KbA3334: V3 to V4 Database Upgrade Feature

Delta Controls

Copyright Information

Table of Contents

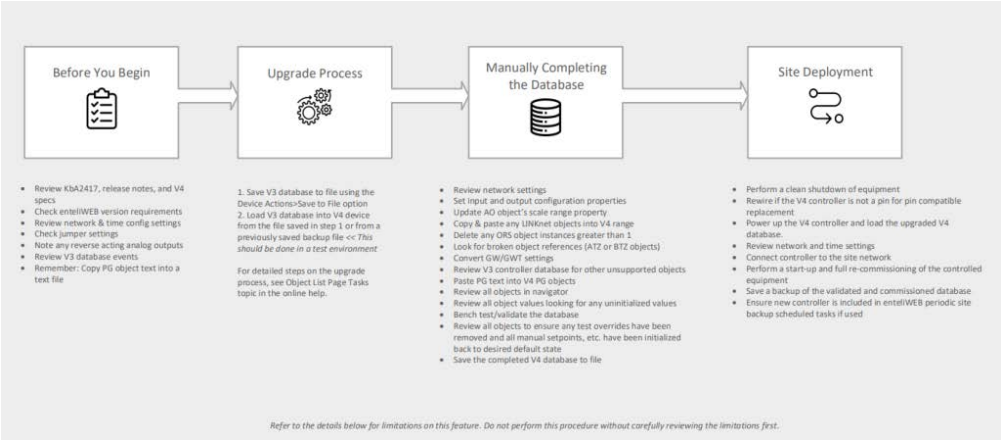
As of enteliWEB 4.25, you can convert a Version 3 device database to Version 4 using enteliWEB's built-in upgrade tool. The upgrade runs automatically in the background when a V3 database is loaded into a V4 controller running V4.14.2 or later firmware.

IMPORTANT! Do NOT perform this upgrade on a live site! This is not an on-site solution.

The upgrade tool **does not provide a 100% conversion**. You must perform a number of manual steps after loading the V3 database to complete the upgrade and make it a fully functioning equivalent of the original V3 database. Future releases of this tool will reduce the number of post-upgrade manual steps required.

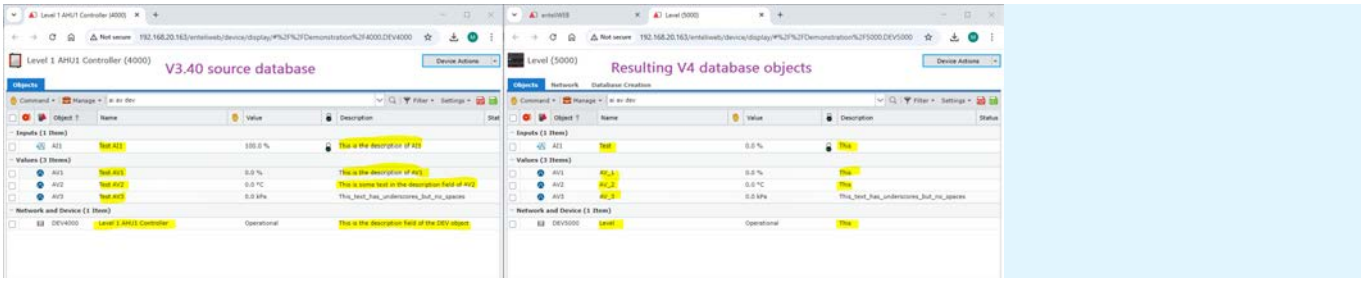
- **Supported V3 (source) devices**: enteliBUS, DSC/DAC
- **Supported V4 (destination) devices**:
  - enteliBUS-2 running V4.15 or later
  - Red5 running V4.14.2 or later firmware

Summary



Limitations ([redacted])

NOTE: Due to bug V4FW-14056, when using certain firmware and enteliWEB version combinations, text strings such as object names and descriptions will be truncated at the first space:



Because no two objects can have the same name, this may cause some objects to be created with generic, automatically derived names, such as “AV_1”, “BV_5”, etc.

enteliWEB V4.31.311 and newer include a fix for V4FW-14056 so that strings are not truncated

Unsupported V3 objects

The following V3 object types are not supported and will be removed from the V4 database:

