

Chapter 1

Intelligent Information Network & Service-Oriented Network Architecture

A Strategy to create a network that is more than a connection.

Chapter 1

Intelligent Information Network

- **An integrated system**
- **Active participation**
- **Policy enforcement**
- **IIN has 3 phases:**
 - **Integrated transport**
 - **Integrated Services**
 - **Integrated Application**

Chapter 1

Service-Oriented Network Architecture

- **An architectural framework that guides the evolution of enterprise networks to IIN**
- **Three-layer design that incorporates the applications, services, and network**

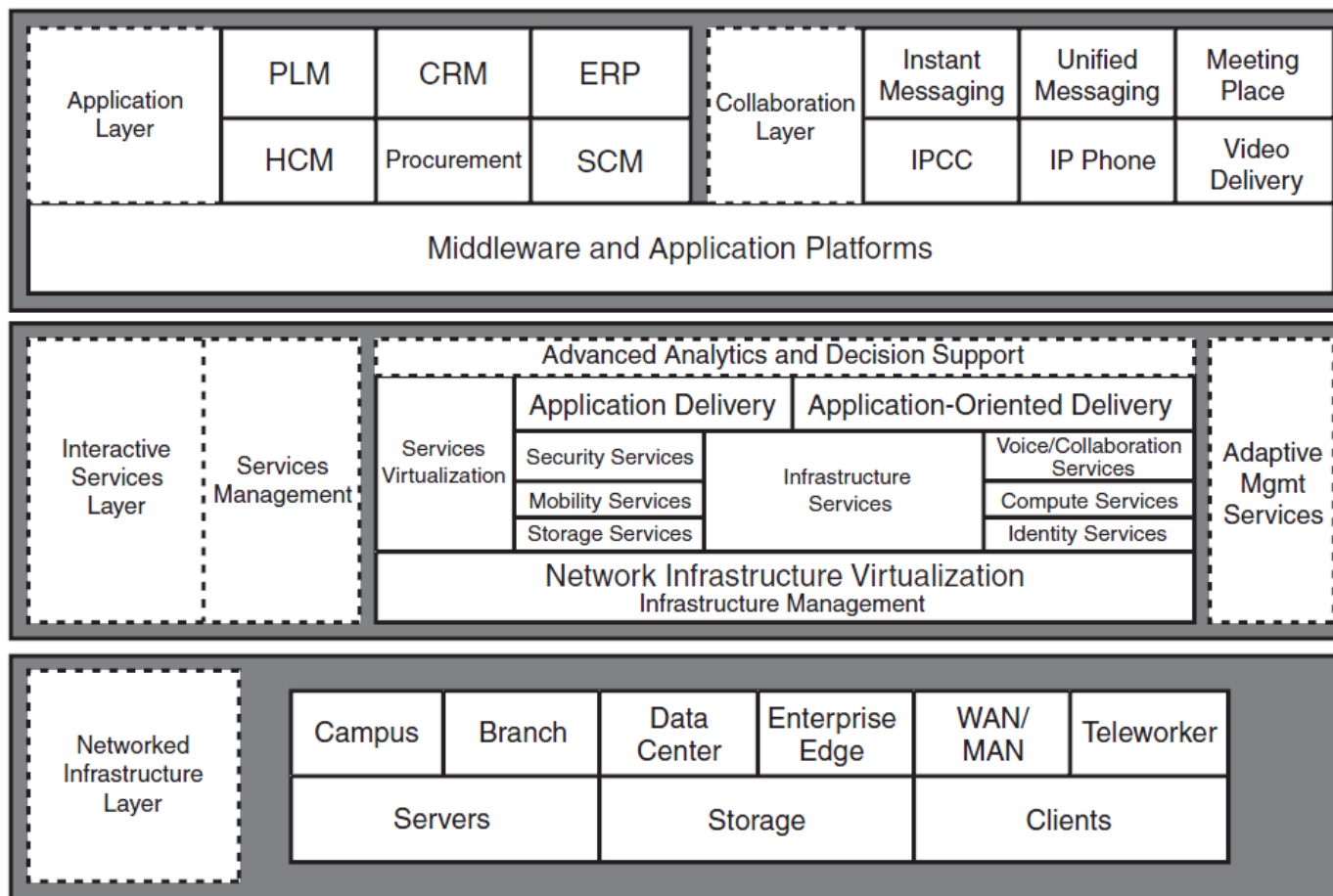
- **Application layer** contains the business and collaboration applications used by end users, such as enterprise resource planning, procurement, customer relationship, unified messaging, and conferencing

- **Interactive Service layer** optimizes the communication between applications and services using intelligent network functions such as security, identity, voice, virtualization, and quality of service.

- **Network Infrastructure layer** contains the Cisco Enterprise Architecture (campus, LAN, WAN, data center, branch) and facilitates the transport of services across the network. It also includes servers, storage, and clients.

