

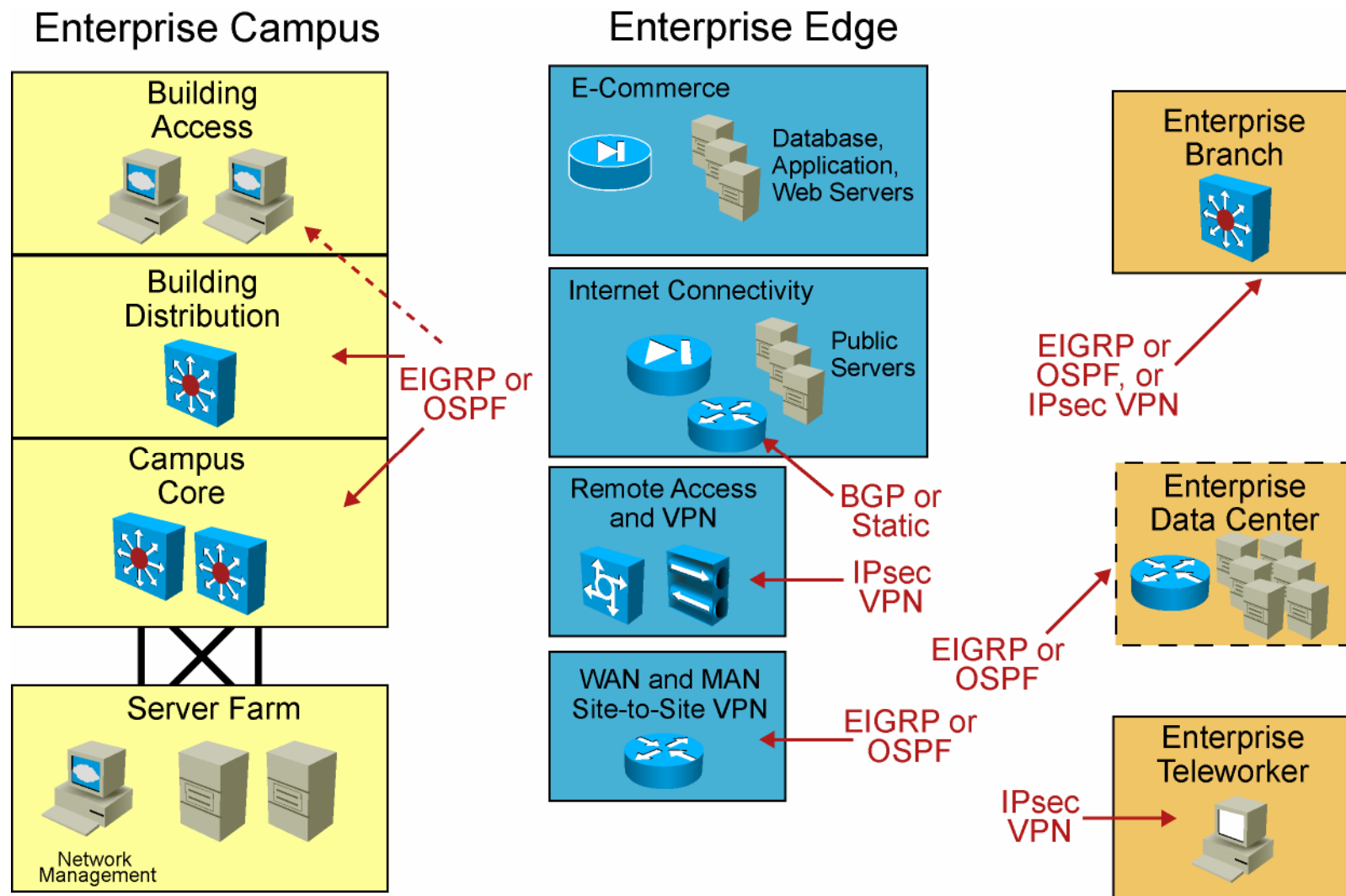


Designing a Routing Protocol Deployment



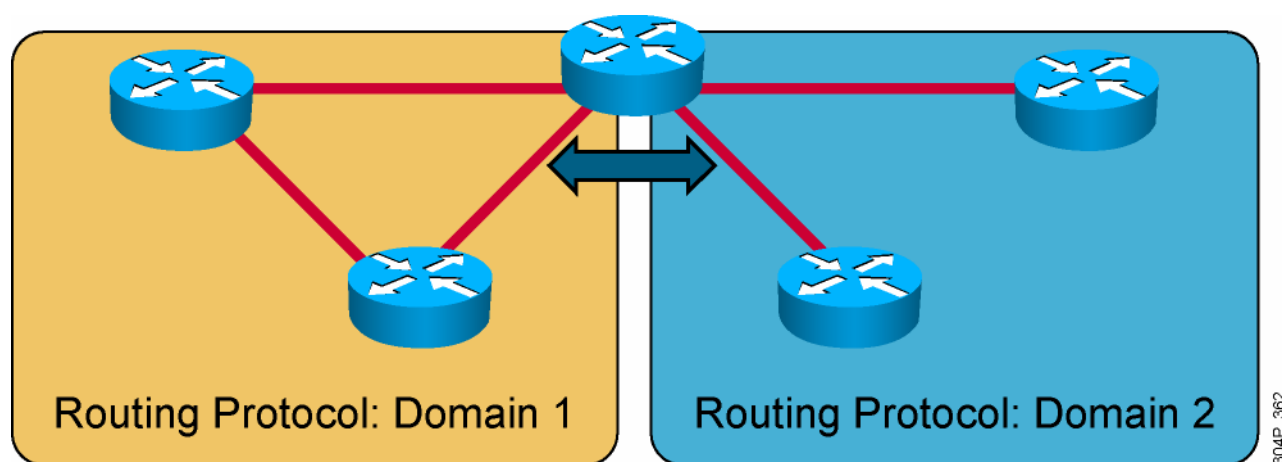
Designing IP Addressing and Selecting Routing Protocols

Routing Protocols in the Enterprise Architecture



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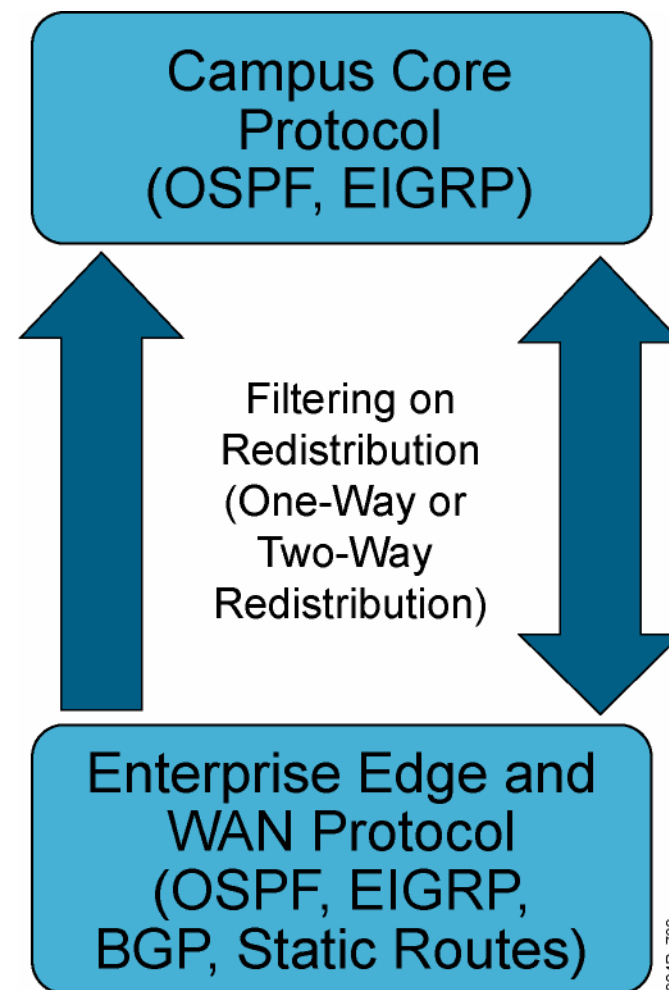
Route Redistribution



Redistribution on routing protocols and domain boundaries occurs on the router.

Route Redistribution Direction

- Redistribution of routing protocols (boundary router)
- One-way redistribution in one direction (for example, from enterprise edge to campus core)
- Two-way redistribution in both directions

