

Campus Network Design Workshop

Layer-2 Network Design

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Campus Network Design – Review

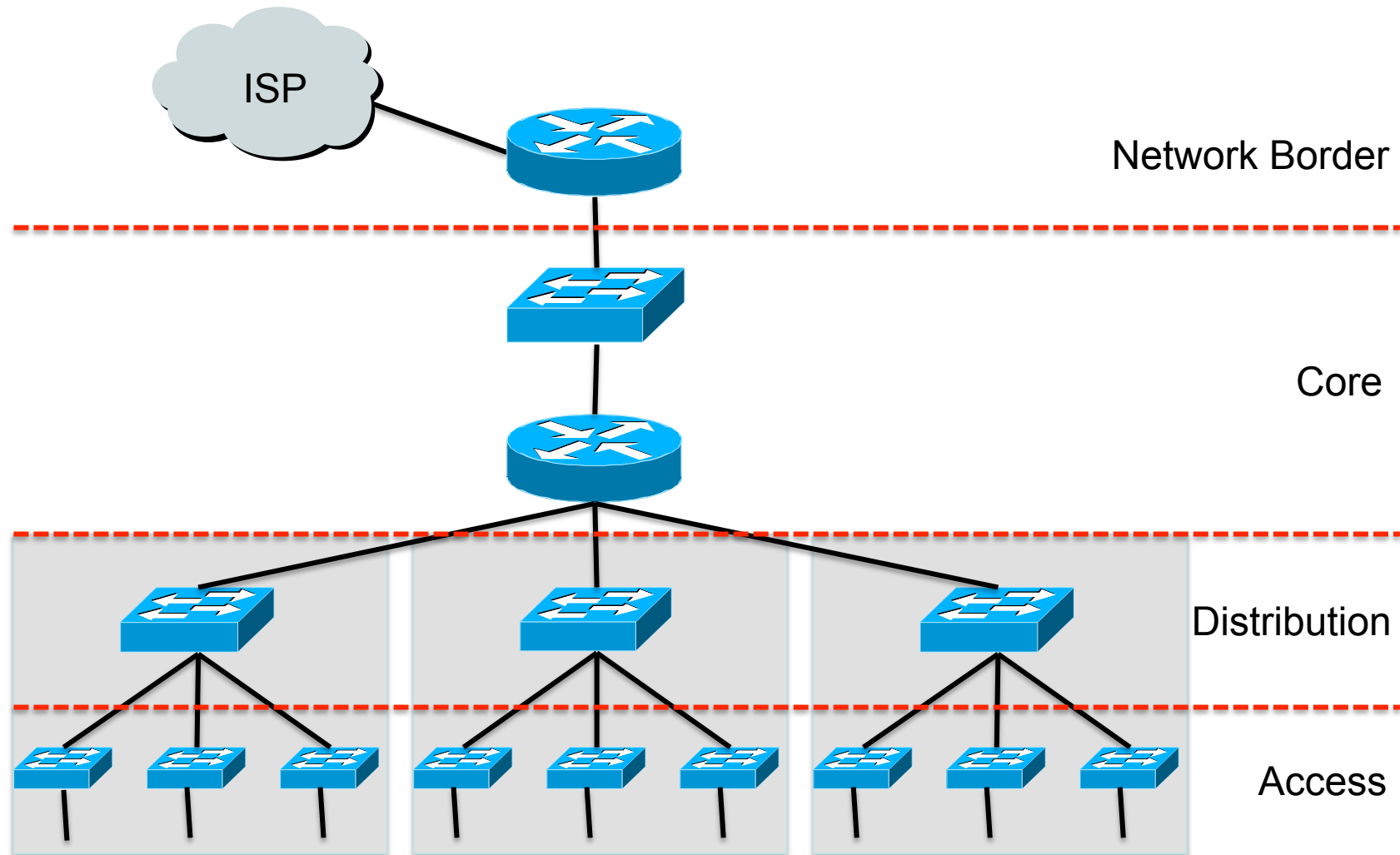
- A good network design is modular and hierarchical, with a clear separation of functions:
 - Core: resilient; few changes or features; high bandwidth; CPU power
 - Distribution: aggregation; redundancy
 - Access: port density; affordability; security features; many adds, moves and changes



