# Aggregation : Higher Layer Requirements

## A quick look

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## Presentation Goals

- To support a proposal to focus on ‘Link Aggregation’ as a first, useful, easy to complete, subset of ‘Trunking’
- By airing concerns arising from a study of generalized trunking or ‘LAN Aggregation”
- And showing that there are simple provisions to ensure that work on ‘Link Aggregation’ does not over-constrain follow on work on ‘LAN Aggregation’

## Presentation Non-goals

- To claim solutions discussed are the unique answer
  (to ensuring work on ‘Link Aggregation’ does not over-constrain futures)
- To propose any architecture

## Overview

- A taxonomy for parallel transmission
- Protocol concerns
- Addressing link segments and aggregated links
- Conclusions

# Parallel transmission, or how to send packets on two or more links instead of one ...

- Equal Cost Routing
  - choice of links toward packet destination address
- Link Aggregation
  - choice of links to same device
    (links look like one link to all devices)
- LAN Aggregation
  - choice of links to same LANs or bridged LANs
    (LANs look like one LAN to all devices)
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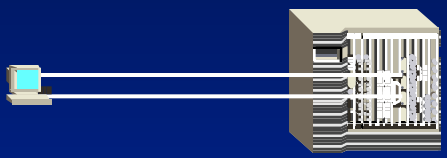
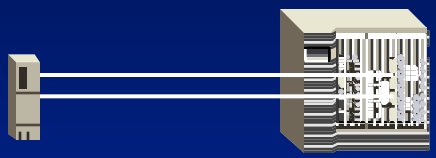
# Link Aggregation

Switch to Switch

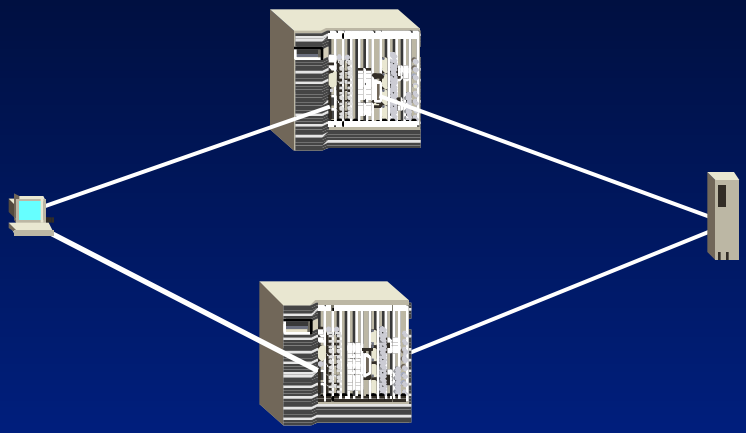


Desktop to Switch



Server to Switch

# LAN Aggregation (simple example)



Both desktop and server see two links trunked together, but these links are supported by different switches to provide network redundancy

## Protocol concerns

- Transparency - invisibility to higher protocols
- Autoconfiguration, misconfiguration detection, and management - visibility to control protocols
- Configuration delays - convergence of higher layer control protocols
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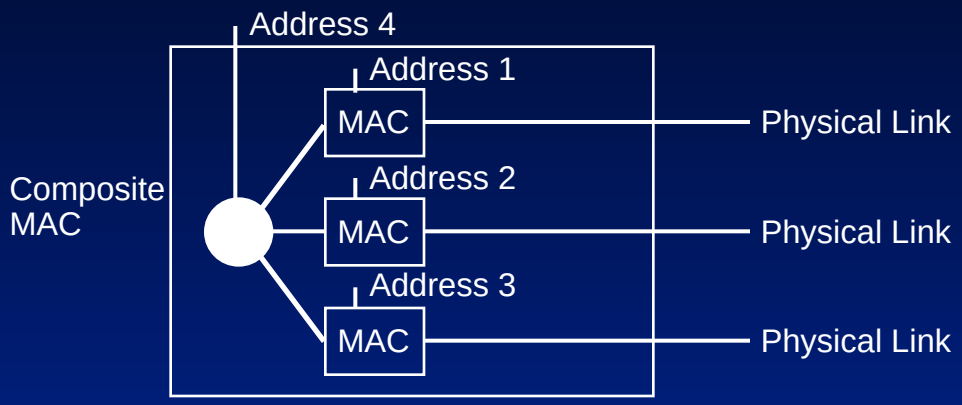
# Addressing Links and Aggregated Links




Allows hierarchical or flat configuration

Transparency or visibility as required

Not claiming "Necessary", but "Sufficient", proof by example

we can do "link aggregation" with simple provision for futures

## Conclusions

Sufficient addressing and the capability to aggregate links as required by configuration protocols provides the flexibility to deal with complex scenarios

Easy to ensure “future proofing”

➠ No reason why we should not proceed with “link aggregation” now