Windows Server® 2008 and Windows Server 2008 R2 Active Directory® Domain Services

Infrastructure Planning and Design

Published: February 2008
Updated: November 2011

What Is IPD?

Guidance that clarifies and streamlines the planning and design process for Microsoft® infrastructure technologies

IPD:

- Defines decision flow

- Describes decisions to be made

- Relates decisions and options for the business

- Frames additional questions for business understanding

IPD guides are available at www.microsoft.com/ipd

Getting Started

Active Directory Domain Services
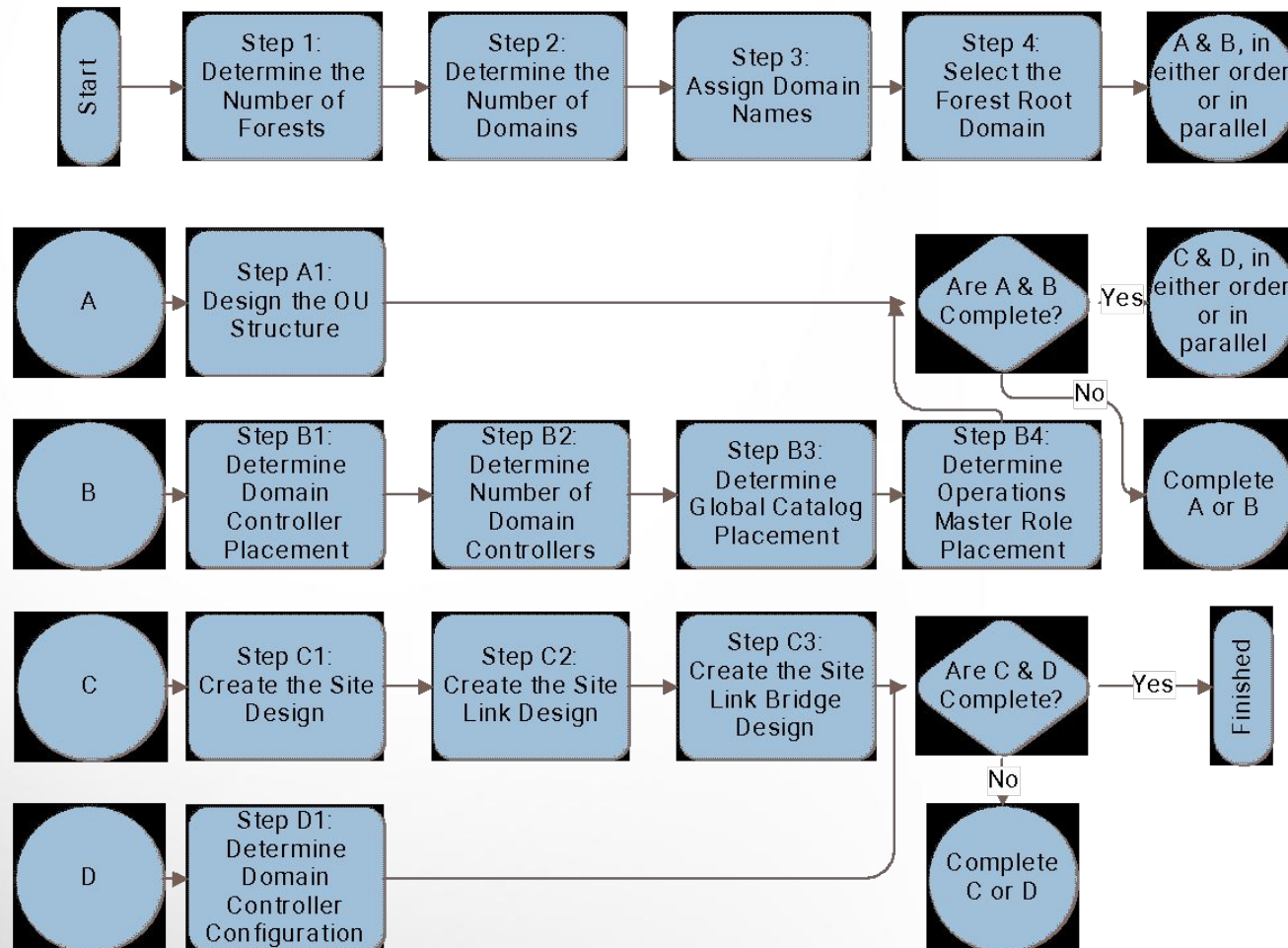
Purpose and Overview

