

CCNP BSCI Notes - Network Design

Full mesh formula: $n(n-1)/2$ Example: To create a mesh between 8 nodes, $8 * (8-1) / 2 = 28$; 28 links are needed. Design concepts

Legacy Hierarchical Design Model Core - fast L2-switched backbone; Distribution - L3 switches; Access - dense L2 switches. This failed to address issues such as redundancy, Internet and remote access, and locating services. *Switch block* design was introduced to add redundancy; this included redundant core and distribution switches and links per switch block. **Enterprise Composite Network Model** This new model was developed to address modern design considerations.

Enterprise campus

- Campus backbone (previously the "core")
- Building distribution (previously "distribution")
- Building access (previously "access")
- Management
 - Server farm (for internal enterprise services)
 - Enterprise edge
 - E-commerce
 - Internet connectivity
 - Remote access
 - WAN (internal links)
 - Service provider edge
 - ISP
 - PSTN
 - Frame relay, ATM, PPP for private connectivity

Intelligent Information Network (IIN)

- Phase 1: Integrated transport - the shift toward the ECN model
- Phase 2: Integrated services - service virtualization (disassociation of services from individual machines)
- Phase 3: Integrated applications - recognizing and combining high-layer traffic properties (for example, Network Access Control)

Services-Oriented Network Architecture (SONA) SONA is the application of IIN ideas to enterprise networks.

- Network infrastructure (IIN phase 1)
- Interactive services (IIN phase 2)
- Application (IIN phase 3)

Routing protocols

- Distance vector - a router will only exchange routes with a directly connected neighbor
- Link-state - a router advertises a list of all its neighbors and its neighbors' networks; routers run SPF to determine the best path