

Session 1-3

Identifying Design Requirements

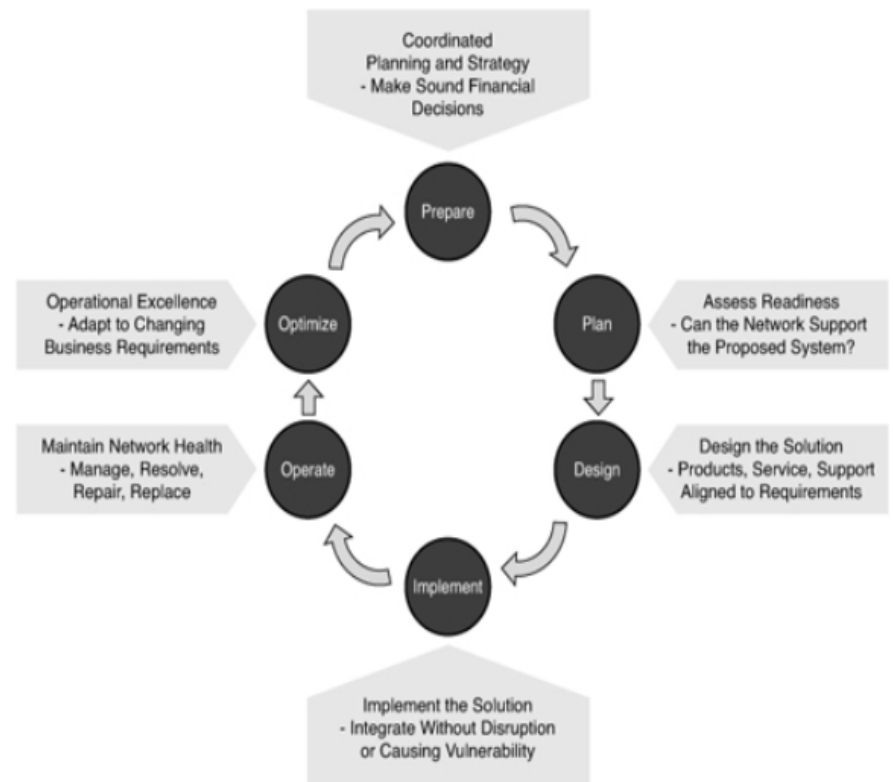
Prepare, Plan, Design, Implement, Operate, and Optimize Phases

- To design a network that meets customer needs, identify the following:
 - Organizational goals and constraints
 - Technical goals and constraints

Network Life Cycles

- Prepare -
- Plan,
- Design,
- Implement,
- Operate, and
- Optimize (PPDIOO)

Figure 2-6 PPDIOO Network Lifecycle Influences Design



Network Life Cycles

Prepare Phase

- Involves establishing the organizational (business) requirements,
- Developing a network strategy,
- Proposing a high-level conceptual architecture, and
- Identifying technologies that can best support the architecture
- Assessing the business case for the proposed architecture –financial justification

Network Life Cycles

Plan Phase

- Involves identifying the network requirements based on the goals for the network, where the network will be installed (facilities), who will require which network services, and so on Business forces

Network Life Cycles

Plan Phase

- The phase characterizes sites and
 - assesses the network,
 - performs a gap analysis against best-practice architectures, and
- Looks at the operational environment
- Develop a project plan to manage the **tasks, responsible parties, milestones,** and **resources** to do the design and implementation

Network Life Cycles

Plan Phase

- The project plan aligns with the **scope, cost, and resource** parameters established with the original business requirements
- **Updates** required during all phases of the cycle

Design Phase

- The initial requirements determined in the **Plan phase** drive the network design specialists' activities
- The network is designed according to the initial requirements, including any additional data gathered during **network analysis** and **network audit**(existing network) and discussion with **managers** and **users**

Design Phase

- The design specification that is produced is a comprehensive detailed design that meets **current business** and **technical requirements** and incorporates specifications to support **availability, reliability, security, scalability, and performance**
- Specifications become basis for the implementation activities.

Implementation Phase

- Implementation and verification begin after the design approval
- The network and any additional components are built according to the design specifications
- Integrating devices without disrupting the existing network or creating points of vulnerability

Operate Phase

- Operation - final test of the design's appropriateness
- Maintaining network health through day-to-day operations
- maintaining high availability and reducing expenses
- Fault detection and correction and performance monitoring provide initial data for the network lifecycle's **Optimize phase**

Optimize Phase

- Phase is based on proactive network management
- Objective is to identify and resolve issues before problems arise and the organization is affected
- Reactive fault detection and correction (troubleshooting) are necessary when proactive management cannot predict and mitigate the failures
- Network redesign – too many errors

Summary of PPDIOO Phases

Table 1-7. *PPDIOO Network Life Cycle Phases*

PPDIOO Phase	Description
Prepare	Establishes organization and business requirements, develops a network strategy, and proposes a high-level architecture
Plan	Identifies the network requirements by characterizing and assessing the network, performing a gap analysis
Design	Provides high availability, reliability, security, scalability, and performance
Implement	Installation and configuration of new equipment
Operate	Day-to-day network operations
Optimize	Proactive network management; modifications to the design

Benefits of the Lifecycle Approach

- Lowering the total cost of network ownership:
 - Identifying and validating technology requirements
 - Planning for infrastructure changes and resource requirements
 - Developing a sound network design aligned with technical requirements and business goals
 - Accelerating successful implementation
 - Improving the efficiency of the network and supporting staff
 - Reducing operating expenses by improving the efficiency of operation processes and tools

Benefits of the Lifecycle Approach

- Increasing network availability :
 - Assessing the state of the network's security and its ability to support the proposed design
 - Specifying the correct set of hardware and software releases and keeping them operational and current
 - Producing a sound operational design and validating network operation
 - Staging and testing the proposed system before deployment
 - Improving staff skills
 - Proactively monitoring the system and assessing availability trends and alerts
 - Proactively identifying security breaches and defining remediation plans

Benefits of the Lifecycle

Approach

- Improving business agility:
 - Establishing business requirements and technology strategies
 - Preparing sites to support the system to be implemented
 - Integrating technical requirements and business goals into a detailed design and demonstrating that the network is functioning as specified
 - Expertly installing, configuring, and integrating system components
 - Continually enhancing performance

Benefits of the Lifecycle

Approach

- Accelerating access to applications and services
 - Assessing and improving operational preparedness to support current and planned network technologies and services
 - Improving service-delivery efficiency and effectiveness by increasing availability, resource capacity, and performance
 - Improving the availability, reliability, and stability of the network and the applications running on it