AG, AS, CEL, CR, CU, DC, DG, EC	V4 access control is substantially different from V3, so there is no 1-to-1 automatic database conversion. There are, however, other migration tools available for V3 to V4 upgrades.
EVL, EVR	These objects currently have no V4 equivalents. Use enteliWEB alarm management for logging and routing/notification tasks with V4 alarms.
GW, GWT	V4 firmware supports gateway protocol integration but is structured differently from V3, so there is no 1-to-1 automatic conversion. The gateway must be manually reconfigured in V4 using SV and FIL objects. **Note**: V4 firmware does not directly support MBUS or Somfy protocols. Integrating these into V4 requires the use of a third-party gateway.
LG	The closest equivalent to the Lighting Group object in V4 is the Lighting Control (LC) object. However, it is substantially different in its implementation so there is no 1-to-1 automatic conversion.
NET, IPS, BMD	Network settings in V4 have moved to NP objects. The NET, IPS, BMD structure is no longer used. All network settings should be reviewed/recommissioned after performing an upgrade.
LS, MN, PI, SUG, ZC, ZF	These objects are also not supported in V4.

AT and BT object conversion

AT and BT objects are converted to their V4 equivalent ATZ and BTZ objects. However, object references

to AT/BT in other objects, such as PGs, TLs, and EVs, are not converted and must be manually edited to ATZ/BTZ references after an upgrade.

I/O object conversion

Upgrades will be the most seamless when upgrading similar I/O footprint databases, such as from eBUS V3 to eBUS V4 or from DSC-1146 to Red5-PLUS-1146. If you are upgrading to a V4 controller with a different I/O layout, I/O objects will need to be copy/pasted into the correct instances to match the physical I/O layout of the V4 controller and all references to those objects will need to be updated to the new instances.

V4 AOs do not have a direct/reverse acting property. AO action is determined by having separate direct and reverse acting AOCs. After completing your upgrade, you must create the equivalent reverse acting AOCs and change the scale range reference in the AO for any AOs that have their action set to reverse in the V3 database.

Since V3 did not have software configurable I/O, the upgrader tool does not know how to configure the input and output configuration properties in the converted V4 database. After performing the upgrade, **you must manually set the input and output configuration properties** to match the correct type for the connected field device in each I/O point.

Do NOT copy scale range objects (AIC/AOC/MIC) from V3 devices. As of V4.14.2 firmware, pre-made scale range objects are included in the controller's default database. For V4.14.0 and earlier, we have a download pack of the same scale range objects on every V4 product page. If your V3 AIC/AOC/MIC is not included there, then it must be recreated from scratch in the V4 device. See KbA3343 for more details.

LINKnet object conversion

LINKnet objects are not moved from the V3 instance range 1xx-12xx. After performing the upgrade, LINKnet objects must be moved into the V4 instance range using copy/paste with offset, and any object references to those objects must be updated.

Note: In V4, the LINKnet range is dependent on the NET port used. Make sure you adjust the range for the specific port that LINKnet has been configured on.

PG object conversion

PG object content is not automatically copied to the V4 database. If you want to reuse the V3 database GCL+ logic, copy the content of each PG object into a text file, then paste the content into the V4 database after the upgrade.

If you paste the content after moving I/O or LINKnet object instance ranges, when the PG object resolves the object descriptors to object instances, it will automatically change the PG references to the new object ranges as long as the associated object names have not changed.

Some object properties have changed between V3 and V4. You may find some properties referenced in your GCL code are no longer valid in V4, and eWEB gives the error 'QERR_CLASS_GCL::QERR_CODE_UNKNOWN_PROPERTY' when you attempt to validate/save the PG. Compare the hidden properties between the V3 & V4 referenced object and you should be able to find the V4 'equivalent' property.

Notable Property Differences:

- In V3, LCD objects include properties such as `Line_2_Units`. In V4, the equivalent properties only include a single underscore. For example, `Line2_Units`. By expanding the property list of the LCD object, you can see the exact property name.

Variable object conversion

Variable objects (AV, BV, MV) that do not have an active control source writing to them, such as GCL+ or periodic remote write, and are not in manual, will have a zero value for AVs, inactive state for BVs, and enum value of 1 for MVs. Do not leave variables without a control source or default value. Even values that are not expected to change, or that change infrequently on an event basis, should still have GCL+ or other logic to ensure that values always stay within a sensible range for the variables' intended purpose.

WARNING: Copying/pasting objects from V3 to/from V4 will lead to a partial object creation. This is unsupported and will lead to undefined behavior.

