ESBox LT Device Config Settings

Version 8337

User Settings

Esbox.SnvmOptAuto

- Purpose:
  - Enable or disable automatic backup of key ESBox Options to the Secure NVM when they changed. The backed up options are used in the event of an ordinary NVM failure.
- Value (uint32):
  - *Default: 1*
  - 0: Disable
  - 1: Enable
  - Other: Enable
- Testing notes:
  - Value 0: Not significantly tested
  - General: No related issues identified

Ntp.En

- Purpose:
  - Enable or disable the NTP client. The NTP client automatically sets the ESBox's current time.
- Value (uint32):
  - *Default: 0*
  - 0: Disable
  - 1: Enable
  - Other: Enable
- Testing notes:
  - Value 0: tested briefly
  - General: No related issues identified

Ntp.Addr

- Purpose:
  - Set the address for the NTP client to use. This setting has no effect if Ntp.En is 0. Note that the NTP client actually uses SNTP and servers should be chosen accordingly.
- Value (string):
  - *Default: pool.ntp.org*
  - Other: the address of the NTP server to use.
- Testing notes:
  - General: No related issues identified

Esco.Ver

- Purpose:
    - Set the default version for the ESCo API to use. This is the protocol version that will be used by the API if no message has yet been received by the ESBox in the current connection including for all auto-reported messages sent via the Pull API.
- Value (uint32):
    - *Default: 1*
    - 0: Use API protocol version 1.0 (integer version 0)
    - 1: Use API protocol version 1.1 (integer version 1)
    - Other: Reserved - undefined behaviour may result
- Testing notes:
    - Value 0: not tested as extensively as Value 1
    - General: No related issues identified

Esco.AutoRep / Esco.AutoRepEnd

- Purpose:
    - Configure messages to send to the ESCo in the first message of each communication. The messages are sent from the ESBox unprompted.
    - Auto reported messages can be considered as a pre-alpha feature for protocol version 1.1 and as a beta feature for protocol version 1.0.
- Usage:
    - See Auto Reporting documentation
- Testing notes:
    - Not tested

Esco.Api.TxDelay

- Purpose:
    - Sets a minimum time between ESCo API messages transmitted by the ESBox. This is especially useful in preventing an unintended flood of messages from an ESBox, which might occur under some error conditions with the ESBox, network or server.
- Value (uint32):
    - *Default: 1000*
    - 0: Disable, no delay
    - Other: The time in ms to delay between messages
- Testing notes:
    - Value 0 (or low): issues have been identified under some conditions, which can cause a flood of messages from the ESBox to the server. This can cause issues with the ESBox, server and/or network.
    - General: No related issues identified

Upd.KillFirst

- Purpose:

    - Enable or disable whether to stop some processes to free additional memory and CPU resources before attempting an update.
- Value (uint32):
    - *Default: 1*
    - 0: Disable, do not stop the processes
    - 1: Enable, stop the processes
- Testing notes:
    - General: No related issues identified

Wapp.LongSess

- Purpose:
    - Enable or disable web-app long sessions. In normal usage, the web-app times out sessions after a short period of inactivity. Long sessions do not expire until the ESBox is restarted.
- Value (uint32):
    - *Default: 0*
    - 0: Disable
    - 1: Enable
- Testing notes:
    - Value 1: not tested as extensively as Value 0
    - General: No related issues identified

Esp.ChannelId

- Purpose:
    - Set the zigbee channel to use.
- Value (uint32):
    - *Default: 14*
    - 11-26: The zigbee channel number
    - Other: Invalid
- Testing notes:
    - Only Value 14 has been tested extensively
    - General: No related issues identified

Esp.AutoCfgRep

- Purpose:
    - Enable or disable whether zigbee nodes should be automatically configured for reporting when they join.
- Value (uint32):
    - *Default: 1*
    - 0: Disable, do not automatically configure nodes
    - 1: Enable, automatically configure nodes
    - Other: Enable, automatically configure nodes
- Testing notes:
    - Only Value 1 has been tested extensively
    - General: No related issues identified

Esp.MinRepIntvl

- Purpose:
  - Set the minimum time in seconds between reports for nodes. This setting has no effect when Esp.UseRepIntvls is 0.
- Value (uint32):
  - *Default: 2*
  - 0-Esp.MaxRepIntvl: The minimum time in seconds between reports
  - Other: Invalid
- Testing notes:
  - General: No related issues identified (see Esp.UseRepIntvls)

