Analysis and demands in Ethernet networks

Marcus Wilhelmsson
marcus.wilhelmsson@lnu.se

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Contents

- Network layers

- Scalability

- Redundancy

- Performance

- Examples

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The hierarchical network model

- Easy to manage and expand

- Problems are usually solved more quickly

- Divide the network into layers, each with its own functions

- Gives scalability and performance

The Hierarchical Network Model

CORE

DISTRIBUTION
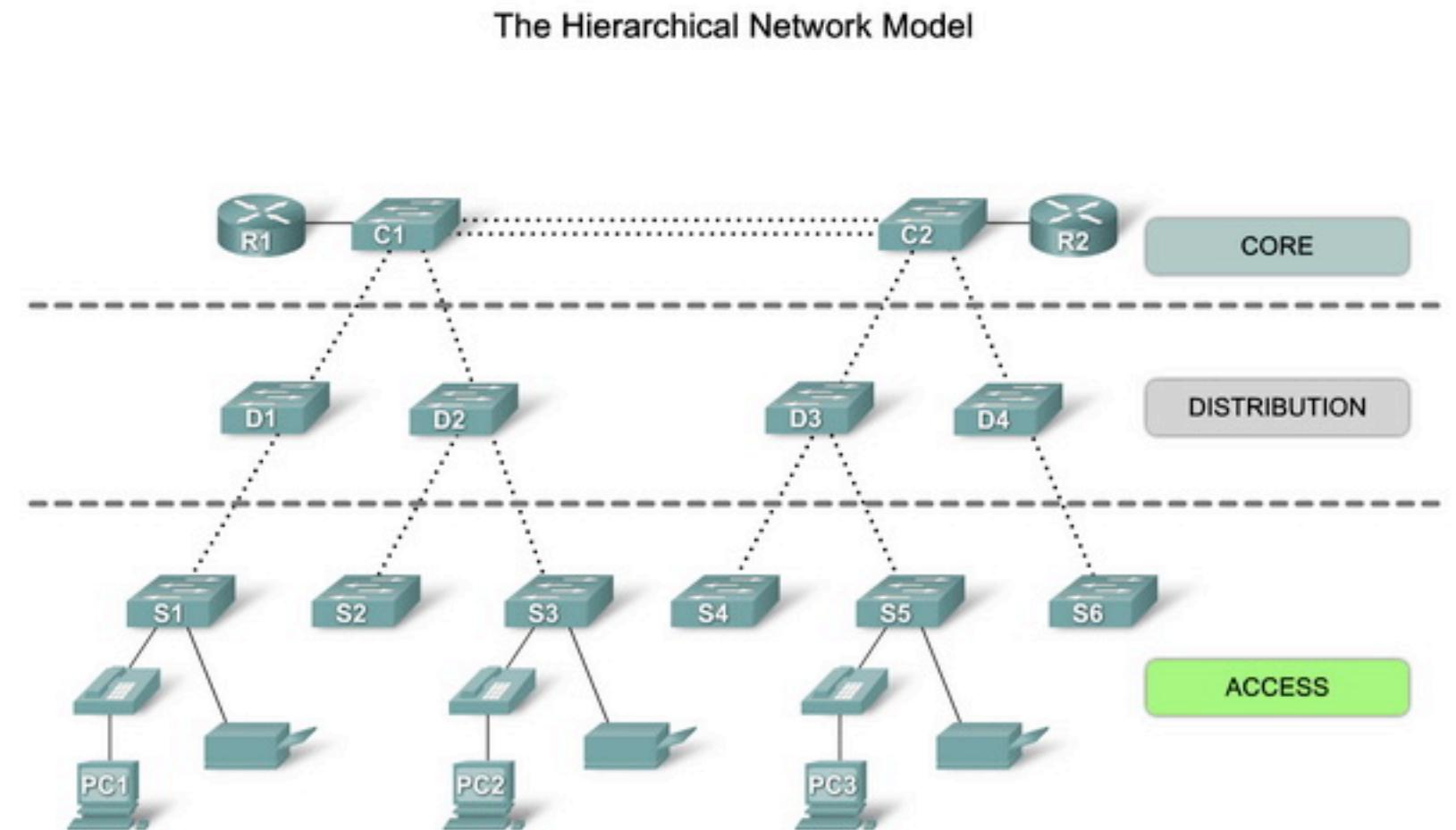
ACCESS

Access layer

- PCs, printers, IP phones

