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# **Masterarbeit Grosch Documentation**

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## BACNET PACKAGE

### 1.1 Subpackages

#### 1.1.1 bacnet.api package

##### Module contents

##### BACnet API Module

This module provides basic api functionality.

**class** `bacnet.api.BACnetAPI (*args)`

Bases: `object`

This class unifies all API accessible functions.

**create** (*line*)

This function creates a request for the specified command.

**Parameters** `line` – command line

**Returns** request object

**static parse** (*apdu*)

This function returns a parsed dictionary from provided message. :param apdu: message :return: parsed dict

**receive** (*block=True, timeout=None*)

This function checks for available incoming requests

**Parameters**

- **block** – block
- **timeout** – timeout

**Returns** incoming response or None

**send** (*request, block=True, timeout=None*)

This function transmits the request.

**Parameters**

- **request** – outgoing request
- **block** – block
- **timeout** – timeout

**Returns** request was queued

## 1.1.2 bacnet.app package

### Subpackages

**bacnet.app.handler package**

### Submodules

#### **bacnet.app.handler.error module**

**Error Module** This module provides error handlers.

`bacnet.app.handler.error.do_AbortPDU(self, apdu)`  
This function handles abortions.

**Parameters** `apdu` – incoming message

**Returns** None

`bacnet.app.handler.error.do_Error(self, apdu)`  
This function handles rejections.

**Parameters** `apdu` – incoming message

**Returns** None

`bacnet.app.handler.error.do_RejectPDU(self, apdu)`  
This function handles rejections.

**Parameters** `apdu` – incoming message

**Returns** None

#### **bacnet.app.handler.events module**

**Event Handler Module** This module provides event handlers.

`bacnet.app.handler.events.do_ConfirmedCOVNotificationRequest(self, apdu)`  
This function reads data from request and returns response.

**Parameters** `apdu` – incoming message

**Returns** response

`bacnet.app.handler.events.do_ConfirmedEventNotificationRequest(self, apdu)`  
This function reads data from request and returns response.

**Parameters** `apdu` – incoming message

**Returns** None

`bacnet.app.handler.events.do_GetEventInformationRequest(self, apdu)`  
This function reads data from request and returns response.

**Parameters** `apdu` – incoming message

**Returns** None



`bacnet.app.handler.events.do_SubscribeCOVPropertyRequest (self, apdu)`

This function reads data from request and returns response.

**Parameters** `apdu` – incoming message

**Returns** response

`bacnet.app.handler.events.do_SubscribeCOVRequest (self, apdu)`

This function reads data from request and returns response.

**Parameters** `apdu` – incoming message

**Returns** response

`bacnet.app.handler.events.do_UnconfirmedCOVNotificationRequest (self, apdu)`

This function reads data from request.

**Parameters** `apdu` – incoming message

**Returns** None

`bacnet.app.handler.events.do_UnconfirmedEventNotificationRequest (self, apdu)`

This function reads data from request and returns response.

**Parameters** `apdu` – incoming message

**Returns** None

## **bacnet.app.handler.fileaccess module**

**File Access Handler Module** This module provides file access handlers.

`bacnet.app.handler.fileaccess.do_AtomicReadFileRequest (self, apdu)`

This function reads data from read file request.

**Parameters** `apdu` – incoming message

**Returns** response

`bacnet.app.handler.fileaccess.do_AtomicWriteFileRequest (self, apdu)`

This function reads data from write file request.

**Parameters** `apdu` – incoming message

**Returns** response

## **bacnet.app.handler.objects module**

**Objects Handler Module** This module provides object handlers.

`bacnet.app.handler.objects.do_CreateObjectRequest (self, apdu)`

This functions handles object creation.

**Parameters** `apdu` – incoming message

**Returns** None

`bacnet.app.handler.objects.do_DeleteObjectRequest (self, apdu)`

This functions handles object deletion.

**Parameters** `apdu` – incoming message

**Returns** None

## bacnet.app.handler.simple module

**Application Handler Module** This module provides basic functions for value casting, property creation and general handlers.

`bacnet.app.handler.simple.do_IAMRequest (self, apdu)`

This function reads data from I Am request.

**Parameters** `apdu` – incoming message

**Returns** None

`bacnet.app.handler.simple.do_IHaveRequest (self, apdu)`

This function reads data from I Have request.

**Parameters** `apdu` – incoming message

**Returns** None

`bacnet.app.handler.simple.do_ReadPropertyMultipleRequest (self, apdu)`

This function reads all values from request.

**Parameters** `apdu` – incoming message

**Returns** response

`bacnet.app.handler.simple.do_ReadPropertyRequest (self, apdu)`

This function reads value from request response.

**Parameters** `apdu` – incoming message

**Returns** None

`bacnet.app.handler.simple.do_WhoHasRequest (self, apdu)`

This function responses to WhoHas requests.

**Parameters** `apdu` – incoming message

**Returns** None

`bacnet.app.handler.simple.do_WhoIsRequest (self, apdu)`

This function responses to WhoIs requests.

**Parameters** `apdu` – incoming message

**Returns** None

`bacnet.app.handler.simple.do_WritePropertyMultipleRequest (self, apdu)`

This function reads all values from request.

**Parameters** `apdu` – incoming message

**Returns** response

`bacnet.app.handler.simple.do_WritePropertyRequest (self, apdu)`

This function reads value from request response.

**Parameters** `apdu` – incoming message

**Returns** None

`bacnet.app.handler.simple.property_to_result (obj, prop_id, prop_index=None)`

This function creates an appropriate ReadAccessResultElement.

**Parameters**

- `obj` – object

- **prop\_id** – property id
- **prop\_index** – property array index

**Returns** ReadAccessResultElement instance

`bacnet.app.handler.simple.read_property_any(obj, prop_id, prop_index=None, prop=None)`

This function creates an appropriate property value of type Any.

**Parameters**

- **obj** – object
- **prop\_id** – property id
- **prop\_index** – property array index
- **prop** – property instance

**Returns** Any instance

## Module contents

**Application Handler Module** This module provides handler for communication callbacks.

`class bacnet.app.handler.HandlerApplication(*args, **kwargs)`

Bases: `bacpypes.app.Application`

This class provides handler functionality for basic requests.

`add_cov_subscription(apdu, obj, prop=None)`

This function adds subscription to cov subscription list.

**Parameters**

- **apdu** – incoming message
- **obj** – object
- **prop** – property

**Returns** None

`check_remote_subscription_updates(apdu)`

This function checks if the cov notification was initiated correctly.

**Parameters** **apdu** – incoming message

**Returns** remote subscription exists

`check_subscription_updates(*args, **kwargs)`

This function is the actual wrapper of the function call.

`delete_cov_subscription(*args, **kwargs)`

This function is the actual wrapper of the function call.

`delete_cov_subscriptions(*args, **kwargs)`

This function is the actual wrapper of the function call.

`do_AbortPDU(apdu)`

This function handles abortions.

**Parameters** **apdu** – incoming message

**Returns** None

**do\_AtomicReadFileRequest** (*apdu*)

This function reads data from read file request.

**Parameters** *apdu* – incoming message

**Returns** response

**do\_AtomicWriteFileRequest** (*apdu*)

This function reads data from write file request.

**Parameters** *apdu* – incoming message

**Returns** response

**do\_ConfirmedCOVNotificationRequest** (*apdu*)

This function reads data from request and returns response.

**Parameters** *apdu* – incoming message

**Returns** response

**do\_CreateObjectRequest** (*apdu*)

This functions handles object creation.

**Parameters** *apdu* – incoming message

**Returns** None

**do\_DeleteObjectRequest** (*apdu*)

This functions handles object deletion.

**Parameters** *apdu* – incoming message

**Returns** None

**do\_Error** (*apdu*)

This function handles rejections.

**Parameters** *apdu* – incoming message

**Returns** None

**do\_IAmRequest** (*apdu*)

This function reads data from I Am request.

**Parameters** *apdu* – incoming message

**Returns** None

**do\_IHaveRequest** (*apdu*)

This function reads data from I Have request.

**Parameters** *apdu* – incoming message

**Returns** None

**do\_ReadPropertyMultipleRequest** (*apdu*)

This function reads all values from request.

**Parameters** *apdu* – incoming message

**Returns** response

**do\_ReadPropertyRequest** (*apdu*)

This function reads value from request response.

**Parameters** *apdu* – incoming message

**Returns** None

**do\_RejectPDU** (*apdu*)

This function handles rejections.

**Parameters** **apdu** – incoming message

**Returns** None

**do\_SubscribeCOVPropertyRequest** (*apdu*)

This function reads data from request and returns response.

**Parameters** **apdu** – incoming message

**Returns** response

**do\_SubscribeCOVRequest** (*apdu*)

This function reads data from request and returns response.

**Parameters** **apdu** – incoming message

**Returns** response

**do\_UnconfirmedCOVNotificationRequest** (*apdu*)

This function reads data from request.

**Parameters** **apdu** – incoming message

**Returns** None

**do\_WhoHasRequest** (*apdu*)

This function responses to WhoHas requests.

**Parameters** **apdu** – incoming message

**Returns** None

**do\_WhoIsRequest** (*apdu*)

This function responses to WhoIs requests.

**Parameters** **apdu** – incoming message

**Returns** None

**do\_WritePropertyMultipleRequest** (*apdu*)

This function reads all values from request.

**Parameters** **apdu** – incoming message

**Returns** response

**do\_WritePropertyRequest** (*apdu*)

This function reads value from request response.

