802.3ad
Link Aggregation Task Force

November 9, 1998

Albuquerque, NM

Link Aggregation Agenda

- Introductory Remarks and Introductions
- Work Plan / Timetable
- Minutes from San Diego, Austin meetings
- Call for Patents
- Presentations
- Discussion:
  - Hot Issues List
  - Authorize writing of first draft
- Plans for next meeting

E-mail Reflector & Website

- The IEEE has set up a reflector for this study group:

  stds-802-3-trunking@ieee.org

  To be added to the reflector, send an E-mail containing:

  subscribe stds-802-3-trunking <your email address>
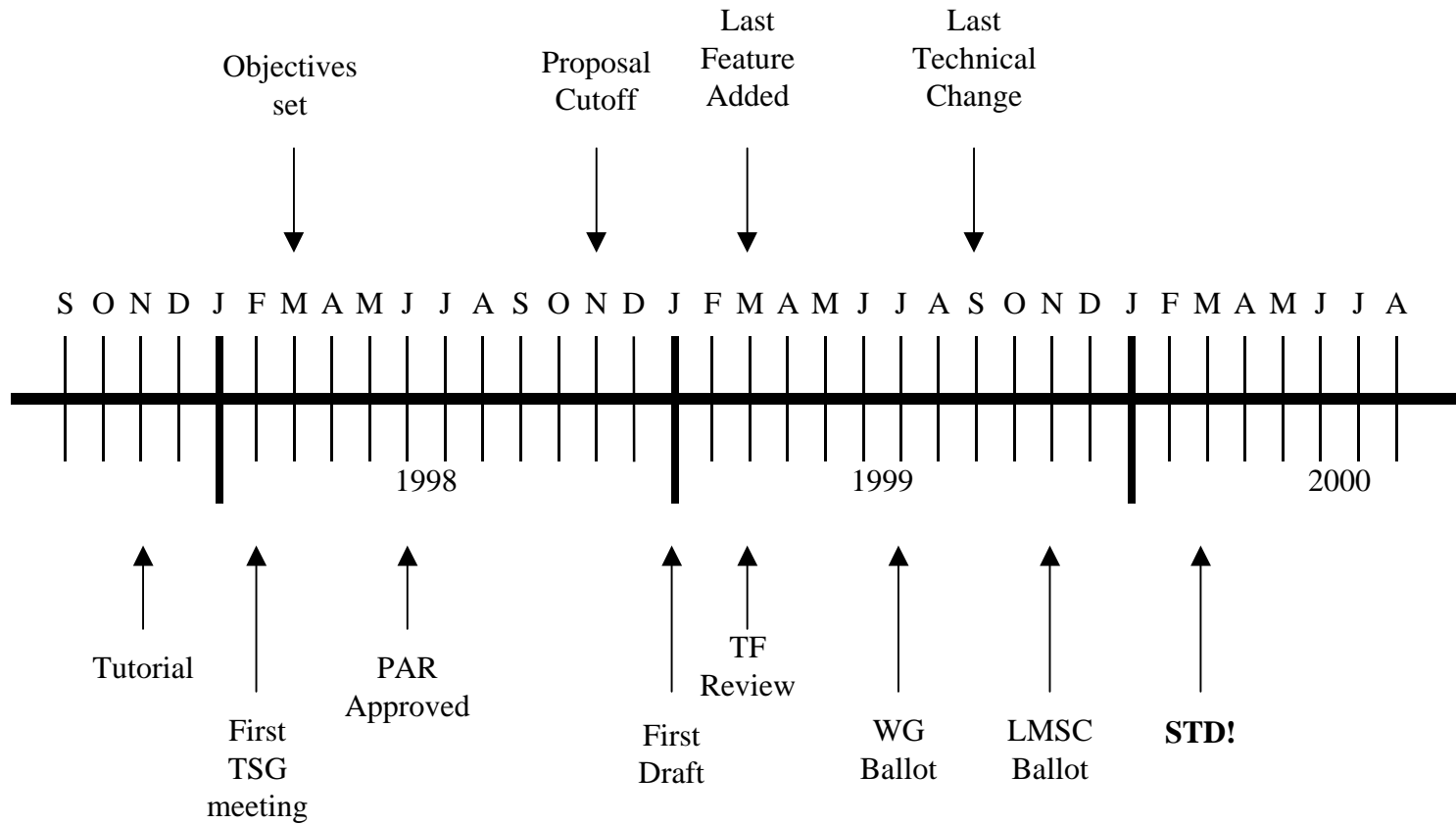
  to:

  majordomo@majordomo.ieee.org

- There is also a web site for our use at:

  http://grouper.ieee.org/groups/802/3/ad/index.html

  The web site contains links to the minutes and presentations from all prior meetings, and an archive of the email reflector

802.3ad Timeline

Objectives
set

Proposal
Cutoff

Last
Feature
Added

Last
Technical
Change

S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A

1998   1999   2000

Tutorial

First
TSG
meeting

PAR
Approved

First
Draft

TF
Review

WG
Ballot

LMSC
Ballot

STD!

November 802.3ad Objectives

- Cutoff date for new proposals for Link Aggregation
  - Selection of a Link Aggregation Control Protocol proposal for inclusion in the first draft of the standard.
- Primary objective of this meeting is to resolve any open issues and authorize the editor(s) to generate a first draft of the 802.3ad Link Aggregation standard.
- Presentations:
  - Tony Jeffree   Link Aggregation Control
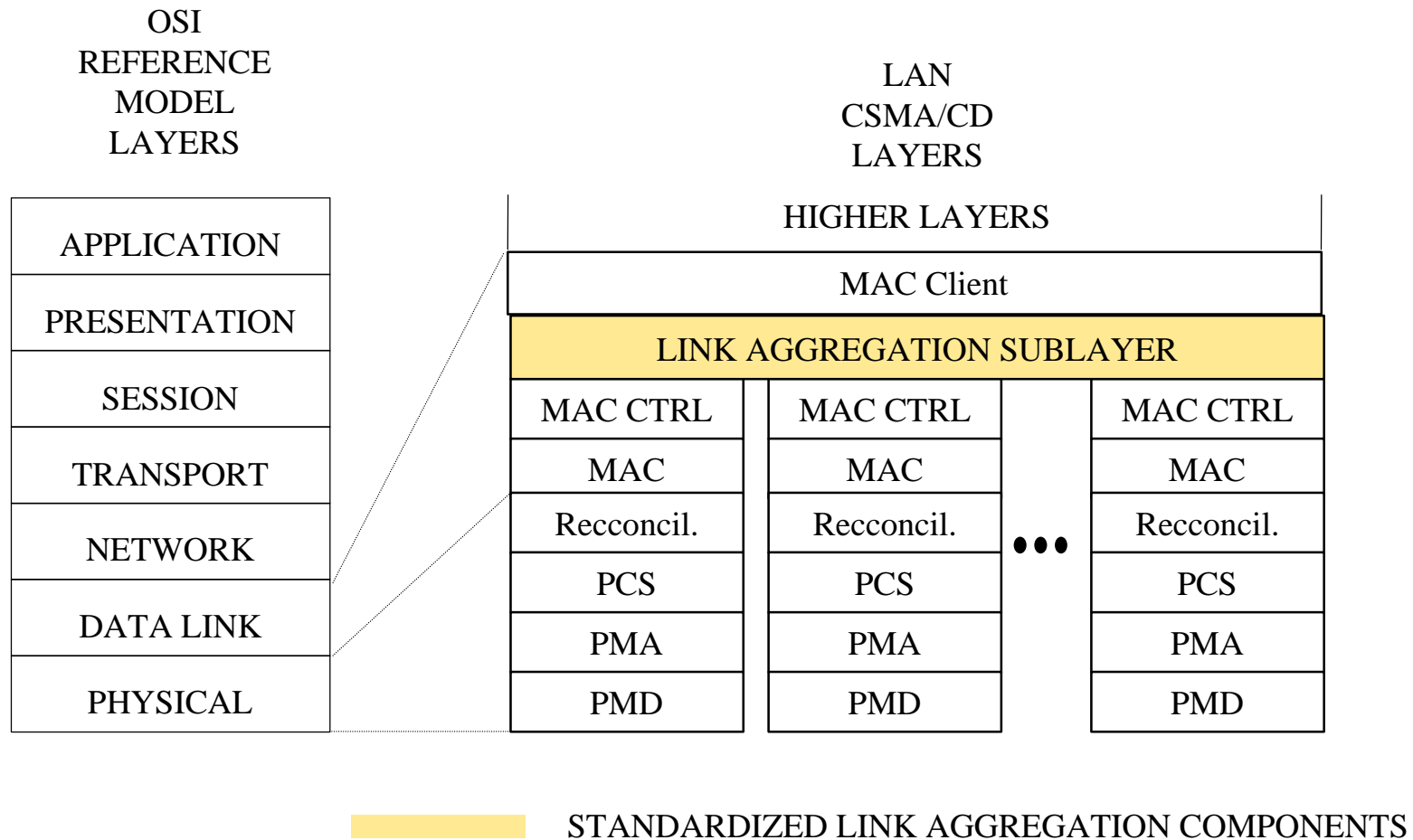 - Jeff Lynch   Selection Rules