- Provide a means of connecting devices to the network

- Controlling which devices are allowed to communicate on the network

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Distribution layer

- Aggregates data before sending it to the core layer for routing

- Controlling the network flow using policies

- Inter-VLAN routing

Core layer

- High-speed backbone

- Connects distribution layer switches

- Connects to other networks such as the Internet

- Aggregates traffic from all distribution layer switches, must be very fast
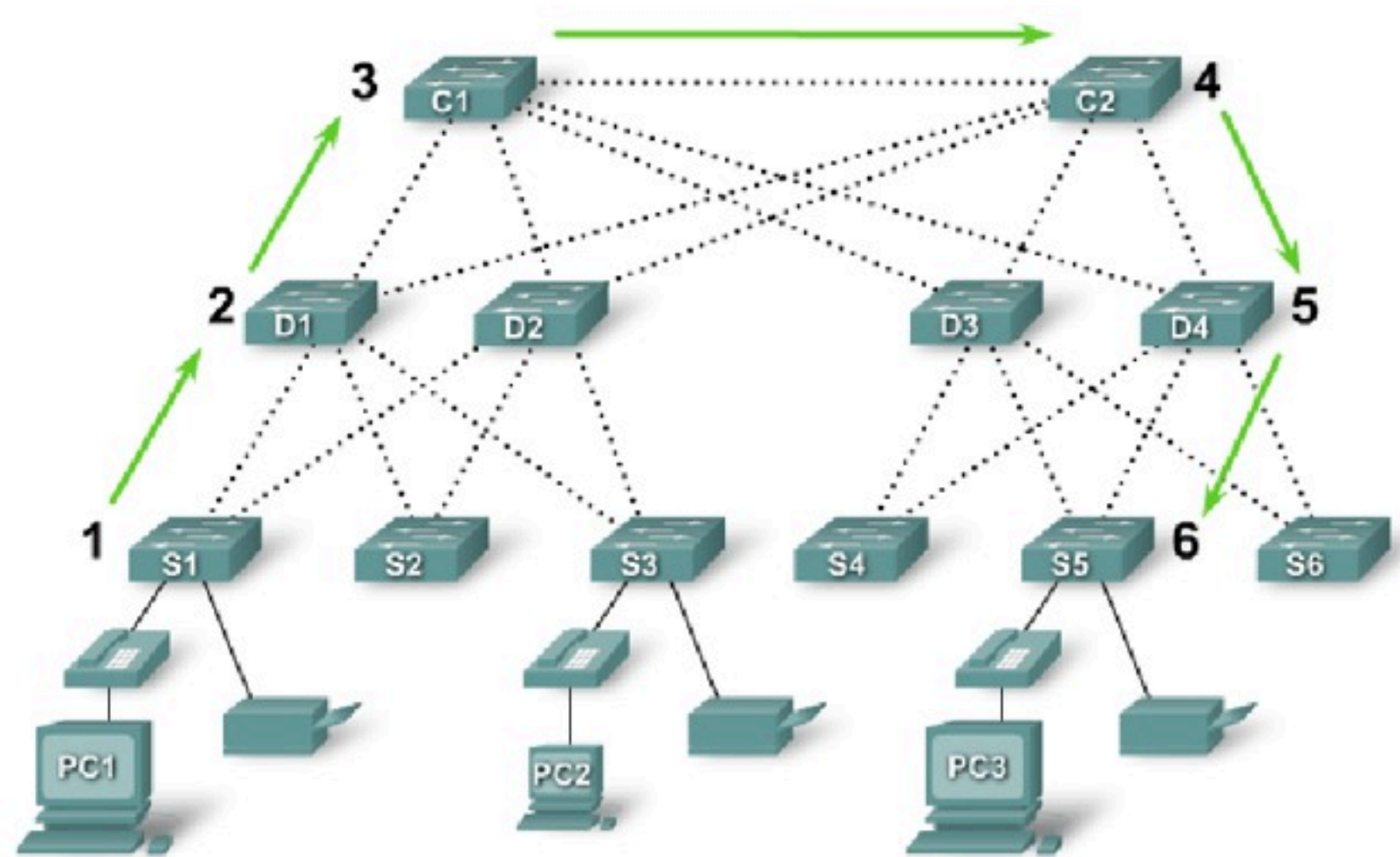
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Benefits of a hierarchical network

