Bay Networks

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Link Aggregation Configuration

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A Few Consequences Of Compatibility

- **A link supporting Link Aggregation must be able to operate like a normal link if not entering a Link Group.**

- **Any PDUs generated by Aggregation Control must be absorbed and disregarded by Non-Aggregating links.**

- **MAC Clients may attach to either a "physical" interface or a "logical" interface.**

Active Non-Aggregated Link

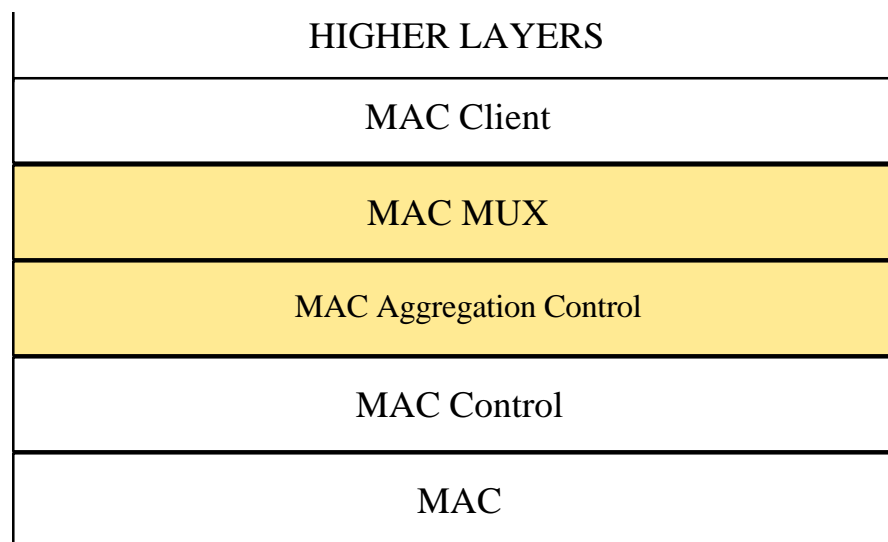| HIGHER LAYERS |
| --- |
| MAC Client |
| MAC Aggregation Control |
| MAC Control |
| MAC |
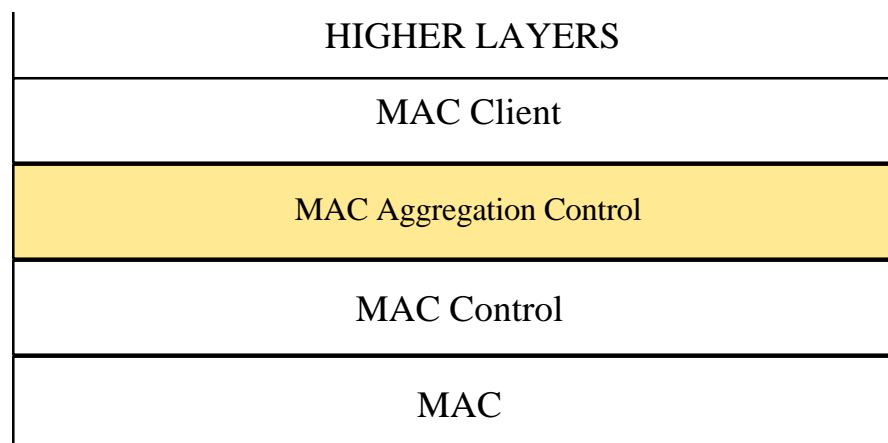
- **Before binding to a MUX Aggregation Control may bind to a MAC Client**
- **The MAC Client uses the "physical" address**
- **Aggregation Control may intercept control frames**

Active Aggregated Link

| |
|---|
| HIGHER LAYERS |
| MAC Client |
| MAC MUX |
| MAC Aggregation Control |
| MAC Control |
| MAC |

- **Aggregation Control bound to a MUX**
- **MAC Client using the "logical" or MUX address**
- **Aggregation Control may intercept control frames**

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Can 2 Clients Bind To 1 Link?

