

bTstat is a driver designed to interact with an HVAC cloud proxy driver (such as bNexia) to send commands to and receive commands from an HVAC cloud service. It implements the Control4 ThermostatV2 proxy to provide the user with a standard thermostat interface.

SETUP

- 1) Install one bTstat instance for each HVAC zone you wish to control
 - For non-zoned systems, install a single bTstat instance. For multiple zoned systems, install a bTstat instance for each zone
 - Simplify the setup process by naming the bTstat instance the same as thermostat system name (for non-zoned systems) or zone name (for zoned systems).
- 2) Install and complete configuration of an HVAC cloud proxy driver (like bNexia).
 - When the HVAC cloud proxy driver is successfully configured and a bTstat is selected in its Thermostats device selector property, bTstat's Location Name and Zone Name properties will populate
 - bTstat will auto select the Zone Name if its driver instance name matches the system name (non-zoned systems) or zone name (zoned systems)
- 3) If not auto selected based on driver instance name (per above), claim an HVAC zone by selecting from the available zones in Zone Name property.
 - Only zones NOT claimed by other bTstats are displayed. As other bTstats claim zones, those zones are removed from the list of available zones
 - Zone names of thermostats for non-zone HVAC installations are display as "NativeZone"

PROPERTIES

DRIVER SETUP

Driver Version	Installed driver version
MAC Address	Unique network interface identifier for the Controller
Upgrade Mode	BNet Solutions drivers automatically update themselves. Options are "Automatic" and "Upgrade Now". See "Upgrade Mode" section below
Admin Token	Token required to access the driver's Admin Server

BTSTAT SETUP

Location Name	Nexia location name associated with selected Zone
Zone Name	List of unclaimed Zones
Scrolling Message	Message template to be displayed by thermostat. See "Scrolling Message Banner" section below
Max Heat Setpoint	Maximum selectable heat setpoint. See "Max/Min Setpoints" section below
Min Cool Setpoint	Minimum selectable cool setpoint. See "Max/Min

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Setpoints" section below

DEBUG SETTINGS

Debug Mode	Sets where the driver outputs debug information. See "Troubleshooting" section below for more information
Debug Level	Sets how much debug detail the driver outputs

ACTIONS

Release Zone	Releases HVAC zone from bTstat instance
Update Zone	Forces zone update from HVAC cloud proxy driver

SCROLLING MESSAGE BANNER

The Scrolling Message Property can be used to customize the message shown on the thermostat interface. The following table lists the available tokens that will be substituted for actual thermostat values. Note that all tokens are preceded by a dollar sign (\$). By default, the property is set to:

Updated: \$LAST_UPDATE, System Status: \$SYSTEM_STATUS, Zone Status: \$ZONE_STATUS

Remove the Zone Status for single zone/NativeZone units

\$COOL_SETPOINT	Thermostat cool setpoint
\$HEAT_SETPOINT	Thermostat heat setpoint
\$HOLD_MODE	Thermostat hold setting
\$LAST_UPDATE	Timestamp of last data received from Nexia
\$OUTDOOR_TEMP	Current temperature as reported by the compressor
\$SCALE	Thermostat scale setting
\$SYSTEM_STATUS	Air Handler system status
\$TSTAT_HUMIDITY	Current humidity as reported by the Nexia thermostat
\$TSTAT_LOCAION	Location name as defined at mynexia.com
\$TSTAT_NAME	Thermostat name as defined at mynexia.com
\$TSTAT_TEMP	Current temperature as reported by the Nexia thermostat
\$ZONE_MODE	Thermostat zone mode (if zone capable)
\$ZONE_NAME	Zone name as defined at mynexia.com
\$ZONE_STATUS	Zone status as reported by Nexia thermostat

MAX/MIN SETPOINTS

Use the Min/Max setpoint to narrow the allowable temperature range for a bTstat instance. Because the MaxMin property must accommodate both Fahrenheit and Celsius settings, the allowable numeric range is necessarily large and the default values will look odd - Max Heat Setpoint is 80F and Min Cool Setpoint is 16C. If a setpoint is out of the allowable range, the driver will reset the setpoint to the minimum allowable cool setpoint or the maximum allowable heat setpoint depending on the thermostat's current mode.

NEXIA PRESETS

Nexia thermostats have 4 built-in presets: None, Home, Away and Sleep. These presets are displayed with a prefix of "Nexia-" to distinguish them from Control4 Presets (not implemented). Except None, each of these presets define a cool and heat setpoint only. They do NOT define a System Mode (Cool, Heat, Auto) or the ability to set any other thermostat features.