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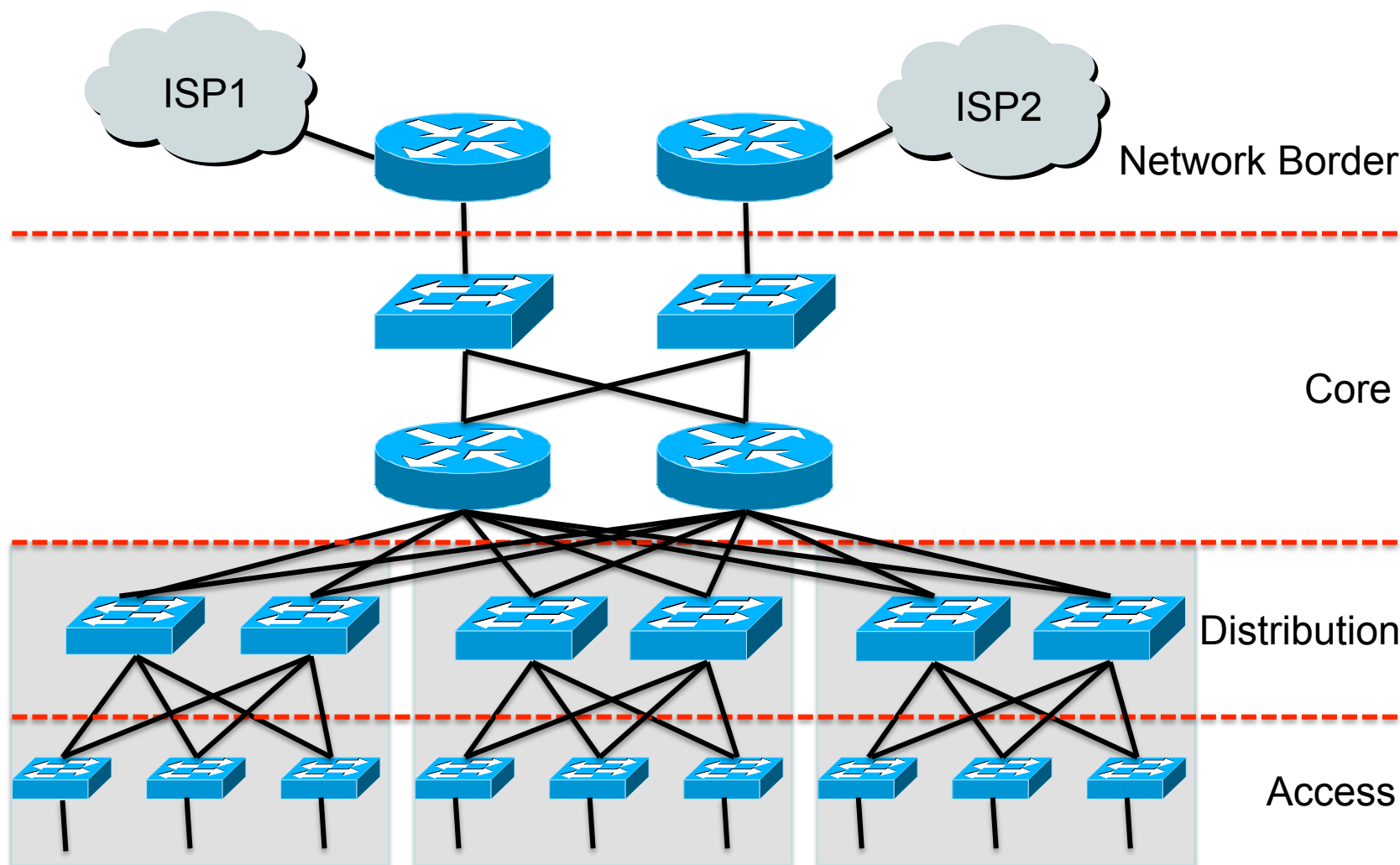
Campus Network Design – Simple