Purpose

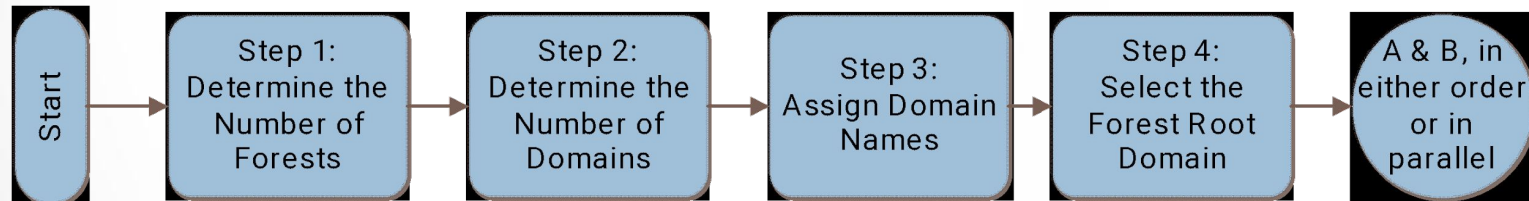- To provide design guidance for Windows Server 2008 Active Directory Domain Services (AD DS)

Overview

- Determine process for AD DS design

- Assist designers in the decision-making process

- Provide design assistance based on best practices and real-world experience

Active Directory Domain Services Decision Flow

Decision Flow Start Path: Determine Domain and Forest Components

Start → Step 1: Determine the Number of Forests → Step 2: Determine the Number of Domains → Step 3: Assign Domain Names → Step 4: Select the Forest Root Domain → A & B, in either order or in parallel

Determine the Number of Forests

- ## How Many Forests?

  - Option 1: Single forest

  - Option 2: Multiple forests

- ## Multiple Forest Drivers

  - Multiple schemas

  - Resource forests

  - Forest administrator distrust

  - Legal regulations for application or data access

Determine the Number of Domains

- ## How Many Domains?

  - Option 1: Single domain

  - Option 2: Multiple domains

- ## Multiple Domain Drivers

  - Large number of frequently changing attributes

  - Reduce replication traffic

  - Control replication traffic over slow links

  - Preserve legacy Active Directory

Assign Domain Names

- ## Task 1: Assign the NetBIOS Name
  - Maximum effective length of 15 characters
  - Use a NetBIOS name that is unique across corporations

- ## Task 2: Assign DNS Name
  - DNS name consists of host name and network name
  - Ensure uniqueness by not duplicating existing registered Internet domain names
  - Register all top-level domain names with InterNIC
  - Name should not represent business unit or division

Select the Forest Root Domain

- Establish Forest Root Domain Structure

  - Option 1: Use a planned domain

  - Option 2: Dedicated forest root domain

- Additional Considerations

  - Determine time synch strategy

  - Consider cost of final structure

 - Consider complexity of final structure

Decision Flow Path A:
Determine Organizational Unit (OU) Structure
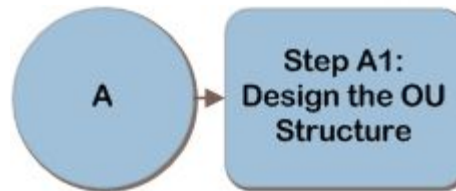
Design the OU Structure

- ## Choose an OU Design

  - Task 1: Design OU configuration for delegation of administration

  - Task 2: Design OU configuration for group policy application

Microsoft | Solution Accelerators

Decision Flow Path B: Determine Domain Controller Placement and Operations Master Role Placement
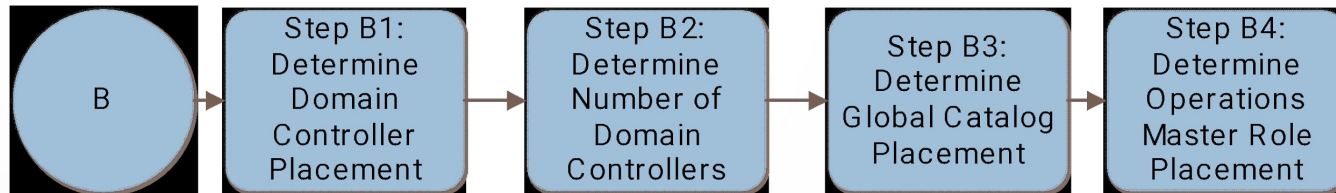
Determine Domain Controller Placement

- Placement of the Domain Controllers

  - Task 1: Hub locations

  - Task 2: Satellite locations

Determine the Number of Domain Controllers

- Number of Domain Controllers Needed and Their Type

  - Task 1: Determine number of domain controllers

  - Task 2: Determine type of domain controllers placed in location

Determine Global Catalog Placement

- Global Catalog Locations and Number Needed

  - Task 1: Determine global catalog locations and counts

Determine Global Catalog Placement

- Considerations

  - Locate near applications that rely on global catalog

  - Number of users at the location greater than 100

  - WAN link availability

  - Roaming users at location

  - Use of universal group caching

  - How many global catalog servers?