The setpoint information for each preset is NOT available from Nexia and the return data from Nexia does not always contain the actual preset setpoints but the setpoint information will update after the next bNexia poll.

Nexia Presets can only be configured on the physical thermostat and are system-wide as opposed to per zone.

ADMIN PORTAL

BNet Solutions drivers have a built-in Admin Portal that include an Information, Properties, Variables, Actions, Lua, Documentation and License tabs. Additionally, if the driver supports additional custom tabs, these are displayed as well.

bTstat's Admin Portal can be reached at the following address template:
[https://\[controller ip\]/driver/bTstat/admin.html](https://[controller ip]/driver/bTstat/admin.html) where "controller ip" is the IP Address of your Control4 Director.

Because of the security model used by modern browsers, there are two configuration steps to successfully connect to the Admin Portal:

- 1) The Admin Portal communicates to the controller via a secured websocket. The BNet Certificate Authority that signed the Admin Portal's server certificate must be trusted for your browser to make the SSL/TLS websocket connection. The BNet CA bundle must be downloaded and install as a root certificate. The bundle can be found at https://ca.bnet4solutions.com/get_ca_bundle.php
- 2) Each Director uses a privately signed Control4 server certificate that must be trusted before your browser will allow you to navigate to the Admin Portal. On your first visit to the Portal, you will be asked to make a security exception and continue.

The Admin Portal is protected by a challenge page that requires a token to continue. By default, the token is "bTstatAdmin". Once authenticated, the token is stored in a cookie (technically hashed, then stored) so you won't need to log in every time. The token is configurable via the driver's property page. The Admin Server is enabled by default but can be disabled entirely via the driver's property page.

UPGRADE MODE

BNet Solutions drivers can automatically update themselves. New driver functionality or capability is typically packaged as an incremental "Major" version (v3, v4 etc). "Minor" versions (v2.3, v2.4) are typically maintenance releases that update underlying libraries, address a specific issue or usability concern.

Automatic When "Automatic" is selected, the driver will upgrade/update itself when a new

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version is available. This is currently the only available option.
Update Now Checks for and upgrades to any newer Major or Minor version.

KNOWN ISSUES AND LIMITATIONS

- This driver must be installed from a file named "bTstat.c4z" otherwise bNexia will not "find" the installed instances in the project. This is especially important with subsequent driver versions as many OSs will not overwrite downloaded files but will rename the newly downloaded file to something like driver(1).c4z.

Implemented Functionality

- Setpoints (Heat and Cool)
- Modes (Off, Heat, Cool and Auto)
- Fan Modes (Auto, Circulate, Low, Medium and High)
- Hold Modes (Off and Permanent)
- Nexia Presets

Not Implemented (but shown)

- Control4 Presets
- Humidity functionality (other than showing current humidity)
- Schedule - Is a duplication of Nexia's scheduling via their app / website

TROUBLESHOOTING

All BNet Solutions products have an additional 'Submit' Debug Mode. With this mode selected, the driver creates a unique log file to capture the Lua output based on the selected Debug Level (usually set to "5 - Debug"). Once 'Submit' Debug Mode is deselected, either manually or when the Debug Timer expires, the Submit Debug Log is uploaded to the BNet Solutions Server for analysis.

The server notifies me when Submit files are uploaded but if you have not purchased a license, I will have no way to reach back out to you for troubleshooting so please email me your contact information.

TRIAL AND PURCHASE

The bTstat driver does not require a license.

LEGAL

By using this driver, you are indicating that you have read and agree with the Policies and Terms that govern its usage as published [here](#).

CONTACT INFORMATION

You can reach me at blucas@bnet4solutions.com for comments or questions.

CHANGE LOG

- v1 - 3/19 Beta Release
- v2 - 5/19 Initial Release
- v3 - 6/19 Consolidated all Nexia interactions into bNexia - bTstat now only proxies commands and updates via bNexia making bTstats cloud service agnostic
Added Auto system mode, Circulation fan support, Extras
- v4 - 7/19 Updated architecture modules
- v5 - 10/19 Added customize scrolling message banner
Workaround for partial extras update issue
- v6 - 11/19 Added auto-update functionality
- v7 - 6/20 Streamlined setup and zone claim/release process
- v8 - 11/20 Improved Zone claim and release strategy
- v9 - 6/21 Major architecture overhaul