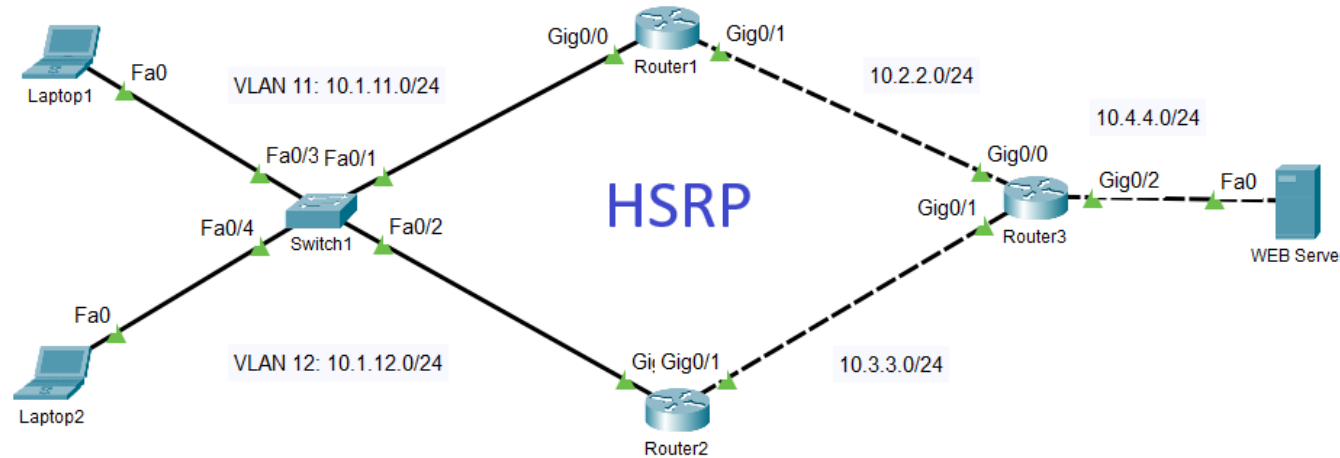


First hop redundancy

Lecture 9



SoftUni Team

Technical Trainers



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Table of Contents

1. What is “First hop redundancy”
2. Hot Standby Routing Protocol (HSRP)
3. Hierarchical design model
4. HSRP and STP
5. Demonstration



Have a Question?

