(Optional) Creating a BACnet Device Interface (XIF) Definition (Release 3.1)

You can create a device interface (XIF) definition for a BACnet/IP or BACnet MS/TP device. To create a BACnet XIF definition, you create a CSV file with a **.bac** extension that defines the device interface for a BACnet device interface (XIF). The BACnet XIF specifies the BACnet device interface name, program ID, and manufacturer, and lists all the BACnet objects to be polled or updated by the SmartServer. To create the file, you will need the manufacturer's BACnet Protocol Implementation Conformance Statement (PICS) for the device, or the BACnet object type and object instance numbers reported by a BACnet workstation. You can download a free BACnet workstation for this purpose here.

> (i) **SmartServer 3.2 and higher releases**
>
> For SmartServer 3.2 and higher, see (Optional) Creating a BACnet Device Interface (XIF) Definition.

This section consists of the following:

- Creating a BACnet XIF File
    - File Type Specification
    - Product Details
    - Datapoint List
- Defining the BACnet Program ID
- Application Example

Creating a BACnet XIF File

The name of the BACnet XIF file, without the **.bac** extension, is the name of the BACnet XIF. The extension must be **.BAC** or **.bac**. You cannot use a compound extension name such as **.bac.csv**.

A BACnet XIF file has the following three sections.

- A file type specification that identifies the file as a BACnet XIF file.
- A product details section that specifies the program ID, version, product name, and manufacturer for the BACnet device.
- A datapoint list that specifies the datapoints on the device to be available to the SmartServer. The first line of the datapoint list is a header with column headings for a datapoint list.

The following figure illustrates the top portion of a BACnet XIF file.

```
#filetype,BACnet_xif
#program_ID,9B00F5050104FB03
#version,v1.0.0
#manufacturer,Contemporary Control Systems
#description,BASR-8M BASremote V3
Object Type,Object Instance,Write Enable,Description,Presentation Type
```

File Type Specification

The file type specification for a BACnet XIF file is the following:

```
#filetype,BACnet_xif
```

If you open a CSV file with this line in Excel, it is displayed as two cells, one with **#filetype** and one with **BACnet_xif**.

Product Details

The product details identify the product specified by the BACnet XIF file. The product details specification has the following contents:

```
#program_ID,<Program_ID>
#version,<Version>
#manufacturer,<Manufacturer>
#description,<Description>
```

If you open a CSV file with these lines in Excel, each line is displayed as two cells.

Specify the details as follows:

- <Program_ID> – (required) a 64-bit hexadecimal number used for identifying resource definitions. An example BACnet/IP program_ID is **9B00F50 50104FB03**. The program ID can optionally have colon and hyphen separators. You can create a program ID using the **SPIDCalculator** as described in Device Type Definition.
- <Version> – (optional) version of the device.
- <Manufacturer> – (optional) manufacturer of the device.
- <Description> – (optional) name of the device. This value can match the name of the **.bac** file.

Following is an example product details specification for a Contemporary Control Systems BASremote:

```
#program_ID,9B00F5050104FB03
#version,v1.0.0
#manufacturer,Contemporary Control Systems
#description,BASR-8M BASremote V3
```

Datapoint List

The datapoint list that specifies the datapoints on the device to be available to the SmartServer. The first line of the datapoint list is a header with column headings for a datapoint list. Following is an example datapoint list with a single datapoint defined on the second line:

```
Object Type,Object Instance,Block Name,Write Enable,Description,Presentation Type
AI,1,-,,scalar
```

The following table describes the column contents for the datapoint list:

| Parameter	Required/ Optional	Description
Object Type	Required	Defines the BACnet object type. Supported object types are **AI**, **AO**, **AV**, **BI**, **BO**, and **BV**
Object Instance	Required	Defines the BACnet object instance number.
Block Name	Optional	Specifies the block name for the datapoint. You can use blocks to group related datapoints together. You can provide a descriptive name to identify the block. You can specify the same block for multiple datapoints to specify that those datapoints are members of the same block. *This parameter is available for BACnet with SmartServer 3.0 and higher.*
Datapoint Name	Optional	Specifies the datapoint XIF name. If not included or left blank the datapoint XIF name will be the same name as the Object Type. *This parameter is available for BACnet with SmartServer 3.1 and higher.*
Write Enable	Required	Specifies whether or not the datapoint is writable. A plus sign ('**+**') indicates a writable datapoint (required for **AO** and **BO**). A minus sign ('**-**') indicates a non-writable datapoint (required for **AI** and **BI**).
Description	Optional	Provides a description of the device.
Presentation Type	Optional	Specifies whether the presentation type is float, scalar, or boolean. *This parameter is available for BACnet with SmartServer 3.0 and higher.*
Priority Array	Optional	Specifies whether the BACnet device supports priority arrays. **true** means this datapoint supports priority array. **false** means this datapoint does not supports priority array. When the Priority Array parameter is not specified, the default is **true**. Some BACnet devices support priority arrays and some do not – refer to your BACnet device documentation for this information. If a BACnet device does not support priority arrays, add the Priority Array column and set it to **false** for all datapoints. *This parameter is available for BACnet with SmartServer 3.0 and higher.*