**Parameters** **apdu** – incoming message

**Returns** None

**do\_indication** (*apdu*)

This function initiates appropriate function call for a received request.

**Parameters** **apdu** – incoming message

**Returns** None

**get\_device** (*address*)

This function returns device identifier if known.

**Parameters** **address** – device address

**Returns** device identifier

**get\_object\_by\_id** (*obj\_id*)

This function returns object by id.

**Parameters** **obj\_id** – object id

**Returns** object

**get\_object\_by\_name** (*obj\_name*)

This function returns object by name.

**Parameters** **obj\_name** – object name

**Returns** object

**get\_object\_id** (*obj\_type*)

This function provides a unique object id.

**Parameters** **obj\_type** – object type

**Returns** object id

**handle\_remote\_subscription** (*apdu*)

This function stores a new remote subscription.

**Parameters** **apdu** – outgoing request

**Returns** None

**receive\_remote\_notification** (*apdu*)

This function checks if the cov notification was initiated correctly.

**Parameters** **apdu** – incoming message

**Returns** remote subscription exists

**renew\_cov\_subscription** (*\*args, \*\*kwargs*)

This function is the actual wrapper of the function call.

**send\_cov\_notification** (*subscription, values*)

This function transmits cov notifications for subscriptions

**Parameters**

- **subscription** – subscription
- **values** – sequence of property values

**Returns** None

**bacnet.app.handler.lock\_subscriptions** (*func=None, block=True, retries=3, sleep=0.05*)

This function is a decorator for functions to lock subscriptions during execution.

**Parameters**

- **func** – function reference
- **block** – wait until lock is acquired
- **retries** – retry count if not block
- **sleep** – sleep time in secs if not block

**Returns** updated function

`bacnet.app.handler.restart_on_failure` (*func=None, retries=3, fail\_time=1*)

This function is a decorator for thread functions to restart after failure :param func: function reference :param retries: restart count within fail time :param fail\_time: time between failures to count retries :return: updated function

## Submodules

### bacnet.app.basic module

#### Application Basic Module

This module provides a basic BACpypes application object.

**class** `bacnet.app.basic.BasicApplication` (*\*args, \*\*kwargs*)

Bases: `bacnet.app.handler.HandlerApplication`, `multiprocessing.process.Process`

This class describes a basic BACpypes application including simple functionality.

**add\_object** (*obj*)

This functions adds an object to the collection.

**Parameters** *obj* – object

**Returns** None

**check\_indication\_queue** (*\*args, \*\*kwargs*)

This function is the actual wrapper of the function call.

**check\_queue** (*\*args, \*\*kwargs*)

This function is the actual wrapper of the function call.

**confirmation** (*\*args, \*\*kwargs*)

This function queues incoming messages.

**Parameters** *apdu* – incoming message

**Returns** None

**console\_interrupt** (*\*args*)

This function is the catch for interrupts.

**Returns** None

**delete\_object** (*obj*)

This function removes object from collection.

**Parameters** *obj* – object

**Returns** None

**indication** (*apdu*)

This function queues received requests.

**Parameters** *apdu* – incoming message

**Returns** None

**iter\_objects** ()

This function returns an iterator of the object collection.

**Returns** object iterator

**request** (\*args, \*\*kwargs)

This function handles outgoing messages.

**Parameters** **apdu** – outgoing message

**Returns** None

**response** (\*args, \*\*kwargs)

This function handles outgoing messages as response to a request.

**Parameters** **apdu** – outgoing message

**Returns**

**run** (\*args, \*\*kwargs)

This function is the actual wrapper of the function call.

**shutdown** (\*args)

This function shuts down the process.

**Returns** None

**stdout** = None

**terminate** ()

This function terminates processing.

**Returns** None

**update\_devices** (\*args, \*\*kwargs)

This function is the actual wrapper of the function call.

`bacnet.app.basic.poll_hardware(application, obj_tuple)`

This function polls hardware values.

**Parameters**

- **application** – application object
- **obj\_tuple** – object tuples

**Returns** None

## **bacnet.app.define module**

### **Application Define Module**

This module contains the user specific definition of a BACpypes Application and Console Commands.

**class** `bacnet.app.define.Application` (\*args, \*\*kwargs)

Bases: `bacnet.app.basic.BasicApplication`

This class describes the user specific Application functionality including basic builtin functions like “whois” and “iam”.

### **Module contents**

#### **Application Module**

This module contains just a single public function for creating a basic device and application to ensure BACnet conform communications by using BACpypes.



**Function for creating device and application:** `create_device_and_app(args)`

`bacnet.app.create_app (args, device_init=None, stdout=None, **kwargs)`

This function creates two BACpypes objects needed for BACnet communications. This includes a local device for identification of the BACnet device and grouping of related BACnet objects as well as an application for message handling from the network.

**Parameters** `args` – configuration arguments

**Returns** device, application

### 1.1.3 bacnet.console package

#### Subpackages

**bacnet.console.creator package**

#### Submodules

**bacnet.console.creator.events module**

**Event Handler Module** This module provides COV and event requests.

`bacnet.console.creator.events.subscribe_request (args, console=None)`

This function creates a write file stream request.

Usage: subscribe <address> <lifetime> <confirmed> <type> <instance> [ <property> <increment> [ <index> ] ]

#### Parameters

- **args** – list of parameters
- **console** – console object

**Returns** request

**bacnet.console.creator.fileaccess module**

**File Access Handler Module** This module provides file access requests.

`bacnet.console.creator.fileaccess.rdrec_request (args, console=None)`

This function creates a read file record request.

Usage: rdrec <address> <instance> <start> <count>

#### Parameters

- **args** – list of parameters
- **console** – console object

**Returns** request

`bacnet.console.creator.fileaccess.rdstr_request (args, console=None)`

This function creates a read file stream request.

Usage: rdstr <address> <instance> <start> <count>

**Parameters**

- **args** – list of parameters
- **console** – console object

**Returns** request

`bacnet.console.creator.fileaccess.wrrec_request (args, console=None)`

This function creates a write file record request.

Usage: wrrec <address> <instance> <start> <count> ( <data> )\* ...

**Parameters**

- **args** – list of parameters
- **console** – console object

**Returns** request

`bacnet.console.creator.fileaccess.wrstr_request (args, console=None)`

This function creates a write file stream request.

Usage: wrstr <address> <instance> <start> <data>

**Parameters**

- **args** – list of parameters
- **console** – console object

**Returns** request

**bacnet.console.creator.local module**

**Local Handler Module** This module provides local access requests. - DEPRECATED !

`bacnet.console.creator.local.local_list (args, i, obj=None, objs=None)`

This function lists all objects within the application, all properties within an object, or the property value of a property.

**Parameters**

- **args** – list of parameters
- **obj** – object

**Returns** None

`bacnet.console.creator.local.local_set (args, i, obj)`

This function sets the property value of a local property.

**Parameters**

- **args** – list of parameters
- **obj** – object

**Returns** None

`bacnet.console.creator.local.print_values (values)`

This function prints all arguments.

**Parameters** **values** – list of argument tuples

**Returns** None

## **bacnet.console.creator.objects module**

**Objects Handler Module** This module provides object requests.

`bacnet.console.creator.objects.create_request` (*args*, *console=None*)

This function creates a create object request.

Usage: create <address> <type> [ <vendor> ] ( <property> <value> [ <index> [ priority ] ] ) \* ...

### **Parameters**

- **args** – list of parameters
- **console** – console object

**Returns** request

`bacnet.console.creator.objects.delete_request` (*args*, *console=None*)

This function creates a delete object request.

Usage: delete <address> <type> <instance>

### **Parameters**

- **args** – list of parameters
- **console** – console object

**Returns** request

## **bacnet.console.creator.simple module**

**Simple Handler Module** This module contains rudimentary request functions.

`bacnet.console.creator.simple.cast_value` (*value*, *data\_type*, *prop\_index=None*,  
*prop=None*)

This function casts value to data type.

### **Parameters**

- **value** – object
- **data\_type** – data type
- **prop\_index** – property array index
- **prop** – property instance

**Returns** casted value

`bacnet.console.creator.simple.iam_request` (*args*, *console=None*)

This function creates a iam request.

Usage: iam [ <address> ]

### **Parameters**

- **args** – list of parameters
- **console** – console object

**Returns** request

`bacnet.console.creator.simple.ihave_request (args, console=None)`

This function creates a ihave request.

Usage: `ihave [ <address> ] ( <name> | <type> <instance> )`

**Parameters**

- **args** – list of parameters
- **console** – console object

**Returns** request

`bacnet.console.creator.simple.read_request (args, console=None)`

This function creates a read request for multiple objects.

Usage: `read <address> ( <type> <instance> ( <property> [ <index> ] )+ ... )+ ...`

**Parameters**

- **args** – list of parameters
- **console** – console object

**Returns** request

`bacnet.console.creator.simple.whohas_request (args, console=None)`

This function creates a whohas request.

Usage: `whohas [ <address> ] ( <name> | <type> <instance> ) [ <lowlimit> <highlimit> ]`

**Parameters**

- **args** – list of parameters
- **console** – console object

**Returns** request

`bacnet.console.creator.simple.whois_request (args, console=None)`

This function creates a whois request.

Usage: `whois [ <address> ] [ <lowlimit> <highlimit> ]`

**Parameters**

- **args** – list of parameters
- **console** – console object

**Returns** request

`bacnet.console.creator.simple.write_request (args, console=None)`

This function creates a write request for multiple objects.