sli.do

#CNA



What is first hop redundancy

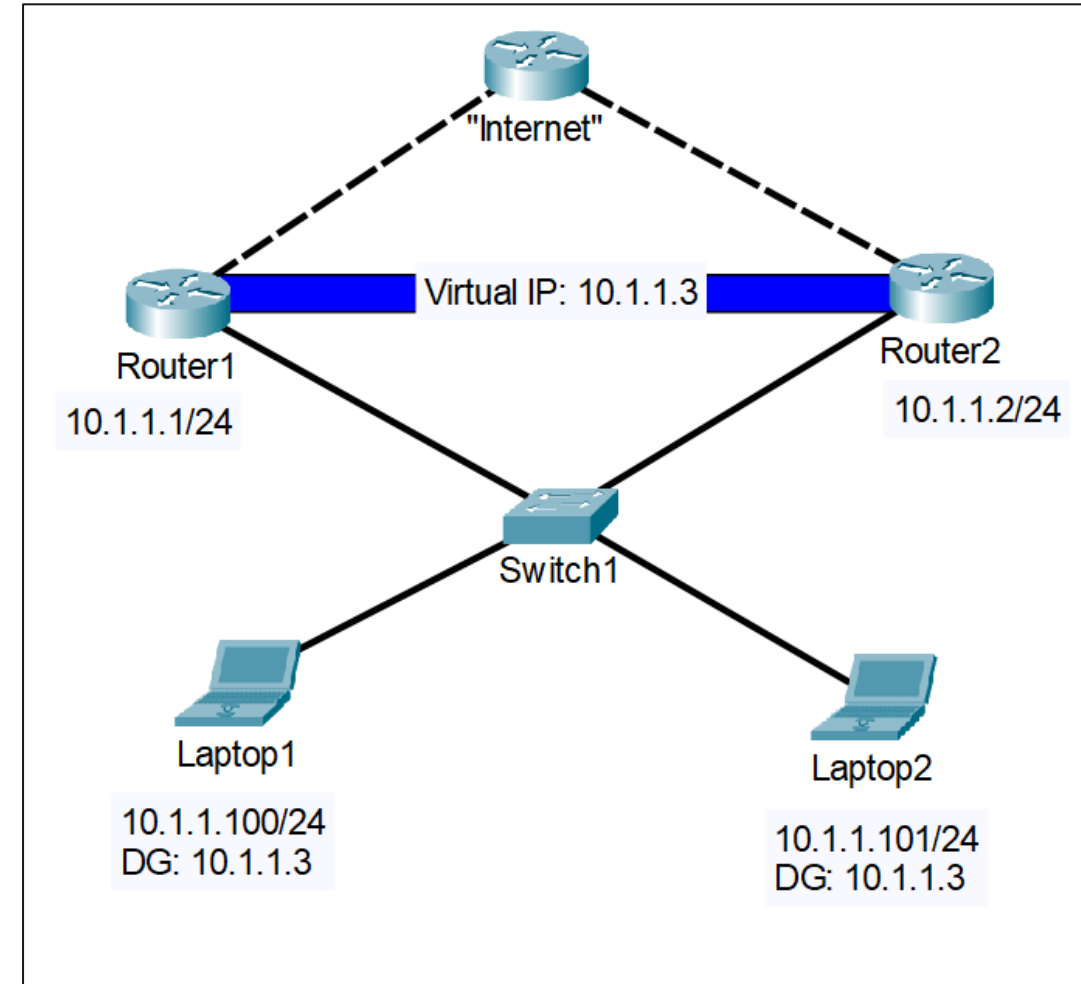
- The end devices (hosts, servers) need a default gateway to reach remote networks or Internet
- If the default gateway is not reachable, the end devices can no longer exit their local segment
- A secondary / backup default gateway option is needed to provide fault tolerance. There are two options:
 - On the client / OS side - causes problems and is not recommended
 - On the router side – usually one IP address is shared between multiple routers. It acts as a default gateway for the end devices



Hot Standby Router Protocol (HSRP)

