BACnet® TESTING LABORATORIES

TESTING POLICIES

Last Amended by formal vote of BTL-WG

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Version 2

Table of Contents

1   Introduction

BTL Testing Policies provides all the policies covering the application of the ***BTL Test Plan*** and package onto a specific product. In addition, the ***BTL Testing Policies*** guide the BTL Certification and Listing process. To get the most out of the ***BTL Testing Policies,*** a general understanding of the other documents in the BTL Test Package should also be acquired.

1.1   Glossary

BTL Certification – a process for recognizing products which have successfully completed testing according to the BTL requirements and have met the requirements for issuance of a Certificate of Conformance. A BTL Certification includes a BTL Listing, a BTL Certificate and use of the BTL Mark.

BTL Listing – is a listing of products that have successfully completed testing according to the BTL requirements and have either been Certified or were entered in the listing prior to the initiation of the BTL Certification process and have continued to meet the requirements for Listing. Note that a BTL Listed product may or may not be Certified, but in either case has been successfully tested according to the BTL requirements.

BTL-WG – BTL Working Group

Certified BACnet product – a BACnet product which has been awarded a Certificate of Conformance. Recognized BACnet Testing Organization (RBTO) – any test organization that has been formally recognized by BACnet International for BTL testing of BACnet Devices.

2   Checklist Accuracy Policy

2.1   Purpose

The purpose of this policy is to ensure all implemented BACnet functionality is tested and reported in BTL Listings.

2.2   Policy Description

The BTL Testing process requires that applicants completely and accurately complete the **BTL Functionality Checklist**. The checklist is not the set of functionality that the applicant wants tested; it is the set of functionality implemented in the device.

Each checklist entry succinctly describes the functionality in question but for a more detailed explanation see the corresponding Test Plan entry. The description in the Test Plan provides more information on whether an entry should be selected for a particular implementation.

All functionality implemented in the product shall be claimed in the checklist.

The RBTOs will validate the checklist against the product under test and report inaccurate checklist entries as failures.

2.2.1   Virtual BACnet Devices

If a device supports the GW-VN-B BIBB, the applicant must complete a separate BTL Functionality Checklist that describes the functionality of all the supported virtual devices. For example, if one virtual device supports the Analog Input object and second virtual device supports the Binary Input object, the virtual device BTL Functionality Checklist must document both of these objects.

2.3   Version History

This policy was adopted on September 26, 2017.

This policy was updated on January 31, 2018.

This policy was updated on April 17, 2023.

This policy was updated on May 29, 2025.

3   Minimum Protocol_Revision Testing Policy

3.1   Purpose

The purpose of this policy is to promote the advancement of the BACnet protocol into the user community.

3.2   Policy Description

The BTL requires that products being tested for BTL Certification claim a Protocol_Revision equal to or greater than a moving minimum. The minimum Protocol_Revision is determined each January 1st and is the highest Protocol_Revision which has been available in a **BTL Test Plan** for at least 4 years. The schedule below indicates the specifics of how this will work for the next few years. See the BTL website for the current schedule.

Protocol_Revision	Date that BACnet at this Protocol_Revision was Published	Date that BTL-WG Test Plan for this Protocol_Revision became available	Becomes the minimum on Jan 1 of Year
6	March 2007	July 15, 2009	---
7	October 2008	July 15, 2009	2014
8	January 2009	December 1, 2011	---
9	June 2009	December 1, 2011	2016
10	January 2010	August 2, 2012	---
11	July 2010	August 2, 2012	---
12	February 2011	August 2, 2012	2017
13	June 2011	November 13, 2014	---
14	January 2012	November 13, 2014	2019
15	January 2013	October 19, 2017	2022
16	July 2014	October 4, 2019	2024
17	December 2014	October 30, 2020	---
18	February 2016	October 30, 2020	2025
19	April 2016	January 18, 2022	---
20	June 2018	January 18, 2022	---
21	August 2019	December 22, 2022	---
22	November 2019	December 22, 2022	---
23	August 2021	December 22, 2022	2027
24	January 2022	December 20, 2024	---
25	November 2022	December 20, 2024	---
26	June 2024	December 20, 2024	2029
27	October 2024		

3.2.1   Impact on BTL Certified and Listed Products

Products that are already Certified or Listed will be able to keep their status and will not need to be updated solely because the minimum Protocol_Revision advances.

All other products that are submitted for testing or retesting are required to meet the current minimum Protocol Revision requirement except products that are submitted for retesting solely due to the following reasons:

    a. an issue found in the field (see the Field Defects Resolution Policy);

    b. advancements in the test package which require the callback of products for functionality that existed in the device, but which was untested, even if defects are found during testing and changes are made to the product in order to resolve the issues (see the Product Retesting Requirements Policy).

    c. products retesting for certificate renewal which do not trigger the retesting requirement (as per Product Retesting Requirements Policy).

The minimum Protocol_Revision requirement that shall be met by a product is the minimum that is in force on the date that the product is submitted to the RBTO (both the testing application and the device have been received and are ready for testing).

3.3   Version History

This policy was adopted as version 6 on 13-Dec-2011.

This policy was updated as version 7 on 27-Sep-2012 to include the date of Test Plan-12.0

This policy was updated as version 8 on 19-Jan-2015 to include the date of Test Plan-14.0

This policy was updated and moved to the ***BTL Testing Policies*** document on September 26, 2017.

This policy was updated as version 15 on January 31, 2018 to include Test Plan-15.0.

This policy was updated on November 18, 2019 to include Test Plan 16.0.

This policy was updated on March 12, 2021 to include Test Plan 18.0.

This policy was updated on February 28, 2022 to include Test Package 20.0, Protocol Revisions 23 & 24, and to update wording concerning certificate renewal.

This policy's table was updated on February 16, 2023, to include Test Package 23.0 and Protocol_Revision 25.

This policy's table was updated on November 14, 2024, to include Test Package 26.0 and Protocol_Revision 26 and 27.

