Chapter 1

Intelligent Information Network & Service-Oriented Network Architecture

En strategi til at skabe et netværk der er mere end bare en forbindelse.

Chapter 1

Intelligent Information Network

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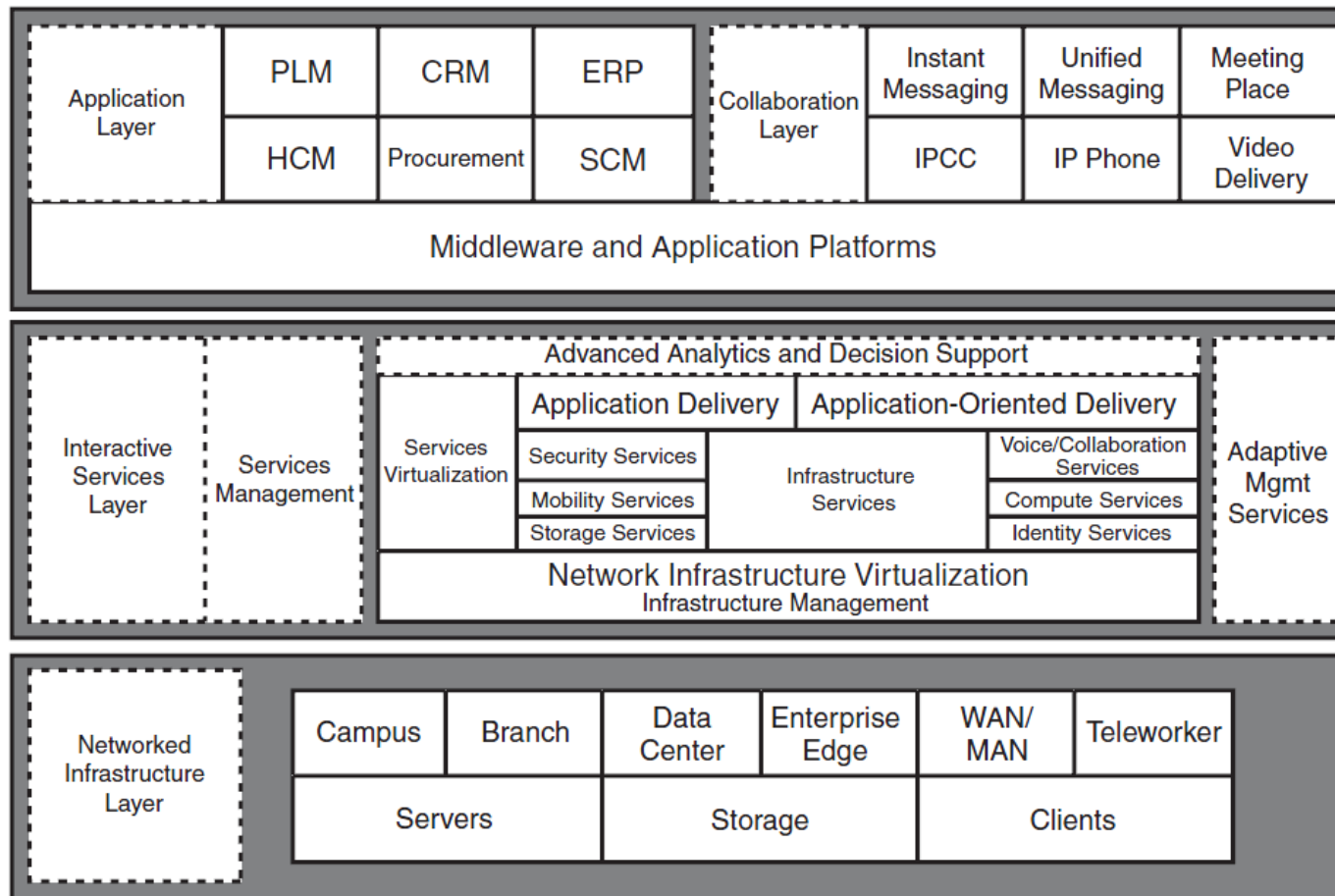 - **Integrated Application**