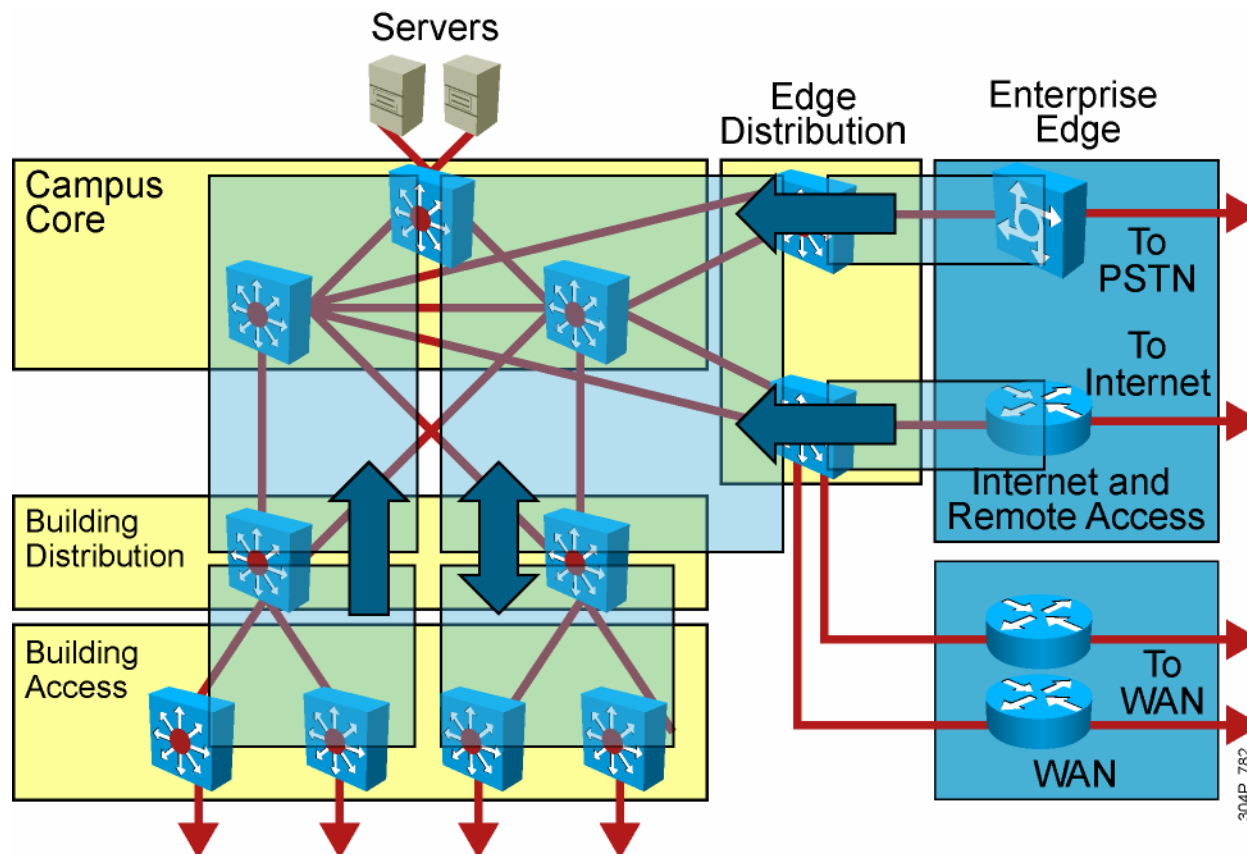


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Route Redistribution in the Enterprise Network

Redistribution:

- From selected building access protocols
- Between campus core and WAN routers
- From static routes to enterprise IGP
- Static routes or BGP routes into enterprise IGP

