

# Attachment 1

## Standards Roadmap as downloaded on 8 July 2019

Topic: IMT-2020

Work Group: IEEE

Name	Scope	Responsible group	Status	Subject
<a href="#">IEEE 802.1CB-2017 Frame-Replication and Elimination</a>		IEEE 802.1	published	<del>IEEE Std 802.1CB-2017</del> —IEEE Standard for Local and metropolitan area networks--Frame Replication and Elimination for Reliability
<a href="#">IEEE 802.1Qbv-2015 Enhancements for Scheduled Traffic</a>		IEEE 802.1	<del>Superseded by IEEE 802.1Q™-2018</del>	IEEE Std 802.1Qbv-2015 (Amendment to IEEE Std 802.1Q-2014 as amended by IEEE Std 802.1Qca-2015, IEEE Std 802.1Qcd-2015, and IEEE Std 802.1Q-2014/Cor 1-2015) - IEEE Standard for Local and metropolitan area networks -- Bridges and Bridged Networks - Amendment: <a href="#">Enhancements for Scheduled Traffic</a>
<del>IEEE 802.1Qbv Enhancements for Scheduled Traffic</del>		<del>IEEE 802.1</del>	<del>published</del>	<del>This standard specifies Media Access Control (MAC) Bridges that interconnect individual Local Area Networks (LANs), each supporting the IEEE 802-MAC service using a different or identical media access control method, to provide Bridged Local Area Networks</del>
<a href="#">IEEE 802.1Qch-2017 Cyclic-Queueing and Forwarding</a>		IEEE 802.1	<del>Superseded by IEEE 802.1Q™-2018</del>	IEEE Standard for Local and metropolitan area networks--Bridges and Bridged Networks--Amendment 29: Cyclic Queueing and Forwarding
<a href="#">IEEE 802.1Qci-2017 Per-Stream Filtering and Policing</a>		IEEE 802.1	<del>Superseded by IEEE 802.1Q™-2018</del>	<del>IEEE Std 802.1Qci-2017 (Amendment to IEEE Std 802.1Q-2014 as amended by IEEE Std 802.1Qca-2015, IEEE Std 802.1Qcd-2015, IEEE Std 802.1Q-2014/Cor 1-2015, IEEE Std 802.1Qbv-2015, IEEE Std 802.1Qbu-2016, and IEEE Std 802.1Qbz-2016) —IEEE Standard for Local IEEE Standard for Local and metropolitan area networks--Bridges and Bridged Networks--Amendment 28: Per-Stream Filtering and Policing</del>
<a href="#">IEEE P802.1CF-2019</a>		IEEE 802.1	<del>draft-</del> <a href="#">published</a>	IEEE <del>Draft</del> Recommended Practice for Network Reference Model and Functional Description of IEEE 802 Access Network
<a href="#">IEEE P802.1CM-2018</a>		IEEE 802.1	<del>draft-</del> <a href="#">published</a>	IEEE <del>Draft</del> Standard for Time-Sensitive Networking for Fronthaul
<a href="#">IEEE P802.1CMde</a>	<a href="#">This amendment defines enhancements to fronthaul profiles in order to address new developments in fronthaul interface standards, and related synchronization and syntonization standards. This amendment also addresses errors and omissions in existing content.</a>	IEEE	<a href="#">draft</a>	<a href="#">IEEE Draft Standard for Local and metropolitan area networks -- Time-Sensitive Networking for Fronthaul Amendment: Enhancements to Fronthaul Profiles to Support New Fronthaul Interface, Synchronization, and Syntonization Standards</a>