- Scalability

- Redundancy

- Performance
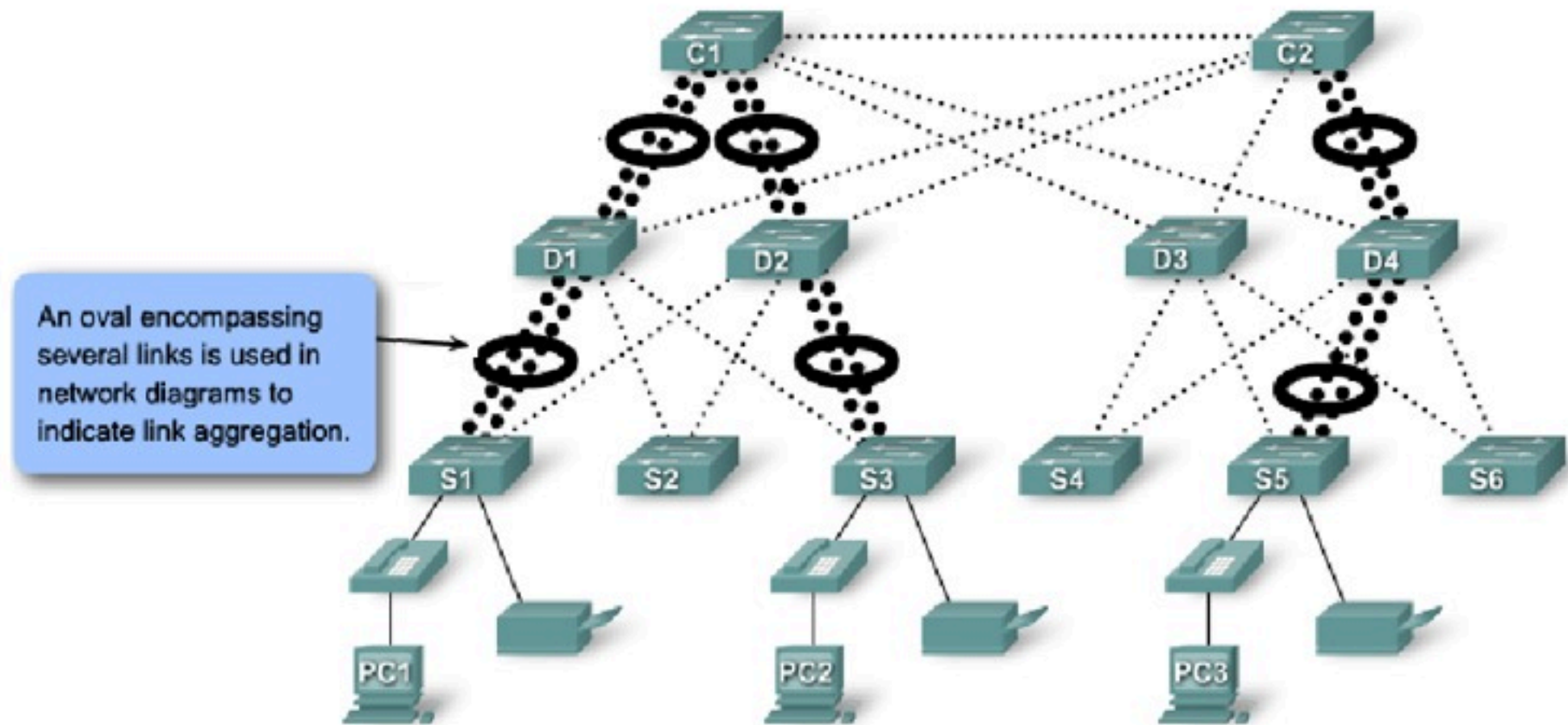
- Security

- Manageability

- Maintainability

Principles of hierarchical network design

- Network diameter

- Bandwidth aggregation
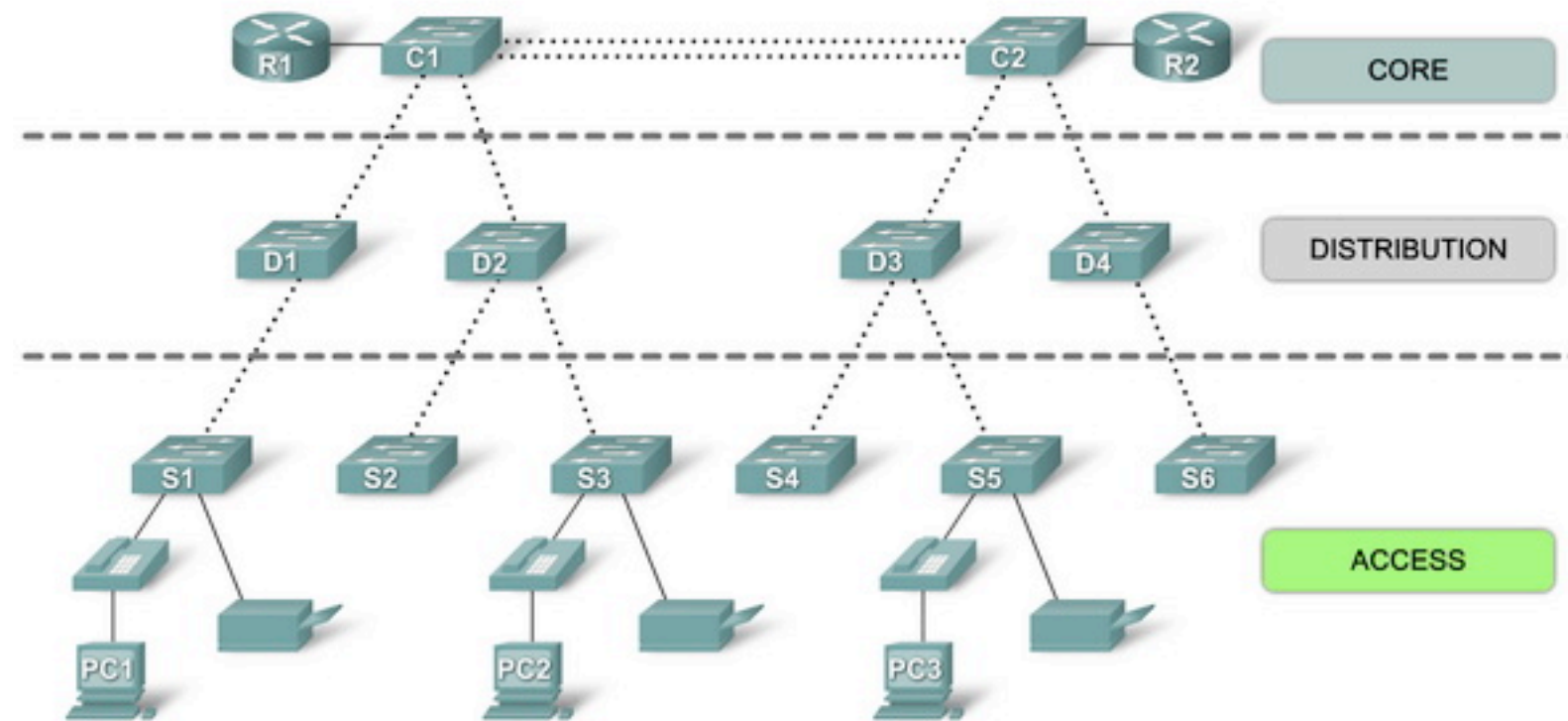
- Redundancy

Network diameter

Bandwidth aggregation

An oval encompassing several links is used in network diagrams to indicate link aggregation.

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Redundancy

The Hierarchical Network Model

Which equipment to choose?

- Traffic flow

- User community

- Data servers

- Creating a topology diagram

- Switch features and performance

- Access layer, distribution layer and core layer features

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Example 1

- 50 employees

- 4 servers

- Internal business applications

- Cloud applications

Example 2

- 400 employees

- 30 servers

- 2 locations (within one city)

Example 3

- 30 employees

- 800 servers

- Running applications and/or servers for other companies