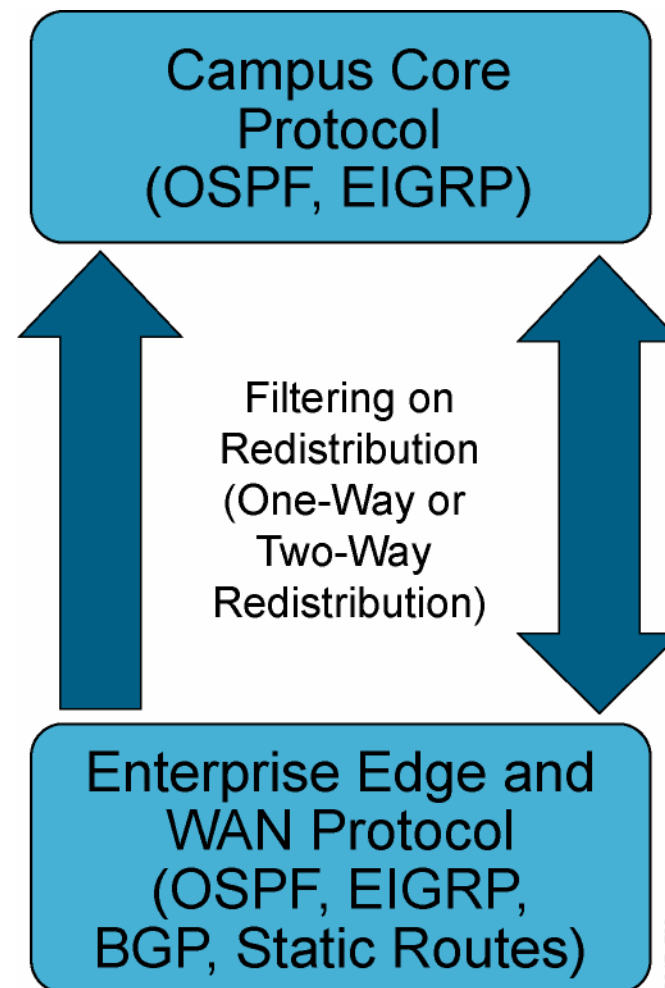


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Route Filtering

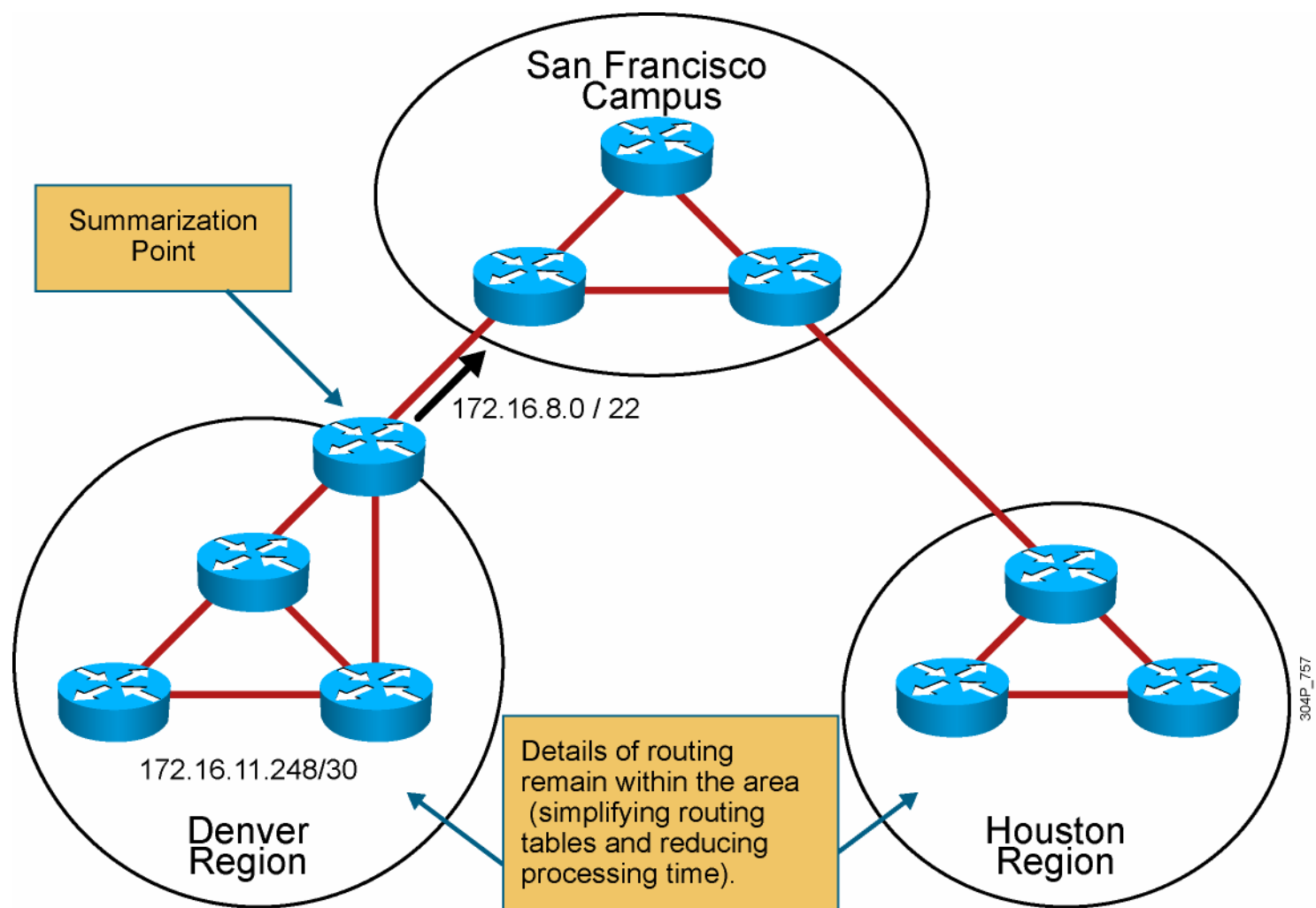
Filtering upon redistribution:

- Avoids routing loops
- Avoids suboptimal routing
- Prevents certain routes from entering routing domain

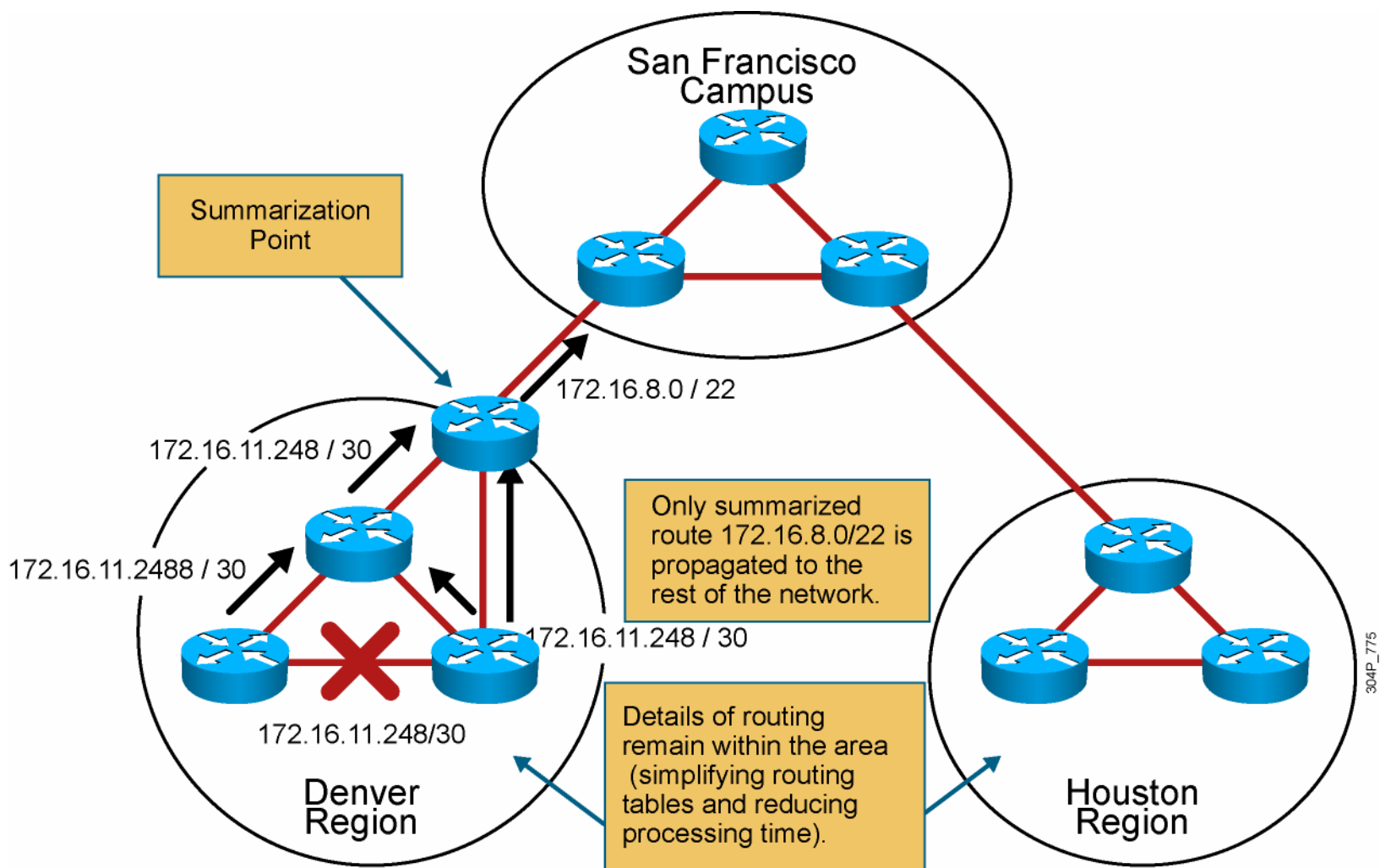


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Route