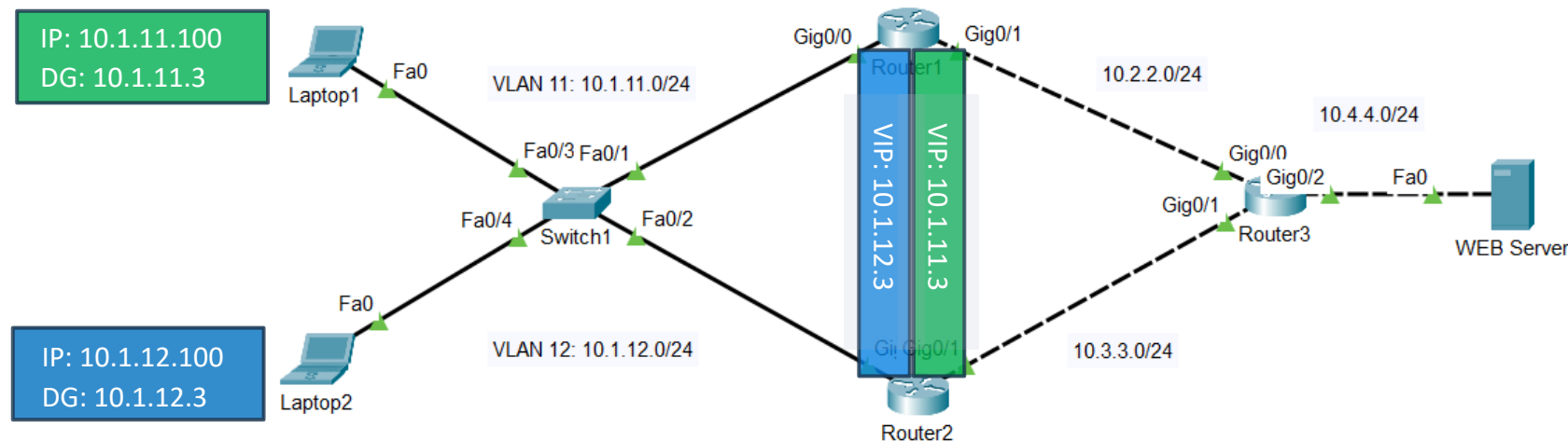
HSRP overview

- HSRP = **H**ot **S**tandby **R**outer **P**rotocol
- Two (or more) routers share one virtual IP (and MAC) address, which is used as default gateway for the clients



- HSRP creates virtual IP and virtual MAC
- One router is active and the others are standby
- Two versions - 1 and 2. No backwards compatible
- HSRP v2 uses 224.0.0.102 as multicast address and UDP port 1985
- Uses “hello” packets to talk to other HSRP enabled routers
 - Default hello timer is 3 seconds
 - Default hold time (dead timer) is 10 seconds
- Load balancing is possible with different HSRP groups (next slide)

- Load balancing is possible with **different HSRP groups**
- In the example below:
 - one HSRP group is configured with Virtual IP of 10.1.11.3 and the active router is R1
 - another HSRP group is configured with Virtual IP of 10.1.12.3 and active router is R2
- In case of one of the routers goes down, the other will handle all the traffic