HIGHER LAYERS		HIGHER LAYERS
MAC Client		MAC Client
		MAC MUX
MAC Aggregation Control		
MAC Control		
MAC		
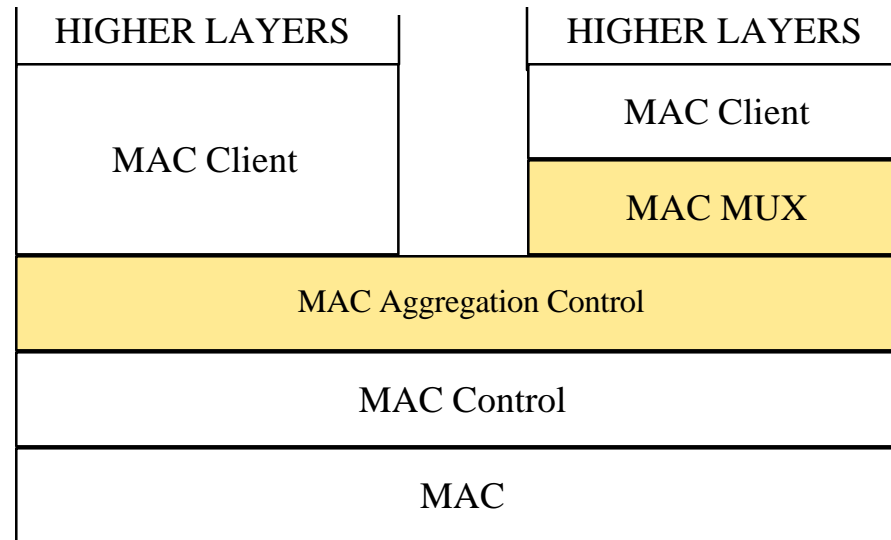
- **Both "Physical" and "Logical" addresses**
- **Multicast frames must be duplicated?**
- **Only one promiscuous receiver**
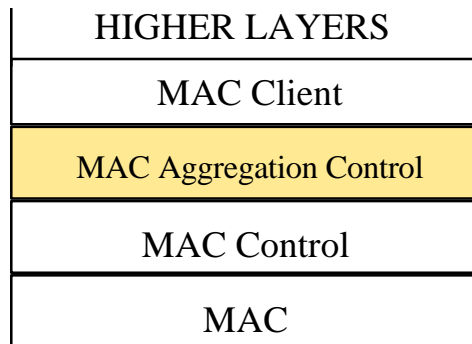- **"Logical" and "Physical" interfaces different**

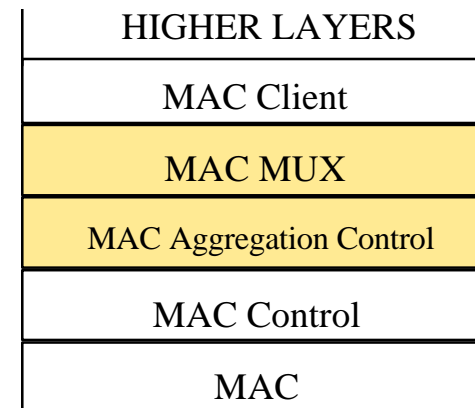**Bay Networks** *Where Information Flows.*

Single Client

ACTIVE, NOT AGGREGATING

ACTIVE, AGGREGATING

HIGHER LAYERS
MAC Client
MAC Aggregation Control
MAC Control
MAC

State Change →

HIGHER LAYERS
MAC Client
MAC MUX
MAC Aggregation Control
MAC Control
MAC

- **Example where aggregating state change requires coupling a MUX**
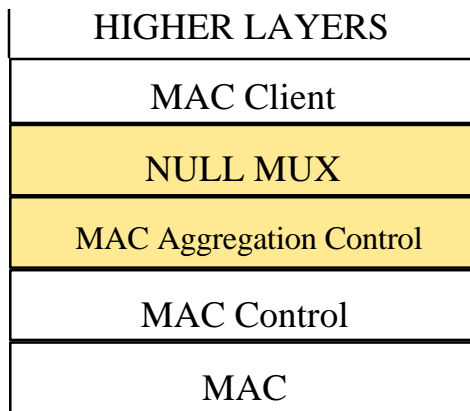
- **Probably need a transition through NOT ACTIVE state**
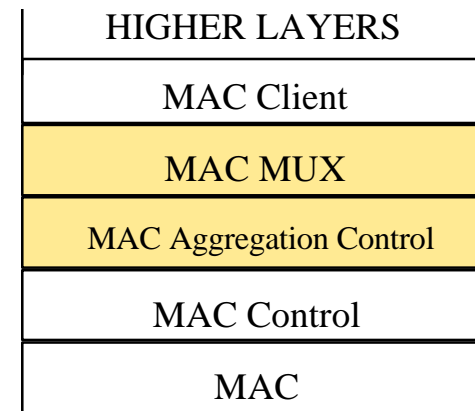
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Single Address Case

