup Events

The following events should always be logged after a FasBAC startup.

Event Description	Action to be taken
Starting FasBAC service.	None
BACnet BACdoc library initialized.	None
FasBAC is in auto discovery mode. The FasBACCINET.csv file and BACnet room devices will be automatically created as rooms are discovered. Do not restart FasBAC until the process is completed.	None – rooms are discovered as WinP5PT sends room image messages to FasBAC. As rooms are discovered, they are added to the CSV file. The AutoDiscovery mode will continue until the service is stopped. The next time the service starts, it will be in "Normal Startup" mode.
Connected to the WinP5PT server.	If this message does not appear, check the IPAddress and TCPPort settings as described in Table 5. Also check if the WinP5PT server is running.

WinP5PT Error Events

If there are problems with communications to the WinP5PT server, one or more of the following events may be logged:

Event Description	Action to be taken
Communications to the WinP5PT server has been lost.	Check if WinP5PT server is running. If FasBAC connects to the WinP5PT server then check the connectivity of the machine.
The WinP5PT server is not responding. Begin retrying the connection.	Check if WinP5PT server is running. If FasBAC connects to the WinP5PT server then check the connectivity of the machine. NOTE: FasBAC will periodically retry making the connection at the rate defined by the LinkCheckTimeInSec parameter in the FasBAC.INI file. The default value is 60 seconds. The minimum value is 60 seconds.
FasBAC will not send the following new value to the WinP5PT server as the room is offline: <room id – new value>	Check if the room thermostat is connected to the CINET network.
FasBAC will not send the following new value to the WinP5PT server as it is out of range: <room id – new value>	The value being written is out of range. Check the value range of the given room thermostat point in Table 1.
FasBAC received the following request indication from WinP5PT server: < room id – indication >.	Check if the room thermostat is connected to the CINET network.
FasBAC failed to send the following command to < room id – command>	Check if the room thermostat is connected to the CINET network.

Configuration File Error Events

If there is a problem with the format or syntax of an entry in the BACnet object definition file, the following event may be logged:

Event Description	Action to be taken
There is no FasBACCINET.csv file and auto discovery is disabled. No room device objects have been created.	Either place a previously created FasBACCINET.csv in the product folder or set the AutoDiscoveryEnabled parameter in FasBAC.ini to 1. Restart the FasBAC service.

Event Description	Action to be taken
The licensed room limit of 10 rooms has been reached.	The configuration file has more rooms defined in it than the license allows. BACnet room devices will be created for only the rooms up to the license limit. NOTE: The message will show the actual number of rooms allowed by the license. In this example, 10 is the limit of the demo license installed with the product.
Error encountered on line number <linenumber> in the FasBACCINET.csv file.	Make the necessary corrections in the FasBACCINET.csv file

BACnet Error Events

If there is a problem with the BACnet communications, one or more of the following events may be logged:

Event Description	Action to be taken
Failed to initialize the BACnet protocol handler. The service will be shutdown.	Check if the file bacdoc.dll is present in the same folder as FasBAC.exe.
BACnet communications reported the following Error: Number -139	The bacdoc.dll is unable to determine the IP address to use. Manually enter the IP address in the bacdoc.ini file, as described in section: BACnet Communications Settings
BACnet communications reported the following Error: <error #>	Please refer to Table 6 for more details on the error.

Table 6. BACnet Communication Error Descriptions

BACnet Error #	Error Description
0	Success
-1	NoFreeBuffers
-2	InvalidPort
-3	OpenAdapterFailed
-4	LSLNotFound
-5	InvalidService
-6	CantGetSelector
-7	InvalidPointer

BACnet Error #	Error Description
-8	LSAPinUse
-9	NotYetInitialized
-10	CreateThreadFailed
-11	MACDriverNotFound
-100	NoFreeTimers
-101	CantCreateWindow
-102	FailedClassRegistration
-105	MACPNotInstalled
-106	UnknownPDUType
-107	InvalidPDUType
-108	InvalidRequestThisState
-109	NoFreeSpaceAvailable
-110	NoFreeInvokeIDs
-111	Timeout
-112	ReceivedPacketTooLarge
-113	TransmitError
-114	InvalidDestinationAddr
-115	InvalidResponse
-116	AbortReceived
-117	RejectReceived
-118	ErrorReceived
-119	NoMoreSegments
-120	CannotSendSegmentedCACK
-121	TransmitPacketTooLarge
-122	NoPacketsAvailable
-123	InvalidRequestHandle
-124	NoFreeCacheSlots
-125	InvalidTag
-126	InvalidPassword
-127	BIPInitFailed

BACnet Error #	Error Description
-128	BIPCantLocateSubnetMask
-130	MSTPInitFailed
-131	TooManyPeers
-132	PeerAlreadyKnown
-133	MACorRouterAddressTooLong
-134	NotImplemented
-135	PTPInitFailed
-136	InvalidRequest
-137	NoListProvided
-139	BDE_BIPIPorMaskNotInitialized
-204	NoNALSpacketinResult
-205	NoAPDUinResult
-206	BufferSizeExceeded
-998	InhibitTX
-1000	UnknownOS