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
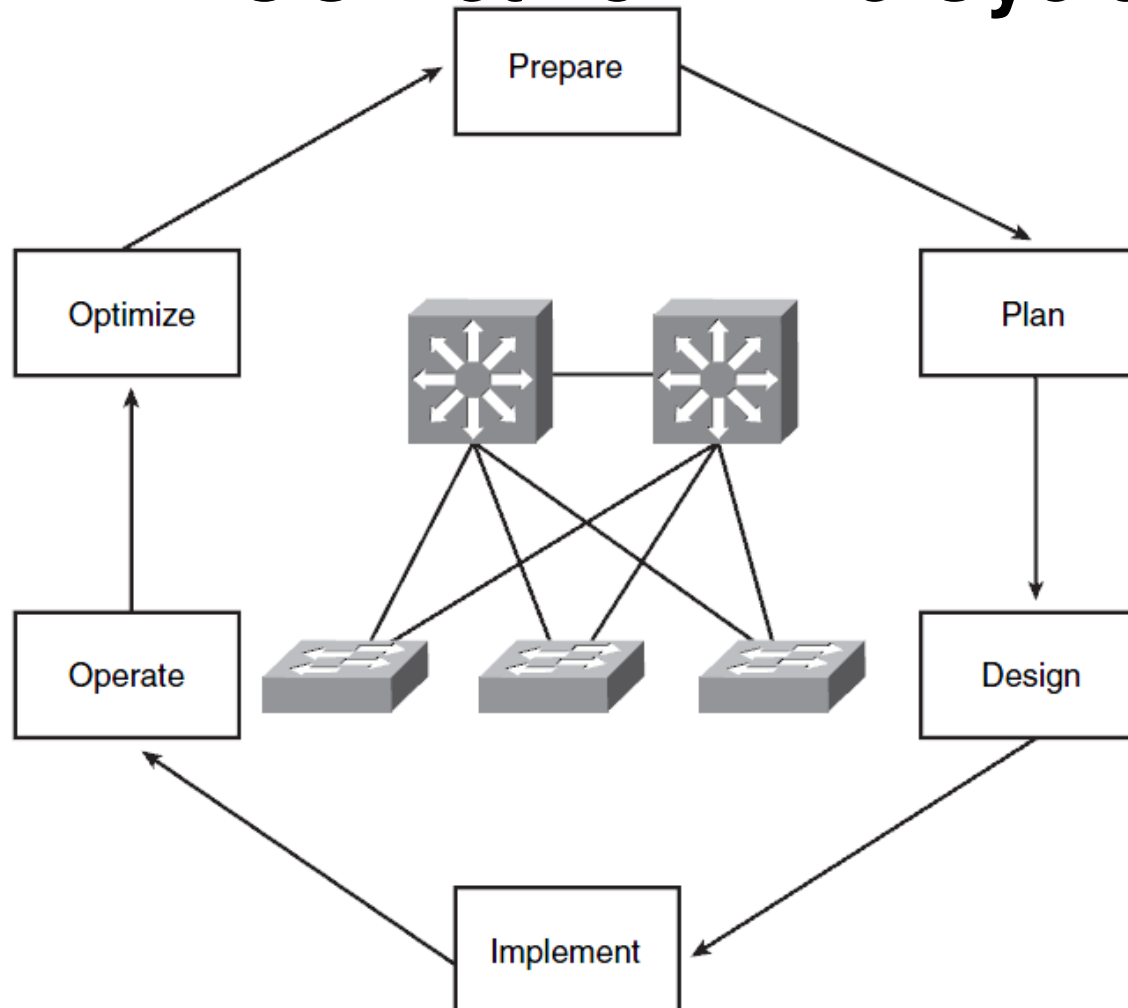
Chapter 1

Service-Oriented Network Architecture

| Application Layer | PLM | CRM | ERP | Collaboration Layer | Instant Messaging | Unified Messaging | Meeting Place |
| | HCM | Procurement | SCM | | IPCC | IP Phone | Video Delivery |

Middleware and Application Platforms

Interactive Services Layer — Services Management — Services Virtualization

Advanced Analytics and Decision Support

Application Delivery — Application-Oriented Delivery

Security Services — Infrastructure Services — Voice/Collaboration Services

Mobility Services — Compute Services

Storage Services — Identity Services

Adaptive Mgmt Services

Network Infrastructure Virtualization
Infrastructure Management

Networked Infrastructure Layer — Campus — Branch — Data Center — Enterprise Edge — WAN/ MAN — Teleworker

Servers — Storage — Clients

Chapter 1

Cisco PPDIOO Network Life Cycle

Chapter 1

Prepare, Plan & Design faserne

1. Identificer de krav netværket skal leve op til
2. Find ud af hvordan netværket fungerer idag
3. Design det nye netværk

Chapter 1

Prepare fasen

1. **Hvilke netværks applikationer og services har kunden**
   1. Nuværende og fremtidige
   2. Hvilke er vigtige for kunden (Business Critical)
2. **Hvad er organisationens mål**
   1. Hvorfor vil de gerne have en nyt netværk. Hvad er de fremtidige mål. (Spare penge, være foran konkurrenterne....)
3. **Er der nogle begrænsninger i organisationen**
   1. Økonomi, tid, personale, politikker.....
4. **Definer de tekniske mål**
   1. Response tid, fejlrate, sikkerhed, skalerbarhed, tilgængelighed
5. **Er der tekniske begrænsninger**
   1. Genbrug af ældre udstyr, gamle protokoller..