Name	Scope	Responsible group	Status	Subject
<a href="#">IEEE P802.1AS</a>	<a href="#">This standard specifies the protocol, procedures, and managed objects used to ensure that the synchronization requirements are met for time-sensitive applications, such as audio, video, and time-sensitive control, across networks; for example, IEEE 802 and similar media. This includes the maintenance of synchronized time during normal operation and following addition, removal, or failure of network components and network reconfiguration. It specifies the use of IEEE Std 1588 specifications where applicable in the context of IEEE Std 802.1Q. Synchronization to an externally provided timing signal (e.g., a recognized timing standard such as UTC or TAI) is not part of this standard but is not precluded.</a>	<a href="#">IEEE</a>	<a href="#">draft</a>	<a href="#">IEEE Draft Standard for Local and Metropolitan Area Networks – Timing and Synchronization for Time-Sensitive Applications</a>
<a href="#">IEEE 802.1AS-2011</a>	<a href="#">This standard specifies the protocol and procedures used to ensure that the synchronization requirements are met for time sensitive applications, such as audio and video, across Bridged and Virtual Bridged Local Area Networks consisting of LAN media where the transmission delays are fixed and symmetrical; for example, IEEE 802.3 full duplex links. This includes the maintenance of synchronized time during normal operation and following addition, removal, or failure of network components and network reconfiguration. It specifies the use of IEEE 1588 specifications where applicable in the context of IEEE Stds 802.1D and 802.1Q. Synchronization to an externally provided timing signal (e.g., a recognized timing standard such as UTC or TAI) is not part of this standard but is not precluded.</a>	<a href="#">IEEE</a>	<a href="#">published</a>	<a href="#">IEEE Standard for Local and Metropolitan Area Networks - Timing and Synchronization for Time-Sensitive Applications in Bridged Local Area Networks</a>
<a href="#">IEEE 802.1AS-2011/Cor 1-2013</a>	<a href="#">This corrigendum to IEEE Std 802.1AS - 2011 corrects minor errors, bugs, ambiguities, and inconsistencies that were missed when the document was balloted. It does not contain new material.</a>	<a href="#">IEEE</a>	<a href="#">published</a>	<a href="#">IEEE Standard for Local and Metropolitan Area Networks - Timing and Synchronization for Time-Sensitive Applications in Bridged Local Area Networks - Corrigendum 1: Technical and editorial corrections</a>
<a href="#">IEEE 802.1AS-2011/Cor 2-2015</a>	<a href="#">This corrigendum to IEEE Std 802.1AS - 2011 corrects minor errors, bugs, ambiguities, and inconsistencies that have been identified by the 802.1 maintenance activity. It does not contain new material.</a>	<a href="#">IEEE</a>	<a href="#">published</a>	<a href="#">IEEE Standard for Local and Metropolitan Area Networks - Timing and Synchronization for Time-Sensitive Applications in Bridged Local Area Networks - Corrigendum 2: Technical and Editorial Corrections</a>

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<a href="#">IEEE 802.1AX-2014</a>	<p><u>Link Aggregation provides protocols, procedures, and managed objects that allow:</u></p> <ol style="list-style-type: none"> <li><u>1. One or more parallel instances of full duplex point-to-point links to be aggregated together to form a Link Aggregation Group, such that a Medium Access Control (MAC) Client can treat the Link Aggregation Group as if it were a single link.</u></li> <li><u>2. A resilient interconnect using multiple links among one or more nodes in a network and one or more nodes in another, separately administered, network, along with a means to ensure that frames belonging to any given service will use the same physical path in both directions between the two networks.</u></li> </ol> <p><u>This standard defines the MAC independent Link Aggregation capability, and general information relevant to specific MAC types that support Link Aggregation. The capabilities defined are compatible with previous versions of this standard.</u></p>	IEEE	published	<a href="#">IEEE Standard for Local and metropolitan area networks--Link Aggregation</a>
<a href="#">IEEE 802.1AX-2014/Cor 1-2017</a>	<p><u>This corrigendum to IEEE Std 802.1AX-2014 corrects minor errors, bugs, ambiguities, omissions and inconsistencies that have been identified by the 802.1 maintenance activity. It does not contain new material.</u></p>	IEEE	published	<a href="#">IEEE Standard for Local and Metropolitan Area Networks - Link Aggregation - Corrigendum 1: Technical and Editorial Corrections</a>
<a href="#">IEEE P802.1AX</a>	<p><u>Link Aggregation provides protocols, procedures, and managed objects that allow the following: One or more parallel instances of full-duplex point-to-point links to be aggregated together to form a Link Aggregation Group (LAG), such that a MAC Client can treat the LAG as if it were a single link.; A resilient interconnect using multiple full-duplex point-to-point links among one to three nodes in a network and one to three nodes in another, separately administered, network, along with a means to ensure that frames belonging to any given service will use the same physical path in both directions between the two networks. This standard defines the MAC-independent Link Aggregation capability and general information relevant to specific MAC types that support Link Aggregation. The capabilities defined are compatible with previous versions of this standard.</u></p>	IEEE	draft	<a href="#">IEEE Draft Standard for Local and Metropolitan Area Networks – Link Aggregation</a>
<a href="#">IEEE P802.1CQ</a>	<p><u>This standard specifies protocols, procedures, and management objects for locally-unique assignment of 48-bit and 64-bit addresses in IEEE 802 networks. Peer-to-peer address claiming and address server capabilities are specified.</u></p>	IEEE	draft	<a href="#">IEEE Draft Standard for Local and Metropolitan Area Networks: Multicast and Local Address Assignment</a>

