

# **TR-374**

## **YANG modules for management of G.hn systems in FTTdp architectures**

**Issue: 1**  
**Issue Date: June 2018**

## Notice

The Broadband Forum is a non-profit corporation organized to create guidelines for broadband network system development and deployment. This Technical Report has been approved by members of the Forum. This Technical Report is subject to change. This Technical Report is copyrighted by the Broadband Forum, and all rights are reserved. Portions of this Technical Report may be copyrighted by Broadband Forum members.

## Intellectual Property

Recipients of this Technical Report are requested to submit, with their comments, notification of any relevant patent claims or other intellectual property rights of which they may be aware that might be infringed by any implementation of this Technical Report, or use of any software code normatively referenced in this Technical Report, and to provide supporting documentation.

## Terms of Use

### 1. License

Broadband Forum hereby grants you the right, without charge, on a perpetual, non-exclusive and worldwide basis, to utilize the Technical Report for the purpose of developing, making, having made, using, marketing, importing, offering to sell or license, and selling or licensing, and to otherwise distribute, products complying with the Technical Report, in all cases subject to the conditions set forth in this notice and any relevant patent and other intellectual property rights of third parties (which may include members of Broadband Forum). This license grant does not include the right to sublicense, modify or create derivative works based upon the Technical Report except to the extent this Technical Report includes text implementable in computer code, in which case your right under this License to create and modify derivative works is limited to modifying and creating derivative works of such code. For the avoidance of doubt, except as qualified by the preceding sentence, products implementing this Technical Report are not deemed to be derivative works of the Technical Report.

### 2. NO WARRANTIES

THIS TECHNICAL REPORT IS BEING OFFERED WITHOUT ANY WARRANTY WHATSOEVER, AND IN PARTICULAR, ANY WARRANTY OF NONINFRINGEMENT IS EXPRESSLY DISCLAIMED. ANY USE OF THIS TECHNICAL REPORT SHALL BE MADE ENTIRELY AT THE IMPLEMENTER'S OWN RISK, AND NEITHER THE BROADBAND FORUM, NOR ANY OF ITS MEMBERS OR SUBMITTERS, SHALL HAVE ANY LIABILITY WHATSOEVER TO ANY IMPLEMENTER OR THIRD PARTY FOR ANY DAMAGES OF ANY NATURE WHATSOEVER, DIRECTLY OR INDIRECTLY, ARISING FROM THE USE OF THIS TECHNICAL REPORT.

### 3. THIRD PARTY RIGHTS

Without limiting the generality of Section 2 above, BROADBAND FORUM ASSUMES NO RESPONSIBILITY TO COMPILE, CONFIRM, UPDATE OR MAKE PUBLIC ANY THIRD PARTY ASSERTIONS OF PATENT OR OTHER INTELLECTUAL PROPERTY RIGHTS THAT MIGHT NOW OR IN THE FUTURE BE INFRINGED BY AN IMPLEMENTATION OF THE TECHNICAL REPORT IN ITS CURRENT, OR IN ANY FUTURE FORM. IF ANY SUCH

RIGHTS ARE DESCRIBED ON THE TECHNICAL REPORT, BROADBAND FORUM TAKES NO POSITION AS TO THE VALIDITY OR INVALIDITY OF SUCH ASSERTIONS, OR THAT ALL SUCH ASSERTIONS THAT HAVE OR MAY BE MADE ARE SO LISTED.

The text of this notice must be included in all copies of this Technical Report.

## Issue History

Issue Number	Approval Date	Publication Date	Issue Editor	Changes
1	13 June 2018	17 July 2018	Marcos Martínez, MaxLinear	Original

Comments or questions about this Broadband Forum Technical Report should be directed to [info@broadband-forum.org](mailto:info@broadband-forum.org).

<b>Editor</b>	Marcos Martínez	MaxLinear
<b>YANG Modules Project Stream Leaders</b>	Joey Boyd Ken Kerpez	ADTRAN ASSIA
<b>Common YANG Work Area Directors</b>	Joey Boyd Sven Ooghe	ADTRAN Nokia

**Table of Contents**

1 Purpose and Scope .....7

    1.1 Purpose.....7

    1.2 Scope.....7

2 References and Terminology .....8

    2.1 Conventions.....8

    2.2 References.....9

    2.3 Definitions.....10

    2.4 Abbreviations.....10

3 Technical Report Impact ..... 11

    3.1 Energy Efficiency.....11

    3.2 IPv6.....11

    3.3 Security .....11

    3.4 Privacy .....11

4 Modules..... 12

    4.1 bbf-ghn.....12

5 Documentation ..... 12

6 Dependencies on related YANG modules and Standards..... 13

## **Executive Summary**

This specification defines the YANG data models necessary for the management of ITU-T G.hn technology when used in FTTdp architectures.

# 1 Purpose and Scope

## 1.1 Purpose

This specification defines the YANG data models necessary for the management of ITU-T G.hn technology when used in FTTdp architectures.

## 1.2 Scope

This Technical Report currently defines the following interface-related YANG modules:

- **bbf-ghn**: Includes all standardized parameters and associated types for G.hn configuration, status monitoring, performance management, testing and diagnostics of a G.hn network connected to the interface.