"Big Ticket" Issues

- Specification of Distributor frame ordering constraints
  - Current frame ordering constraint is adequate.
  - A brief informative annex with example traffic distribution rules may be included.

- Architectural Model: # of aggregate ports required
  - # of aggregate ports may be <= to # of physical ports

- Addressing: MAC address per aggregate or per physical
  - Aggregate port has one individual MAC address
  - Physical MACs are only required to recognize a single individual MAC address at any given time.
  - When bound to an Aggregate, the Physical MAC recognizes the MAC address of the Aggregate.
  - When not bound to an Aggregate, it is recommended that each Physical MAC recognize a unique individual address.

"Big Ticket" Issues

- Dynamic Key modification rules

  – To be discussed following Tuesday's presentations

- Selection rules

  – To be discussed following Tuesday's presentations

- MAC addresses in LA Control frames

  – Will request a new Ethertype to be assigned for LA Control frames
  – Will request a new group MAC address from the 802.1 block.
  – The address should be re-usable by other compatible protocols.

- Extensibility of LA Control frames

  – To be discussed following Tuesday's presentations

- Managed objects for LA Control and "logical MAC"

  – Action Item to a small group to create a proposal by Wednesday

Link Aggregation Reference Model

OSI
REFERENCE
MODEL
LAYERS

LAN
CSMA/CD
LAYERS

OSI Layers
APPLICATION
PRESENTATION
SESSION
TRANSPORT
NETWORK
DATA LINK
PHYSICAL

HIGHER LAYERS

MAC Client

LINK AGGREGATION SUBLAYER

MAC CTRL	MAC CTRL		MAC CTRL
MAC	MAC		MAC
Recconcil.	Recconcil.	• • •	Recconcil.
PCS	PCS		PCS
PMA	PMA		PMA
PMD	PMD		PMD

STANDARDIZED LINK AGGREGATION COMPONENTS

Link Aggregation Control Model

MAC Client	MAC Client	• • •	MAC Client
Aggregator	Aggregator	Link Aggregation Sub-layer	Aggregator
		Link Aggregation Control	
LA state	LA state		LA state
MAC CTRL	MAC CTRL		MAC CTRL
MAC	MAC		MAC
Recconcil.	Recconcil.	• • •	Recconcil.
PCS	PCS		PCS
PMA	PMA		PMA
PMD	PMD		PMD