

# **P802f YANG Data Model for EtherTypes**

## Overview and Open Issues

Glenn Parsons – Chair 802.1

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Version 0.6

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# Background and Timelines

- IETF requested IEEE to create a YANG module of EtherTypes (early 2017)
  - A program was proposed for the RAC to generate a YANG module for all EtherTypes
  - IETF wanted a short list of relevant or favorite EtherTypes
    - This would require a project to define
  - IETF published a YANG module of EtherTypes in [RFC 8519](#) (early 2019)
    - They will deprecate when IEEE module is available
- IEEE 802.1 WG created a project to work YANG EtherTypes (late 2019)
  - Initial P802f discussion held in YANGsters (Chair: Scott Mansfield)
  - Marc Holness assigned as editor (mid 2020)

# P802f PAR

- **PAR:** <https://development.standards.ieee.org/myproject-web/public/view.html#pardetail/7215>
- **Highlights of the PAR**
  - **Type of Project:** Amendment to IEEE Standard 802-2014
  - **Scope:** This amendment specifies YANG modules that contain the EtherType information, including a compact human-readable name and description. The name and description for an initial set of EtherTypes are defined for inclusion in the IEEE Registration Authority EtherType public listing. This amendment also addresses errors and omissions in IEEE Std 802 description of existing functionality.
  - **Are there other standards or projects with a similar scope?** Yes  
**Explain:** The Internet Engineering Task Force (IETF) has requested that the IEEE create an EtherTypes YANG module, since the IEEE owns the EtherTypes registry. The IETF will use the IEEE YANG module once completed and deprecate the EtherTypes Module they have written which is found in RFC 8519 "YANG Data Model for Network Access Control Lists (ACLs)" <https://tools.ietf.org/html/rfc8519>.

# Introduction

- The IEEE SA Registration Authority for Ethertype (<https://standards.ieee.org/products-services/regauth/ethertype/index.html>) provide access to the public listing of the EtherType registry
  - <http://standards-oui.ieee.org/ethertype/eth.txt>
  - <http://standards-oui.ieee.org/ethertype/eth.csv>
- Contains the following information, and has a tabular representation as illustrated below:
  - Ethertype Assignment (hex)
  - Organization Address (string)
  - Protocol (string)

Registry	Assign	Organization Name	Organization Address	Protocol
Ethertype	891c	Martin Professional A/S	Olof Palmes Allé 18 Århus N Midtjylland DK 8200	This protocol is used for high bandwidth, low latency transmission of video data to video wall display devices over an Ethernet network. The protocol is proprietary to Martin Professional A/S, refer to <a href="http://www.martin.dk">www.martin.dk</a> for further information.
Ethertype	8946	IETF TRILL Working Group	c/o Internet Society Reston VA US 20190-5108	The RBridge Channel protocol is specified in <a href="http://www.ietf.org/id/draft-ietf-trill-rbridge-channel-05.txt">http://www.ietf.org/id/draft-ietf-trill-rbridge-channel-05.txt</a> . Most of the document is about communication between RBridges. Section 4 describes the differences for transmission between and end station and an RBridge.

# Introduction

- [IETF RFC 8519](#) contains a YANG module for Ethertypes with a structure that includes
  - Ethertype Name (as an enum literal string)
  - Ethertype Value (as decimal number)
  - Short Description (as string)

```
enum wlan {  
    value 2114;  
    description  
        "Wake-on-LAN. Hex value of 0x0842.";  
}  
enum trill {  
    value 8947;  
    description  
        "Transparent Interconnection of Lots of Links.  
        Hex value of 0x22F3.";  
    reference  
        "RFC 6325: Routing Bridges (RBridges): Base Protocol  
        Specification.";  
}
```

- An example of a Registry tabular representation that incorporates a short EtherType name and short description is shown below

Registry	Assignment	Short Name	Short Description	Organization Name	Organization Address	Protocol
EtherType	0800	ipv4	Internet Protocol version 4 (IPv4)			
EtherType	0842	wlan	Wake-on-LAN			
EtherType	8946	trill	Rbridge	IETF TRILL Working Group	c/o Internet Society Reston VA US 20190-5108	The RBridge Channel protocol is specified in <a href="http://www.ietf.org/id/draft-ietf-trill-rbridge-channel-05.txt">http://www.ietf.org/id/draft-ietf-trill-rbridge-channel-05.txt</a> . Most of the document is about communication between RBridges. Section 4 describes the differences for transmission between and end station and an RBridge.

# P802f Project Impact on the RAC

- The RAC introduces additional fields to the EtherTypes registry
  - Short Name
  - Short Description
- The RAC provides a mechanism to alert interested entities (i.e., subscribers) when an EtherType registry item has changed
- The RAC continues to validate and provide approval for requests to add or modified EtherType registry entries
- The RAC provides a mechanism to allow interested parties (e.g., other SDOs) to subset the EtherType registry

## P802f — YANG Data Model for EtherTypes

- The P802f project will specify the process to generating the EtherTypes YANG representation of the EtherType registry
  - The YANG representation could be of the entire EtherType registry and/or could be a selected subset of the EtherType registry
  - The resulting 802f standards document may or may not contain the YANG modules, it may contain a description of the process to create YANG modules
- The P802f project will modify the description of the IEEE Std 802-2014 specification related to the administration of EtherTypes

## P802f Project Progress ...

- Preliminary draft P802f specification available for review
- Tool created to auto-generate a YANG model from the EtherTypes registry
- Need to resolve Outstanding open issues
  - Requesting feedback on best method to pursue resolution of these Open Items
    - a) Via email to RAC reflector
    - b) Schedule [periodic] meetings with this audience to discuss
    - c) 802.1 Chair (and/or P802f Editor, etc.) periodically engages the RAC
    - d) Other?