ACTIVE, NOT AGGREGATING

ACTIVE, AGGREGATING

HIGHER LAYERS
MAC Client
NULL MUX
MAC Aggregation Control
MAC Control
MAC

State Change →

HIGHER LAYERS
MAC Client
MAC MUX
MAC Aggregation Control
MAC Control
MAC

- **If this is the first link entering an aggregation, then it's MUX will define the group**

- **In this case a "physical" address is re-used for the "logical" address**

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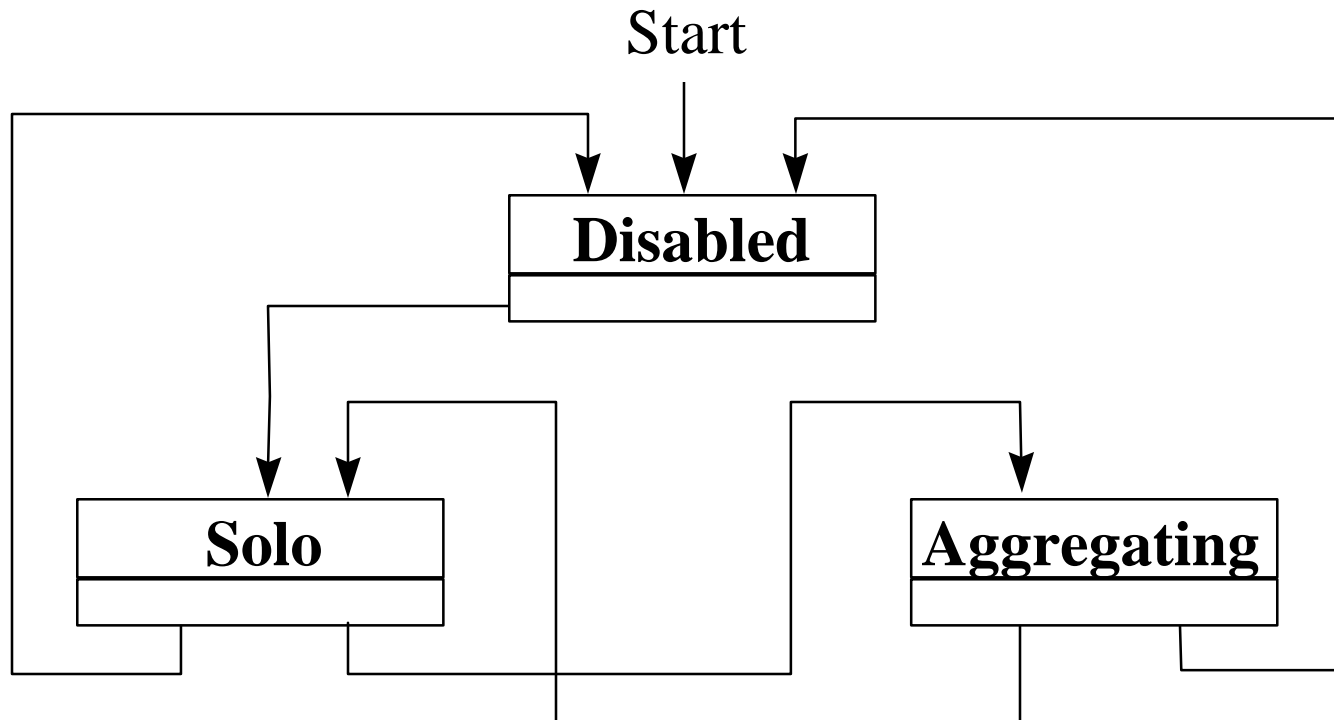
Single Client Model

- **Switches modes between Non-Aggregating and Aggregating state**

- **May have a single MAC address for "logical" and "physical"**

- **When using separate "physical" and "logical" MAC addresses and when a client is attached to the "logical" address the "physical" address is only used by the MAC Aggregation Control Layer**