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Campus Network Design – Redundant



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In-Building and Layer 2

- There is usually a correspondence between building separation and subnet separation
 - Switching inside a building
 - Routing between buildings
- This will depend on the size of the network
 - Very small networks can get by with doing switching between buildings
 - Very large networks might need to do routing inside buildings



Layer 2 Network Design Guidelines

- Always connect hierarchically
 - If there are multiple switches in a building, use an aggregation switch
 - Locate the aggregation switch close to the building entry point (e.g. fiber panel)
 - Locate edge switches close to users (e.g. one per floor)
 - Max length for Cat5 is 100 meters (according to TIA/EIA 568-5-A)



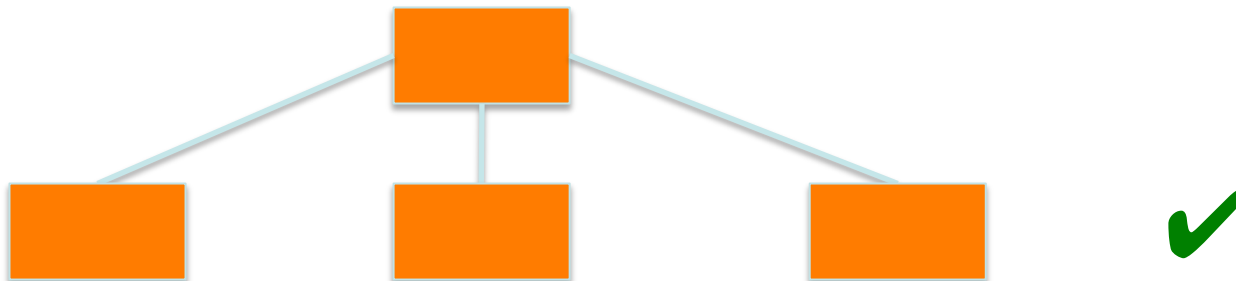
Building Network



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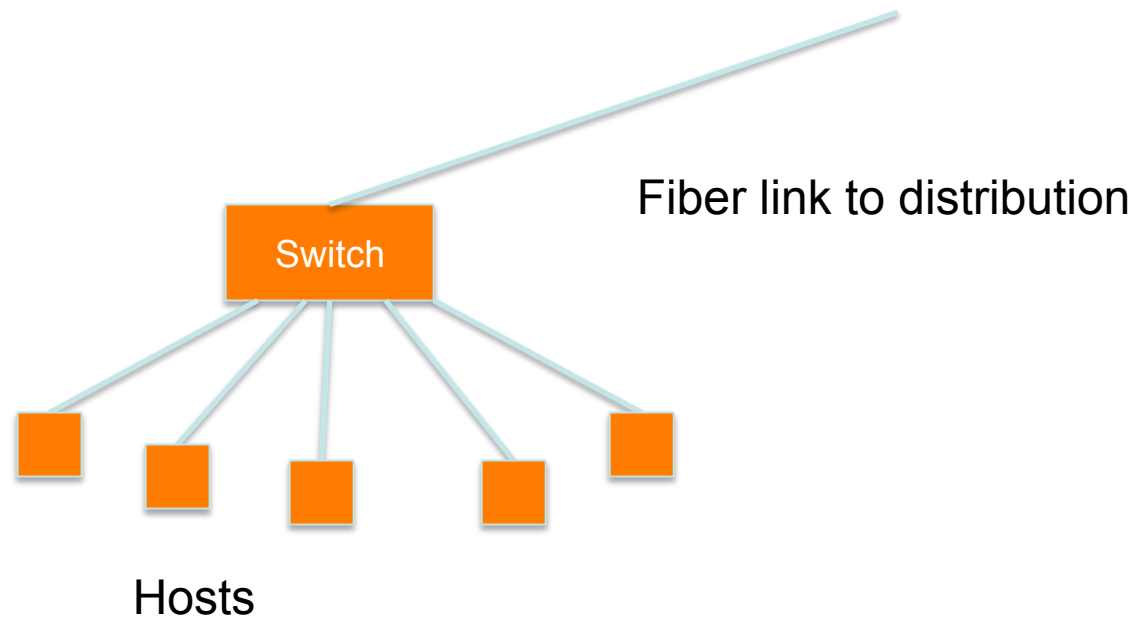