# Project Open Issues

## Clarification Items

1) There are items in the EtherType registry of the form EtherTypeX = EtherTypeY (e.g., 86BB = 86DA, 86AD = 86B0).

- How should these be interpreted?

86BB = 86DA

Software Technology, Inc.  
1511 Park Ave  
Melbourne FL 32901  
US

Protocol unavailable.

- 2) There are missing EtherTypes (e.g., 0x800) from the Public listing. How to we clean this up?
- 3) How to correct with EtherTypes with incorrect protocol description? Especially where the owner no longer exists.
- 4) Is there a “master database”? If so, does it need to be updated with the new fields?

# Project Open Issues

## Design Consideration Items

- 5) IEEE maintains the "complete" list of the EtherType registry but provides a tool that can be used by other entities (e.g., other SDOs, etc.) to generate a subset of the "complete" list.
- 6) How is the EtherType registry master list subset delineator governed and managed? There needs to be one if a per SDO (or subset) view of the EtherType registry YANG model representation can be provided. Options include:
  - a) IEEE generates overall IEEE EtherType "complete" list via YANG representation. However the RAC can generate the subset based upon some delineation scheme. Scheme to be determined.

NOTE: There may be a business opportunity for the RAC, where they can charge a subset delineation fee.
  - b) Each subset entity (i.e., consumer) has their own and manages their own subsetting scheme, and they prune the "complete" list to create their own list. The subset entity can then run the IEEE provided tool to generate the YANG representation.

NOTE: A distinct benefit of using our tool to generate the YANG representation is that the structure of the YANG model will be consistent, uniform, and correct.

# Project Open Issues

## Implementation Items

7) When there is a request to add a new EtherType is being added to registry, how should the Order form be updated to reflect the new fields (e.g., short name and short description)?

8) When there is a request to update/modify an existing EtherType in the registry, how should the Order form be updated to reflect these new fields (i.e., short name and short description)?

Organization Information | Select Registry | Enter Payment Preference | Review & Submit Request | Cancel

Please supply and review the information below in order to submit your request. Please note that IEEE does not honor requests for applicant-specified identifiers. Assignments are public unless specifically requested otherwise. For assistance with your application, please contact us @ ieee-registration-authority@ieee.org

**REGISTRIES**

Select Registry\*  
EtherType

Detailed Description\*  
Enter Detailed Description

Protocol Description\*  
Enter Protocol Description

Assignment Quantity\*  
1  
This organization is authorized to request for a maximum of (1) assignment(s) at a time.

Assignment Justification\*  
Confidentiality Renewal

Public Listing Justification\*  
Enter justification for public listing

**ADDITIONAL COMMENTS**  
Justification for additional assignments, Notes to Approver, etc.

Back Next

**Ethertype**  
Provides a context for interpretation of the data field of an Ethernet/IEEE 802.3 data frame (protocol identification).

**Registration Fees:**  
Product: Fees  
Publicly Registered: [Redacted]

**COST OF SERVICE**

Service	Qty	Cost
Confidentiality	1	[Redacted]
<b>Total Cost</b>		[Redacted]

Tracking #: RAS336

Requested on:5/15/2014, 8:00:00 PM



### COMPANY INFORMATION

IEEE 802.1 Working Group  
445 Hoes Lane  
Piscataway, NJ 08854  
US

Alt E-Mail:  
Alt Phone:613-963-8141

### PAYMENT INFORMATION

No payment type selected

### ORDER DETAILS

Selected Registry : EtherType

Public Listing Address :  
349 Terry Fox Drive  
Ottawa, ON K2K 2V6  
CA

Number of Assignments : 1

**Detailed Description :**  
Currently IEEE Std. 802.1AX uses a subtype of the 802.3 slow protocols EtherType for LACP frames. For the revision currently in sponsor ballot (<http://www.ieee802.org/1/files/private/ax-rev-drafts/d4/802-1AX-REV-d4-0.pdf>), new functionality has been added to Link Aggregation to support Distributed Resilient Network Interconnect (DRNI). DRNI describes two new protocols to allow communication between portal systems on the same side of the LAG. It is proposed to use one EtherType with subtyping to identify these protocols and allow future protocols. The Distributed Relay Control Protocol (DRCP) exchanges information to ensure that the Portal Systems can work together. The Address Synchronization Protocol Data Units (ASPDUs) ensures MAC Address synchronization between the Portal Systems.

**Protocol Description :**  
IEEE Std 802.1AX - Distributed Relay Control Protocol (DRCP) EtherType

Service	Quantity	Unit Price	Cost
Ethertype	1	[Redacted]	[Redacted]
<b>Total Cost</b>			[Redacted]

### Additional Comments

Consolidation

Angela N. Thomas  
IEEE Registration Authority

# Project Open Issues

## Implementation Items

- 9) When an EtherType registry item has changed, a description of who gets notified and the notification mechanism is required
  - For example, perhaps the entity (e.g., person or organization) needs to subscribe/register to get alerts/notifications when a registry item changes
- 10) YANG representation gets generated whenever a change to the registry occurs or perhaps a refreshed YANG representation gets generated periodically (e.g., every 24-hours)
- 11) YANG representation gets deposited on a designated IEEE Server.
  - Or perhaps there is no repository needed. Rather there is just access to a tool that can generate the YANG representation
  - If the YANG representation is stored on an IEEE Server, then do we just retain the latest version, or do we also provide version control (i.e., history)?
- 12) The EtherType Tutorial document (<https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/tutorials/ethertype.pdf>) is outdated and needs a refresh