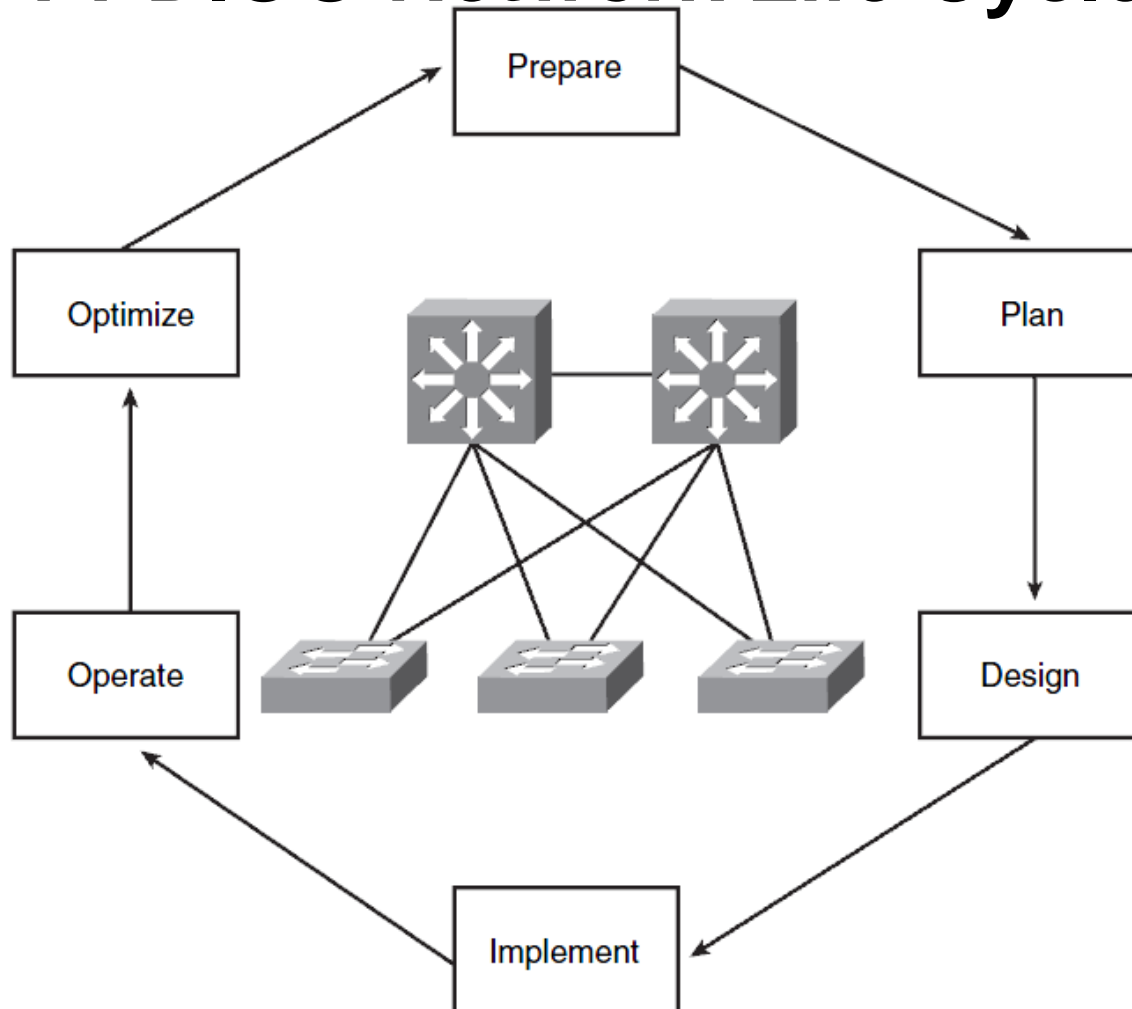
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Service-Oriented Network Architecture



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Cisco PPDIOO Network Life Cycle



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Prepare, Plan & Design phases

1. **Identify customer requirements**
2. **Characterize the existing network and sites**
3. **Design the network topology and solutions**

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Prepare fasen

1. **Identify network applications and network services. Define which applications have timing constraints in the traffic flows.**
 1. Current and in the future
 2. What's important for the organization (Business Critical)
2. **Define the organizational goals.**
 1. Why do they need a new network. What are the future goals. (Save money, Be ahead of the competitors...)
3. **Define the organizational constraints.**
 1. Economics, time, employees, politics...
4. **Define the technical goals.**
 1. Response time, Error rate, Security, Scalability, Availability
5. **Define the technical constraints.**
 1. Reuse of old equipment, Old protocols...