Summarization

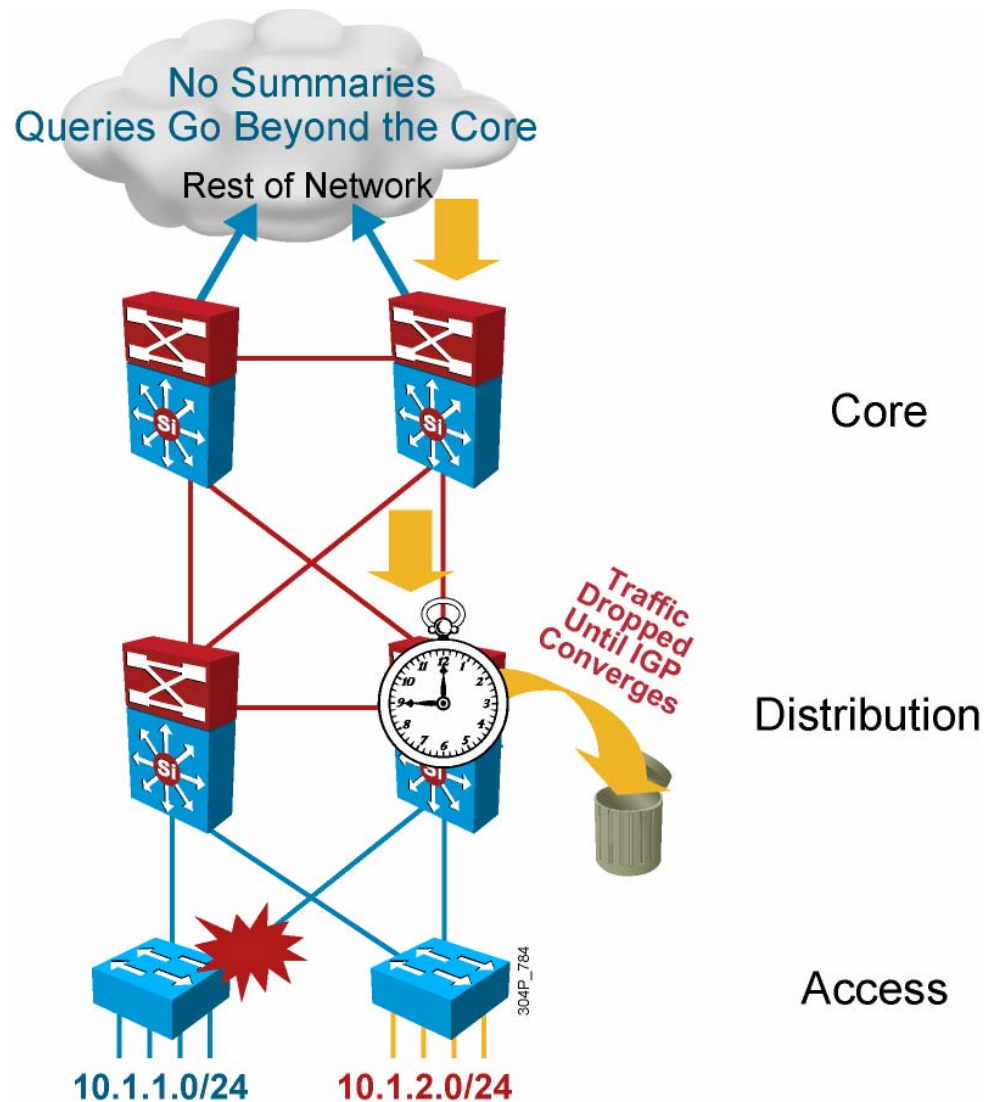


Route Summarization



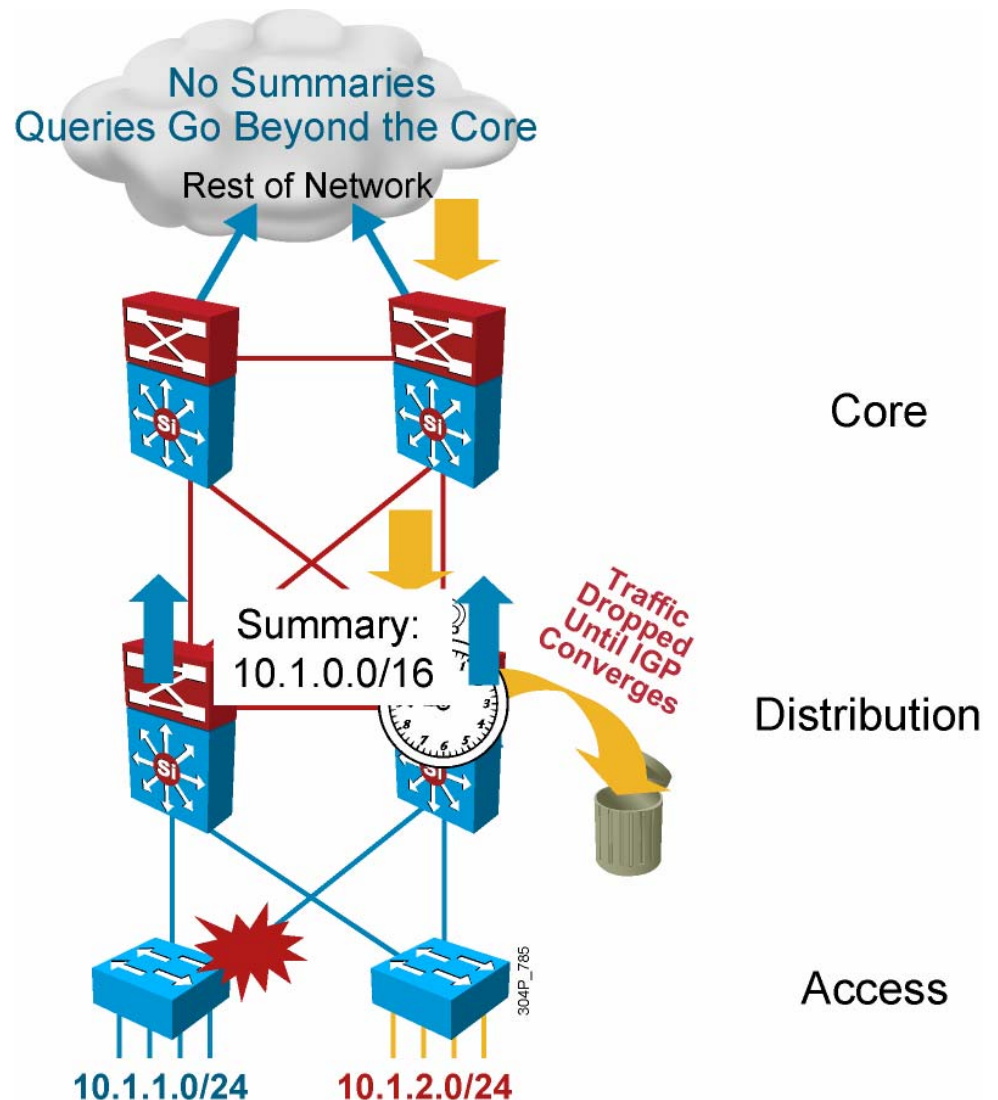
Recommended Practice: Summarize at the Distribution Layer

- It is important to force summarization at the distribution layer toward the core.
- After link failure, for return path traffic, an OSPF or EIGRP reroute is required.



