Requirements For 802.17c

General Characteristics:
- Support rings interconnect through dual-station homing
- Provide sub 50 ms protection
  - *Does this imply a need for a quick keepalive message?*
- Requires no changes to non-interconnect stations on the ring (running previous versions of 802.17) to benefit from PIRC
- Provide maintenance commands (e.g. manual switch-over)
- Preferable that the mandatory profile can be implemented with existing silicon
  - optional profiles may require new silicon
- Allow implementation of interconnecting station as two separate stations with back-to-back connections
- *Need an architectural reference model*
- *Need management and provisioning details*

Loop Prevention:
- Always prevent loops in steady-state operation
- Support strict and relaxed modes of loop prevention during the transient process between the normal and failure states
- *What is the interaction with STP? [Mike]*

Load Balancing:
- *Should the type of load balancing algorithm being used be sent to your mate and/or peer? [John]*
  - *If so, do we need any special checks? [John]*
    - *If so, what action(s) should we take? [John]*
- Mandatory load balancing algorithms:
  - Active/Standby
- Optional specified load balancing algorithms:
  - *VLAN Hash [Rafi]*
  - *Perhaps VLAN static assignment [Yan]*
- Other optional load balancing algorithms are allowed, but must follow constraints
  - *What constraints are needed for optional load balancing methods? [Rafi]*
- The load balancing shall allow unicast traffic to be forwarded without persistent flooding or loss of connectivity
- Hashing will not be based on MAC addresses

Tributary Support on PIRC Nodes:
- Optional support of local tributary interfaces in interconnecting stations

Supported Topologies:
- Support multiple network topologies:
  - an interconnect station may belong to multiple protection groups

- – an interconnection station may peer with different interconnection stations for different interconnect groups
  - – interconnect stations may occupy any relative position in a ring
- Support services with both point-to-point and multi-point-to-multi-point topologies
- PIRC will be used on networks that do not have loops aside from those created by a single PIRC group
- *What, if any, changes are needed in Topology?*
  - – *We might need or want to know via TP or ATD that other PIRC groups exist on the same ring. Alternatively, this might be detected by snooping PIRC messages from other pairs.*
  - – *We need some form of keepalive or sync message. The claim is that we don't need to send this quickly as long as we send changes as soon as they occur (perhaps multiple quick sends of same message for safety) and other failures are determined by topology.*

Failures:
- *Should PIRC listen both to its peer and its mate for failure information, or only one? [Mike]*
  - – *If only one, which?*
  - – *If both, are there any conflict problems?*
- *What synchronization and recovery mechanisms will we use?*
- *Details on the inter-MAC protocol [Largely already proposed by Rafi]*

Multiple Failures:
- Double failures will not cause persistent flooding
- *Will we agree that not all double failures will provide protected communication?*
  - – *Close to agreement on this. A bit more cogitation required. [All]*
  - – *We could handle many or perhaps even all cases through failing one member of group (through some protocol operating on the working ring) whenever the members are isolated on one ring and there is at least one other group on that ring. Solving it this way would still involve some loss of connectivity, the amount is TBD. [Mike]*
  - – *The tradeoffs of solving as mentioned are possibly overloading other rings with traffic that would not normally go onto them, difficulty in doing CAC, loss of connectivity versus complexity of running algorithms such as spoofed STP or a homegrown equivalent. It would be very helpful to have carrier feedback on the tradeoffs involved. [All]*
- *PIRC shall provide protection between rings, wherever possible, even when the PIRC Group is unable to communicate on one of the rings – dual split on one ring, isolating the PIRC nodes on that ring, but still communicating on the other ring – This is now in question, depending upon the location of the ring in the topology. There is concern over using one ring to protect another ring, especially in cases such as when an access ring would be used to protect an aggregation ring. This should be solved by answering the above tradeoff question.*

SAS:

- *Where is the filtering being done, specifically is it below or above SAS on ingress to the station from the ring and on egress from the station to the ring? [Mike]*
- 802.17c requires the presence of 802.17b in the PIRC stations.
    - 802.17b is still optional for end stations.
- 802.17c will not prevent the use of selective MAC table flush
- *What about static MAC and static VLAN entries in the FDB? If we don't modify the end stations, then how do the static entries get remapped to the protection PIRC station and/or work at any time with load balancing algorithms that map them to the other PIRC station? Does this break PBT-TE? [Marc]*