4   Policy for Testing Beyond the Test Package's Coverage

4.1   Purpose

The purpose of this policy is to ensure devices with functionality not covered by the current BTL Test Package can be tested and obtain BTL Certification in a reasonable time frame.

4.2   Policy Description

Devices claiming a Protocol_Revision newer than the current BTL Test Package, or which contain functionality not covered by the current BTL Test Package, shall be tested using an Interim Test Package if the BTL-WG determines the device's capabilities require additional tests be written. The Test Report shall indicate an Interim Test Package was applied.

Once a new BTL Test Package has been released, any devices tested using Interim Test Packages shall be reviewed by the BTL and either recalled for further testing or a final Test Report shall be prepared if the Protocol_Revision of the device is at or below the current BTL Test Package.

4.2.1   Notifying the BTL

When an RBTO receives a test application for a product which claims functionality beyond that covered by the current BTL Test Package, the RBTO shall require the customer to submit the latest Interim Tests Checklist document. If the returned Interim Tests Checklist contains any checkmarks with a footnote of "Contact BTL …", the RBTO shall inform the BTL so they can identify an appropriate set of tests to apply based on the device's claimed functionality.

4.2.2   Interim Test Package Development

The BTL-WG will endeavor to create an Interim Test Package in a timely manner and the BTL Manager will keep all test organizations informed of the status of the Interim Test Package. The applicant has the option to develop and submit proposed interim tests to the BTL-WG. The BTL-WG retains the right to decide whether the proposed tests are sufficient for the product in question.

Once the Interim Test Package is complete it will be made publicly available.

4.2.3   Recalling a Device

After a BTL Test Package has been released the BTL-WG will review each device tested under an Interim Test Package and has the right to recall the device to have new or improved tests performed. The applicant will be notified by the BTL-WG if further testing

is required and has 3 months to deliver the device to an RBTO. If the product is not submitted for a retest, the BTL Certification for the product shall be revoked and notice of the revocation shall be published on the website along with a description of the known issue.

4.3   Version History

This policy was adopted as version 1 on 14-Feb-2012.

This policy was updated and moved to the **BTL Testing Policies** document on September 26, 2017.

This policy was updated on January 31, 2018.

This policy was updated on November 14, 2024, to include the Interim Tests Checklist document.

5   Test Package Transition Policy

5.1   Purpose

The purpose of this policy is to allow test applicants and RBTO a reasonable amount of time to adopt the new test package after it is released and published.

5.2   Policy Description

When a new test package is released, there will be a transition period introduced during which both the new and old versions of the test package will be valid. The length of the transition period will be determined by the BTL-WG, in consultation with the RBTOs. Whenever the BTL-WG releases a test package the BTL Manager will notify the RBTOs. The BTL Manager will also make an announcement through BACnet International. The new version of the test package will be placed on the BTL website along with the notification that the transition period has begun. When the transition period ends, all new test applications shall be tested with the new test package.

For products received by an RBTO during the transition period, which claim a Protocol_Revision less than or equal to that covered by the old test package, the testing applicant is allowed to choose which test package is applied to their product. For products received by an RBTO during the transition period, which claim a Protocol_Revision greater than that covered by the old test package, or if the product contains functionality not covered by the old test package and its associated interim test document, the new test package shall be applied to the product.

Products already in test prior to the transition period are not required to change test packages. However, if a product's test application is using a test package that has not been the current test package for more than one year, the test application shall change to apply the current test package.

During the transition period, the new test package will be under review by the RBTOs. The BTL-WG reserves the right to extend the transition period to allow the RBTOs more time for review and/or to allow changes to be incorporated in the new test package before it is required for use.

5.3   Version History

This policy was adopted as version 3 on 16-Feb-2012.

This policy was updated and moved to the *BTL Testing Policies* document on September 26, 2017.

This policy was updated on October 18, 2022.

This policy was updated on November 14, 2024.

6   Product Retesting Requirements Policy

6.1   Purpose

The purpose of this policy is to state the circumstances which require the retesting of BTL Listed products.

6.2   Policy Description

A BTL Certification will be awarded to a product if the product meets the BTL's current requirements. However, partial or complete retesting of a BTL Listed product is required under certain circumstances. Generally, the BTL-WG will evaluate the need for retesting once per year around the anniversary of the awarding of a BTL Listing to a product. Annually, the BTL will require suppliers to submit an attestation indicating any changes in Listed products. To facilitate this process, each vendor of a BTL Listed product is responsible for providing the BTL with contact information for a person who is authorized to respond to the BTL's correspondence about the company's BTL Listed products.

Here are some specific circumstances that will lead to the requirement for retesting of a BTL Listed product:

a. Changes in the BTL Functionality Checklist:

     i.   When any new Test Package is released, the BTL will review all new Functionality Checklist sections and line-items, to determine any items which will result in the callback of products for untested functionality.

     ii.   The annual attestation shall highlight items which BTL has determined will result in the callback of products for untested functionality.

b. Changes in the Product: Significant changes are made to the product's BACnet protocol stack implementation. Guidelines on what constitutes a significant change include, for example, if since the last testing more than 5% of the code, or more than 25% of any major functional module of the BACnet stack has been modified. If any of the following are true, the product must be retested regardless of the degree of code changes involved:

     i.   Any object type or service is added.

     ii.   Any standard properties are added to an existing object type.

     iii. Any changes to the product that adds one or more checkmarks to the tested functionality checklist.

     iv.   If the claimed protocol revision changed.

v.   Any property is made writable.

c.   Extension of the Test Package: The Test Package has been extended to cover untested functionality which was in the product when the product was last tested. See Checklist Accuracy Policy. In this circumstance, customers will have the option of not getting a product retested. In this case, the product's BTL Listing will not be renewed; however, customers may continue using the mark on any previously created labeling. These types of legacy BTL Listings shall be archived.

d.   Field Interoperability: The BTL is provided with documented evidence of a significant interoperability problem in the field, for a BTL Listed product. See Field Defects Resolution Policy.

e.   Known Defects: The BTL is notified of defects in the product found during incidental testing which were not fixed at the time, and for which a new test has been created. See Incidental Testing Policy.