Usage: `write <address> ( <type> <instance> ( <property> <value> [ <index> [ <priority> ] ] )+ ... )+ ...`

**Parameters**

- **args** – list of parameters
- **console** – console object

**Returns** request

## Module contents

**Console Handler Module** This module provides requests and parser.

`bacnet.console.creator.request_creator(line, console=None, local_id=1)`

This function parses arguments and calls specific command.

**Parameters**

- **line** – string of command line
- **console** – console object

**Returns** request object

## **bacnet.console.parser package**

### **Submodules**

#### **bacnet.console.parser.events module**

**Event Parser Module** This module provides event parsers.

`bacnet.console.parser.events.confirmed_cov_notification_request(apdu)`

This function parses confirmed cov notification request.

**Parameters** **apdu** – ConfirmedCOVNotificationRequest

**Returns** parsed data, output

`bacnet.console.parser.events.subscribe_cov_property_request(apdu)`

This function parses subscribe cov property request.

**Parameters** **apdu** – SubscribeCOVPropertyRequest

**Returns** parsed data, output

`bacnet.console.parser.events.subscribe_cov_request(apdu)`

This function parses subscribe cov request.

**Parameters** **apdu** – SubscribeCOVRequest

**Returns** parsed data, output

`bacnet.console.parser.events.unconfirmed_cov_notification_request(apdu)`

This function parses unconfirmed cov notification request.

**Parameters** **apdu** – UnconfirmedCOVNotificationRequest

**Returns** parsed data, output

#### **bacnet.console.parser.fileaccess module**

**File Access Parser Module** This module provides file access parsers.

`bacnet.console.parser.fileaccess.read_file_ack(apdu)`

This function parses atomic read file acknowledgements.

**Parameters** **apdu** – AtomicReadFileACK

**Returns** parsed data, output

`bacnet.console.parser.fileaccess.write_file_ack(apdu)`

This function parses atomic write file acknowledgements.

**Parameters** `apdu` – AtomicWriteFileACK

**Returns** parsed data, output

## **bacnet.console.parser.simple module**

**Simple Parser Module** This module contains rudimentary parser functions.

`bacnet.console.parser.simple.iam_request(apdu)`

This function parses i am requests.

**Parameters** `apdu` – IAmRequest

**Returns** parsed data, output

`bacnet.console.parser.simple.ihave_request(apdu)`

This function parses i have requests.

**Parameters** `apdu` – IHaveRequest

**Returns** parsed data, output

`bacnet.console.parser.simple.read_property_ack(apdu)`

This function parses read property acknowledgements.

**Parameters** `apdu` – ReadPropertyACK

**Returns** parsed data, output

`bacnet.console.parser.simple.read_property_multiple_ack(apdu)`

This function parses read property multiple acknowledgements.

**Parameters** `apdu` – ReadPropertyMultipleACK

**Returns** parsed data, output

`bacnet.console.parser.simple.whohas_request(apdu)`

This function parses who has requests.

**Parameters** `apdu` – WhoHasRequest

**Returns** parsed data, output

`bacnet.console.parser.simple.whois_request(apdu)`

This function parses who is requests.

**Parameters** `apdu` – WhoIsRequest

**Returns** parsed data, output

## **Module contents**

**Acknowledgement Parser Module** This module provides acknowledgement parsing handlers.

`bacnet.console.parser.response_parser(apdu, console=None)`

This function parses request messages and returns parsed data.

**Parameters**

- `apdu` – request message

- **console** – console object

**Returns** parsed data

## Submodules

### bacnet.console.basic module

#### Console Basic Module

This module provides a basic BACpypes console commands object.

**class** `bacnet.console.basic.BasicConsole` (*device, application, \*args, \*\*kwargs*)

Bases: `cmd.Cmd`, `multiprocessing.process.Process`

This class describes a basic BACpypes shell including simple commands.

**application** = `None`

**callback** (*apdu*)

This function provides a callback for command executions.

**Parameters** **apdu** – message

**Returns** `None`

**check\_queue** ()

This function checks for queued outgoing requests.

**Returns** `None`

**console\_interrupt** (*\*args*)

This function is the catch for interrupts.

**Returns** `None`

**default** (*line*)

This function handles the command line if no command was found.

**Parameters** **line** – command line

**Returns** `None`

**device** = `None`

**do\_EOF** (*args*)

This function provides an exit.

Usage: EOF

**Parameters** **args** – string of parameters

**Returns** `None`

**do\_buggers** (*args*)

This function lists all buggers.

Usage: buggers [ <prefix> ]

**Parameters** **args** – string of parameters

**Returns** `None`

**do\_bugin** (*args*)

This function activates debugging for mentioned buggers.

Usage: bugin ( <bugger> )+

**Parameters** *args* – string of parameters

**Returns** None

**do\_bugout** (*args*)

This function deactivates debugging for mentioned buggers.

Usage: bugout ( <bugger> )+

**Parameters** *args* – string of parameters

**Returns** None

**do\_exit** (*args*)

This function provides an exit.

Usage: exit

**Parameters** *args* – string of parameters

**Returns** None

**do\_gc** (*args*)

This function prints current garbage collection information.

Usage: gc

**Parameters** *args* – string of parameters

**Returns** None

**do\_info** (*args*)

This function adjusts package output.

Usage: info [ ( on | off ) ( <msg\_type> )\* ]

**Parameters** *args* – string of parameters

**Returns** None

**do\_shell** (*args*)

This function provides an access to shell execution.

Usage: ! <command>

**Parameters** *args* – string of parameters

**Returns** None

**do\_version** (*args*)

This function prints current software version.

Usage: version

**Parameters** *args* – string of parameters

**Returns** None

**emptyline** ()

This function ignores empty lines.

**Returns** None



**get\_names()**

This function collects all attributes.

**Returns** list of attributes

**help\_create** (*text*='Usage: create <address> <type> [ <vendor> ] ( <property> <value> [ <index> [ <priority> ] ] ) \* ...')

**help\_delete** (*text*='Usage: delete <address> <type> <instance>')

**help\_iam** (*text*='Usage: iam [ <address> ]')

**help\_ihave** (*text*='Usage: ihave [ <address> ] ( <name> | <type> <instance> )')

**help\_rdrec** (*text*='Usage: rdrec <address> <instance> <start> <count>')

**help\_rdstr** (*text*='Usage: rdstr <address> <instance> <start> <count>')

**help\_read** (*text*='Usage: read <address> ( <type> <instance> ( <property> [ <index> ] ) + ... ) + ...')

**help\_subscribe** (*text*='Usage: subscribe <address> <lifetime> <confirmed> <type> <instance> [ <property> <increment> [ <index> ] ]')

**help\_whohas** (*text*='Usage: whohas [ <address> ] ( <name> | <type> <instance> ) [ <lowlimit> <highlimit> ]')

**help\_whois** (*text*='Usage: whois [ <address> ] [ <lowlimit> <highlimit> ]')

**help\_write** (*text*='Usage: write <address> ( <type> <instance> ( <property> <value> [ <index> [ <priority> ] ] ) + ... ) + ...')

**help\_wrrec** (*text*='Usage: wrrec <address> <instance> <start> <count> ( <data> ) \* ...')

**help\_wrstr** (*text*='Usage: wrstr <address> <instance> <start> <data>')

**onecmd** (*line*, *queue*=True)

This function interprets the command line.

**Parameters** **line** – user command line

**Returns** command result

**postloop** ()

This function wraps up readline history after loop has finished.

**Returns** None

**preloop** ()

This function prepares loop by loading readline history file.

**Returns** None

**print\_text** (*text*)

This function prints help text.

**Parameters** **text** – help text

**Returns** None

**run** ()

This function initiates processing.

**Returns** None

**shutdown** (\*args)

This function shuts down the process.

**Returns** None

**terminate()**

This function terminates processing.

**Returns** None

## **bacnet.console.define module**

### **Console Define Module**

This module is an empty shell.

**class** `bacnet.console.define.Console(device, application, *args, **kwargs)`

Bases: `bacnet.console.basic.BasicConsole`

This Class describes the user specific Console Commands including basic builtin functions like “read” and “write”.

## **Module contents**

### **Console Module**

This module contains just a single public function for creating an object for a set of console commands to ensure BACnet conform communications by using BACpypes.

**Function for creating console commands:** `create_console(application)`

`bacnet.console.create_console(device, application, **kwargs)`

This function creates a single BACpypes object to support a shell to control BACnet messages.

#### **Parameters**

- **device** – device object
- **application** – application object

**Returns** console object

## **1.1.4 bacnet.debugging package**

### **Submodules**

#### **bacnet.debugging.log module**

##### **Debugging Log Module**

This module contains necessary objects to support logging in multiprocessing environments.

**class** `bacnet.debugging.log.LoggingFormatter(fmt=None, color=None)`

Bases: `logging.Formatter`

This class is a wrapper for logging formatter to support coloring.

**format(record)**

This function formats the message.

**Parameters** **record** – logging record

**Returns** message text

**class** `bacnet.debugging.log.MultiProcessingLog` (*name*, *mode*='a', *maxsize*=0, *backup-count*=0, *\*\*kwargs*)

Bases: `logging.Handler`

This class sends logs to queues.

**close** ()

This function closes the handler.

**Returns** None

**emit** (*record*)

This function sends the message to queue.