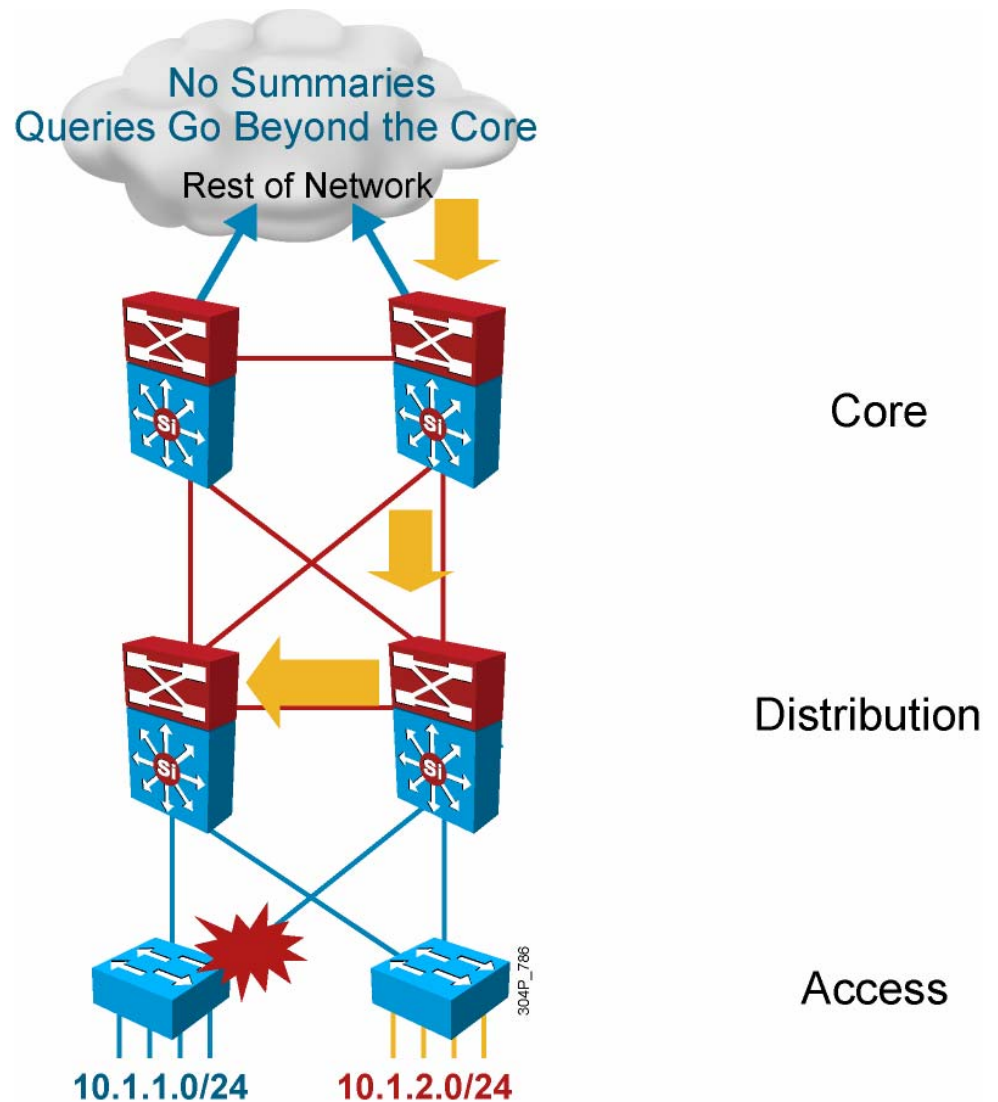
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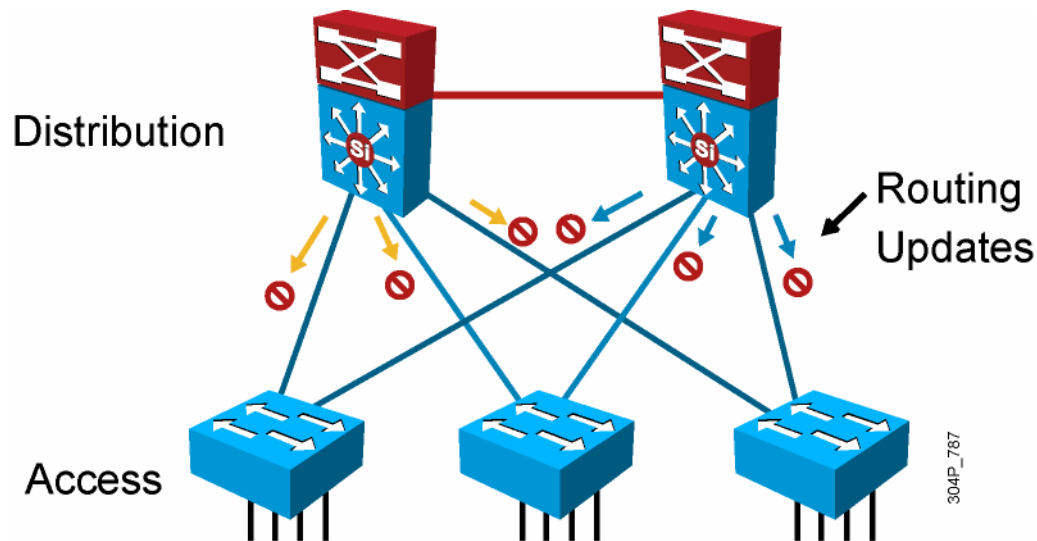


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- After link failure, for return path traffic, an OSPF or EIGRP reroute is required.
- Summaries limit the number of peers an EIGRP router must query or the number of LSAs an OSPF peer must process.
- Summaries allow faster reroutes.



Recommended Practice: Passive Interfaces for IGP at Access Layer



- Limit unnecessary peering
- Without passive interface:
 - With four VLANs per wiring closet
 - 12 adjacencies total
 - Memory and CPU requirements increased with no real benefit
 - Creates overhead for IGP

Summary

- Large networks may implement multiple protocols for different modules of the Cisco Enterprise Architecture.
- Advanced routing features such as redistribution, filtering, and summarization allow multiple routing protocols to coexist and provide greater scalability.
 - Redistribution between different routing protocols passes routing knowledge from one protocol to another.
 - Route filtering prevents advertisement of certain routes through the routing domain.
 - Route summarization and an IP hierarchy reduce routing traffic and unnecessary route recomputation.