

To: Mr. Herbert Bertine  
ITU-T SG 17 Q7

Cc: Mr. Shaohua Yu  
ITU-T SG 17 Q7

Cc: Mr. Ghani Abbas  
ITU-T SG15 Q9

Subject: Comments on ITU-T SG17 TD2053,

Dear Mr. Bertine,

Thank you for inviting IEEE 802 and IEEE 802.17 to submit comments on your draft document, ITU-T SG17 TD2053, Draft New Recommendation X.msr: "Multiple Services Ring (MSR)". We have general comments on the relationship between the work going on in ITU-T SG 17 and IEEE 802.17, as well as specific technical comments on the referenced draft (detailed in the Annexes). Because of the similarities between the work of ITU-T SG 17 as reflected in TD2053, and the charter of IEEE 802.17, we believe that a close coordination of our work efforts is most critical, and will therefore address that area first.

The IEEE 802.17 Resilient Packet Ring (RPR) Working Group was formed with a charter to develop an RPR standard in December, 2000. We meet every two months and have on the order of 100 participants at each meeting. The IEEE 802.17 RPR standard development efforts have benefited from the extensive efforts and contributions of over 50 companies including carriers, system vendors, silicon vendors and universities, and from the participation of over 400 individuals, world-wide. Between meetings we develop and review drafts, we are currently reviewing Draft 0.3. The drafts are subject to intensive scrutiny, analysis, simulation and hardware modeling. It is our expectation that this effort will result in a standard that fully addresses our projects objectives. In addition, it will be fast-tracked as an international ISO/IEC standard, with world-wide reach. By visiting our web site <http://grouper.ieee.org/groups/802/17/> you can review the hundreds of detailed contributions, representing thousands of hours of work by carriers, equipment and chip providers, and technical universities from around the world that have formed the basis for our current draft.

The charter of the Working Group is to create an RPR standard that will address transport of multi services that includes data, voice and video. Our technical approach is to use dynamic bandwidth management mechanisms for carrying multi services over RPR with the required bandwidth and delay assurances. In addition, RPR will maximize bandwidth utilization for opportunistic traffic such as Internet traffic.

RPR provides a flexible protection mechanism that supports meeting SLAs for multi services in under 50 ms. The wrap based protection switching mechanism in RPR provides a minimized packet loss for data services whose SLA attributes for network availability are usually a function of packet loss. The steering based protection mechanism provides somewhat simpler hardware. Both mechanisms can provide guarantees of no packet reordering, which is useful for emulating voice and TDM emulated services and is required by some data protocols. These features highlight RPR's commitment to multi services. Furthermore, when deployed as part of a SONET/SDH ring network, a portion of the ring BW can be provisioned for traditional TDM services, with a portion reserved for RPR services.

An objective for RPR is to provide an out-of-box plug-and-play experience that requires no provisioning or configuration of RPR nodes to attain an operational state of the RPR network. Hence, RPR is targeted for world markets that have access to pool of labor with very minimal qualifications to configure, provision and monitor RPR networks.

RPR is physical layer agnostic enabling it to operate over SONET, SDH, Gigabit Ethernet or 10 Gigabit Ethernet physical layers, as well as other physical layers to be defined. This flexibility will permit the integration of RPR into a variety of existing and newly emerging optical transmission technologies

As a part of 802 standards, RPR will operate with existing bridging and routing protocols with no changes required to either. This capability will enable seamless integration of several video multicast schemes proposed over IP. Since RPR will support current 802.1D bridging, it can be used to offer Ethernet based layer 2 services with no changes to existing Ethernet equipment.

The proposed RPR standard also includes Layer 2 OAM that enables root cause analysis and fault isolation on optical networks. This feature allows the flexibility for the optical transmission layer to retain its OAM&P scheme while providing a better resolution of failures. It also speeds up fault isolation.

The proposed RPR standard is also specified with flexibility in implementing RPR nodes in terms of buffer capacity required. This flexibility will allow for cost trade-offs in RPR box design based on application requirements.

