



CAS BACnet Explorer CAS-1000-10

Chipkin - Enabling Integration

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Document Revision: 1

TABLE OF CONTENTS

TABLE OF CONTENTS	2
1 CAS BACNET EXPLORER DESCRIPTION.....	3
2 CONNECTIONS DIAGRAM	4
3 FEATURES	5
3.1 DISCOVERY	5
3.1.1 <i>Simple device discovery</i>	5
3.1.2 <i>Full Device Discovery</i>	5
3.2 AUTO REFRESH.....	5
3.3 CUSTOM RENDERING OF BACNET PROPERTIES	5
3.4 EXPORT / IMPORT DATABASE	6
3.5 NETWORK ADAPTER SELECTION.....	6
4 CONFIGURATION.....	7
4.1 NETWORK ADAPTER	7
4.2 LICENSE	7
5 ADVANCED.....	8
5.1 BACNET COMMANDS.....	8
5.2 VERSIONING	8
5.3 ERROR / ABORT / REJECT WINDOW	8
6 GLOSSARY OF TERMS	9
7 CUSTOMER SUPPORT	10
REVISION HISTORY.....	11

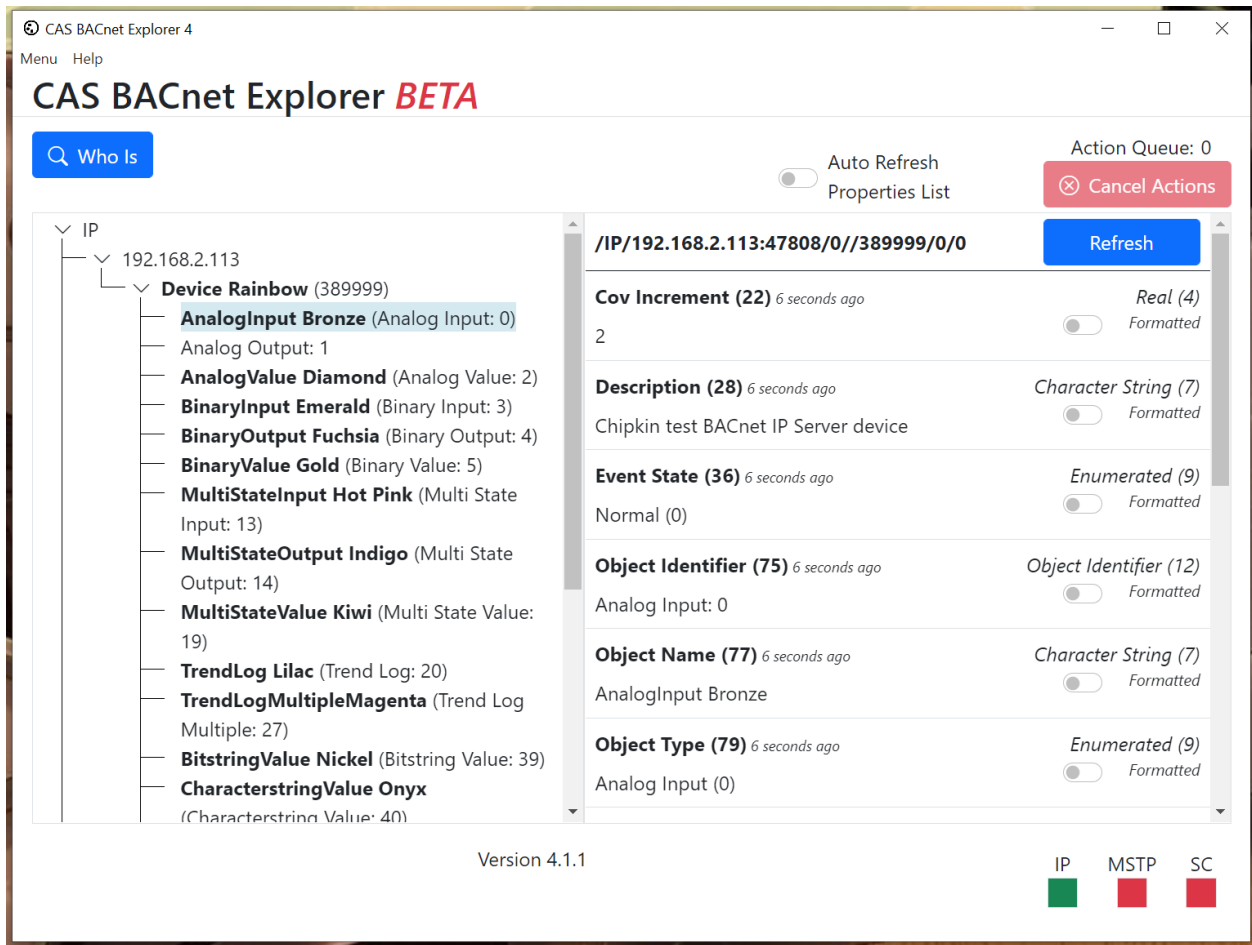
1 CAS BACnet Explorer Description

The CAS BACnet Explorer is an application that can be used to Discover, Explorer, Monitor, Debug, Test and Create reports for BACnet networks.