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<a href="#">IEEE 802.1Q-2018</a>	<a href="#">This standard specifies Bridges that interconnect individual LANs, each supporting the IEEE 802 MAC Service using a different or identical media access control method, to provide Bridged Networks and VLANs.</a>	IEEE	published	<a href="#">IEEE Standard for Local and Metropolitan Area Networks--Bridges and Bridged Networks</a>
<a href="#">IEEE P802.1Qcj</a>	<a href="#">This standard specifies procedures and managed objects for a bridge to perform frame counting, filtering, policing, and service class selection for a frame based on the particular data stream to which the frame belongs, and a synchronized cyclic time schedule. Policing and filtering functions include the detection and mitigation of disruptive transmissions by other systems in a network, improving the robustness of that network.</a>	IEEE	draft	<a href="#">IEEE Draft Standard for Local and Metropolitan Area Networks – Bridges and Bridged Networks Amendment: Automatic Attachment to Provider Backbone Bridging (PBB) Services</a>
<a href="#">IEEE P802.1Qcr</a>	<p><a href="#">This project specifies procedures and managed objects for bridges and end stations to perform asynchronous traffic shaping over full-duplex links with constant data rates.</a></p> <p><a href="#">Asynchronous traffic shaping can be modeled as an additional layer of shaped egress queues to merge flows into the existing queue structure. The required minimum number of independent queues at an egress port is adjustable and is at least the number of ingress ports of the particular bridge that require merging.</a></p> <p><a href="#">The amendment specifies an information model for the capabilities of asynchronous traffic shaping. It further specifies a YANG data model and Management Information Base (MIB) modules both based on that information model to support configuration and status reporting. It further defines the relationship between the models introduced by this amendment, and the models in the base standard.</a></p> <p><a href="#">Additionally, this amendment provides an informative framework for worst case delay analysis in static networks with static configurations. This amendment also addresses errors and omissions in the description of existing functionality.</a></p>	IEEE	draft	<a href="#">IEEE Draft Standard for Local and Metropolitan Area Networks – Bridges and Bridged Networks Amendment: Asynchronous Traffic Shaping</a>
<a href="#">IEEE 802c-2017</a>	<p><a href="#">The amendment will provide an optional local MAC address space structure to allow multiple administrations to coexist. This structure will designate a range of local MAC addresses for protocols using a Company ID (CID) assigned by the IEEE Registration Authority. Another range of local MAC addresses will be designated for assignment by local administrators. The amendment will recommend a range of local MAC addresses for use by IEEE 802 protocols.</a></p> <p><a href="#">This amendment will also correct minor errors, ambiguities, omissions and inconsistencies including clarifying the use of CID in protocol identifiers and context dependent identifiers.</a></p>	IEEE	draft	<a href="#">IEEE Standard for Local and Metropolitan Area Networks: Overview and Architecture – Amendment 2: Local Medium Access Control (MAC) Address Usage</a>

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<a href="#">IEEE 802d-2017</a>	<a href="#">This amendment specifies a Uniform Resource Names (URN) namespace for IEEE 802 networks. This URN is used as the root identifier for YANG data models that allow configuration and status reporting for 802 network elements.</a>	IEEE	draft	<a href="#">IEEE Standard for Local and Metropolitan Area Networks: Overview and Architecture – Amendment 1: Allocation of Uniform Resource Name Values (URN) in IEEE 802® Standards</a>
<a href="#">IEEE P802E</a>	<a href="#">This recommended practice specifies a privacy threat model for IEEE 802 technologies and provides recommendations on how to protect against privacy threats.</a>	IEEE	draft	<a href="#">IEEE Draft Recommended Practice for Privacy Considerations for IEEE 802 Technologies</a>
<a href="#">IEEE P802.1ABdh</a>	<a href="#">This amendment specifies protocols, procedures and managed objects that support the transmission and reception of a set of Link Layer Discovery Protocol (LLDP) Type Length Values (TLVs) that exceed the space available in a single frame. This amendment defines the transmission of multiple frames, additional TLVs and the procedures needed to support the transmission of those TLVs across multiple frames. This amendment maintains existing functionality while communicating with a peer that supports updated functionality. This amendment defines a method to further restrict the size of the LLDP Data Unit (LLDPDU) and extensions in order to meet timing constraints in the network. This amendment also addresses errors and omissions in the description of existing functionality.</a>	IEEE	draft	<a href="#">IEEE Draft Standard for Local and Metropolitan Area Networks - Station and Media Access Control Connectivity Discovery Amendment: Support for Multiframe Protocol Data Units</a>
<a href="#">IEEE P802.1Qdj</a>	<a href="#">This amendment specifies procedures, interfaces, and managed objects to enhance the three models of 'Time-Sensitive Networking (TSN) configuration'. It specifies enhancements to the User/Network Interface (UNI) to include new capabilities to support bridges and end stations in order to extend the configuration capability. This amendment preserves the existing separation between configuration models and protocol specifications. This amendment also addresses errors and omissions in the description of existing functionality.</a>	IEEE	draft	<a href="#">IEEE Draft Standard for Local and Metropolitan Area Networks--Bridges and Bridged Networks Amendment: Configuration Enhancements for Time-Sensitive Networking</a>

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