Defining the BACnet Program ID

Each BACnet device interface definition requires a unique program ID. Create a BACnet program ID for the BACnet XIF as defined in Device Type Definition.

Application Example

Following is an example of creating a BACnet XIF file for a Contemporary Control Systems BASR-8M BASremote I/O device.

The SmartServer BACnet Configurator discovers and displays the interface to the device as shown in the following figure:
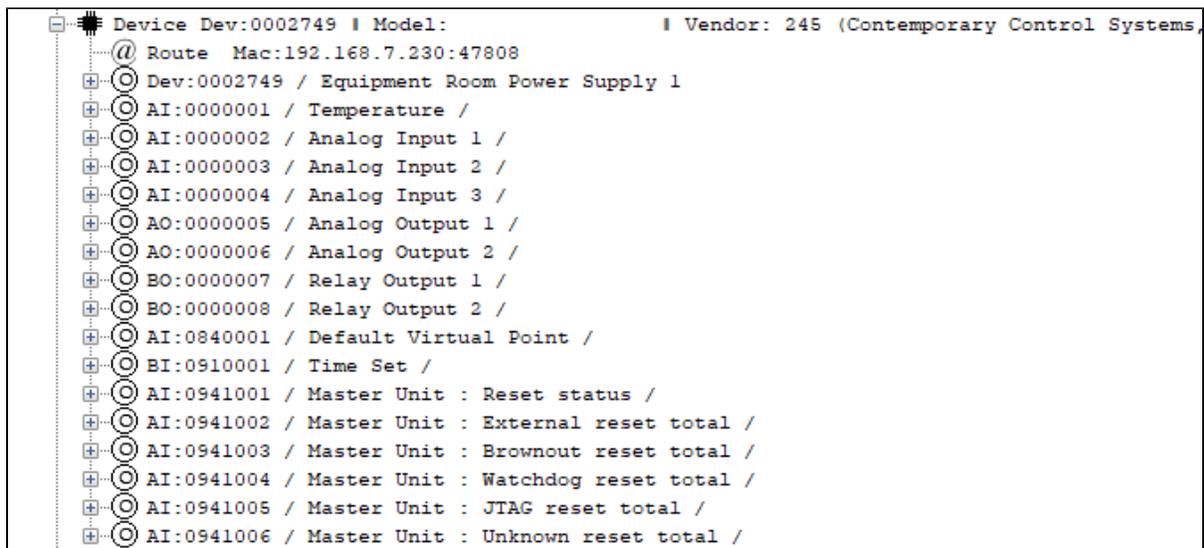
The configurator shows

that the BASremote has AI, AO, BI, and BO BACnet objects. The number shown after the BACnet object type is the BACnet object instance number. Following is the BACnet XIF file for this device:

```
#filetype,BACnet_xif
#program_ID,9B00F5050104FB03
#version,v1.0.0
#manufacturer,Contemporary Control Systems
#description,BASR-8M BASremote V3
Object Type,Object Instance,Write Enable,Description,Presentation Type
AI,1,-,,scalar
AI,2,-,,scalar
AI,3,-,,scalar
AI,4,-,,scalar
AO,5,+,,scalar
AO,6,+,,scalar
BO,7,+,,boolean
BO,8,+,,boolean
BI,910001,-,,boolean
AI,941001,-,,scalar
AI,941002,-,,scalar
AI,941003,-,,scalar
AI,941004,-,,scalar
AI,941005,-,,scalar
AI,941006,-,,scalar
```

The datapoint names for a BACnet device are all reported in a device block with block index 0 in the form of *<BACnet-object-type>***:***<BACnet-object-instance>*.