Minimize Path Between Elements



Build Incrementally

- Start small

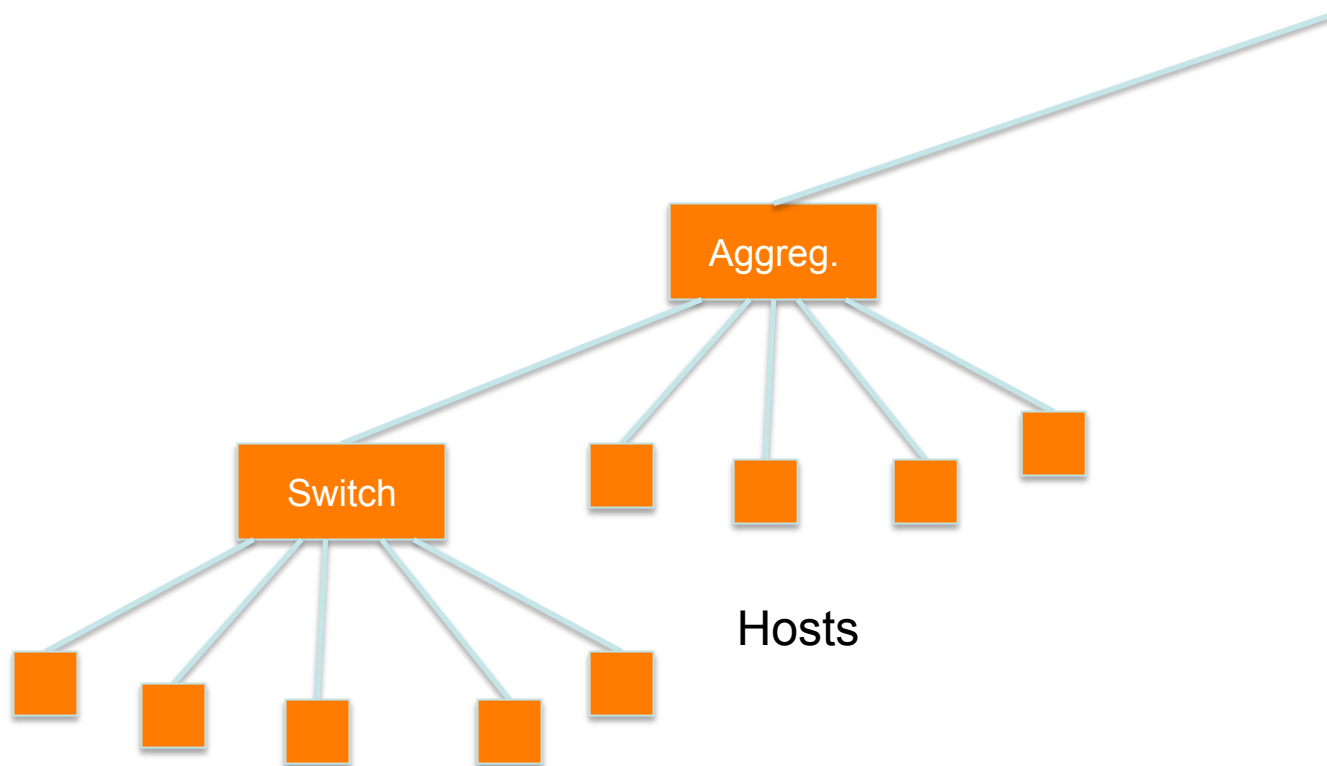