Before You Begin

Before you begin the upgrade, follow these steps:

1. Review the differences between V3 and V4 firmware. See KBA2417 for an overview of the key differences.
2. Review the release notes for the specific V4 firmware version that the database is being upgraded to, as well as specifications for the V3 controller replacing the V3 controller.
3. Review the specifications for the V4 controller that is replacing the V3 controller to make sure that it supports the capabilities needed. For example, enteliBUS does not support access control in V4. If you need access control support, you must use Red5-ROOM.
4. Network and time configuration settings are not overridden as part of the database load process. If the upgrade is being done for service replacement/upgrade of an existing V3 controller, make a note of the network settings in the original controller or site documentation.

This will need to be manually configured on the site V4 controller.

5. Red5 controllers have software-configurable inputs. If you are loading a V3 database into a Red5 controller, make a note of the physical input jumper settings on the V3 controller. This information will be needed later to manually configure the matching input objects input configuration property in the V4 controller.
6. In V4, the event enable reference property has been replaced by the event inhibit reference property. Review V3 database events (in both EV object and where intrinsic alarming is enabled in other object types) to see if the event enable property is being used. If so, this behavior will need to be re-created using the event inhibit property in the V4 database after the upgrade.
7. Make a note of any reverse acting analog outputs. You will need to create a reverse acting AOC scale range that is the inverse of the current direct acting scale range linked to it, and change the AOs' scale range property to point to the new reverse acting scale range.
8. If you want to reuse the V3 database GCL+ logic, copy the content of each PG object into a text file. Paste the content back into the PG objects after the upgrade.

Upgrading the Database

The upgrade process is similar to loading a database to file. For detailed steps on the upgrade process, see the Object List Page Tasks topic in the online help.

Main steps

The main steps to upgrade the database are as follows:

1. Save the V3 database using the **Device Actions > Save to File** option from the navigator pane. You must use the save to file option in the navigator pane to give you the option to browse and select a file to load back into the V4 device in the next step. Save to server options only allow you to load the database back into the same controller you saved it from.
2. Load the V3 database into the V4 device from the file saved in step 1 or from a previously saved backup file. This step should be done in a test/development environment using a device on your desk, on a test wall, or in Cloud Engineering.

After you have completed these steps, follow the steps for manually completing the database.

Upgrade log

Once the database conversion is complete, a .log file is downloaded to your browser's download destination. It is a list output of conversion status of every object property in its raw form. It has very little summary data and does not differentiate between items that were not expected to convert from V3 to V4 and objects/properties that were expected to convert but had some other source of unexpected error.

This log is useful if you want to look up whether a specific property or object converted. It is less useful as a general troubleshooting or upgrade validation tool. Because it does not differentiate between expected and unexpected failures for V3 to V4 database upgrades, it will always report a summary status of failed for the upgrade, which can be misleading. Future releases of the V3 to V4 upgrade tool will make the upgrade log more useful for general troubleshooting.

Manually Completing the Database

TIP: Have a V3 controller online running a copy of the V3 database that is being upgraded so that you can easily refer to it as a reference for the changes that need to be matched in the V4 controller.

To complete the upgrade process, follow these steps:

Step 1. Review the network settings in Network tab or NP object. Revise them as needed to match the V3 port/protocol settings configuration for subnet ports.

Some network settings need to be adjusted in the actual site controller as these settings are retained and not overwritten by database settings on database load. Other network settings, however, such a non-BACnet subnet protocol settings, are saved and restored from database values and can be preset when engineering a database in a virtual or test bench setup prior to site deployment.

Step 2. Navigate to your I/O objects and set the input and output configuration properties to match the equivalent V3 database I/O configuration.

Step 3. For any AOs configured as reverse acting in the V3 database, create a reverse acting AOC scale range that is the inverse of the current direct acting scale range linked to it, and change the AOs' scale range property to point to the new reverse acting scale range.

Step 4. Copy/paste or re-create any I/O objects that need to moved due to differences in V3 to V4 controllers physical I/O mapping.

For any I/O object instances that have changed, look through the database to find any references to those objects and update them to the new instances.

Before deleting the old instances, select the object in navigator and use the right pane to quickly see what other objects have references to that I/O point that will need to be adjusted. Also, if you are using the copy/paste method, make sure to edit the pasted object name after deleting the old instance to remove and (#) text postpended during the paste to give it a unique descriptor. You want the object name in the new instance to be exactly the same as in the old instance, so that when you copy/paste the PG text in later steps, it will automatically resolve the object in the PG to its new instance.