**Parameters** *record* – message

**Returns** None

**receive** ()

This function polls for received logs.

**Returns** None

**send** (*record*)

This function queues the message.

**Parameters** *record* – message

**Returns** None

**setFormatter** (*fmt*)

This function sets the formatter.

**Parameters** *fmt* – formatter instance

**Returns**

## Module contents

### Debugging Module

This module contains basic debugging functionality.

`bacnet.debugging.ModuleLogger` (*context*=None, *details*=0, *level*=None, *module\_name*=None, *formatter*=True)

This function creates a general logger.

**Returns** None

**class** `bacnet.debugging.TimeoutJoinableQueue` (*\*args*, *\*\*kwargs*)

Bases: `multiprocessing.queues.JoinableQueue`

This class is an updated version of `JoinableQueue` with join timeout.

**join** (*timeout*=None)

This function overrides the join function with timeout support.

`bacnet.debugging.bacnet_debug` (*func*=None, *formatter*=True, *level*=None)

This function is a decorator for objects to add debugging methods.

**Parameters**

- **formatter** – set formatter string

- **level** – set log level

**Returns** updated object

`bacnet.debugging.get_formatter(color=None)`

This function returns a logging formatter instance.

**Parameters** **color** – set color

**Returns** logging formatter

`bacnet.debugging.get_loggers(prefix=None)`

This function returns the list of all loggers.

**Returns** list of loggers

`bacnet.debugging.iso_now()`

This function returns current time in iso format.

**Returns** time in iso format

`bacnet.debugging.set_debug(args=None, stream=None)`

This function sets basic logging parameters.

**Parameters** **args** – arguments

**Returns** log queue

`bacnet.debugging.set_handler(name, **kwargs)`

This function assigns logging handler to certain loggers.

**Parameters** **name** – logger name

**Returns** None

## 1.1.5 bacnet.object package

### Subpackages

#### `bacnet.object.basic` package

#### Submodules

#### `bacnet.object.basic.cov_support` module

**COV Support Module** This module contains a list of all objects and properties supporting COV events.

#### `bacnet.object.basic.device` module

**Object Basic Module** This module contains basic definitions of BACpypes Object.

`class bacnet.object.basic.device.LocalDeviceObject(**kwargs)`

Bases: `bacnet.object.basic.general.DeviceObject`

This class provides additional functionality for device objects.

**defaultProperties** = {'numberOfApduRetries': 3, 'maxApduLengthAccepted': 1024, 'apduTimeout': 3000, 'apduSe

**properties** = [<bacnet.object.properties.CurrentTimeProperty 'localTime'>, <bacnet.object.properties.CurrentDatePr

**bacnet.object.basic.fileaccess module**

**File Access Object Module** This module contains File Access Objects.

**class** `bacnet.object.basic.fileaccess.RecordAccessFileObject` (*\*\*kwargs*)  
Bases: `bacnet.object.basic.general.FileObject`

This class provides read/write access to file records.

**ReadFile** (*start, count*)

This function provides read access.

**Parameters**

- **start** – start record
- **count** – record count

**Returns** record data

**WriteFile** (*start, count, data*)

This function provides write access.

**Parameters**

- **start** – start record
- **count** – record count
- **data** – record data

**Returns** start record

**class** `bacnet.object.basic.fileaccess.StreamAccessFileObject` (*\*\*kwargs*)  
Bases: `bacnet.object.basic.general.FileObject`

This class provides read/write access to file streams.

**ReadFile** (*start, count*)

This function provides read access.

**Parameters**

- **start** – start position
- **count** – letter count

**Returns** record data

**WriteFile** (*start, data*)

This function provides write access.

**Parameters**

- **start** – start position
- **data** – data

**Returns** start position

**get\_filename** ()

This function returns the absolute path and file name.

**Returns** file name

**lock\_file** ()

This function locks the file.

**Returns** None

`unlock_file()`

This function unlocks the file.

**Returns** None

## **bacnet.object.basic.general module**

**Object Basic Module** This module contains basic definitions of BACpypes Object.

**class** `bacnet.object.basic.general.AccessCredentialObject` (*\*\*kwargs*)

Bases: *bacnet.object.basic.general.Object*

This class is an cov extended version of bacpypes AccessCredentialObject.

**objectType** = 'accessCredential'

**properties** = [`<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>`, `<bacnet.object.properties.Reada`

**class** `bacnet.object.basic.general.AccessDoorObject` (*\*\*kwargs*)

Bases: *bacnet.object.basic.general.Object*

This class is an cov extended version of bacpypes AccessDoorObject.

**objectType** = 'accessDoor'

**properties** = [`<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>`, `<bacnet.object.properties.Reada`

**class** `bacnet.object.basic.general.AccessPointObject` (*\*\*kwargs*)

Bases: *bacnet.object.basic.general.Object*

This class is an cov extended version of bacpypes AccessPointObject.

**objectType** = 'accessPoint'

**properties** = [`<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>`, `<bacnet.object.properties.Reada`

**class** `bacnet.object.basic.general.AccessRightsObject` (*\*\*kwargs*)

Bases: *bacnet.object.basic.general.Object*

This class is an cov extended version of bacpypes AccessRightsObject.

**objectType** = 'accessRights'

**properties** = [`<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>`, `<bacnet.object.properties.Reada`

**class** `bacnet.object.basic.general.AccessUserObject` (*\*\*kwargs*)

Bases: *bacnet.object.basic.general.Object*

This class is an cov extended version of bacpypes AccessUserObject.

**objectType** = 'accessUser'

**properties** = [`<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>`, `<bacnet.object.properties.Reada`

**class** `bacnet.object.basic.general.AccessZoneObject` (*\*\*kwargs*)

Bases: *bacnet.object.basic.general.Object*

This class is an cov extended version of bacpypes AccessZoneObject.

**objectType** = 'accessZone'

**properties** = [`<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>`, `<bacnet.object.properties.Reada`

```
class bacnet.object.basic.general.AccumulatorObject (**kwargs)
```

Bases: *bacnet.object.basic.general.Object*

This class is an cov extended version of bacpypes AccumulatorObject.

```
objectType = 'accumulator'
```

```
properties = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.Reada
```

```
class bacnet.object.basic.general.AnalogInputObject (**kwargs)
```

Bases: *bacnet.object.basic.general.Object*

This class is an cov extended version of bacpypes AnalogInputObject.

```
objectType = 'analogInput'
```

```
properties = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.Reada
```

```
class bacnet.object.basic.general.AnalogOutputObject (**kwargs)
```

Bases: *bacnet.object.basic.general.Object*

This class is an cov extended version of bacpypes AnalogOutputObject.

```
objectType = 'analogOutput'
```

```
properties = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.Reada
```

```
class bacnet.object.basic.general.AnalogValueObject (**kwargs)
```

Bases: *bacnet.object.basic.general.Object*

This class is an cov extended version of bacpypes AnalogValueObject.

```
objectType = 'analogValue'
```

```
properties = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.Reada
```

```
class bacnet.object.basic.general.AveragingObject (**kwargs)
```

Bases: *bacnet.object.basic.general.Object*

This class is an cov extended version of bacpypes AveragingObject.

```
objectType = 'averaging'
```

```
properties = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.Reada
```

```
class bacnet.object.basic.general.BinaryInputObject (**kwargs)
```

Bases: *bacnet.object.basic.general.Object*

This class is an cov extended version of bacpypes BinaryInputObject.

```
objectType = 'binaryInput'
```

```
properties = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.Reada
```

```
class bacnet.object.basic.general.BinaryOutputObject (**kwargs)
```

Bases: *bacnet.object.basic.general.Object*

This class is an cov extended version of bacpypes BinaryOutputObject.

```
objectType = 'binaryOutput'
```

```
properties = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.Reada
```

```
class bacnet.object.basic.general.BinaryValueObject (**kwargs)
```

Bases: *bacnet.object.basic.general.Object*

This class is an cov extended version of bacpypes BinaryValueObject.

```
objectType = 'binaryValue'
```

**properties** = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.Reada

**class** bacnet.object.basic.general.BitStringValueObject (\*\*kwargs)

Bases: *bacnet.object.basic.general.Object*

This class is an cov extended version of bacpypes BitStringValueObject.

**objectType** = 'bitstringValue'

**properties** = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.Reada

**class** bacnet.object.basic.general.CalendarObject (\*\*kwargs)

Bases: *bacnet.object.basic.general.Object*

This class is an cov extended version of bacpypes CalendarObject.

**objectType** = 'calendar'

**properties** = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.Reada

**class** bacnet.object.basic.general.CharacterStringValueObject (\*\*kwargs)

Bases: *bacnet.object.basic.general.Object*

This class is an cov extended version of bacpypes CharacterStringValueObject.

**objectType** = 'characterstringValue'

**properties** = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.Reada

**class** bacnet.object.basic.general.CommandObject (\*\*kwargs)

Bases: *bacnet.object.basic.general.Object*

This class is an cov extended version of bacpypes CommandObject.

**objectType** = 'command'

**properties** = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.Reada

**class** bacnet.object.basic.general.CredentialDataInputObject (\*\*kwargs)

Bases: *bacnet.object.basic.general.Object*

This class is an cov extended version of bacpypes CredentialDataInputObject.

**objectType** = 'credentialDataInput'

**properties** = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.Reada

**class** bacnet.object.basic.general.DatePatternValueObject (\*\*kwargs)

Bases: *bacnet.object.basic.general.Object*

This class is an cov extended version of bacpypes DatePatternValueObject.