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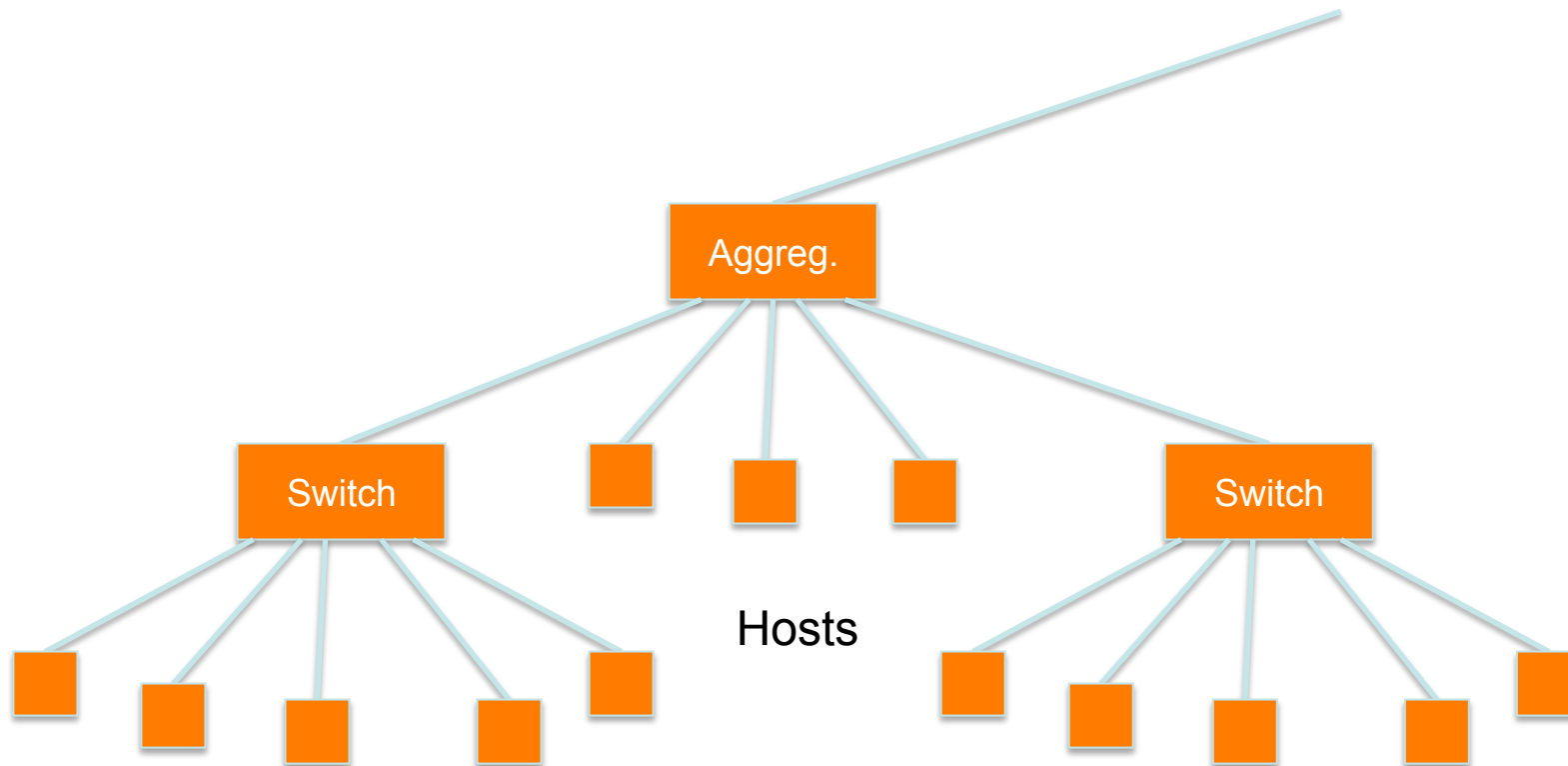
Build Incrementally