Esp.MaxRepIntvl

- Purpose:
  - Set the maximum time in seconds between reports for nodes. This setting has no effect when Esp.UseRepIntvls is 0.
- Value (uint32):
  - *Default: 30*
  - 1-65535: The maximum time in seconds between reports
  - Other: Invalid
- Testing notes:
  - General: No related issues identified (see Esp.UseRepIntvls)

Esp.UseRepIntvls

- Purpose:
  - Enable or disable an override for the configured minimum and maximum report periods for nodes. This override takes precedence over all other configuration including defaults and EDConf.
- Value (uint32):
  - *Default: 0*
  - 0: Disable the override
  - 1: Enable the override
  - Other: Enable the override
- Testing notes:
  - Very short report periods (when a 1 second maximum is forced for example) may cause an occasional crash.
  - General: No other related issues identified

Esp.SafeStateDefault

- Purpose:
  - Sets the default default state for meters with switches to enter in case the ESBox loses contact with the ESCo for an extended period and triggers the connected end devices to enter their safe state.

- Value (uint32):
    - *Default: 4294967295*
    - 0: Set Home Automation end devices to *off* when the ESBox requests them to enter safe-state.
        - Choose this when the network contains Home Automation end devices and reversion to safe state should ensure that switches are *off*.
    - 1: Set Home Automation end devices to *on* when the ESBox requests them to enter safe-state.
        - Choose this when the network contains Home Automation end devices and reversion to safe state should ensure that switches are *on*.
    - 4294967295: Set Saturn South Load Control end devices to their configured safe state when the ESBox requests them to enter safe-state.
        - Choose this when the network contains Saturn South Load Control end devices.
    - Other: Invalid
    - Notes:
        - The ESBox is unable to revert both Saturn South Load Control and Home Automation devices to safe state on the same network.
- Testing notes:
    - Not tested explicitly
    - General: No related issues identified

Esp.NwkLog

- Purpose:
    - Enable or disable the zigbee network logger. The network logger is a debugging feature that stores relatively detailed historic data about the state of the zigbee network. It is not recommended to leave the logger running when it is not anticipated to be required for debugging.
- Value (uint32):
    - *Default: 0*
    - 0: Disable
    - 1: Enable
    - Other: Enable
- Testing notes:
    - Not tested extensively

Esp.NwkLogSz

- Purpose:
    - Set the target maximum size of the zigbee network logging data file in bytes. The data is stored double buffered, and so the maximum space utilised is roughly 2*Esp.NwkLogSz bytes. Log entries are written before the size check is performed, so the size may marginally exceed the setting. This setting has no effect if Esp.NwkLog is 0.
- Value (uint32):
    - *Default: 20000000*
    - 0-4294967295: The nominal maximum size in bytes of each network logging file (plus one log entry)

- Testing notes:
    - Large values (larger than 20000000): May cause issues with lack of space on the ordinary NVM. This may lead to other unrelated issues
    - Not tested extensively

Esp.NwkLogLqi

- Purpose:
    - Enable or disable the logging of LQI data for each node to the zigbee network log. This setting has no effect if Esp.NwkLog is 0.
- Value (uint32):
    - *Default: 0*
    - 0: Disable
    - 1: Enable
    - Other: Enable
- Testing notes:
    - Not tested extensively

Esp.NwkLogRpts

- Purpose:
    - Enable or disable the logging of reports from each node to the zigbee network log. This setting has no effect if Esp.NwkLog is 0.
- Value (uint32):
    - *Default: 0*
    - 0: Disable
    - 1: Enable
    - Other: Enable
- Testing notes:
    - Not tested extensively

Esp.SilentOTA

- Purpose:
    - Enable or disable Silent OTA mode. When enabled, Silent OTA mode reconfigures nodes to stop reporting or reduce energy reporting while an OTA update is in progress.
    - Silent OTA mode also causes OTA updates to be deregistered as soon as no applicable devices for that update are connected to the network.
- Value (uint32):
    - *Default: 1*
    - 0: Disable
    - 1-299: Enable:
        - OTA updates are performed after nodes are reconfigured to stop reporting.
        - Nodes with a switch will be reconfigured to report switch state with a minimum interval of 1 second and a maximum interval of 300 seconds. This ensures that the switch state is maintained correctly by the ESBox.
    - 300-65535: Enable:

        - OTA updates are reconfigured to report at an interval of Value seconds during OTA.
        - Nodes with a switch will be reconfigured to report switch state with a minimum interval of 1 second and a maximum interval of 300 seconds. This ensures that the switch state is maintained correctly by the ESBox.
- Testing notes:
    - Value 300-65535: Not tested extensively
    - General: No related issues identified

Esp.AutoAssoc

- Purpose:
    - Enable or disable whether nodes are configured to automatically rejoin the zigbee network after an OTA update to factory state. If this feature is not enabled, such updates create a requirement for an operator to physically rejoin the node after an update.
- Value (uint32):
    - *Default: 1*
    - 0: Disable
    - 1: Enable
    - Other: Enable
- Testing notes:
    - General: No related issues identified

Esp.NwkCfgTest

- Purpose:
    - Reserved
- Value (uint32):
    - *Default: 0*
    - 0: No effect
    - Other: Undefined
- Testing notes:
    - It is important that this setting not be changed from 0.
    - General: No related issues identified

Data.SdbEn

- Purpose:
    - Disable or enable the Stream Database (SDB). The stream database provides long term storage of data from nodes.
    - Note that this setting enables the SDB module, that means that data can be saved to and read from SDB. It does not automatically enable saving of data to SDB however (see Data.LogToSdb).
        - Data can be read from SDB
        - Data can be saved to SDB
        - It does
- Value (uint32):

    - *Default: 0*
    - 0: Disable
    - 1: Enable
    - Other: Enable
- Testing notes:
    - Value 1:
        - There is a possible crash when Data.LogToSdb is 1, which possibly also depends on the SDB filter settings and node report frequency. The details of the crash and the cause are not known as yet.
    - General: No other related issues identified

Data.LogToSdb

- Purpose:
    - Disable or enable logging of data received from nodes to the SDB. Data will not be written to the SDB unless this setting is 1. This setting has no effect if Data.SdbEn is 0.
- Value (uint32):
    - *Default: 1*
    - 0: Disable
    - 1: Enable
    - Other: Enable
- Testing notes:
    - See testing notes for Data.SdbEn
    - General: No other related issues identified

Data.UseLr

- Purpose:
    - Disable or enable the Latest Readings module.
    - The latest readings module stores attribute data as it arrives from nodes and retains the single most recent copy of that attribute data. Data is stored against unique tuples: (node HAN address, endpoint ID, cluster ID, manufacturer, attribute ID).
    - If an attribute datapoint is not replaced within a certain time it is discarded as out of date. This time period is set by Data.LrRetMinMs.
- Value (uint32):
    - *Default: 1*
    - 0: Disable
    - 1: Enable
    - Other: Enable
- Testing notes:
    - General: No related issues identified

Data.UseDb

- Purpose:
    - Disable or enable the Relational Database (RDB) module.
    - The RDB is not available in current builds, so this setting has no effect.

- Value (uint32):
    - *Default: 0*
    - 0: Disable
    - 1: Enable
    - Other: Enable
- Testing notes:
    - Not tested for values other than 0.

Data.SdbNRecs

- Purpose:
    - Sets how much data for the SDB to store. This setting has no effect if Data.SdbEn is 0 or if Data.LogToSdb is 0.
    - The SDB stores data double-buffered. This setting determines how many ‘cells’ to store per file at most. Note that because the storage is double buffered, up to twice this number of cells may be available at any one time.
        - A cell is the basic unit of storage available to the SDB. It is a report containing attribute data (and metadata) as received from a node. Each cell is stored along with its node’s HAN address, endpoint ID, cluster ID and manufacturer to identify its origin. Each cell may contain any number of attributes worth of data, though in practice this is limited by the maximum packet size of a zigbee message.
- Value (uint32):
    - *Default: 10000*
    - 0: Invalid
    - 1-4294967295: The number of records to store per file
- Testing notes:
    - General: No related issues identified