If no specific circumstance as detailed here requires retesting on the product before qualifying for a BTL Listing, then the product, as a derivative of the tested product, has inherited the test results. If the combined tests include all functionality and conditionality as required, then no retesting is required. The vendor may be required to submit a written and signed attestation that no additional testing is required according to this policy.

6.3   Version History

This policy was adopted in May 2006.

This policy was updated and moved to the *BTL Testing Policies* document on September 26, 2017.

This policy was updated to handle known issues found by Incidental Testing Policy on November 18, 2019

This policy was updated on April 17, 2023.

7 Product Retesting Selection Policy

7.1 Purpose

The purpose of this policy is to identify which tests are selected when retesting a BTL Listed product.

7.2 Policy Description

A retest of a product occurs when dictated by the Product Retesting Requirements Policy section above in the **BTL Testing Policies**. The test selection outlined below does not apply to products that have not previously completed a successful application of the BTL Test Package, or are not a derivative of such a product (refer below to the Derivative Product Policy section, for details on what constitutes a derivative product).

If a new version of the **BTL Test Plan** is to be applied to a previously tested product the following tests shall be selected for application to the product (in addition to tests required by other sections of policy.)

1. All tests that apply to the product which were not previously applied, or which have been substantively changed since they were previously applied shall be selected.

2. All tests where the test was previously skipped due to a conditionality requirement described in the **BTL Test Plan**, but the BTL Test Package has changed such that the conditionality requirement no longer applies.

3. All tests where the number of iterations of the test, as specified by the Test Directives in the **BTL Test Plan**, differs from the number applied due to a change in the BTL Test Package.

In addition to the above which ensures complete application of the current BTL Test Package, when functionality is added to, removed from, or modified in the product, the following tests shall be selected for application to the product (in addition to tests required by other sections of this policy):

a. All tests associated with any line item in the **BTL Functionality Checklist** that is selected that was not selected when the product was last tested shall be selected.

b. All tests associated with any line items in the **BTL Functionality Checklist** for which the vendor indicates that significant changes were made to the product's implementation.

c. All tests where the test was previously skipped due to a conditionality requirement described in the **BTL Test Plan**, but the product has changed such that the conditionality requirement no longer applies.

d. All tests where the number of iterations of the test, as specified by the Test Directives in the **BTL Test Plan**, differs from the number applied due to a change in the product.

e. All tests in Section 2.1.1 Base Requirements and Section 2.1.2 EPICS Consistency Tests of the **BTL Test Plan**.

f. From the originally performed testing, for each changed Checklist functional section include:

   I. One other test in the Checklist functional section

   II. A pair of tests (or all the tests if there are less than 2 in that section) in another Checklist functional section.

   III. Where there are related sections (such as ACK-B and INFO-B), if any defect is found in an unchanged section, and the remedy makes a change in that section, then testing as-if this is a change in that section as well, shall be performed.

g. All tests in the Data Sharing - Read Property - B Base Requirements section of the BTL Test Plan.

h. All tests in the Data Sharing - Write Property - B Base Requirements section of the **BTL Test Plan**, if the product supports DS-WP-B.

i. A randomly selected set of 5% of the remaining tests that apply to the product, but which would otherwise be skipped.

The RBTO must ascertain which functional areas within the device have not been changed. A supplier attestation indicating all functionality that has changed since the most recent RBTO applied test of the device is sufficient for this purpose. The attestation used as the basis for skipping tests shall be attached to the final test report.

Testing shall only occur with the current BTL Test Package. When there are multiple BTL Test Packages that are current (which occurs when the BTL is transitioning to a new BTL Test Package), either test package may be applied.

7.3   Version History

This policy was adopted on September 26, 2017.

This policy was updated on November 18, 2019.

Added Section 2.1.1 to Clause 7.2.e. This update was approved on April 16, 2024.

Updated formatting on August 3, 2025.

8 Regression Testing Test Selection Policy

8.1 Purpose

The purpose of this policy is to identify the amount of regression testing that is performed after each submission of updated firmware.

8.2 Policy Description

RBTOs find problems in almost every product that is submitted for testing.

Testing is an iterative process whereby a product is tested, defects are found and fixed, and then the product is re-tested to ensure that the defects have been resolved. This re-test phase is commonly referred to as regression testing.

This policy describes how RBTOs are to select tests for the regression testing phase.

During regression testing, the RBTO will select tests that previously failed and closely related tests that might have been impacted by the fixes. For each regression test, the RBTO chooses a reasonable number of sets of test parameter values. The values will typically include a mix of new parameter values and values that were previously used.

8.3 Version History

This policy was adopted in May of 2006.

This policy was updated and moved to the **_BTL Testing Policies_** document on September 26, 2017.

This policy was updated to include section 8.3 on January 7, 2019.

This policy was updated to include section 8.4 on January 22, 2019.

Section 8.3 was moved to its own policy, and section 8.4 was deleted on November 18, 2019.

9   Deprecated Functionality Testing Policy

9.1   Purpose

The purpose of this policy is to provide direction on how deprecated functionality, for which there are no existing tests, is to be tested.

9.2   Policy Description

The BTL recognizes that products may contain support for deprecated BACnet functionality, or historic BACnet functionality (such as PTP), which the vendor has not removed from their codebase. Due to past testing policy, this functionality will, in some cases, not be tested and not have tests for it within the BTL Test Package.

In order to avoid spending BTL-WG or vendor resources validating functionality that is not expected to be used in the field, the BTL-WG allows for such functionality to be present and not tested under the following conditions:

a. The product is received by an RBTO for certificate renewal testing.

b. The changes to the product do not trigger the retesting requirements (as per the Product Retesting Requirements Policy).

c. The functionality was not previously tested by and RBTO.

d. There are no tests for the functionality in the current BTL Test Package.

e. The functionality in question is deprecated within the BACnet standard, or the functionality is identified by the vendor as no longer receiving support nor is actively marketed as being supported by the product.