- As you have demand and money, grow like this:



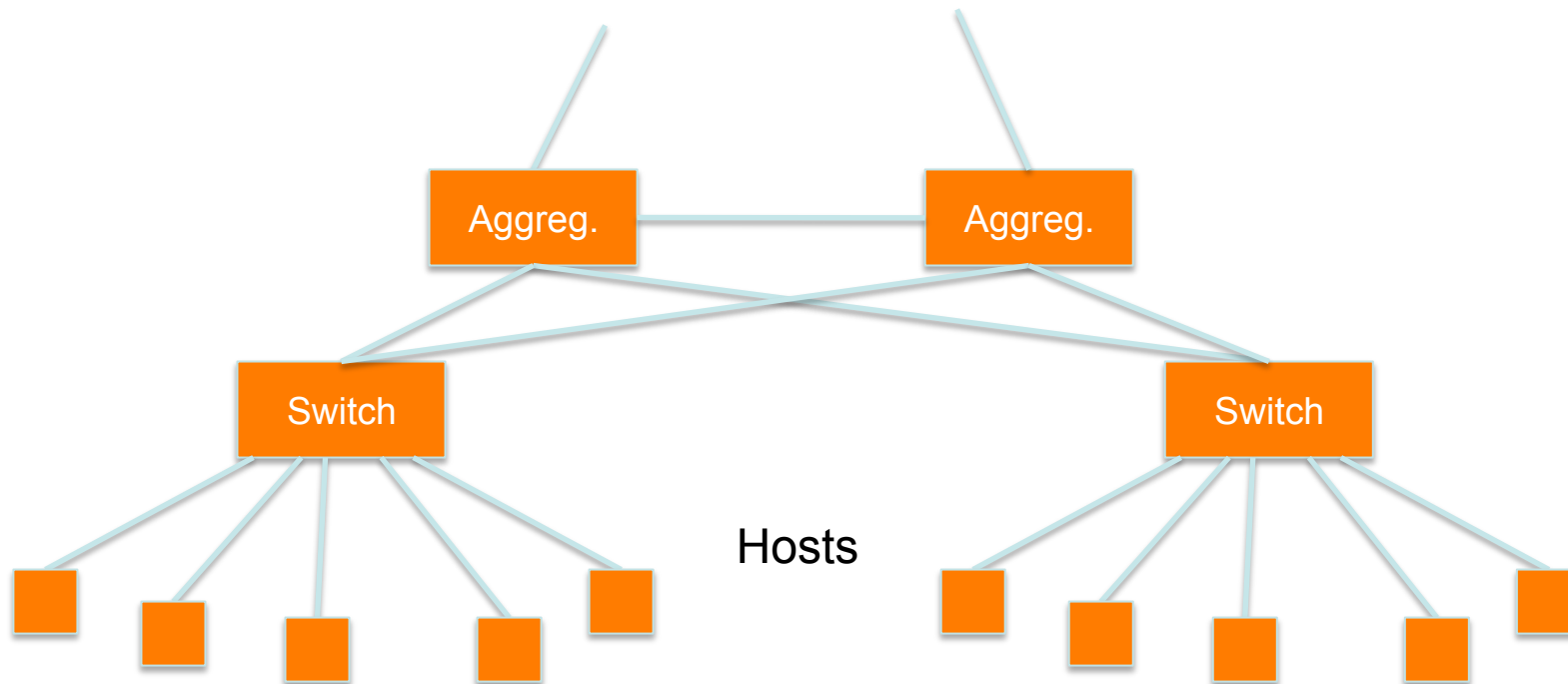
Build Incrementally

- And keep growing within the same hierarchy:



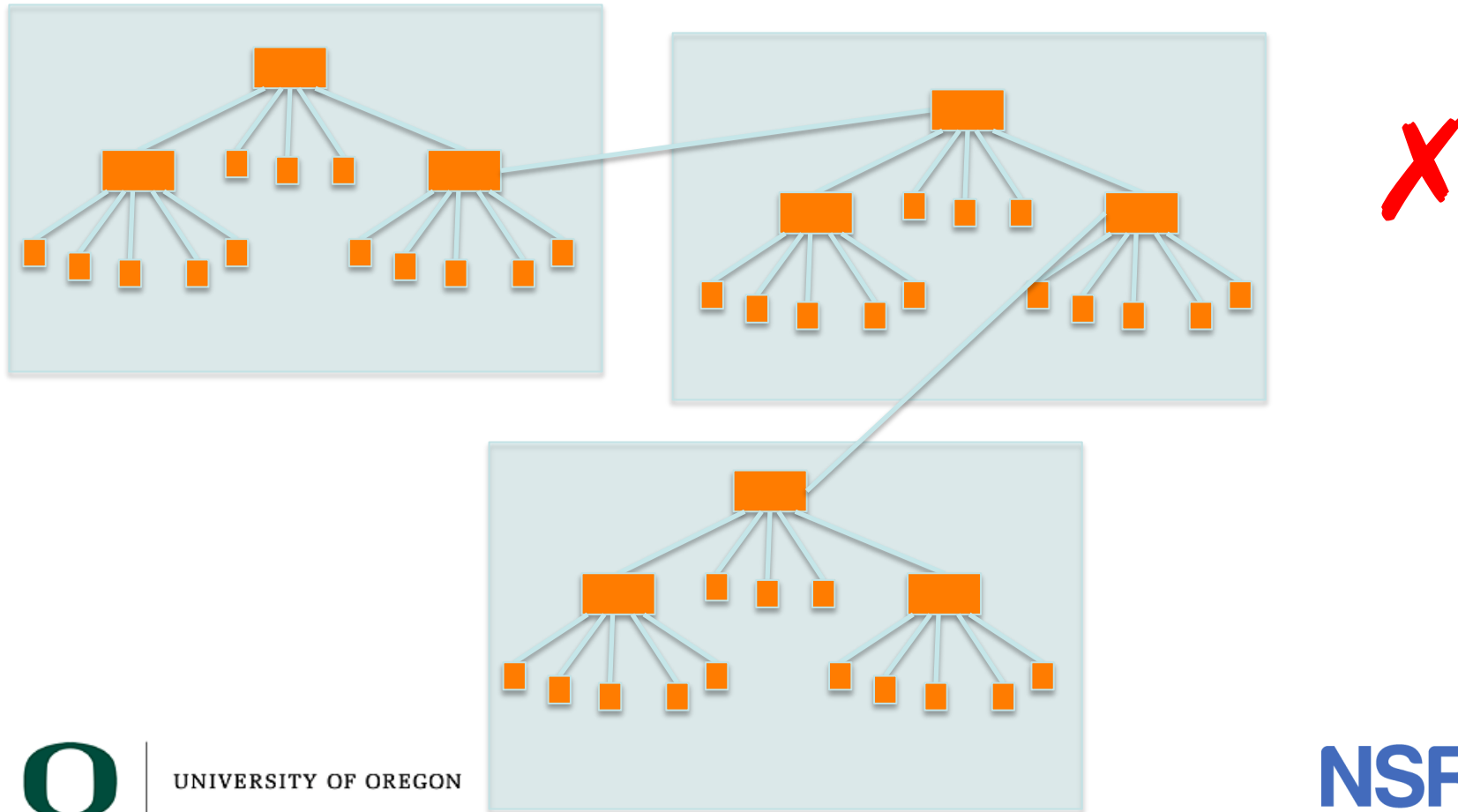
Build Incrementally

- At this point, you can also add a redundant aggregation switch



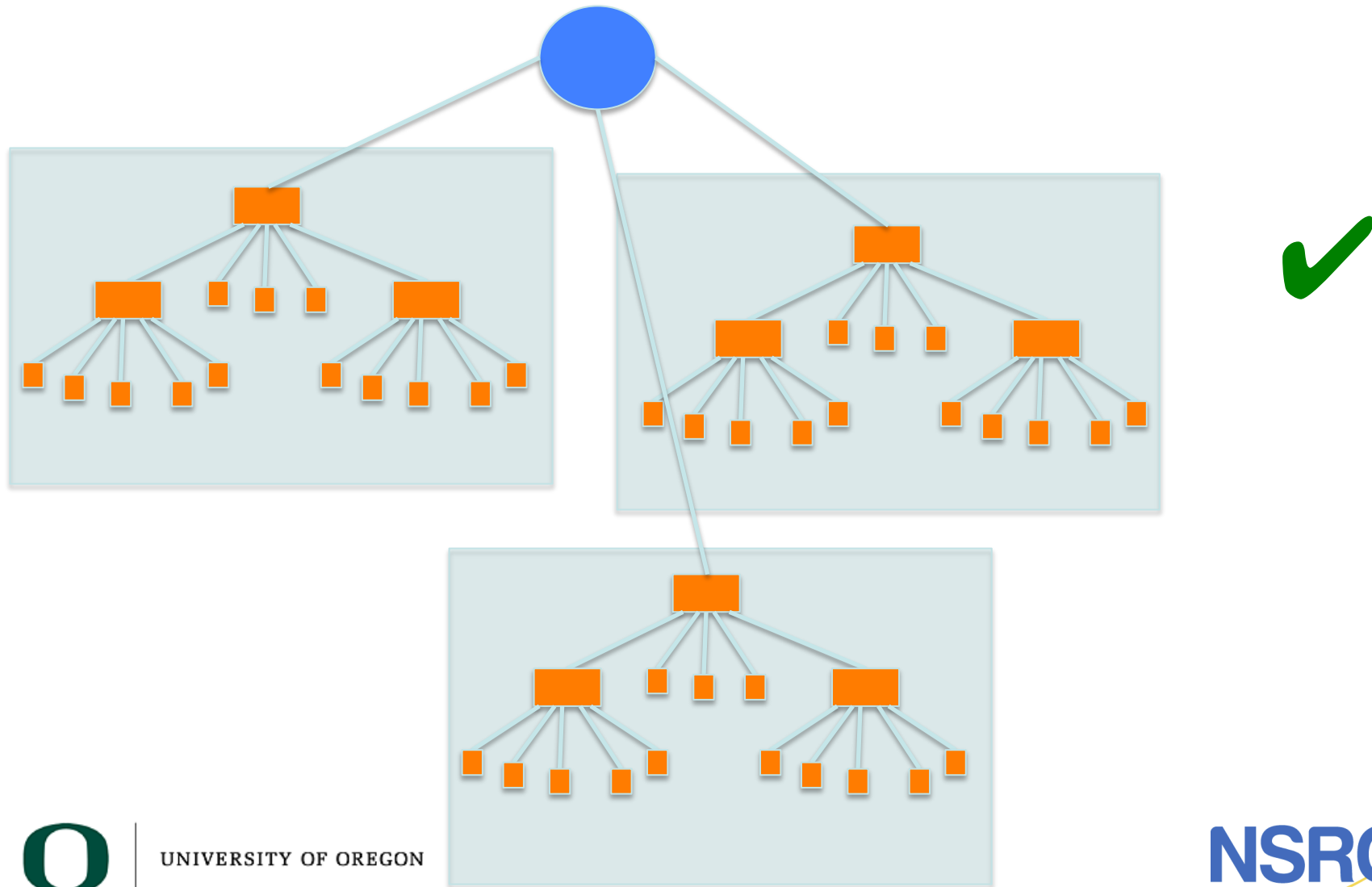
Do not daisy-chain

- Resist the temptation of doing this:



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Connect buildings hierarchically



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Questions?

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