Data.SdbFilterMode

- Purpose:
    - Sets the mode for the SDB filter to operate in. This setting has no effect if Data.SdbEn is 0 or if Data.LogToSdb is 0.
- Value (uint32):
    - *Default: 1*
    - 0: Record the next reading to arrive Data.SdbFilterPeriod seconds after the previously recorded reading. This applies per node HAN, endpoint ID, cluster ID and manufacturer.
    - 1: Record the next reading to arrive periodically every Data.SdbFilterPeriod seconds starting at an arbitrary time. This applies per node HAN, endpoint ID, cluster ID and manufacturer.
    - 2: Record the next reading to arrive periodically every Data.SdbFilterPeriod seconds starting at a set offset from ESBox time 0. This applies per node HAN, endpoint ID, cluster ID and manufacturer.
    - Other: Invalid
- Testing notes:
    - General: No related issues identified

Data.SdbFilterConf

- Purpose:
    - Provides additional configuration options for SDB. This setting has no effect if Data.SdbEn is 0 or if Data.LogToSdb is 0.
- Value (uint32):
    - *Default: 0*
    - Bitfield (MSB [31 .. 0] LSB):
        - Bit 0: Unlock filter timers from ESBox time. This setting have no effect unless Data.SdbFilterMode is 1 or 2.
            - If 0: Set the filter timers correctly at startup and regularly correct them to match a deliberate change (or inadvertent drift) in the ESBox time. This will result in deliberate changes to the ESBox time changing the absolute period between recorded readings. The timestamps recorded on the readings will appear correct around the point of the time change however.
            - If 1: Set the filter timers correctly at startup and then allow them to run freely. This will result in deliberate changes to the ESBox time not changing the absolute period between recorded readings. The timestamps recorded on the readings will appear incorrect around the point of the time change however.
        - Bit 1: Unlock filter before first period after startup. This setting have no effect unless Data.SdbFilterMode is 1 or 2.
            - If 0: Do not allow a reading to be saved immediately after startup before the first partial regular period has elapsed. Readings may only be saved after each regular period has elapsed.
            - If 1: Allow a reading to be saved immediately after startup before the first partial regular period has elapsed. Readings may also be saved after each regular period has elapsed.
        - Bits 2-31: Reserved
- Testing notes:
    - General: No related issues identified

Data.SdbFilterPeriod

- Purpose:
    - Enable, disable and set the period for the SDB's rate-limiting filter. This setting has no effect if Data.SdbEn is 0 or if Data.LogToSdb is 0.
    - The filter limits the recording of data received from nodes based on a configurable period, some settings (Data.SdbFilterMode and Data.SdbFilterConf) and which node the data was received from. A node is categorised by the tuple: (node HAN address, endpoint ID, cluster ID, manufacturer).
- Value (uint32):
    - *Default: 0*
    - 0: Disable, all readings sent to SDB are logged by SDB.
    - 1-4294967295: Enable:
        - If Data.SdbFilterMode is 0:

        - Allow and save the first reading sent by each node.
        - After a reading is received and saved for a node, only allow subsequent readings for that node after Data.SdbFilterPeriod seconds have elapsed since that node was saved.
        - Discard all other readings.
- If Data.SdbFilterMode is 1:
    - If Data.SdbFilterConf is 0 [...,0,0]:
        - At ESBox startup, disallow readings from all nodes.
        - At ESBox startup, set the first regular period for each node to end Data.SdbFilterOffset seconds after the current ESBox time.
        - At the end of each regular period, set the next regular period to end Data.SdbFilterPeriod seconds after the one that just ended.
        - At the end of each regular period, allow all readings from all nodes.
        - If the ESBox time is changed, set the next regular period to end at the next ESBox time that is the (current period end time) plus or minus a multiple of (Data.SdbFilterPeriod).
        - When a reading is received and saved from a node, disallow readings for that node.
        - Save readings that arrive for nodes that are allowed.
        - Discard readings that arrive for nodes that are disallowed.
    - If Data.SdbFilterConf is 1 [...,0,1]:
        - As if Data.SdbFilterConf is 0 [...,0,0], except:
            - ~~If the ESBox time is changed, set the next regular period to end at the next ESBox time that is the current period end time plus or minus a multiple of Data.SdbFilterPeriod.~~
            - If the ESBox time is changed, set the next regular period to end at (current period end time) - ((old ESBox time) - (new ESBox time)).
    - If Data.SdbFilterConf is 2 [...,1,0]:
        - As if Data.SdbFilterConf is 0 [...,0,0], except:
            - ~~At ESBox startup, disallow readings from all nodes.~~
            - At ESBox startup, allow readings from all nodes.
    - If Data.SdbFilterConf is 3 [...,1,1]:
        - As if Data.SdbFilterConf is 0 [...,0,0], except:
            - ~~At ESBox startup, disallow readings from all nodes.~~
            - At ESBox startup, allow readings from all nodes.
            - ~~If the ESBox time is changed, set the next regular period to end at the next ESBox time that is the current period end time plus or minus a multiple of Data.SdbFilterPeriod.~~
            - If the ESBox time is changed, set the next regular period to end at (current period end time) - ((old ESBox time) - (new ESBox time)).
- If Data.SdbFilterMode is 2:
    - As if Data.SdbFilterMode is 1, except:
        - ~~At ESBox startup, set the first regular period for each node to end Data.SdbFilterOffset seconds after the current ESBox time.~~