The CAS BACnet Explorer discovers BACnet objects using the BACnet Who-Is service. Reads the BACnet devices and objects' properties using either the BACnet Read Property or Read Property Multiple service.

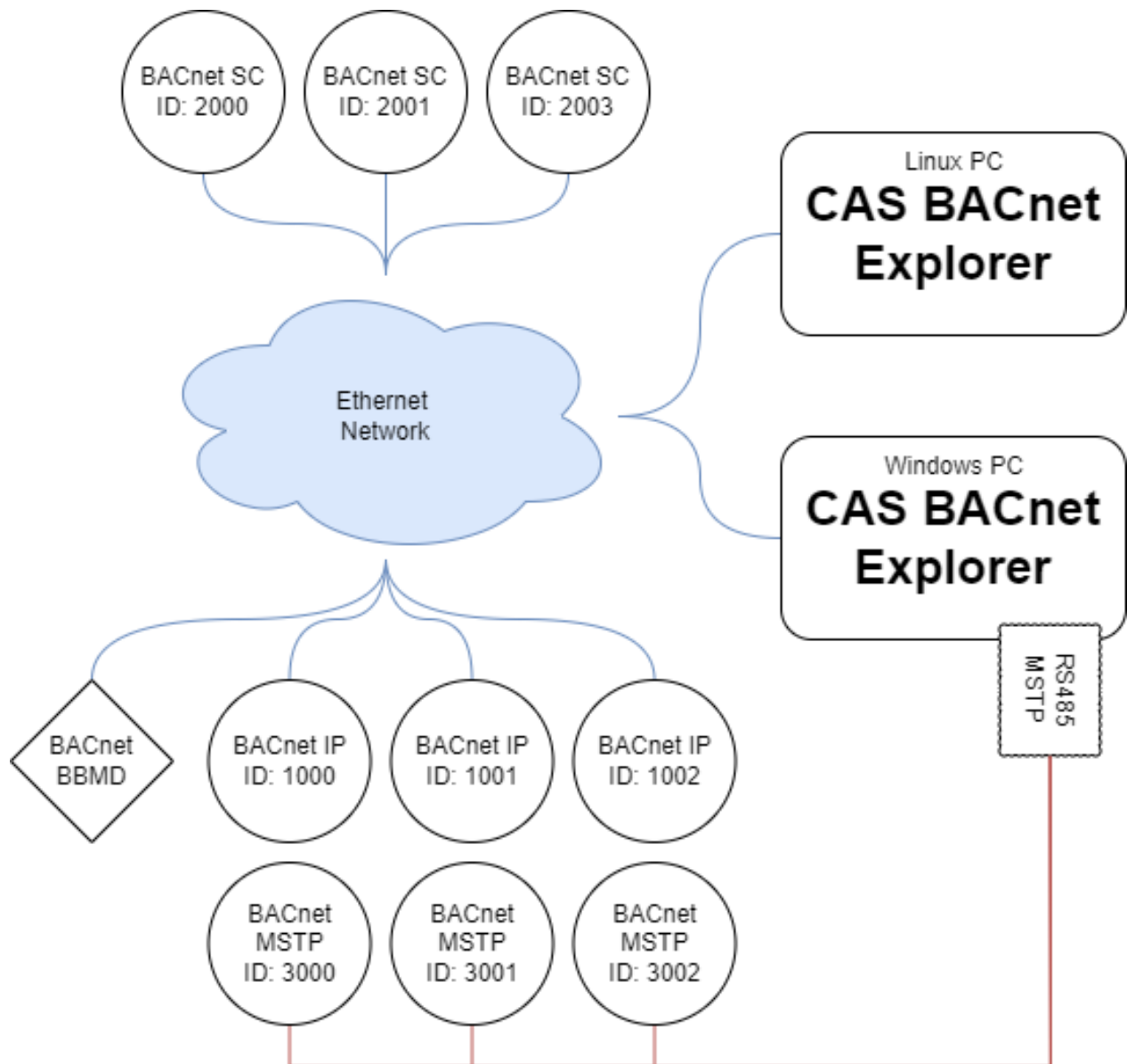
The CAS BACnet Explorer uses the CAS BACnet Stack to generate the BACnet messages to interact with the BACnet networks. More information about the CAS BACnet Stack can be found here

<https://store.chipkin.com/services/stacks/bacnet-stack>.