**objectType** = 'datePatternValue'

**properties** = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.Reada

**class** bacnet.object.basic.general.DateTimePatternValueObject (\*\*kwargs)

Bases: *bacnet.object.basic.general.Object*

This class is an cov extended version of bacpypes DateTimePatternValueObject.

**objectType** = 'datetimePatternValue'

**properties** = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.Reada

**class** bacnet.object.basic.general.DateTimeValueObject (\*\*kwargs)

Bases: *bacnet.object.basic.general.Object*

This class is an cov extended version of bacpypes DateTimeValueObject.



```
    objectType = 'datetimeValue'
    properties = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.Reada

class bacnet.object.basic.general.DateValueObject (**kwargs)
    Bases: bacnet.object.basic.general.Object
    This class is an cov extended version of bacpypes DateValueObject.
    objectType = 'dateValue'
    properties = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.Reada

class bacnet.object.basic.general.DeviceObject (**kwargs)
    Bases: bacnet.object.basic.general.Object
    This class is an cov extended version of bacpypes DeviceObject.
    objectType = 'device'
    properties = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.Reada

class bacnet.object.basic.general.EventEnrollmentObject (**kwargs)
    Bases: bacnet.object.basic.general.Object
    This class is an cov extended version of bacpypes EventEnrollmentObject.
    objectType = 'eventEnrollment'
    properties = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.Reada

class bacnet.object.basic.general.EventLogObject (**kwargs)
    Bases: bacnet.object.basic.general.Object
    This class is an cov extended version of bacpypes EventLogObject.
    objectType = 'eventLog'
    properties = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.Reada

class bacnet.object.basic.general.FileObject (**kwargs)
    Bases: bacnet.object.basic.general.Object
    This class is an cov extended version of bacpypes FileObject.
    objectType = 'file'
    properties = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.Reada

class bacnet.object.basic.general.GlobalGroupObject (**kwargs)
    Bases: bacnet.object.basic.general.Object
    This class is an cov extended version of bacpypes GlobalGroupObject.
    objectType = 'globalGroup'
    properties = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.Reada

class bacnet.object.basic.general.GroupObject (**kwargs)
    Bases: bacnet.object.basic.general.Object
    This class is an cov extended version of bacpypes GroupObject.
    objectType = 'group'
    properties = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.Reada
```

**class** `bacnet.object.basic.general.IntegerValueObject` (\*\*kwargs)

Bases: `bacnet.object.basic.general.Object`

This class is an cov extended version of bacpypes IntegerValueObject.

**objectType** = 'integerValue'

**properties** = [`<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>`, `<bacnet.object.properties.Reada`

**class** `bacnet.object.basic.general.LargeAnalogValueObject` (\*\*kwargs)

Bases: `bacnet.object.basic.general.Object`

This class is an cov extended version of bacpypes LargeAnalogValueObject.

**objectType** = 'largeAnalogValue'

**properties** = [`<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>`, `<bacnet.object.properties.Reada`

**class** `bacnet.object.basic.general.LifeSafetyPointObject` (\*\*kwargs)

Bases: `bacnet.object.basic.general.Object`

This class is an cov extended version of bacpypes LifeSafetyPointObject.

**objectType** = 'lifeSafetyPoint'

**properties** = [`<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>`, `<bacnet.object.properties.Reada`

**class** `bacnet.object.basic.general.LifeSafetyZoneObject` (\*\*kwargs)

Bases: `bacnet.object.basic.general.Object`

This class is an cov extended version of bacpypes LifeSafetyZoneObject.

**objectType** = 'lifeSafetyZone'

**properties** = [`<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>`, `<bacnet.object.properties.Reada`

**class** `bacnet.object.basic.general.LoadControlObject` (\*\*kwargs)

Bases: `bacnet.object.basic.general.Object`

This class is an cov extended version of bacpypes LoadControlObject.

**objectType** = 'loadControl'

**properties** = [`<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>`, `<bacnet.object.properties.Reada`

**class** `bacnet.object.basic.general.LoopObject` (\*\*kwargs)

Bases: `bacnet.object.basic.general.Object`

This class is an cov extended version of bacpypes LoopObject.

**objectType** = 'loop'

**properties** = [`<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>`, `<bacnet.object.properties.Reada`

**class** `bacnet.object.basic.general.MultiStateInputObject` (\*\*kwargs)

Bases: `bacnet.object.basic.general.Object`

This class is an cov extended version of bacpypes MultiStateInputObject.

**objectType** = 'multiStateInput'

**properties** = [`<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>`, `<bacnet.object.properties.Reada`

**class** `bacnet.object.basic.general.MultiStateOutputObject` (\*\*kwargs)

Bases: `bacnet.object.basic.general.Object`

This class is an cov extended version of bacpypes MultiStateOutputObject.

**objectType** = 'multiStateOutput'

```
properties = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.Reada
```

```
class bacnet.object.basic.general.MultiStateValueObject (**kwargs)  
    Bases: bacnet.object.basic.general.Object
```

This class is an cov extended version of bacpypes MultiStateValueObject.

```
objectType = 'multiStateValue'
```

```
properties = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.Reada
```

```
class bacnet.object.basic.general.NetworkSecurityObject (**kwargs)  
    Bases: bacnet.object.basic.general.Object
```

This class is an cov extended version of bacpypes NetworkSecurityObject.

```
objectType = 'networkSecurity'
```

```
properties = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.Reada
```

```
class bacnet.object.basic.general.NotificationClassObject (**kwargs)  
    Bases: bacnet.object.basic.general.Object
```

This class is an cov extended version of bacpypes NotificationClassObject.

```
objectType = 'notificationClass'
```

```
properties = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.Reada
```

```
class bacnet.object.basic.general.Object (**kwargs)  
    Bases: bacpypes.object.Object
```

This class is an extension of the bacpypes Object class to support COV notifications.

```
ReadProperty (propid, arrayIndex=None, **kwargs)  
    This function handles reading of property values.
```

**Parameters**

- **propid** – property identifier
- **arrayIndex** – property index

**Returns** property value

```
WriteProperty (propid, value, arrayIndex=None, priority=None, direct=False, **kwargs)  
    This function handles writing of property values.
```

**Parameters**

- **propid** – property identifier
- **value** – property value
- **arrayIndex** – property index
- **priority** – write priority
- **direct** – direct write

**Returns** property value

```
add_cov_subscription (subscription)  
    This function adds subscription to cov subscription list.
```

**Parameters** **subscription** – subscription

**Returns** None

**cov\_supported** (*prop=None*)

This function checks if COV subscription is supported.

**Parameters** **prop** – property object or identifier

**Returns** COV is supported

**delete\_cov\_subscription** (*subscriptions, inform\_app=False*)

This function deletes subscription from cov subscription list.

**Parameters**

- **subscriptions** – subscriptions
- **inform\_app** – inform application

**Returns** None

**get\_property** (*identifier*)

This function returns the property for identifier. :param identifier: property identifier :return: property

**get\_value** (*identifier*)

This function returns the value for property identifier. :param identifier: property identifier :return: value

**poll\_hardware** ()

This function checks for value updates for hardware.

**Returns** None

**properties** = [<bacnet.object.properties.ObjectIdentifierProperty ‘objectIdentifier’>, <bacnet.object.properties.Read

**renew\_cov\_subscription** (*subscription*)

This function checks if subscription can be renewed and returns boolean of this action.

**Parameters** **subscription** – subscription

**Returns** subscription renewed

**set\_application** (*application*)

This function defines the application associated to this object.

**Parameters** **application** – application object

**Returns** None

**set\_value** (*identifier, value*)

This function sets the value for property identifier. :param identifier: property identifier :param value: property value :return: None

**class** bacnet.object.basic.general.**OctetStringValueObject** (\*\*kwargs)

Bases: *bacnet.object.basic.general.Object*

This class is an cov extended version of bacpypes OctetStringValueObject.

**objectType** = ‘octetstringValue’

**properties** = [<bacnet.object.properties.ObjectIdentifierProperty ‘objectIdentifier’>, <bacnet.object.properties.Read

**class** bacnet.object.basic.general.**PositiveIntegerValueObject** (\*\*kwargs)

Bases: *bacnet.object.basic.general.Object*

This class is an cov extended version of bacpypes PositiveIntegerValueObject.