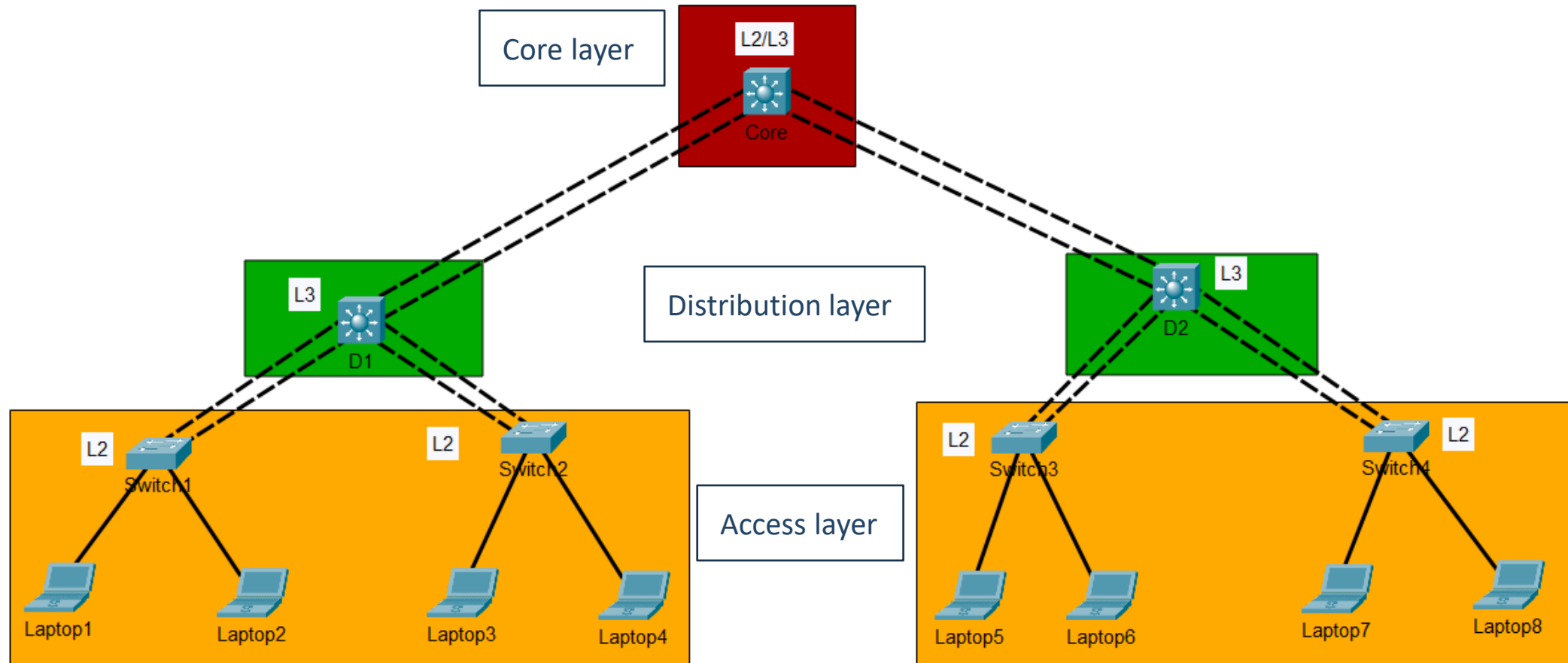


- HSRP is configured per interface
- Example configuration
 - R1:
 - (config-if)#standby version 2
 - (config-if)#standby 1 ip 10.1.1.3
 - (config-if)#standby 1 priority 255
 - (config-if)#standby 1 preempt
 - R2:
 - (config-if)#standby version 2
 - (config-if)#standby 1 ip 10.1.1.3

