

LACP - Frame Types & Protocol Extensibility

Presentation to the Link Aggregation
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Objectives

- Capable of carrying the payload
- Multicast destination - not forwarded by Bridges
- Protocol clearly identified
- Compatible with existing hardware
- Extensible, as far as possible/desirable

Payload requirements

- Fundamentally a size issue
- Unlikely to be a problem with any chosen solution

Destination address

- No problem here - Either:
 - Use existing MAC Control address
 - Allocate an unused address from the 802.1D set of 16 addresses

Protocol Identification

- Choice:
 - LSAP
 - SNAP
 - EtherType - further choice:
 - MAC Control EtherType
 - Allocate a new one
- Use of an EtherType is likely to be most acceptable solution

Compatibility - Rationale

- Existing hardware may be software/firmware upgradeable if the right approach is taken
- Has advantages for speed of development & rapid deployment
 - Less immediate need to re-develop existing hardware
 - Possibility to upgrade installed base
- Downside (if wrong approach taken) is slow deployment/client resistance

Compatibility - Options

- Could use a new MAC Control opcode BUT
 - Existing spec states that MAC Control frames with unknown opcodes are tossed (not processed)
 - Hence existing (conformant) hardware may not be usable for Link Aggregation
 - Consequences for acceptability & speed of deployment
- Conclusions
 - Use normal frame with new EtherType for LACP
 - Fix MAC Control to make it extensible in the future
 - Only use MAC Control for “green field” applications

Extensibility

- Mac Control is an example of how not to design an extensible protocol
- Need to consider:
 - Whether LACP needs to be extensible
 - If so
 - For what purposes
 - How
 - Ensure spec does not create cul-de-sacs

Extensibility - Problems

- Making sure that V_n devices do not do the wrong thing with information aimed at V_{n+x} devices
- Making sure that V_{n+x} devices can still work with V_n devices

Extensibility - Useful principles

- Do not discard PDUs that are too long or that contain values you think are reserved - interpret the bits you know about
- Leave “hooks” for later extension to deal with stuff you don’t understand now
- For LACP: record what you see, if you don’t understand it, reflect it back unchanged