**objectType** = ‘positiveIntegerValue’

**properties** = [<bacnet.object.properties.ObjectIdentifierProperty ‘objectIdentifier’>, <bacnet.object.properties.Read

```
class bacnet.object.basic.general.ProgramObject (**kwargs)
    Bases: bacnet.object.basic.general.Object
```

This class is an cov extended version of bacpypes ProgramObject.

```
    objectType = 'program'
```

```
    properties = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.ReadableProperty 'readable'>]
```

```
class bacnet.object.basic.general.PulseConverterObject (**kwargs)
    Bases: bacnet.object.basic.general.Object
```

This class is an cov extended version of bacpypes PulseConverterObject.

```
    objectType = 'pulseConverter'
```

```
    properties = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.ReadableProperty 'readable'>]
```

```
class bacnet.object.basic.general.ScheduleObject (**kwargs)
    Bases: bacnet.object.basic.general.Object
```

This class is an cov extended version of bacpypes ScheduleObject.

```
    objectType = 'schedule'
```

```
    properties = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.ReadableProperty 'readable'>]
```

```
class bacnet.object.basic.general.StructuredViewObject (**kwargs)
    Bases: bacnet.object.basic.general.Object
```

This class is an cov extended version of bacpypes StructuredViewObject.

```
    objectType = 'structuredView'
```

```
    properties = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.ReadableProperty 'readable'>]
```

```
class bacnet.object.basic.general.TimePatternValueObject (**kwargs)
    Bases: bacnet.object.basic.general.Object
```

This class is an cov extended version of bacpypes TimePatternValueObject.

```
    objectType = 'timePatternValue'
```

```
    properties = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.ReadableProperty 'readable'>]
```

```
class bacnet.object.basic.general.TimeValueObject (**kwargs)
    Bases: bacnet.object.basic.general.Object
```

This class is an cov extended version of bacpypes TimeValueObject.

```
    objectType = 'timeValue'
```

```
    properties = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.ReadableProperty 'readable'>]
```

```
class bacnet.object.basic.general.TrendLogMultipleObject (**kwargs)
    Bases: bacnet.object.basic.general.Object
```

This class is an cov extended version of bacpypes TrendLogMultipleObject.

```
    objectType = 'trendLogMultiple'
```

```
    properties = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.ReadableProperty 'readable'>]
```

```
class bacnet.object.basic.general.TrendLogObject (**kwargs)
    Bases: bacnet.object.basic.general.Object
```

This class is an cov extended version of bacpypes TrendLogObject.

```
    objectType = 'trendLog'
```

```
properties = [<bacnet.object.properties.ObjectIdentifierProperty 'objectIdentifier'>, <bacnet.object.properties.Reada
```

```
bacnet.object.basic.general.cls_obj  
    alias of Object
```

```
bacnet.object.basic.general.get_datatype(cls, prop_id, vendor_id=0)  
    This function returns the data type for a specified class and property identifier.
```

**Parameters**

- **cls** – object class
- **prop\_id** – property identifier

**Returns** object type

```
bacnet.object.basic.general.get_object_class(cls, vendor_id=0)  
    This function returns the object type for a specified class.
```

**Parameters** **cls** – object class

**Returns** object type

```
bacnet.object.basic.general.new_class  
    alias of TrendLogMultipleObject
```

```
bacnet.object.basic.general.new_property(cls_type, old_prop)  
    This function converts bacpypes properties into new bacnet properties.
```

**Parameters**

- **cls\_type** – object type
- **old\_prop** – old property

**Returns** new property

```
bacnet.object.basic.general.register_object_type(cls, vendor_id=0)  
    This function stores new object types.
```

**Parameters** **cls** – object class

**Returns** None

## **bacnet.object.basic.program module**

**Object Basic Module** This module contains basic definitions of BACpypes Object.

```
class bacnet.object.basic.program.ExecProgramObject (**kwargs)  
    Bases: bacnet.object.basic.general.ProgramObject
```

This class provides additional functionality for python programs.

```
WriteProperty(prop_id, value, arrayIndex=None, priority=None, direct=False)  
    This function writes to property.
```

**Parameters**

- **prop\_id** – property identifier
- **value** – value
- **arrayIndex** – index
- **priority** – priority

- **direct** – direct

**Returns** None

**do\_haltProgram()**

This functions watches over the halt process of the executed program.

**Returns** None

**haltProgram()**

This function halts the program.

**Returns** None

**loadProgram()**

This function loads the program.

**Returns** None

**runProgram()**

This function runs the program.

**Returns** None

**safe\_delete()**

This function handles safe deletion

**Returns** None

**set\_application(application)**

This function defines the application associated to this object.

**Parameters** **application** – application object

**Returns** None

**unloadProgram()**

This function unloads the program.

**Returns** None

**watchdog(\*funcs)**

This function watches over the executed program changes.

**Returns** None

## Module contents

**Object Basic Module** This module contains basic definitions of BACpypes Object.

**bacnet.object.hardware package**

## Subpackages

**bacnet.object.hardware.terra package**

## Submodules

**bacnet.object.hardware.terra.ablib\_dummy module**

**Terra\_Board ABLIB\_Dummy Module** This module contains dummy classes for hardware abstraction.

```
class bacnet.object.hardware.terra.ablib_dummy.ABLIB_Dummy(*args, **kwargs)
    Bases: object
```

This class is a generic dummy class.

**identifier** = None

**name** = ''

```
class bacnet.object.hardware.terra.ablib_dummy.BinaryReadDummy(*args, **kwargs)
    Bases: bacnet.object.hardware.terra.ablib_dummy.ABLIB_Dummy
```

This class is a dummy for reading binary values.

**get** (identifier=None)

This function is a dummy for getting the led status.

**value** = False

```
class bacnet.object.hardware.terra.ablib_dummy.BinaryWriteDummy(*args, **kwargs)
    Bases: bacnet.object.hardware.terra.ablib_dummy.BinaryReadDummy
```

This class is a dummy for reading and writing binary values

**off** (identifier=None)

This function is a dummy for turning off the led.

**on** (identifier=None)

This function is a dummy for turning on the led.

```
class bacnet.object.hardware.terra.ablib_dummy.Daisy11(connector_id, led_id)
    Bases: bacnet.object.hardware.terra.ablib_dummy.BinaryWriteDummy
```

This class is a dummy for the terra board's led array.

**name** = 'LED'

```
class bacnet.object.hardware.terra.ablib_dummy.Daisy19(connector_id, position, out-
                                                         put_id)
    Bases: bacnet.object.hardware.terra.ablib_dummy.BinaryWriteDummy
```

This class is a dummy for the terra board's 4 channel output switch.

**name** = 'Output'

```
class bacnet.object.hardware.terra.ablib_dummy.Daisy20(*args, **kwargs)
    Bases: bacnet.object.hardware.terra.ablib_dummy.BinaryReadDummy
```

This class is a dummy for the terra board's adc.

**convert** (value)

This function is a dummy to convert the bit value into voltage.

**Parameters** value – bit value

**Returns** voltage

**name** = 'ADC'

```
class bacnet.object.hardware.terra.ablib_dummy.Daisy22(*args, **kwargs)
    Bases: bacnet.object.hardware.terra.ablib_dummy.BinaryWriteDummy
```

This class is a dummy for the terra board's backlight led of the lcd display.

**name** = 'Backlight LED'



```
class bacnet.object.hardware.terra.ablib_dummy.Daisy24(*args, **kwargs)
    Bases: bacnet.object.hardware.terra.ablib_dummy.ABLIB_Dummy
```

This class is a dummy for the terra board's lcd display and button array.

```
backled = <bacnet.object.hardware.terra.ablib_dummy.Daisy22 'Backlight LED None'>
```

```
name = 'LCD'
```

```
pressed(keyid)
```

This function is a dummy for checking pressed buttons.

**Parameters** **keyid** – button id

**Returns** button pressed

```
putstring(value)
```

This function is a dummy for putting a string to the LCD display.

**Parameters** **value** – string

**Returns** None

```
setcurpos(x, y)
```

This function is a dummy for setting the cursor on the LCD display.

**Parameters**

- **x** – x position
- **y** – y position

**Returns** None

## Module contents

**Terra Module** This module contains Terra Board specific objects.

```
class bacnet.object.hardware.terra.AbstractDaisy20(identifier)
```

Bases: object

This class is an abstraction of the ablib.Daisy20 class.

```
get()
```

This function is a wrapper for the get function.

**Returns** voltage

```
identifier = None
```

```
class bacnet.object.hardware.terra.AbstractDaisy24Backlight(identifier=None)
```

Bases: object

This class is an abstraction for backlight of the ablib.Daisy24 class.

```
get()
```

This function is a wrapper for the backled.get function.

**Returns** led on/off

```
off()
```

This function is a wrapper for the backled.off function.

**Returns** None

**on ()**

This function is a wrapper for the backled.on function.

**Returns** None

**class** bacnet.object.hardware.terra.**AbstractDaisy24Button** (*identifier*)

Bases: object

This class is an abstraction for buttons of the ablib.Daisy24 class.

**get ()**

This function is a wrapper for the pressed function.

**Returns** button pressed

**identifier = None**

**class** bacnet.object.hardware.terra.**AbstractDaisy24LCD** (*identifier=None*)

Bases: object

This class is an abstraction for lcd of the ablib.Daisy24 class.

**get ()**

This function is a providing a value buffer.

**Returns** button pressed/not pressed

**identifier = None**

**value = ''**

**write (value)**

This function is a wrapper for the putstring and setcurpos function

**Returns** None

**class** bacnet.object.hardware.terra.**New\_Daisy20** (*max\_voltage=10, bits=10*)

Bases: object

DAISY-20 (ADC module)

**adc\_path = '/sys/bus/iio/devices/iio:device0/'**

**chan\_file = 'in\_voltage%i\_raw'**

**convert (bit\_value)**

**get (ch=0)**

**max\_voltage = 0**

**volt\_per\_point = 0**

## Module contents

**Objects Hardware Module** This module collects objects and classes with hardware specific properties.

**bacnet.object.hardware.discover\_hardware\_objects ()**

This function registers all defined objects in all hardware modules.

**Returns** object dictionary

## Submodules

### bacnet.object.define module

#### Object Define Module

This module contains user specific definitions of BACpypes Object and a list to collect all builtin Objects needed.

```
bacnet.object.define.get_initial_object_list()
```

This function creates the object list.