2 Connections Diagram

This block diagram shows how the CAS BACnet Explorer connects to different BACnet networks. BACnet IP, BACnet MSTP, BACnet Secure Connect (SC)



3 Features

The CAS BACnet Explorer supports the following features.

3.1 Discovery

The discovery feature is used to find and explore BACnet devices. Devices can be explored manually by clicking on the device node in the network tree or using the discovery tool to do a full discovery.

3.1.1 Simple device discovery

The CAS BACnet Explorer supports discovery of BACnet devices using the BACnet Who-Is command.

3.1.2 Full Device Discovery

A full discovery will send a BACnet Who-Is command and for each device that responds the CAS BACnet Explorer will discover all the objects and properties. This can be useful when creating documentation of a site's network.

Depending on the network size a full discovery can take between a few mins to hours. The discovery process can be canceled if required

3.2 Auto Refresh

The property list can be automatically refreshed by toggling the “auto refresh” switch above the property list. The CAS BACnet Explorer will attempt to rediscover the selected objects’ properties every 3 seconds and refresh the display.

This feature can be useful for monitoring the present value of an object as it changes overtime.

3.3 Custom Rendering of BACnet properties

The properties of an object are rendered depending on data type and property identifier. This allows the display of the properties in a more familiar way than raw values. The raw values are accessible by a toggle switch next to each property.

For example:

- The Enumerated (9) are be displayed as both the enumerated text and the enumerated value.
- The Octet String (6) can be rendered as 2-character hex values separated in an array of boxes.
- The Bit String (8) for Status Flags (111) can be rendered as a series of on or off values in an array of boxes.
- The Bit String (8) for Protocol Object Types Supported (96) can be rendered as a series of on or off values in an array of boxes as well as a list of enabled services.
- The Boolean (1) can be rendered as a true of false
- Etc...

3.4 Export / Import database

After discovering the devices and objects the database can be exported to a JSON database file. This database file can be imported at a later date and viewed offline. This file can also be used as documentation or used to configure BACnet clients.

3.5 Network Adapter Selection

Many modern computers have multiple network adapters. For example, a Ethernet adapter and a Wi-Fi adapter. The CAS BACnet Explorer allows the selection of the network adapter to ensure that the traffic is sent out on the correct network.

4 Configuration

The CAS BACnet Stack has a limited amount of configuration options. In most cases the default configuration options will be suitable for most networks.

4.1 Network Adapter

Modern computers have multiple network adapters. For example a Ethernet adapter and a Wifi adapter. The CAS BACnet Explorer allows the selection of the network adapter to ensure that the traffic is sent out on the correct network.

The selection of an “unbound” connection will allow the CAS BACnet Explorer to connect to any network but broadcasted messages (Who-Is) will be sent to the global broadcasted address (255.255.255.255) instead of the local broadcast address.

4.2 License

The CAS BACnet Explorer requires a license to connect to a BACnet network. A license is tied to a specific computer. An internet connection is required to request a new license. After a license has been validated an internet connection is no longer required.

A demo key can be requested from the license dialog.

5 Advanced

The following is some advanced information about how to use the CAS BACnet Explorer in very specific ways.

5.1 BACnet commands

The CAS BACnet Explorer allows for sending BACnet messages manually. The CAS BACnet Explorer supports the following BACnet commands.

- Who-Is
- Who-Has
- Time-Synchronization
- Device Communication Control
- Read-Property
- Read-Property-Multiple
- Write-Property
- Write-Property-Multiple
- Subscribe-COV
- Cancel-Subscribe-COV
- Create-Object
- Delete-Object
- Read-Range
- Confirmed-Text-Message
- Unconfirmed-Text-Message
- Register-Foreign-Device

5.2 Versioning

The CAS BACnet Explorer uses semantic versioning <https://semver.org/>.

The CAS BACnet Explorer depends on the CAS BACnet Stack to generate and decode BACnet messages. The Version information for the CAS BACnet Stack can be found on the about page.

The application was built using Electron/Chrome/Node. For reference the version numbers for these pages can be found on the about page. For all intents and purposes, the version numbers for these packages can be ignored.

5.3 Error / Abort / Reject Window

When the CAS BACnet Explorer receives a BACnet Error PDU or BACnet Abort PDU or BACnet Reject PDU the request causes the error, and the response will be found in the error window.

The items can be individually cleared, or all the items can be cleared at once.

6 Glossary of Terms

- **BACnet SC** - BACnet Secure connect
- **BBMD** - BACnet/IP Broadcast Management Device (BBMD)
- **UDP** - UDP/IP used by BACnet IP

7 Sales and Customer Support

Chipkin is proud to provide support for our products. For technical support, sales and customer service, please contact us.

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Revision History

This table summarizes the update history for this document. Please contact Chipkin for an updated version of this document if required.

DATE	Agent	Revision	COMMENT
16 Jun 2022	SWS	1.00	Created