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Characterizing the Existing Network

1. **Characterizing the Existing Network and Sites**
 1. Existing network documentation
 2. Existing Network management software
 3. New Network management software
2. **Examine the existing network**
 1. Equipment lists
 2. Hardware models
 3. Software versions
 4. Configuration
 5. Link, CPU & memory usage
3. **Collect network traffic to identify used protocols and application**
 1. Network-Based Application Recognition – NBAR
 2. Netflow

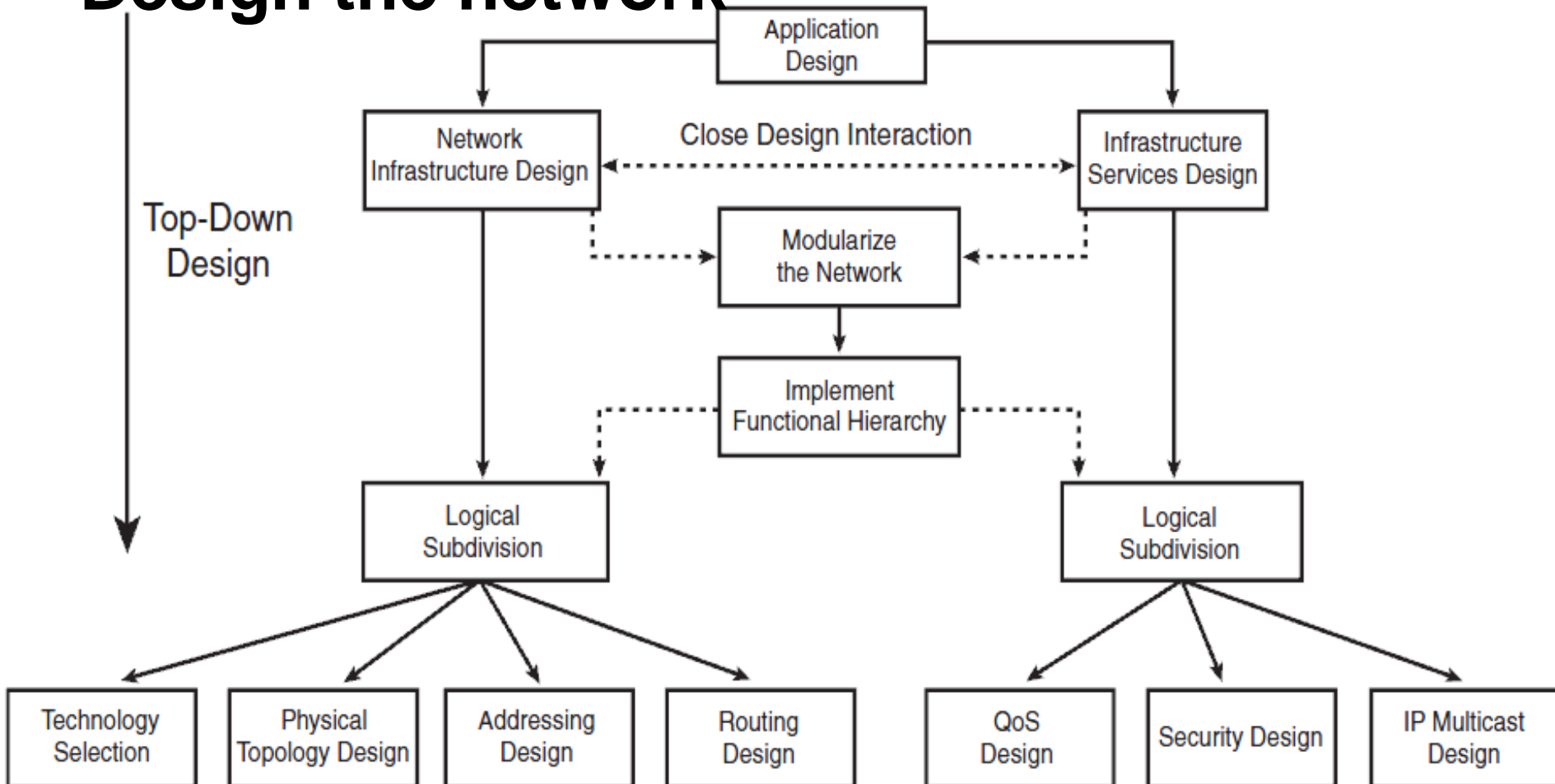
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Network Checklist

- **No shared Ethernet segments are saturated (no more than 40 percent sustained network utilization). New segments should use switched and not shared technology.**
- **No WAN links are saturated (no more than 70 percent sustained network utilization).**
- **The response time is generally less than 100ms (one-tenth of a second). More commonly less than 2ms in a LAN.**
- **No segments have more than 20 percent broadcasts or multicast traffic. Broadcasts are sent to all hosts in a network and should be limited. Multicast traffic is sent to a group of hosts but should also be controlled and limited to only those hosts registered to receive it.**
- **No segments have more than one cyclic redundancy check (CRC) error per million bytes of data.**
- **On the Ethernet segments, less than 0.1 percent of the packets result in collisions.**
- **A CPU utilization at or over 75 percent for a 5-minute interval likely suggests network problems. Normal CPU utilization should be much lower during normal periods.**
- **The number of output queue drops has not exceeded 100 in an hour on any Cisco router.**
- **The number of input queue drops has not exceeded 50 in an hour on any Cisco router.**
- **The number of buffer misses has not exceeded 25 in an hour on any Cisco router.**
- **The number of ignored packets has not exceeded 10 in an hour on any interface on a Cisco router.**

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Design the network





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