Single Client Control States

- **Disabled = MAC Inoperative**

- **Solo = MAC Operative & Not Associated With MUX**
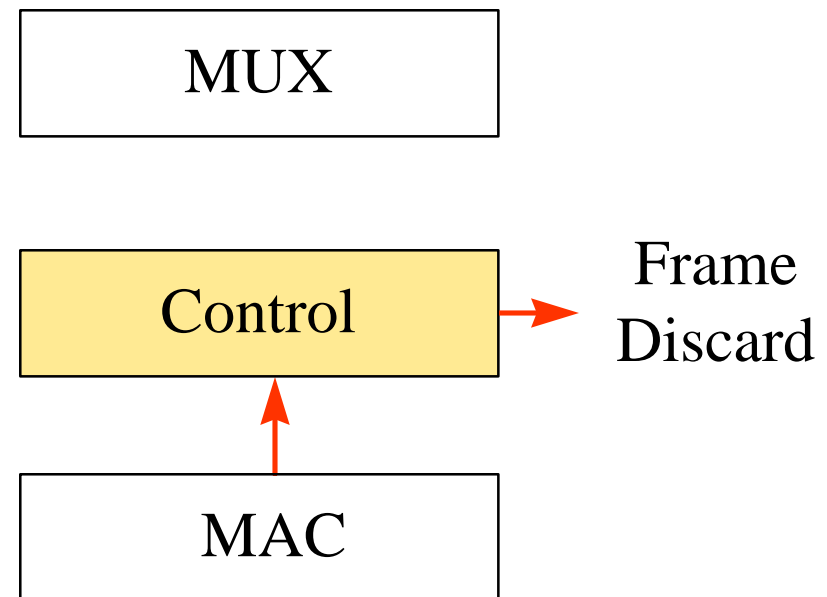
- **Aggregating =MAC Operative & Associated With MUX**

Disabled State

- **When the control state is Disabled all frames received are discarded**

Solo State

- **When the control state is Solo Control Frames are intercepted**
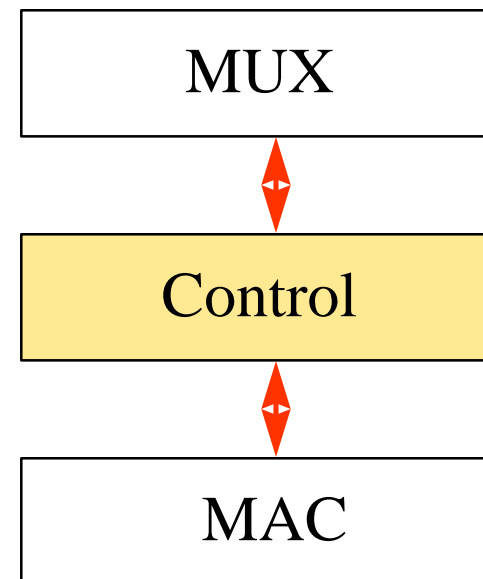
- **All other frames may forward to the MAC Client**

-
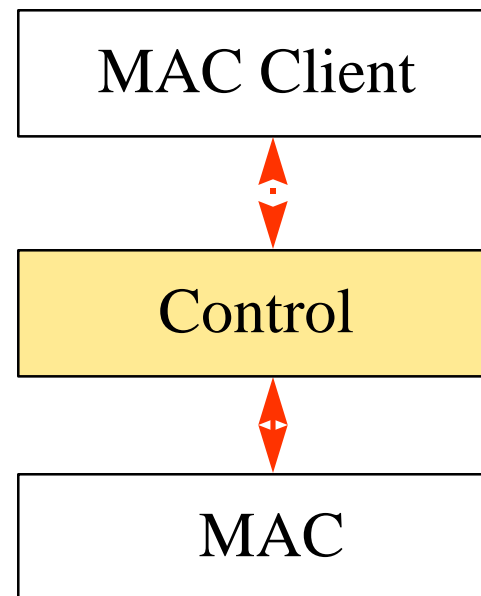
Aggregating State

- **When the control state is Aggregating Control Frames are intercepted**

- **All other frames are forwarded to the MUX**

-

```
┌─────────────────┐
│       MUX       │
└─────────────────┘
         ▲
         ▼
┌─────────────────┐
│     Control     │
└─────────────────┘
         ▲
         ▼
┌─────────────────┐
│       MAC       │
└─────────────────┘
```

Recommendation

- **Adopt a Single Client model**