In such cases:

a. The RBTO shall communicate with the BTL Manager to request that the functionality be allowed to be skipped.

b. The RBTO shall mark the functionality in the Final Test Report as 'Skipped(deprecated)'.

c. The BTL Listing shall not include mention of the functionality.

d. The product's PICS shall either not mention support for the functionality or shall indicate that the functionality is no longer receiving support from the vendor.

9.3   Version History

This policy was adopted on March 12, 2021.

10   Derivative Product Policy

10.1   Purpose

The purpose of this policy is to specify when a product is considered a derivative product. When a product passes all applicable BTL Test Package tests applied by one of the RBTOs both that product and all derivative products qualify for a BTL Listing.

10.2   Policy Description

10.2.1   Terminology

Child Product – Product being considered as a derivative of another product or set of products.

Parent Product – The product or set of products that has been fully tested by an RBTO.

Partial Derivative Product – product which mostly derives from a parent product but may contain additional or changed BACnet functionality.

Duplicate Tests – Tests that are the same between derivative products.

10.2.2   Single Product Derivative

A product is considered a derivative of a single product, if it meets the following conditions:

a. The child product is built from the same source code for all of its BACnet functionality implementation as the parent product.

b. The child product was developed by the same company as the parent product or the child product incorporates the parent product as a component, including its hardware and software, with no change to the parent product except for vendor identifier, vendor name, product name, product model, application software version, or firmware revision.

c. The child product is a subset of the parent product. The child product does not contain any BACnet functionality that is not contained in the parent product. (i.e., there are no checklist items selected that were not selected for the parent product(s)).

d. The child product does not require any additional tests that were already applied to the parent product due to any conditionality requirements called out in the ***BTL Test Plan***.

e. If the parent product supports execution of any of the below confirmed services, the child product must execute the same set of services.

SubscribeCOV

SubscribeCOVProperty

SubscribeCOVPropertyMultiple

ReadPropertyMultiple

WriteProperty

WritePropertyMultiple

f. The child product claims the same or a sub-set of the same objects as the parent.

g. Only BACnet functionality affects whether a product is considered a derivative product. The application programs in a product, which do not implement BACnet object functionality or services, are not considered part of the BACnet implementation and do not impact a product's derivative status.

10.2.3 Partial Derivative Product

A product may be considered a partial derivative of another product if it meets the following conditions:

a. The child product is built from the same source code for all of its BACnet functionality implementation as the parent product.

b. The child product was developed by the same company as the parent product.

c. Any functionality that is different between the products must be tested on the respective product.

10.2.4 Multiple Product Derivative

Multiple products can be considered a set of products which as a set represent a parent product in order to define additional derivative products as described above.

To define a set of parent products, each member of the parent product set must meet the following conditions:

a. Each member must be built from the same source code for all of its BACnet functionality implementation.

b. Each member must be developed by the same company.

c. Each member must be tested such that the combined tests, include all functionality required by any derivative product, including any conditionality requirements called out in the ***BTL Test Plan***.

10.2.5 Testing of Multiple and Partial Product Derivatives

If both the parent product and the partial derivative product are tested at the same time, then the set of tests that are the same between the multiple products may be distributed between the multiple products.

The RBTO may choose to perform the testing in one of the following ways provided the total number of tests run is not greater than the sum of the unique tests.

    a. All duplicate tests may be run on one product and all unique tests per product are run on the appropriate product.

    b. The duplicate tests can be randomly tested on either of the submitted products, and all unique tests per product are run on the appropriate product.

10.3 Version History

This policy was adopted on September 26, 2017.

This policy was updated on July 23, 2018.

This policy was updated on April 28, 2025.

11 Incidental Testing Policies

11.1 Incidental Testing Policy

11.1.1 Purpose

To provide rules around defects which are found in products during testing by an RBTO, but which cannot be exposed by any existing tests.

11.1.2 Policy Description

The BTL recognizes that the set of tests within the BTL Test Package does not provide complete coverage of all BACnet functionality within BACnet products. The coverage provided by the BTL Test Package is focused on those areas that the BTL-WG deemed most important during development of the test package. This focus allows the BTL to achieve the goal of reducing test effort while minimizing the risk of missed defects that negatively impact interoperability.

11.1.2.1 Incidental Testing

This policy provides the allowance for RBTOs to fail devices when severe defects are noticed at any time during the testing process, but which are not covered by existing tests.

Incidental testing consists of monitoring and review of all actions of the IUT while regular testing is underway. In such cases, any actions taken, or not taken, by the IUT where such actions, or non-actions, would contravene the BACnet standard, would be noted as defects.

11.1.2.2 Defect Evaluation

When a defect is encountered during incidental testing, the first action an RBTO should take is to report the issue, as would be done for any defect, to the vendor indicating that the defect was encountered during incidental testing. The RBTO should also make the applicant aware of this policy and the Incidental Testing Dispute Policy when reporting defects found during incidental testing. Where possible, RBTOs should also report defects found during incidental testing to the BTL Manager for the purpose of improving the BTL Test Package.

If the applicant disputes a defect found during incidental testing, the RBTO shall not provide a positive test report to the applicant until the testing dispute mechanism has been formally concluded.

11.1.2.3 Delayed Testing

For defects which are not considered severe, the BTL-WG may develop tests to check for such defects in future test packages.

If such tests are developed and incorporated into a test package, the product will be required to pass the test when it is next in for retesting. In addition, the noted existence of the defect is sufficient reason for the product to require retesting as per the Product Retesting Requirements Policy.

11.1.3 Version History

This policy was adopted November 18, 2019.

11.2 Incidental Testing Dispute Resolution Policy

11.2.1 Purpose

The Incidental Testing Dispute Resolution Policy defines the framework and process for appeal in the case of a disagreement on product behavior not covered by existing tests. The BTL testing program allows any vendor to appeal a negative RBTO finding, while ensuring that all functionality is correctly implemented. This appeals policy ensures that the test plan is correctly specified, and that testing is correctly implemented, when resolving the dispute.