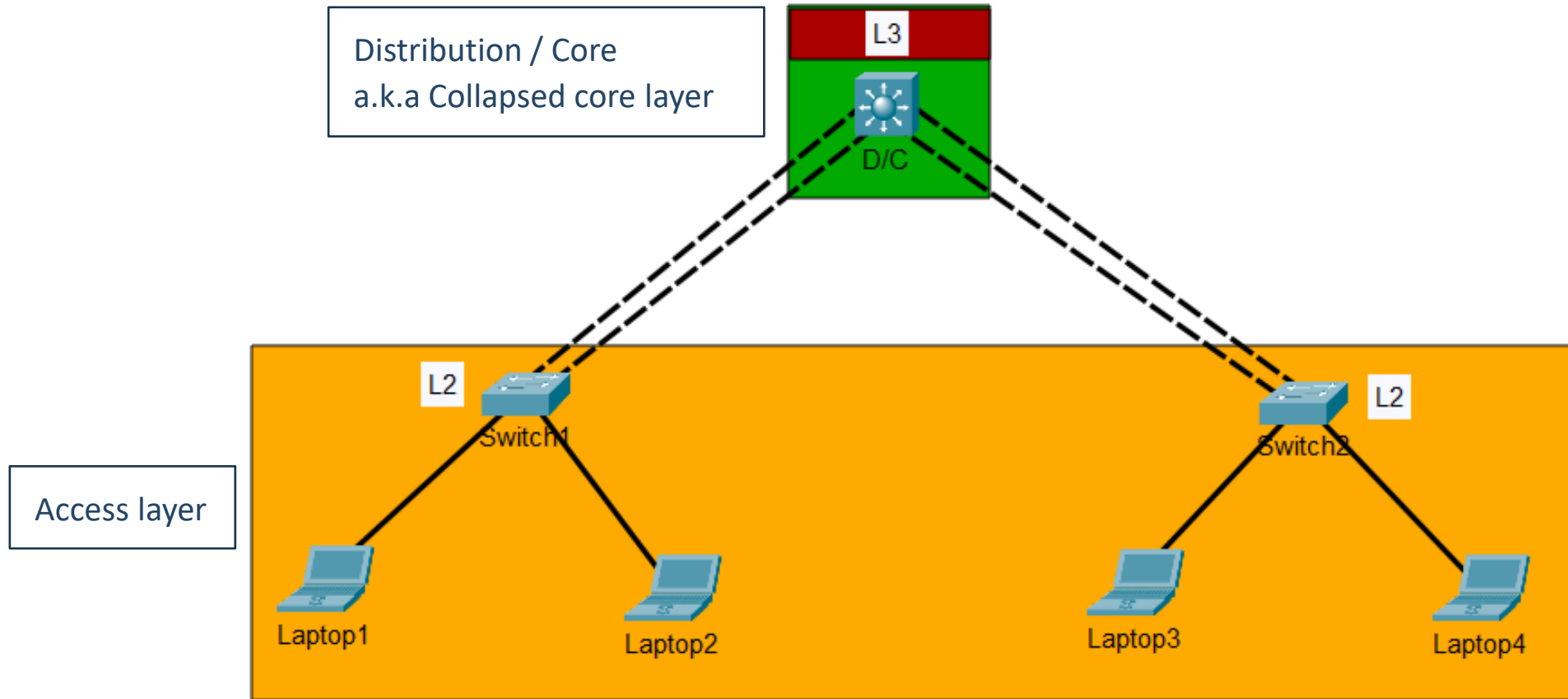


Hierarchical design models

3-tier hierarchical model



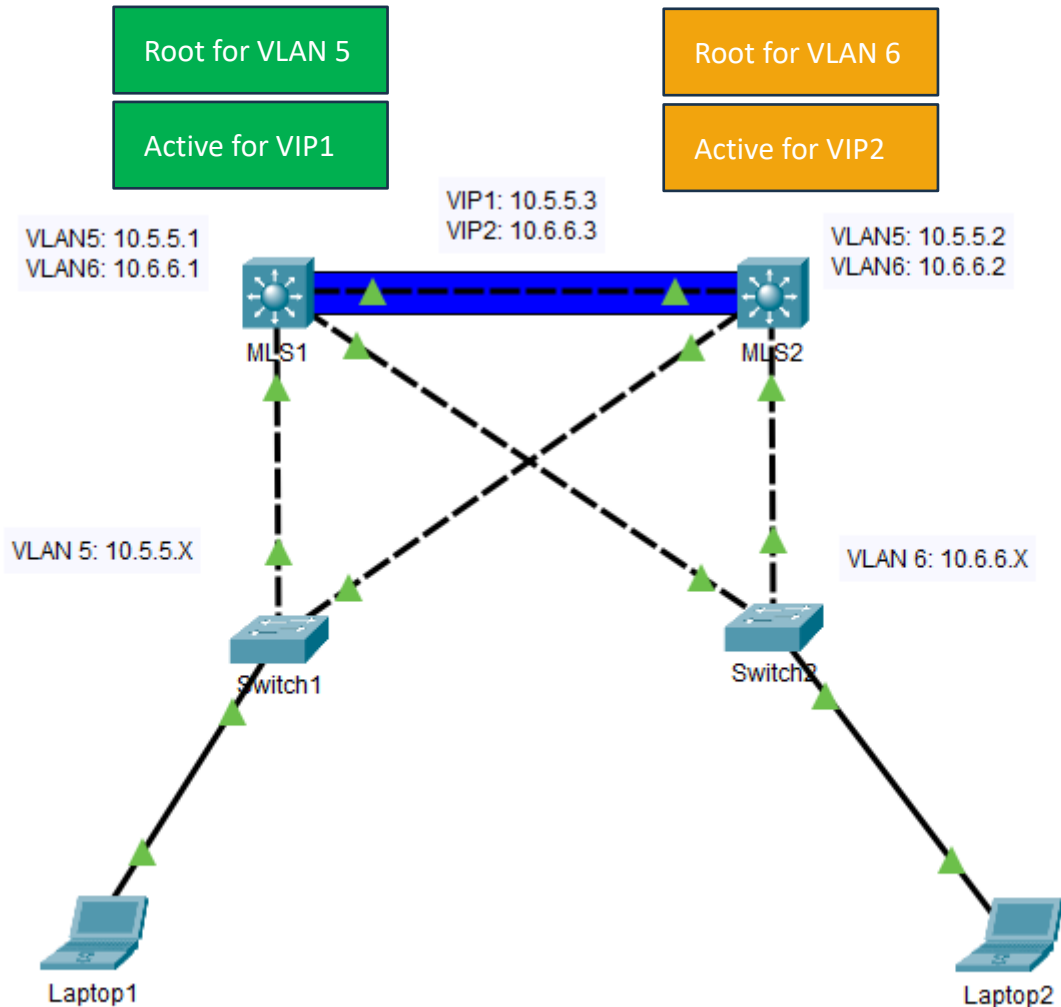
2-tier hierarchical model





HSRP and STP

HSRP and STP



- Load balancing at L2 and L3 during normal operations
- Failover at L2 and L3 during failure of links or distribution devices