Future Amendments are likely to define additional YANG modules.

The YANG modules of TR-374 are posted on GitHub at <https://github.com/BroadbandForum/yang>. This file documents the theory of operation and structure of the YANG modules in TR-374. This file also provides a starting point for understanding TR-374; containing high-level descriptions and pointers to more detailed documentation in the YANG files.

Section 4 of this document briefly outlines the modules defined in TR-374.

Section 5 describes the documentation included in the modules in TR-374.

## 2 References and Terminology

### 2.1 Conventions

In this Technical Report, several words are used to signify the requirements of the specification. These words are always capitalized. More information can be found in RFC 2119 [1].

<b>MUST</b>	This word, or the term “REQUIRED”, means that the definition is an absolute requirement of the specification.
<b>MUST NOT</b>	This phrase means that the definition is an absolute prohibition of the specification.
<b>SHOULD</b>	This word, or the term “RECOMMENDED”, means that there could exist valid reasons in particular circumstances to ignore this item, but the full implications need to be understood and carefully weighed before choosing a different course.
<b>SHOULD NOT</b>	This phrase, or the phrase "NOT RECOMMENDED" means that there could exist valid reasons in particular circumstances when the particular behavior is acceptable or even useful, but the full implications need to be understood and the case carefully weighed before implementing any behavior described with this label.
<b>MAY</b>	This word, or the term “OPTIONAL”, means that this item is one of an allowed set of alternatives. An implementation that does not include this option <b>MUST</b> be prepared to inter-operate with another implementation that does include the option.



## 2.2 References

The following references are of relevance to this Technical Report. At the time of publication, the editions indicated were valid. All references are subject to revision; users of this Technical Report are therefore encouraged to investigate the possibility of applying the most recent edition of the references listed below.

A list of currently valid Broadband Forum Technical Reports is published at [www.broadband-forum.org](http://www.broadband-forum.org).

Document	Title	Source	Year
[1] <a href="#">RFC 2119</a>	<i>Key words for use in RFCs to Indicate Requirement Levels</i>	IETF	1997
[2] <a href="#">RFC 7223</a>	<i>A YANG Data Model for Interface Management</i>	IETF	2014
[3] <a href="#">RFC 6991</a>	<i>Common YANG Data Types</i>	IETF	2013
[4] <a href="#">RFC 7950</a>	<i>The YANG 1.1 Data Modeling Language</i>	IETF	2016
[5] <a href="#">TR-181</a>	<i>Device Data Model for TR-069</i>	BBF	2014
[6] <a href="#">TR-383</a>	<i>Common YANG Modules for Access Networks</i>	BBF	2017
[7] <a href="#">G.9960</a>	<i>Unified high-speed wire-line based home networking transceivers – Physical layer specification</i>	ITU-T	2016
[8] <a href="#">G.9961</a>	<i>Unified high-speed wire-line based home networking transceivers – Data link layer specification</i>	ITU-T	2016
[9] <a href="#">G.9962</a>	<i>Unified high-speed wire-line based home networking transceivers – Management Specification</i>	ITU-T	2014
[10] <a href="#">G.9964</a>	<i>Unified high-speed wire-line based home networking transceivers – Power spectral density specification</i>	ITU-T	2016

## 2.3 Definitions

The following terminology is used throughout this Technical Report.

**FTTP**                      Fiber To The Distribution Point

## 2.4 Abbreviations

This Technical Report uses the following abbreviations:

DM	Domain Master
EP	End Point

### **3 Technical Report Impact**

#### **3.1 Energy Efficiency**

TR-374 has no impact on energy efficiency.

#### **3.2 IPv6**

TR-374 has no impact on IPv6.

#### **3.3 Security**

TR-374 has no impact on security.

#### **3.4 Privacy**

Any issues regarding privacy are not affected by TR-374.

## 4 Modules

The YANG modules contained in TR-374 are briefly described here.

### 4.1 bbf-ghn

ITU-T G.hn technology ([7], [8], [9], [10]) defines the system architecture, physical and data link layer of an OFDM-based wireline-based transmission system able to operate over different physical media.

The bbf-ghn module's YANG files are in the interface directory. This is the G.hn YANG data model.

The top level module is in file bbf-ghn.yang, and all included submodules have file names beginning with bbf-ghn. The individual parameters are defined in \*body.yang submodule files.

Documentation is in the interface/docs directory.

bbf-ghn uses parameters defined in ITU-T G.9960 [7], ITU-T G.9961 [8], ITU-T G.9962 [9], ITU-T G.9964 [10] and TR-181 [5].

## 5 Documentation

There are "README.md" files; these are short text files giving brief descriptions of the contents of the directories they are in.

Documentation for the bbf-ghn module are contained in directory *interface/docs* and have filenames beginning with bbf-ghn.

The tree file named bbf-ghn-full.tree shows the tree structure and all parameters in the module.

## 6 Dependencies on related YANG modules and Standards

TR-374 is based on YANG 1.1 [4]

The following YANG modules are used by TR-374:

- ietf-interfaces.yang [2]
- ietf-yang-types.yang [3]
- bbm-yang-types [6]

End of Broadband Forum Technical Report TR-374