11.2.2 Testing Dispute Resolution Policy Statement

In the event of a disagreement between the vendor and the RBTO over the resolution of a severe problem in the product discovered during incidental testing, but which is not covered by existing tests, this procedure shall apply. A "severe" problem is defined here as a problem that is likely to prevent the device from interoperating with other devices in an otherwise properly functioning system.

a. The BTL Manager reviews the problem. If he deems it to be a severe problem, he reports it to the vendor as such. If he does not deem it to be a severe problem, this procedure is terminated.

b. If the vendor agrees to fix the problem, this procedure is terminated.

c. The RBTO documents the problem and its reasoning why this is a severe problem that must be fixed and presents it to the vendor and the BTL Manager.

d. The vendor either presents a written rebuttal to the BTL Manager that will be appended to the severe bug report or declares that he is waiving the right. There is no time limit set for this step.

e. The BTL Manager convenes a review committee with five representatives from association members, not including the vendor and presents the RBTO's documentation and reasoning, along with the vendor's rebuttal, if any, to the review committee.

f. The review committee evaluates the documentation and rebuttal. The review committee is permitted to ask questions of the RBTO and the vendor in the course of its evaluation.

g. If the review committee does not find that the problem is severe, this procedure is terminated and the RBTO shall not refuse to award a passing test report because of this problem.

h. If the review committee finds the issue to be a potential interoperability problem but does not require the problem to be fixed immediately, then the vendor will be notified that the product shall be called back for testing within a year following the date that the BTL-WG adds the test for this problem to the Test Package. See Product Retesting Requirements Policy. Alternately the problem may be fixed immediately by the vendor and verified by the RBTO in which case no call back shall be required. In either case, the BTL shall not refuse to award BTL Certification because of this problem until and unless the product is called back and found not to pass the added test.

i. If the review committee agrees that this is a severe problem that must be fixed, it shall produce a test for this problem within one month of being convened. If BTL via the review committee fails to produce the test, this procedure is terminated and the RBTO shall not refuse to award a passing test report because of this problem.

j. The RBTO performs the test upon the device. If the device passes the test, the BTL shall not refuse to award BTL Certification because of this problem. If the device fails the test, it must be fixed in order to qualify for BTL Certification, or the vendor can elect to appeal to BACnet International per the procedures in the Appeals Procedure.

11.2.3 Version History

This policy was adopted in May of 2006.

This policy was updated and moved to the **BTL Testing Policies** document on September 26, 2017.

This policy was renumbered 11.2 and merged with the new Incidental Testing Policy on November 18, 2019.

12   Field Defects Resolution Policy

12.1   Purpose

To define the BTL Policy for handling Field Defects resulting in Interoperability Issues on BTL Listed Products.

12.2   Policy Description

While the BTL strives to provide a thorough testing process, some products may go through the process with undetected interoperability issues, or products may have interoperability issues inserted during the normal course of product maintenance.

In either case, when a problem is encountered with a BTL Listed product, the first action to take is to contact the vendor(s) of the product(s) to get the problem resolved. If there is a disagreement over whether the problem exists in the product, or if the vendor is unwilling to fix the issue, then BACnet International may be requested to help to get the problem resolved.

To request help from BACnet International for such issues, contact the BTL Manager. Be prepared with information about the defective product, the interoperability issue, the installation at which the problem is occurring, and contact information for the individuals that have already discussed the issue.

A BACnet International representative will contact all parties to the dispute and collect statements from each. The problem will then be analyzed by a technical BACnet International representative to determine the accuracy of the report. An anonymized field defect analysis report will be created for review by the BTL-WG.

The BTL-WG will review the report and provide guidance to the BTL Manager on assessing the severity of the issue (see the Severity Evaluation Guideline). If analysis identifies an issue with the product in question, and the BTL-WG determines that the issue is the result of a severe error that could be caught through the application of the test package, the BTL Manager shall request that the product be submitted for a retest. If there is no test which could catch the defect, and the BTL Manager decides that the severity of the interoperability problem warrants a new test, the BTL-WG shall develop a test and the BTL Manager shall request that the product be submitted for a retest.

If the product is not submitted for a retest within six months, the BTL Listing (and Certification if applicable) for the product shall be revoked and notice of the revocation may be published on the website along with a description of the known issue. The retesting will be restricted to the functional area in question, and any functional areas that

have been changed since the last test application. The cost of retesting will be the responsibility of the product vendor.

The expectation is that the parties to the dispute will provide sufficient information and support to make their case to the BTL Manager so that BACnet International's costs to arbitrate the dispute are minimized. Depending on the nature of the dispute and the costs to resolve it, BACnet International at its sole discretion, may allocate costs of a dispute resolution to the parties.

12.3 Version History

This policy was adopted as version 1 in June of 2012.

This policy was updated and moved to the *BTL Testing Policies* document on September 26, 2017.

This policy was updated on November 18, 2019.

13   Test Results Policy

13.1   Purpose

To describe requirements on the reporting of test results.

13.2   Policy Description

13.2.1   Reporting Format

Final test reports from RBTOs shall follow the format laid out by the BTL Final Test Report template.

13.2.1.1 InfoSheet Accuracy

The InfoSheet of the Final Test Report provides detailed information about the product(s) tested that is required by the BACnet Certifier. The EPICSsheet represents the actual product(s) tested by the RBTO. To ensure accuracy of the documented product(s) in the InfoSheet, the below parameters in the InfoSheet must match the EPICSsheet.

InfoSheet Clause	EPICSsheet
4.2 - Product Name	Product Name
4.3 - Product Model Number	Product Model Number
4.5 - Firmware Revision	firmware-revision property in the Device object
4.6 - Application Software Version	application-software-version in the device object

If the EPICSsheet contains multiple EPICS files, each EPICs file must be represented in the specified InfoSheet clauses even if the value is duplicated. Each value must be on a separate line in each cell.