To summarize, we have provided a brief table of the similarities between Draft X.msr and our Draft P802.17 in Annex 1.

Based on the objectives for RPR and MSR there appears to be an almost complete overlap in the scopes of our projects. In light of this overlap in the scope of RPR and MSR, and the desirability to avoid having competing international standards with the same scope, it would be of benefit for us to coordinate our efforts. In an effort to achieve that coordination, we invite you to participate in the review and commenting of our drafts. Although it was our belief that ITU-T SG 15, was the primary ITU-T study group with interest in our work, we will be happy to benefit from the review and commenting on our drafts by ITU-T SG 17 as well. Because of the level of technical detail and industry focus and effort on the IEEE 802.17 effort, we strongly recommend that you work with us to help insure that the emerging IEEE 802.17 standard is written in a way to address your requirements, and so make it unnecessary to develop two competing international standards.

Thank you.

Sincerely,  
Paul Nikolich  
Chair IEEE 802

Michael Takefman  
Chair IEEE 802.17 Resilient Packet Ring Working Group

#### Annex 1: Brief Feature comparison

<b>Feature</b>	<b>Draft X.msr</b>	<b>Draft P802.17</b>
Topology overview	Dual counter-rotating optical rings, maximum of 32 stations	N x dual counter-rotating optical rings, maximum of 127 stations per ring. With support for 255 under consideration.
MAC Address	Local with fixed addresses (4 octets)	Global unique MAC addresses (6

	– but Ethernet or IP addresses may be used instead!?	octets) – no provisioning
MAC Frame Format	Destination address, header, payload, FCS	RPR header, destination address, source address, HEC, payload, FCS
MAC Transit	Unspecified buffer, 8 priorities	Single or dual buffers, 3 priorities
MAC Fairness	Unspecified allocation by ‘scheduler’ function, lossy	Specified fairness algorithm, lossless
PHY	SONET/SDH, GE, 10GE LAN/WAN	Agnostic – includes SONET/SDH, GE, 10GE LAN/WAN
PHY reconciliation	X.86 reconciliation/adaption with SONET/SDH, GMII for GE	GFP or Byte Synchronous HDLC reconciliation / adaption with SONET, GMII for GE, XGMII for 10GE
Topology Discovery	Discovery frame sent with TTL, responses add node address	Discovery frame sent with TTL, responses add node address
Protection	Wrapping	Wrapping or steering
Spatial Reuse	Not specified	Destination stripping of unicast traffic
OAM	Frame based fault & performance management	Frame based fault & performance management with defined MIB
OAM Frame	Destination address, header, source address, parameters, FCS – fixed at 20 octets	RPR header, destination address, source address, HEC, parameters, FCS – fixed at 42 octets
Bridging	Not specified	Conformant to transparent and VLAN bridging (802.1D & 802.1Q)
Document Maturity	50 page draft based on 1 contribution in Feb 2002	260 page draft issued in Feb 2002 based on 2 years of work to combine 200+ contributions
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## Annex 2: Specific technical comments on ITU-T SG17 TD2053

The current version of the MSR draft appears to be in an early stage of development. We seek further clarifications on how the following features are achieved

1. Spatial Reuse: How is spatial reuse achieved for bridging 802 based networks? How will you achieve compliance with 802.1D/Q at the same time?
2. Multicast: The procedure for broadcast and multicast is hard to understand and missing details, especially regarding the packet mis-ordering, packet duplication, and packet loss under various conditions. Please elaborate.
3. TSN: It is unclear how you use TSN for point to multipoint connectivity. TSN seems to be defined for point-to-point connectivity only. If that is the case, it is hard to use the TSN/TT combination to address the point to multipoint connectivity.
4. Fairness: If the probability that a packet will go through a node is  $x$ , then the probability that a packet will go through  $N$  stations will be  $x^N$ . This is not the case for the current network the MSR is to replace, and not the case for the 802.17 based networks. It is not clear how the scheduler function would accomplish this.