Step 5. Copy/paste any LINKnet objects from their existing V3 range into the appropriate V4 range for the port being used for LINKnet. After pasting to the new range, delete the objects in the old V3 instance range.

Use multiselect and paste using the offset option to quickly and easily move multiple LINKnet objects into the appropriate range. Do the same with the I/O objects before deleting the old LINKnet objects. Select them one at a time to see what other object references will need to be updated to use the new instances. Make sure to edit their object names to be the same as before, so that the PG text when pasted in later steps can easily resolve them to their new instances.

Step 6. Delete any ORS object instances greater than 1. V4 only supports a single ORS linked to SUA1. It does not support multiple ORS or temporary unlocking.

Step 7. If there are any ATZ or BTZ objects in the database, make sure to look for any broken object references in other objects, such as TL/EV, that need to be updated from V3 AT/BT to V4 ATZ/BTZ object references.

Step 8. If there are any GWT objects in the V3 database, GW/GWT settings must be converted manually to an equivalent configuration using the V4 NP/SV/FIL gateway configuration structure. You may need to re-map some BACnet objects used in these integration protocol mappings to the reserved/recommended V4 ranges for the integration protocol.

Step 9. Review the V3 controller database for any other unsupported objects.

Step 10. Paste the content of the text from the V3 PG object(s) into the corresponding V4 controller PG object(s).

Step 11. Review all the objects in navigator for unexpected faults, and investigate and fix any issues found.

Step 12. Review all object values looking for any uninitialized values, and initialize them to desired default values. For example, AV setpoints that are not controlled, or that are written to only on an intermittent event that hasn't triggered, may have a zero value.

Set a default value for any points that are not typically under automatic control and/or use GCL+ to set reasonable range limits for the object's intended application.

Step 13. Bench test/validate the database.

Step 14. Review all objects to ensure any test overrides have been removed and that all manual setpoints have been initialized back to the desired default state for loading to the site controller.

For critical or sensitive equipment, place all outputs in manual at their desired failsafe values to allow for controlled startup by a field tech after the site database loads.

Step 15. Save the completed V4 database to file.

Deploying the Site

CAUTION: Before connecting output wiring and powering the controller, make sure binary (TRIAC/FET/Relay) outputs with internal/external power jumpers have been set correctly to match the site power wiring. Failure to do this could permanently damage the 24V power supply if it does not have any short circuit protection.

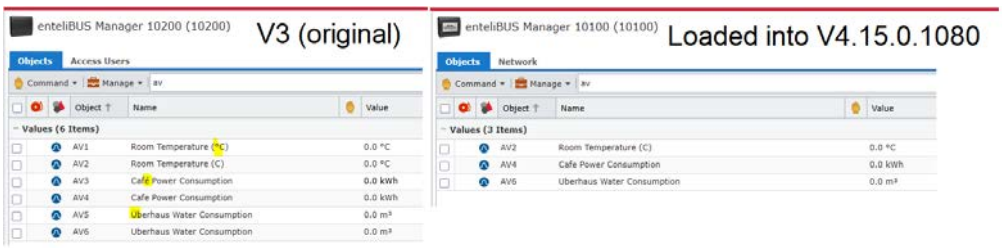
After you have manually completed the database, follow these steps to deploy the site.

1. Perform a clean shutdown of running equipment.
2. If the V4 controller is not a pin-for-pin compatible replacement with the exact same I/O footprint, rewire it as necessary to match the new hardware.

3. Power on the V4 controller and load the upgraded V4 database.
4. Review the network and time settings to ensure that they match the site network documentation and that the time is current.
5. Connect the controller to the site network and verify that it comes online without conflicts.
6. Do a startup and full recommissioning of the controlled equipment with the upgraded V4 database to validate the upgrade.
7. Save a backup of the validated and commissioned database to the site enteliWEB server and make sure that the new controller is included in enteliWEB periodic site backup scheduled tasks, if used.

Known Issues

V4FW-12743 – As of V4.15 firmware, if an object name contains a non-ASCII character (e.g. ° é Ü), the object will not be re-created correctly in the V4 database, and will not be possible to create the same object at the same instance. To avoid this, remove special characters before upgrading or saving out the V3.40 database.



Technical Services Secret Information

[Information in this section can only be seen by TS, not Partners. Use it if you like.]
EWEB-43377 – Add “line_x” and “line_x_units” (underscores) to GCL interpreter for V4 controllers