13.2.2   Individual Test Results

The BTL Test Package allows for RBTOs to report a number of different test results. These standardized test results are:

Passed: A test result of Pass shall be reported only if the test was applied, and a successful test result was observed.

Failed: A test result of Failed shall be reported only if the test was applied and a non-successful result was observed, or if the test was required and unable to be

applied to the product. Note: A 'Failed' result will only appear in a final test report if the applicant stopped testing before addressing all failures.

Skipped(conditionality): A test result of Skipped(conditionality) shall be reported only if the IUT did not meet the conditions for testing as outlined in the test's Test Conditionality field in the **BTL Test Plan**.

Skipped(retest): A test result of Skipped(retest) shall be reported only when the test is a retest and the lab did not select the test for application through a correct application of the Retest Test Selection Policy.

Skipped(deprecated): A test result of Skipped(deprecated) shall be reported only when the test is a recertification retest and the functionality meets the requirements set out in the Deprecated Functionality Testing Policy.

Inconclusive: A test result of Inconclusive shall be reported only if a non-successful result was observed, the lab's expert analysis of the failure resulted in an opinion that the test specification is possibly in error, the issue was reported to the BTL-WG with a Clarification Request and the BTL-WG did not provide an official opinion within the allowed timeframe (as per the Clarification Request process).

13.2.2.1 Inconclusive Test Results

An inconclusive test result shall only be issued in a final test report when a related Clarification Request exists, and it is not answered within the allowable timeframe.

Where there is a question about the validity of a test within the BTL Test Package, the RBTO, or test applicant, shall inform the BTL-WG via a Clarification Request. The RBTO shall wait for the formal response from the BTL-WG before issuing a passing test report.

Upon receipt of the BTL-WG's formal response, the RBTO shall update the test result to reflect the response.

If the BTL-WG does not provide a formal response within the time frame allowed for in the Clarification Request process, the test result shall remain Inconclusive and the Clarification Request shall be referenced within the test report entry.

13.2.3 Section Test Results

Within the Final Test Report, the result of each tested section is reported, where a section consists of all tests related to a single line item in the BTL Functionality Checklist.

The standardized section test results are:

Pass: The section was tested during this application of the test package, all required tests were applied, and no tests resulted in a test result of "Failed", nor "Inconclusive".

Failed: The section was fully or partially tested during this application of the test package, and one or more required tests were resulted in a test result of "Failed".

Positive Result (base product): The section was tested during a previous application of the test package with a positive result, and no tests from the section were applied during this application of the test package.

Positive Result (spot check): The section was tested during a previous application of the test package with a positive result, and some tests from the section were applied during this application of the test package, none of which resulted in test result of "Failed", nor "Inconclusive".

Inconclusive: The section was fully or partially tested during this application of the test package, and one or more required tests were resulted in a test result of "Inconclusive".

Not Applicable: The section is not applicable to the IUT based on the Checklist entry not being selected.

13.2.3.1 Inconclusive Section Test Results

A section shall only be marked as Inconclusive if each test within that section which is marked as Inconclusive has been reported to the BTL-WG and allowed to remain as Inconclusive as per 11.2.2.1.

13.2.4 Monitoring of Inconclusive Results

The BTL Manager shall maintain a list of all listings / certifications which contain an inconclusive test result.

When a formal response to a Clarification Request related to granted listings / certifications is finally received, the BTL Manager shall immediately inform the vendor, and attach the Clarification Request response to the test report on file. If the response is such that the device would have failed, when the vendor's yearly questionnaire is sent out, the vendor will be notified that they are required to submit the affected product for a retest.

13.3 Version History

This policy was adopted on November 18, 2019.

This policy was updated to include Skipped(deprecated) test result on March 18, 2021.

This policy was updated to include the InfoSheet Accuracy clause on November 14, 2024.

14 Appeal Policy

14.1 Purpose

The purpose of the appeal policy is to ensure a fair and correct testing procedure.

14.2 Policy Description

An Applicant that has submitted a product for testing according to these **BTL Testing Policies** may appeal for any of the following reasons:

a. Applicant believes that the RBTO responsible for testing Applicant's product has misinterpreted BTL's requirements by selecting inappropriate tests. Such an appeal may be filed while testing is underway or after testing has been completed.

b. Applicant believes that the RBTO responsible for testing Applicant's product performed a test incorrectly or has misinterpreted the results of a test. Such an appeal may be filed while testing is underway or after testing has been completed.

c. Applicant believes that circumstances exist that may have substantially impacted the ability of the RBTO to perform, repeat, or communicate the results of testing in a professional and objective manner.

An applicant that has submitted a product for Certification according to these BTL policies may appeal any of the following reasons:

a. Applicant believes that the BTL requirement for Certification is in some way inappropriate.

b. Applicant believes a BTL requirement for Certification has been misinterpreted.

Testing requirements and the determination as to whether or not a product has met the requirements for a BTL Certification or Listing shall be made by the sole determination of BACnet International. Notwithstanding the foregoing, the parties recognize that questions may arise regarding the interpretation of a requirement, specific decisions, or the test results in general. Such questions may, at the request of the Applicant, be addressed through the Appeals Procedure described here. The full costs of the Appeals Procedure shall be borne by the Applicant. The Appeals Procedure will allow a reasonable opportunity for the Applicant's concerns to be heard, reviewed, and, if determined on appeal to have substance, acted upon.

Applicants are encouraged to resolve disputes without recourse to the Appeals Procedure. Questions about the selection or execution of specific tests should be directed to the management of the test organization or to the BTL Manager, and questions about test requirements should be directed to the BTL Working Group through the BTL Manager.

14.2.1 Appeal Procedure

14.2.1.1 Initiating an Appeal

An appeal shall be initiated by written notice from the Applicant to the Association Manager of BACnet International. The notice must include the following:

a. The reason(s) for the appeal;

b. Documentation supporting the appeal; and

c. A non-refundable deposit of $500 (U.S.) that will be applied to the cost of the appeal.

