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Subj: SAS 2.1 Active cable proposal guidelines
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Overview
The contents of this proposal is a set of guidelines to help in the proposal preparation and the selection of an active cable/connector to provide extended length for SAS 2.1 and for a higher density connector system (more lanes) for both internal and external SAS applications. The results may include one or more connector types, depending on the attributes presented by the various designs.

Proposals should provide as much information as possible, including test information and text to incorporate in the SAS 2.1 specification. The information contained in this proposal is based on information provided from and reviewed with the SCSI Trade Association.

Usage Models

- External
    - No impact to existing SAS usage
    - Extends connectivity for rack-to-rack, box-to-box, host-to-rack, host to JBOD, host-to-switch, switch-to-rack, Switch-to-JBOD and cascaded SAS Scale-out environments
    - Improved Serviceability
- Internal
    - Dense high-port count connectors

Common feature set for solutions

- **January 2009 cut off date for new proposals**
- Licensing terms if IP involved
    - Comply with INCITS RND
- Minimum length targets:
    - Passive: 10 meters
    - Active copper: 30 meters
    - Active optical: 100 meters
- Cable assembly cost should represent value for performance
- The total depth of mated pair and cable bend should be minimized
- Support provided for a passive configuration with similar/same connector
- Active solutions require power at the SAS connector

Active 4x

- SAS 2.0 compliant
    - No special phy or protocol changes
- Short time to market
- Support optical option
- If a new connector
    - Must be extendable to 12Gb/s SAS
    - Management interface

High-density

- Supports a variety of active cabling solutions including optical
- Low Protocol Impact
- Must be extensible to 12Gb/s SAS
- Improved internal connectivity
    – Allow for denser x8 , x12, or x16 connectors
- Improved external connectivity
    – Allow for denser x8, x12, or x16 connectors
- X4 versions required

New features to discuss

- Desirable to have functionality similar to QSFP, consuming much smaller board space
- Improved Serviceability
    – Cable swap event logging
    – Auto-detect media type and allow for existing OOB operation ala SAS-2
    – NV storage to keep cable SKU info (type and serial number)