**Returns** object list

### bacnet.object.primitivedata module

#### Primitive Data Module

This module contains improved bacpypes primitive data classes.

```
class bacnet.object.primitivedata.COVSubscription(*args, **kwargs)
```

Bases: bacpypes.basetypes.COVSubscription

This class has specific updates.

**sequenceElements** = [<bacpypes.constructeddata.Element instance at 0x10586f0e0>, <bacpypes.constructeddata.Elen

```
class bacnet.object.primitivedata.ObjectPropertyReference(*args, **kwargs)
```

Bases: bacpypes.constructeddata.Sequence

This class has an extension to support instances without property identifier.

**sequenceElements** = [<bacpypes.constructeddata.Element instance at 0x10586f1b8>, <bacpypes.constructeddata.Elen

```
class bacnet.object.primitivedata.Remaining(time)
```

Bases: bacpypes.primitivedata.CharacterString

This class is an extended version of Unsigned.

**decode** (tag)

This function decodes the value from network transmission.

**Parameters** tag – Tag

**Returns** None

**encode** (tag)

This function encodes the value for network transmission.

**Parameters** tag – Tag

**Returns** None

**remaining\_time**

This function calculates the remaining time till defined datetime

**Returns** remaining time in seconds

```
class bacnet.object.primitivedata.RingDict(size, *args, **kwargs)
```

Bases: collections.OrderedDict

This class is a dictionary ring buffer without overriding protection.

**size**

This function returns the size of the ring buffer.

**Returns** buffer size

**class** `bacnet.object.primitivedata.RingList (size, seq=())`

Bases: `list`

This class is a ring buffer without overriding protection.

**append (data)**

This function adds data to ring buffer.

**Parameters** **data** – data to be added

**Returns** None

**first\_value ()**

This function returns the value last appended.

**Returns** last value

**last\_value ()**

This function returns the value last appended.

**Returns** last value

**size**

This function returns the size of the ring buffer.

**Returns** buffer size

**class** `bacnet.object.primitivedata.Unsigned (*args)`

Bases: `bacpypes.primitivedata.Unsigned, long`

This class has an integer extension to support builtin functions like `div` float.

## **bacnet.object.properties module**

### **Object Properties Module**

This module contains specific properties for the usage within objects. Especially it provides updated property COV functionality for `bacpypes` objects.

**class** `bacnet.object.properties.ActiveCovSubscriptionsProperty (*args, **kwargs)`

Bases: `bacnet.object.properties.ReadableProperty`

This class is an extension of the `ReadableProperty` class for active cov subscriptions.

**ReadProperty (obj, arrayIndex=None, dictionary=False)**

This function handles reading.

**Parameters**

- **obj** – property
- **arrayIndex** – index

**Returns** property value

**WriteProperty (obj, value, arrayIndex=None, priority=None, direct=False)**

This function handles writing.

**Parameters**

- **obj** – property
- **value** – property value
- **arrayIndex** – index
- **priority** – priority
- **direct** – direct

**Returns** property value

**class** `bacnet.object.properties.CurrentDateProperty` (*identifier*)

Bases: `bacnet.object.properties.OptionalProperty`

This class is an extension of the OptionalProperty class for current date.

**ReadProperty** (*obj, arrayIndex=None*)

This function handles reading.

**Parameters**

- **obj** – property
- **arrayIndex** – index

**Returns** property value

**WriteProperty** (*obj, value, arrayIndex=None, priority=None, direct=False*)

This function handles writing.

**Parameters**

- **obj** – property
- **value** – property value
- **arrayIndex** – index
- **priority** – priority
- **direct** – direct

**Returns** property value

**class** `bacnet.object.properties.CurrentTimeProperty` (*identifier*)

Bases: `bacnet.object.properties.OptionalProperty`

This class is an extension of the OptionalProperty class for current time.

**ReadProperty** (*obj, arrayIndex=None*)

This function handles reading.

**Parameters**

- **obj** – property
- **arrayIndex** – index

**Returns** property value

**WriteProperty** (*obj, value, arrayIndex=None, priority=None, direct=False*)

This function handles writing.

**Parameters**

- **obj** – property
- **value** – property value

- **arrayIndex** – index
- **priority** – priority
- **direct** – direct

**Returns** property value

**class** `bacnet.object.properties.HardwareAccessObject` (*hw\_object*, *write=False*, *hysteresis=False*, *buffer\_size=0*)

Bases: `object`

This class is a wrapper for terra hardware objects.

**get** (*index=None*)

This function is a wrapper for getting the actual hardware value

**Parameters** **index** – array index

**Returns** value

**hardware** = None

**hysteresis** (*value*)

This function applies a user specific hysteresis to the value.

**Parameters** **value** – hardware value

**Returns** updated value

**set** (*value*, *data\_type*, *index=None*)

This function converts the

**Parameters**

- **value** – value
- **data\_type** – data type
- **index** – array index

**Returns** value

**writable** = False

**class** `bacnet.object.properties.ObjectIdentifierProperty` (*identifier*, *datatype*, *default=None*, *optional=False*, *mutable=False*, *cov\_support=False*)

Bases: `bacnet.object.properties.ReadableProperty`

This class is an extension of the ReadableProperty class for object identifiers.

**WriteProperty** (*obj*, *value*, *arrayIndex=None*, *priority=None*, *direct=False*)

This function handles writing.

**Parameters**

- **obj** – property
- **value** – property value
- **arrayIndex** – index
- **priority** – priority
- **direct** – direct

**Returns** property value

```
class bacnet.object.properties.OptionalProperty(identifier, datatype, default=None,
                                                optional=True, mutable=False,
                                                cov_support=False)
```

Bases: *[bacnet.object.properties.StandardProperty](#)*

This class is an extension of the bacpypes OptionalProperty class to support COV notifications.

```
class bacnet.object.properties.Property(identifier, datatype, **kwargs)
```

Bases: *[object](#)*

This class is an extension of the bacpypes Property class to support COV notifications.

```
ReadProperty(obj, arrayIndex=None)
```

This function handles reading.

#### Parameters

- **obj** – property
- **arrayIndex** – index

Returns property value

```
WriteProperty(obj, value, arrayIndex=None, priority=None, direct=False)
```

This function handles writing.

#### Parameters

- **obj** – property
- **value** – property value
- **arrayIndex** – index
- **priority** – priority
- **direct** – direct

Returns property value

```
class bacnet.object.properties.ReadableProperty(identifier, datatype, default=None,
                                                optional=False, mutable=False,
                                                cov_support=False)
```

Bases: *[bacnet.object.properties.StandardProperty](#)*

This class is an extension of the bacpypes ReadableProperty class to support COV notifications.

```
class bacnet.object.properties.StandardProperty(*args, **kwargs)
```

Bases: *[bacnet.object.properties.Property](#)*

This class is an extension of the bacpypes StandardProperty class to support COV notifications.

```
class bacnet.object.properties.WritableProperty(identifier, datatype, default=None,
                                                optional=False, mutable=True,
                                                cov_support=False)
```

Bases: *[bacnet.object.properties.StandardProperty](#)*

This class is an extension of the bacpypes WritableProperty class to support COV notifications.

## Module contents

### Objects Module

This module contains just a single function to collect all user specific bacpypes Objects.

`bacnet.object.get_object_list()`

This function collects all defined user specific and relevant builtin bacpypes Objects.

**Parameters** `examples` – enable example objects

**Returns** `object_list`

## 1.1.6 bacnet.sandbox package

### Subpackages

### Submodules

#### bacnet.sandbox.interface module

##### Sandbox Interface Module

This module contains the Transformation Implementation for the Sandbox interface. It is simply copied from the PyPy code and thereby not commented.

`bacnet.sandbox.interface.read_message(timeout=None)`

`bacnet.sandbox.interface.receive()`

This function is waiting for arriving messages via an event.

**Returns** `message`

`bacnet.sandbox.interface.transmit(line)`

This function is transmitting outgoing messages.

**Returns** `None`

`bacnet.sandbox.interface.write_message(*x)`

#### bacnet.sandbox.process module

##### Module contents

##### Sandbox Module

This module contains handlers for the pypy sandbox environment.

`bacnet.sandbox.get_platform_name()`

This function returns the platform name.

**Returns** `platform name`

`bacnet.sandbox.get_sandbox_process(executable)`

This function returns a sandbox process object.

**Parameters** `executable` – relative path to untrusted executable

**Returns** `sandbox process`

`bacnet.sandbox.sandbox_interact(sandbox_process)`

This function interacts with the sandbox process.

**Parameters** `sandbox_process` – sandbox process object



**Returns** None

`bacnet.sandbox.sandbox_support(platform_name='darwin-x86_64')`

This function checks if compiled sandbox version of pypy exists for this system.

**Returns** sandbox is supported on this system

## 1.1.7 bacnet.system package

### Subpackages

**bacnet.system.config package**

### Submodules

**bacnet.system.config.helper module**

**Handler Helper Module** This module provides access to local interface addresses.

`bacnet.system.config.helper.get_local_ip(interface)`

This function retrieves an IP address from the defined interface.

**Parameters** `interface` – network interface for IP address retrieval

**Returns** ip\_address

**bacnet.system.config.parser module**

**Config Parser Module** This module provides an extended version of the BCPypres argument parser.

`class bacnet.system.config.parser.FullArgumentParser(**kwargs)`

Bases: `argparse.ArgumentParser`

This class combines BACPypes builtin config and parameter parser with customized parameters.

**arg\_object** = None

**parse\_args** (\*args, \*\*kwargs)

This function wraps the parse\_args of ConfigArgumentParser to intercept version requests.