Applicant must file an appeal of test results no later than six months after the completion of product testing or retesting. Applicant must file an appeal no later than 90 days after notification that a product is not eligible for Certification. Otherwise Applicant loses the right of appeal. Applicant may halt an appeal filed previously by Applicant at any time by written notice to BACnet International's Association Manager.

14.2.1.2 The Appeals Board

Applicant's appeal shall be heard by an Appeals Board consisting of three people selected by BACnet International's Association Manager from a list of people previously approved by BACnet International's President. The members of the Appeals Board shall be selected for each appeal on the basis of their ability to render a fair judgment based on technical and business considerations. A person will be disqualified from serving on an Appeals Board, if in the opinion of BACnet International's Association Manager, the person has a significant conflict of interest that is relevant to the appeal.

Once the members of the Appeals Board are selected, BACnet International's Association Manager will provide the Applicant with the names and affiliations of the members of the Appeals Board. If the Applicant believes that one or more members of the Appeals Board will not be able to render a fair judgment, the Applicant may present relevant evidence to the BACnet International's Association Manager, who after reviewing the evidence and contacting the parties involved, may change the members of the Appeals Board.

Once the Applicant is ready to proceed with the Appeal, BACnet International's Association Manager will officially seat the Appeals Board. The members of the Appeals Board will review the documentation supplied by the Applicant, materials supplied by

other parties including the RBTO and BACnet International and collect any other information that is relevant to the appeal. For each item being appealed, the Appeals Board will issue a decision. Each decision requires a majority vote of the members of the Appeals Board. The decisions may include any or all of the following:

a. Reject an item in the appeal.

b. Reverse the outcome of a specific test already performed by the RBTO, if it is determined that the test organization incorrectly interpreted the test results.

c. Require the RBTO to remove, modify, substitute, or add specific tests in order to test BACnet functionality claimed by Applicant, if it is determined that the RBTO chose tests that did not meet the requirements approved by BACnet International.

d. Require the RBTO to rerun a test, if it is determined that the RBTO incorrectly executed a particular test. Appropriate instructions shall be given to the RBTO.

e. Require the RBTO to take additional steps to ensure that the tests are sufficiently documented and repeatable. Appropriate instructions shall be given to the RBTO.

f. Request the review of a particular test requirement by BACnet International, if it is the opinion of the Appeals Board that the test requirement is not sufficiently clear.

g. Request the review of a particular test requirement by BACnet International, if it is the opinion of the Appeals Board that the test requirement is not appropriate.

The collection of decisions, the reasons for the decisions, and any minority opinions will be presented to BACnet International's Association Manager in a written report. The report shall be completed within 60 days of the formation of the Appeals Board unless BACnet International's Association Manager determines there are unusual circumstances and extends the deadline by an additional 30 days. Failure to deliver the written report by the deadline shall result in the appeal proceeding directly to the BACnet International President. Following the delivery of the written report, the Appeals Board shall be disbanded, although its members may be contacted by BACnet International's President if there is some question about the content of the report.

BACnet International's Association Manager will provide a copy of the Appeals Board's report to Applicant and to the BTL Manager.

14.2.1.3 Review of Test Requirements

If the Appeals Board's report requests the review of one or more test requirements, then BACnet International shall complete such a review of those requirements not later than 30 days after the receipt of the report. The review will be conducted using procedures determined by BACnet International. Such a review may result in the removal, modification, or addition of test requirements, and the new set of requirements shall apply to all of Applicant's products that are currently being tested and all products submitted for testing after the review is complete. BACnet International's Association Manager will inform Applicant of the results of the review.

14.2.1.4 Appeal to BACnet International's Board of Directors

Following the completion of the Appeals Board's report and any possible review of test requirements by BACnet International, Applicant may appeal to BACnet International's Board of Directors by written notice to BACnet International's Association Manager. After reviewing the Appeals Board's report, considering Applicant's arguments, and obtaining any other relevant information, the Board of Directors will issue a decision. The decision reached by the Board of Directors is final and may not be appealed.

Applicant's appeal to BACnet International's Board of Directors must be filed within the 60 days following the receipt of the Appeals Board's report. The Board of Directors shall issue a decision within 60 days of receipt of Applicant's appeal.

14.2.1.5 Implementation of Decisions

BACnet International's Association Manager is responsible for the implementation of decisions reached as a result of this Appeals Procedure.

14.2.1.6 Confidentiality

BACnet International does not guarantee that information pertaining to Applicant's appeal will be kept confidential. In particular, certain documents generated as a result of the appeal will be distributed to people that are involved in determining how BACnet products should be tested by the BTL, and summaries of appeals decisions may be published.

14.2.1.7 Appeal Cost

BACnet International will invoice Applicant for the cost of the appeal. Applicant will be charged $500 in administrative fees, plus reasonable fees for time and expenses charged to BACnet International by the Appeals Board members and the test organization. The maximum amount charged to Applicant for a single appeal will be $5,000. A single appeal may include multiple claims on a single product.

14.2.1.8 Delivery of Documents

All notices, reports, and other documents shall be sent by e-mail, fax, mail or courier, in each instance confirmed by certified mail return receipt requested, with notice to be given to the parties at their principal address as recorded in the official BACnet International records.

14.3 Version History

This policy was adopted 03-Nov-2008.

This policy was updated and moved to the *BTL Testing Policies* document on September 26, 2017.

15   Expiration of BTL Certification Policy

15.1   Purpose

The purpose of this policy is to define the conditions for expiration of a BTL Certificate and BTL Listing.

15.2   Policy Description

BTL Certificates expire on March 31 following the fifth anniversary of the date of the test report on which the Certificate was based, unless revoked before that time. See Product Retesting Requirements Policy for details on the requirements to maintain qualification for BTL Certification.

BTL Listings expire after 25 years for B-SS and B-SA devices, and after 15 years for all other devices, unless revoked before that time. See Product Retesting Requirements Policy for details on the requirements to maintain qualification for the BTL Listing.

15.3   Version History

This policy was adopted on September 26, 2017.