Determine Operations Master Role Placement

- Domain Roles

  - Primary domain controller (PDC) emulator operations master

  - Relative ID (RID) operations master

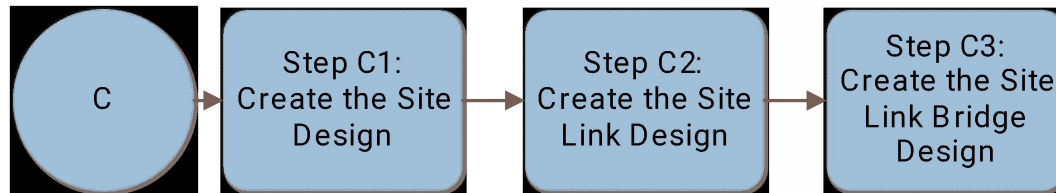 - Infrastructure operations master

- Forest Roles

  - Schema operations master

  - Domain naming operations master

Determine Operations Master Role Placement

- ## Operations Master Role Placement

  - Task 1: Operations master role placement

Decision Flow Path C: Determine Site Design and Structure

Create the Site Design

- Creating the Site Design

  - Task 1: Create a site for the location

  - Task 2: Associate location to nearest defined site
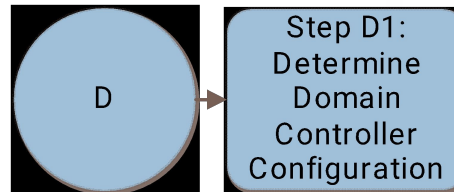
Create a Site Link Design

- Creating the Site Link Design

  - Task 1: Determine the site link design

Create the Site Link Bridge Design

- Creating the Site Link Bridge Design

  - Option 1: Default behavior

  - Option 2: Custom site link bridge

Decision Flow Path D:
Determine Domain Controller Configuration

D → Step D1: Determine Domain Controller Configuration

Determine Domain Controller Configuration

- ## Plan Domain Controller Configuration

  - Task 1: Identify minimum disk space requirements for each domain controller

  - Task 2: Identify memory requirements for each domain controller

Determine Domain Controller Configuration (Continued)

- Plan Domain Controller Configuration

  - Task 3: Determine processor requirements

  - Task 4: Identify network requirements for each domain controller

Active Directory Domain Services Dependencies

- Direct Dependencies

  - Domain Name System (DNS)

  - Lightweight Directory Access Protocol (LDAP)

- Indirect Dependencies

  - Windows Internet Name Service (WINS)

What's Next? – Discuss, Rinse, Repeat

- Implement your design

- Test and refine design along the way

Summary and Conclusion

- Organizations should base the design of their AD DS infrastructure on business and technical requirements

- Considerations should include:

  - The scope of the network and environment

  - Technical requirements and considerations

  - Additional business requirements

  - Designing an AD DS infrastructure to meet these requirements

  - Validating the overall approach

- Provide feedback to ipdfdbk@microsoft.com

Find More Information

- Download the full document and other IPD guides:
www.microsoft.com/ipd

- Contact the IPD team:
ipdfdbk@microsoft.com

- Access the Microsoft Solution Accelerators website:
www.microsoft.com/technet/SolutionAccelerators

Questions?

Addenda

- Benefits for Consultants or Partners

- IPD in Microsoft Operations Framework 4.0

- Active Directory Domain Services in Microsoft Infrastructure Optimization

Benefits of Using the Active Directory Domain Services Guide

- Benefits for Business Stakeholders/Decision Makers
  - Most cost-effective design solution for implementation
  - Alignment between the business and IT from the beginning of the design process to the end

- Benefits for Infrastructure Stakeholders/Decision Makers
  - Authoritative guidance
  - Business validation questions ensuring solution meets requirements of business and infrastructure stakeholders
  - High integrity design criteria that includes product limitations
  - Fault-tolerant infrastructure
  - Infrastructure that's sized appropriately for business requirements

Benefits of Using the Active Directory Domain Services Guide (Continued)

- Benefits for Consultants or Partners
  - Rapid readiness for consulting engagements
  - Planning and design template to standardize design and peer reviews
  - A "leave-behind" for pre- and post-sales visits to customer sites
  - General classroom instruction/preparation

- Benefits for the Entire Organization
  - Using the guide should result in a design that will be sized, configured, and appropriately placed to deliver a solution for achieving stated business requirements

IPD in Microsoft Operations Framework 4.0

Use MOF with IPD guides to ensure that people and process considerations are addressed when changes to an organization's IT services are being planned.

Active Directory Domain Services in Microsoft Infrastructure Optimization