Chapter 1

Characterizing the Existing Network

1.   **Find alt eksisterende information og dokumentation**
   1. **Eksisterende netværks dokumentation**
   2. **Eksisterende Network management software**
   3. **Ny Network management software**
2.   **Undersøg det eksisterende netværk**
   1. **Enhedsliste**
   2. **Hardware modeller**
   3. **Software versioner**
   4. **Configuration**
   5. **Link, CPU & hukommelses forbrug**
3.   **Opsaml netværks trafik for at finde brugte protokoller og applicationer**
   1. **Network-Based Application Recognition – NBAR**
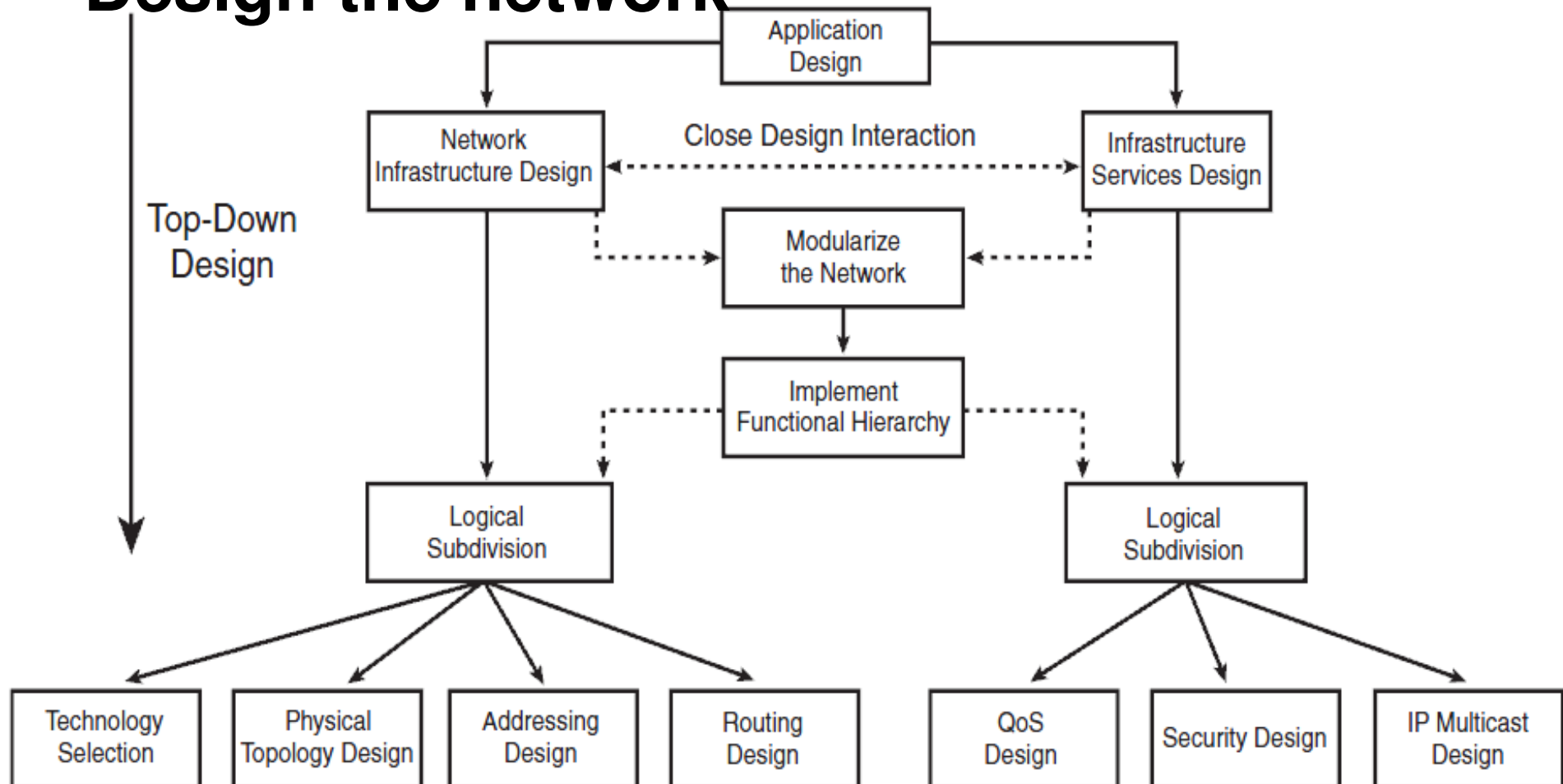   2. **Netflow**

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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.

Chapter 1

Design the network

Top-Down Design

```
                                    Application
                                      Design
                                         |
            +----------------------------+----------------------------+
            |                                                         |
       Network            Close Design Interaction            Infrastructure
  Infrastructure Design  <------------------------->          Services Design
            |                        |                                |
            |                   Modularize                            |
            |                   the Network                           |
            |                        |                                |
            |                   Implement                             |
            |                Functional Hierarchy                     |
            |                                                         |
        Logical                                                   Logical
      Subdivision                                               Subdivision
```

| Technology Selection | Physical Topology Design | Addressing Design | Routing Design | | QoS Design | Security Design | IP Multicast Design |

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