            - At ESBox startup, set the first regular period for each node to the next ESBox time that is (Data.SdbFilterOffset) plus a multiple of (Data.SdbFilterPeriod).
        - Notes:
            - Very large values will severely limit or completely stop data being saved to the SDB.
- Testing notes:
    - General: No related issues identified

Data.SdbFilterOffset

- Purpose:
    - Set the offset from the zero time used by regular SDB filter modes (where Data.SdbFilterMode is 1 or 2). See Data.SdbFilterPeriod for details on operation of this setting. This setting has no effect if Data.SdbEn is 0, if Data.LogToSdb is 0, if Data.SdbFilterPeriod is 0 or if Data.SdbFilterMode is 0.
- Value (uint32):
    - *Default: 0*
    - 0-4294967295: The offset to use relative to the configured zero point (be that ESBox time 0 or the ESBox time at startup) in seconds. When used, the offset will be truncated to (Data.SdbFilterOffset) % (Data.SdbFilterPeriod).
- Testing notes:
    - General: No related issues identified

Data.SdbRdMaxB

- Purpose:
    - A tuning setting. Set the maximum chunk size to read when reading from the SDB. This setting has no effect if Data.SdbEn is 0.
    - It is not recommended to modify this value without consultation with Saturn South or extensive testing with representative networks, node data and backhaul connections.
- Value (uint32):
    - *Default: 500*
    - 0: Invalid
    - 1-4294967295: The number of bytes to allocate for reading chunks from SDB
- Testing notes:
    - Significantly smaller or larger values will cause crashes when reading from the SDB. Detailed data about the exact sizes required to cause crashes varies depending on the data and the state of the ESBox
    - General: No related issues identified

Data.SdbRdMaxC

- Purpose:
    - A tuning setting. Set the maximum number of cells to read when reading from the SDB. This setting has no effect if Data.SdbEn is 0.

    - It is not recommended to modify this value without consultation with Saturn South or extensive testing with representative networks, node data and backhaul connections.
- Value (uint32):
    - *Default: 1*
    - 0: Invalid
    - 1-4294967295: The maximum number of cells to read from the SDB per chunk.
- Testing notes:
    - Values other than 1 will often cause crashes when data is read from SDB
    - General: No related issues identified

Data.LrRetMinMs

- Purpose:
    - Set the time to retain each attribute before discarding it as out of date. See Data.UseLr for details. This setting has no effect if Data.UseLr is 0.
- Value (uint32):
    - *Default: 60000*
    - 0: Invalid
    - 1-4294967295: The time to retain latest readings attributes for in milliseconds
- Testing notes:
    - General: No related issues identified

EdConf.En

- Purpose:
    - Disable or enable the end device config module (EDConf).
    - This feature is not currently functional.
    - Do not change this value.
- Value (uint32):
    - *Default: 0*
    - 0: Disable
    - 1: Enable
    - Other: Enable
- Testing notes:
    - Values other than 0 will often cause crashes

EdConf.UseHAN

- Purpose:
    - Disable or enable matching of HANs for EDConf rules. Not matching HANs can significantly reduce memory usage, CPU utilisation and response times. This setting has no effect if EdConf.En is 0.
    - This feature is not currently functional.
    - Do not change this value.
- Value (uint32):
    - Default: 0
    - 0: Disable

    - 1: Enable
    - Other: Enable
- Testing notes:
    - Not tested

Factory/Device Settings

Contact Saturn South for details.