



Protection Initiation Criteria

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Protection commands

- External
 - Initiated by the OS or local interface
- Local
 - Based on performance criteria
- Remote
 - Based on remote indications



External Commands

- **Lockout**
 - Prevents the use of the protection resource and prevents protection switches
- **Forced Protect**
 - Performs a protection switch regardless of the state of the protection resource
- **Manual Protect**
 - Same as Forced Protect, but performed only if the protection resource is not degraded
- **Clear**
 - Clear external commands and end Wait To Restore
- **Exercise**
 - This command exercises protection without completing the actual switch



Local commands

- Signal Fail
 - Hard failure caused by link failure or high error rate, or other hard failures at local Station
 - In RPR:
 - Phy failure (e.g. SONET: LOS, LOF, AIS, BERH)
 - MAC layer failure: LOS, BERH, Frame Loss high
- Signal Degradation
 - Soft failure caused by the error rate exceeding a preselected threshold at local station.
 - In RPR
 - Phy low error rate
 - MAC layer: BERL, Frame Loss low
- Wait To Restore
 - Maintain switched state until WTR expiration
 - Infinite for non-revertive mode



Remote commands

- Signal Fail
 - Hard failure caused by link failure or high error rate, or other hard failures at another Station
- Signal Degrade
 - Soft failure caused by the error rate exceeding a preselected threshold at another Station.



Request preemption priority

- Lockout
- Forced Protection
- Signal Fail
- Signal Degrade
- Manual Protection
- Wait to Restore
- Exercise
- Preempted external commands and WTR shall not be retained
- Forced Protection and Signal Failure may coexist in ring



Wrap External Commands

- Lockout ?
 - Need to decide if we want to support
- Forced Wrap
 - Perform Forced wrap at Station receiving command
- Manual Wrap
 - Perform Manual wrap at Station receiving command
- Exercise ?
 - Need to decide if we want to support
- Clear
 - Clear all external commands



Steer External Commands

- Lockout ?
 - Need to decide if we want to support
- Forced Steer
 - Perform Forced steer at Station receiving command
 - Local operation, no implications to other Stations
- Manual Steer
 - Perform Manual steer at Station receiving command
 - Local operation, no implications to other Stations
- Clear
 - Clear all external commands



Protection Alarms

- Is there a Protection channel ?
 - Wrap: Yes
 - Steer: No need
- Protection channel alarms
 - No protection frame received
 - Invalid payload
 - Invalid ring state (violation of priorities)