16   BTL Certificate Renewal Policy

16.1   Purpose

This policy describes the conditions under which testing is required for renewal of a BTL Certificate.

16.2   Policy Description

BTL Certificates expire on March 31 following the five-year anniversary of the completion of BTL testing as documented in the final test report upon which the certification is based. If a manufacturer wishes to renew a BTL Certificate, regression testing may be required.

The following rules determine whether retesting is required.

a.   Changes to the Product: If there have been any changes to the product, including within the non-BACnet functionality, the product must be re-tested.

b.   Change to the Test Package: If there have been any substantive changes to the **BTL Test Plan** which impact the tests that apply to the product, then the product must be re-tested. Substantive changes in the test package include:

i.   Tests in the current test package for the product's functionality but which were not previously applied to the product;

ii.   Tests in the current test package for the product's functionality which were previously applied to the product, but which have subsequently undergone substantive changes in the test.

When retesting for re-certification, the following rules apply:

a.   Test Package Version: As with any re-test, the product shall be re-tested using the current BTL Test Package.

b.   Minimum Protocol_Revision Requirements: The minimum protocol revision requirement does not apply if the changes made to the product do not trigger the retesting requirement (as per Product Retesting Requirements Policy).

c.   Testing of Defects: If there are any defects found during the testing, once the defect has been repaired all applicable testing in the functionality area of the failure shall be applied.

16.3   Version History

This policy was originally accepted as section 8.3 on January 7, 2019.

This policy was moved from 8.3 to its own policy on November 18, 2019.

17   Remote Testing Policy

17.1   Purpose

The purpose of this policy is to specify the kinds of products that can be tested remotely and what the vendor must provide to facilitate testing this kind of product.

17.2   Policy Description

To qualify for remote testing, a product:

1. must be integrated into a software environment that cannot be replicated in a laboratory.

2. does not support deployment on a standalone server.

3. supports the BACnet Secure Connect (B/SC) data link and no other BACnet data link.

4. does not support BACnet routing unless it is B/SC to B/SC routing.

The vendor must provide:

1. product access to facilitate configuration as required for testing.

2. product access to validate tests which may require access to BACnet messaging before encryption and after decryption.

3. documentation on how the RBTO can determine if the product has been updated.

17.3   Version History

This policy was accepted on June 20, 2024.

18   Application of Test Package Addenda

18.1   Purpose

The purpose of this policy is to specify when each type of Test Package addendum is applied to the current Test Package.

18.2   Policy Description

The BTL-WG produces three types of addenda that apply to the current Test Package and each type of addendum is applied to the current Test Package differently.

18.2.1   Fixes (Fix)

The Fix Test Package addendum is a set of fixes to the current Test Package that must be applied as soon as the addendum has been published. Once the changes that make up a fix addendum have passed at the BTL-WG general meeting, testing may occur. The Final Test Report may not be completed until after the addendum has been published.

18.2.2   Other Addenda

This Test Package addendum is a set of changes that will be rolled into the next Test Package.

18.3   Version History

This policy was accepted on November 14, 2024.

19   Change History

Date	Change
22-Apr-2016	Initial release of combined policy document.
16-Mar-2017	Added additional final paragraph to clause 6.2 stating the attestation policy.
25-Sep-2017	Change to wording to include BTL Certification Change to wording from test organization to RBTO Addition of wording concerning Certificate expirations and Annual Review Process. Change in wording concerning current titles and responsibilities of BACnet International. Update to minimum Protocol Revision table.
18-Jan-2018	Updated for Test Plan 15.0. Updated for **All Claimed Function must be tested for BTL Certification.** Updated to include Interim Testing for function not currently in Test Plan.
4-Jun-2018	Updated for Test Plan 15.1 Updated for expansion of child product / parent product inclusion. Section 9.2.2 Single Product Derivative. Updated for 5-year rule. Added section 14 Use of Prior Test Results.
13-Dec-2018	Updated for Test Plan 15.2 Added section 8.3 Policy for Regression Testing Required for Renewal of BTL Certificate
10-Jan-2019	Updated to 15.3 Added section 8.4vPolicy for Regression Testing when Vendor ID has been changed
15-Nov-2019	The following Policies were added or updated: 11 Field Defect Policy – updated 12 Test Results Policy – added 9 BTL Certificate Renewal Policy – updated, moved to separate policy 14 Inconclusive Test Results - added The following sections were removed because adequately covered elsewhere 8.4 Policy for Regression Testing when Vendor ID has been changed. This section is already adequately covered by the Derivative Product Policy (Single Product Derivative)] Use of Prior Test Results. This policy is adequately covered by the Product Retesting Selection Policy, and Derivative Product Policy (Single Product Derivative)
12-Apr-2021	Updated with Test Package 18.0 release. Added Deprecated Functionality Testing Policy
09-Feb-2022	Updated with Test Package 20.0 release. Included PR 23 & 24. Corrected criteria for retest to match Certificate Renewal wording.
03-Mar-2022	Updated section 5 Test Package Transition Policy to include products prior to transition period and test packages that are not current for > 1 year.
16- Jan-2023	Updated with Test Package 23.0 release and Protocol_Revision 25.
17-Apr-2023	Updated 2 Checklist accuracy to remove "partial implementation" wording. Updated 6 Product Retesting Policy to include "Any property is made writable." Published May 8, 2023.
16-Apr-2024	7.2 - Add Test Plan Section 2.1.1 to the set of tests required to be executed on a retest.

25-Jun-2024	Added Remote Testing Policy
14-Nov-2024	3.2 - Update minimum Protocol_Revision requirements.
	4.2.1 - Added Interim Checklist requirements.
	5.2 - Updated when a device must use the latest Test Package during the transition period.
	13.2.1.1 - Added clause to specify the Test Report InfoSheet requirements.
	18 - Added requirement for when Test Package addenda are applied to the current Test Package.
May 29, 2025	Added 2.2.1 Virtual BACnet Devices
	Updated 10.2.2 Single Product Derivative
July 10, 2025	Updated Clause 10.2.2 – Single Product Derivative sections e