**Returns** self

**update** ()

This function updates the argument object.

**Returns** parsed parameters

### Module contents

**BACnet Config Module** This module provides configuration functionality.

```
class bacnet.system.config.ConfigManager (**kwargs)
    Bases: object
```

This class handles the configuration requests by the user.

```
data = {}
```

```
filename = 'BACnet.ini'
```

```
get (key)
```

This function retrieves specified value provided by the user.

**Parameters** **key** – value to retrieve

**Returns** None

```
get_input (key, prompt)
```

This function handles user input.

**Parameters**

- **key** – default key
- **prompt** – prompt text

**Returns** user response

```
start ()
```

This function initiates the user interface.

**Returns** None

```
store ()
```

This function stores the retrieved data.

**Returns** None

```
valid (key, response)
```

This function checks, if response is valid

**Parameters**

- **key** – value to retrieve
- **response** – retrieved value

**Returns**

```
verify_address (key='address', response='', interface=True)
```

This function retrieves an ip address provided by the user.

**Parameters** **response** – user input

**Returns** verified response

```
verify_bbmd (response)
```

This function verifies an ip address provided by the user.

**Parameters** **response** – user input

**Returns** verified response

## Submodules

### bacnet.system.managing module

#### BACnet Managing Module

This module provides managing tools for multiprocessing.

`bacnet.system.managing.client_manager` (*address=None, authkey=None*)

This function creates a client manager

**Returns** manager

`bacnet.system.managing.server_manager` (*log\_queue, ip\_address, port, console=False, webgui=False*)

This function creates a server manager.

**Returns** manager, server

### bacnet.system.vendors module

#### Vendors

This module provides an updater for BACnet vendor IDs.

**class** `bacnet.system.vendors.TableParser`

Bases: `htmllib.HTMLParser`

This class implements a table parser for the BACnet vendor list.

`end_tr()`

This function handles the end of a column.

**Returns**

`handle_data` (*data*)

This function handles tag data.

**Parameters** *data* – tag data

**Returns** None

`handle_starttag` (*tag, method, attrs*)

This function is called on every start tag.

**Parameters**

- **tag** – full tag
- **method** – tag function
- **attrs** – tag attributes

**Returns** None

`handle_td` (*data*)

This function handles a new column.

**Parameters** *data* – tag content

**Returns** None

**start\_td** (*attrs*)

This function handles a new column.

**Parameters** *attrs* – tag attributes

**Returns** None

`bacnet.system.vendors.get_vendors()`

This function requests the current vendor list and returns a parsed dictionary

**Returns** vendor dictionary

## bacnet.system.version module

### BACnet System Version Module

This module handles version printing and normalizing according to PEP 386.

`bacnet.system.version.create_version(version)`

This function is a verlib wrapper to create necessary version and git information.

**Parameters** *version* – get current version tuple

**Returns** full\_version, git\_info

`bacnet.system.version.get_version()`

This function returns current version string and exits program.

**Returns** None

## Module contents

### BACnet System Module

This module contains the bacnet system class.

**class** `bacnet.system.BACnetSystem` (*stdin=<open file '<stdin>', mode 'r'>, stdout=<open file '<stdout>', mode 'w'>, stderr=<open file '<stderr>', mode 'w'>*)

Bases: object

This class handles the BACnet system.

**application** = None

**console** = None

**console\_interrupt** (*\*args*)

This function is the catch for interrupts.

**Returns** None

**do\_buggers** (*config\_args*)

This function lists all buggers.

**Parameters** *config\_args* – configuration arguments

**Returns** None

**do\_config** (*config\_args*)

This function sets configuration parameters.

**Parameters** *config\_args* – configuration arguments

**Returns** None

**do\_hardware** (*config\_args*)

This function lists all creatable hardware objects.

**Parameters** **config\_args** – configuration arguments

**Returns** None

**do\_set\_tag** (*config\_args*)

This function initiates the BACnet system start up as shell.

**Parameters** **config\_args** – configuration arguments

**Returns** None

**do\_shell** (*config\_args*)

This function initiates the BACnet system start up as shell.

**Parameters** **config\_args** – configuration arguments

**Returns** None

**do\_start** (*config\_args, console=False, webgui=False*)

This function initiates the BACnet system start up as reactive application.

**Parameters** **config\_args** – configuration arguments

**Returns** None

**do\_webgui** (*config\_args*)

This function initiates the BACnet system start up as web gui.

**Parameters** **config\_args** – configuration arguments

**Returns** None

**exit** (*code=0*)

This function exits the system.

**Parameters** **code** – exit code

**Returns** None

**manager** = None

**shutdown** (*\*args*)

This function shuts down the process.

**Returns** None

**stderr** = None

**stdin** = None

**stdout** = None

## 1.1.8 bacnet.webgui package

### Subpackages

**bacnet.webgui.caching package**

### Subpackages

**bacnet.webgui.caching.base package**

**Submodules**

**bacnet.webgui.caching.base.filter module**

**bacnet.webgui.caching.base.helpers module**

**bacnet.webgui.caching.base.options module**

**bacnet.webgui.caching.base.relations module**

**Module contents**

**Submodules**

**bacnet.webgui.caching.cache module**

**Module contents**

**bacnet.webgui.control package**

**Subpackages**

**bacnet.webgui.control.templatetags package**

**Submodules**

**bacnet.webgui.control.templatetags.menu module**

**Menu Templatetags Module** This module contains important descriptions for the menu.

`bacnet.webgui.control.templatetags.menu.url_attr` (*context, label, attribute, exact=False, \*\*kwargs*)

This function marks links depending on the request's path.

**Module contents**

**Control Templatetags Module** This module is a collection of all tags used within the app's templates.

**bacnet.webgui.control.views package**

**Submodules**

**bacnet.webgui.control.views.access module****bacnet.webgui.control.views.devices module****Module contents**

**Views Module** This module contains all descriptions of web access interfaces.

`bacnet.webgui.control.views.breadcrumbs` (*path*)

This function provides the breadcrumbs for a path.

**Parameters** `path` – path

**Returns** list of breadcrumbs

`bacnet.webgui.control.views.control_views_render` (*request*, *template\_file*, *arg\_dict*={}, *local*=True)

This function provides general rendering for all templates.

**Parameters**

- **request** – Django request
- **template\_file** – template filename
- **arg\_dict** – arguments
- **local** – is local template

**Returns** HTTP response

`bacnet.webgui.control.views.get_crumb_name` (*link*)

This function provides the breadcrumb name for a link

**Parameters** `link` – link

**Returns** breadcrumb name

`bacnet.webgui.control.views.index` (*request*)

This function provides the index page of the project.

**Parameters** `request` – Django request

**Returns** HTTP response

**Submodules****bacnet.webgui.control.models module****bacnet.webgui.control.urls module**

**Control URL Module** This module contains the description of all app based pages on the web interface.

**Module contents**

**Control Module** This module contains all necessary descriptions for the web interface and internal structure.

## `bacnet.webgui.webgui` package

### Subpackages

## `bacnet.webgui.webgui.settings` package

### Submodules

## `bacnet.webgui.webgui.settings.apps` module

**App Settings Module** This module contains app specific definitions for Django settings.

## `bacnet.webgui.webgui.settings.private` module

**Private Settings Module** This module contains private definitions for Django settings.

**Module contents** Django settings for webgui project.

For more information on this file, see <https://docs.djangoproject.com/en/1.7/topics/settings/>

For the full list of settings and their values, see <https://docs.djangoproject.com/en/1.7/ref/settings/>

### Submodules

## `bacnet.webgui.webgui.urls` module

**`bacnet.webgui.webgui.wsgi` module** WSGI config for webgui project.

It exposes the WSGI callable as a module-level variable named `application`.

For more information on this file, see <https://docs.djangoproject.com/en/1.7/howto/deployment/wsgi/>

### Module contents

### Submodules

## `bacnet.webgui.bacnet_access` module

### BACnet Access Module

This module provides access to the inter-process communication of the system.

`bacnet.webgui.bacnet_access.api_create` (*line*)

This function wraps the API method `create`.

**Parameters** `line` – command

**Returns** APDU object



`bacnet.webgui.bacnet_access.api_receive()`

This function wraps the API methods receive and parse.

**Returns** parsed APDU object

`bacnet.webgui.bacnet_access.api_transmit(line=None, request=None)`

This function wraps the API methods create and send.

**Parameters**

- **line** – command
- **request** – APDU object

**Returns** sending successful

## bacnet.webgui.manage module

### Manage Module

This module manages the django environment and process start up.

### Module contents

#### BACnet WebGUI Module

This module contains a django project for BACnet interaction.

**class** `bacnet.webgui.DjangoProcess(address, port)`

Bases: `multiprocessing.process.Process`

This class handles the django process.

**receiver()**

This function provides the environment for the receiver thread.

**Returns** None

**run()**

This function is executed as a separate process.

**shutdown(\*args)**

This function shuts down the process.

**Returns** None

`bacnet.webgui.create_webgui(address, port)`

This function creates a django subprocess.

**Returns** webgui process

## 1.2 Submodules

### 1.3 bacnet.settings module

#### 1.3.1 BACnet Settings Module

This module contains general settings for the BACnet system.

## 1.4 Module contents

### 1.4.1 BACnet Framework

This module contains wrappers for BACpypes to ensure seamless integration of BACnet functionality to user specific use cases.

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