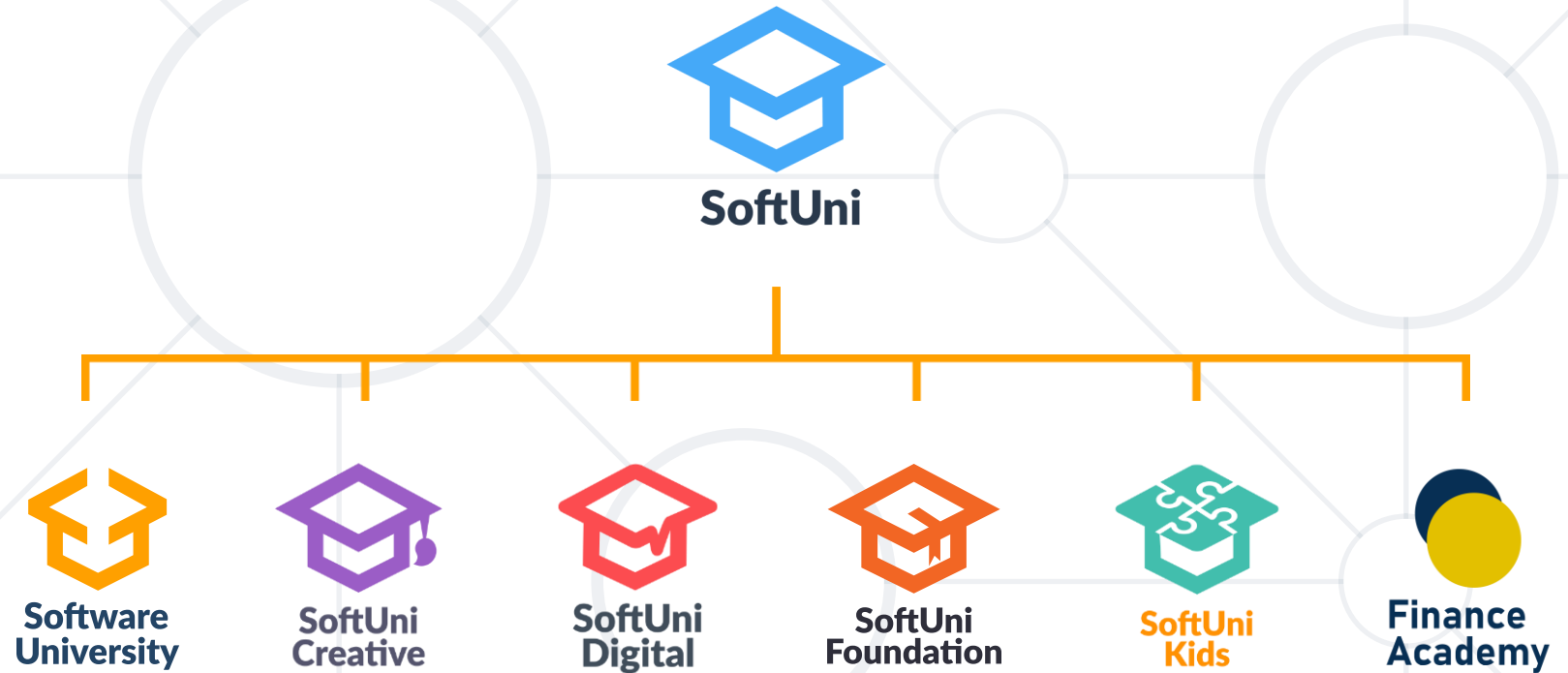


Demonstration

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Questions?



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