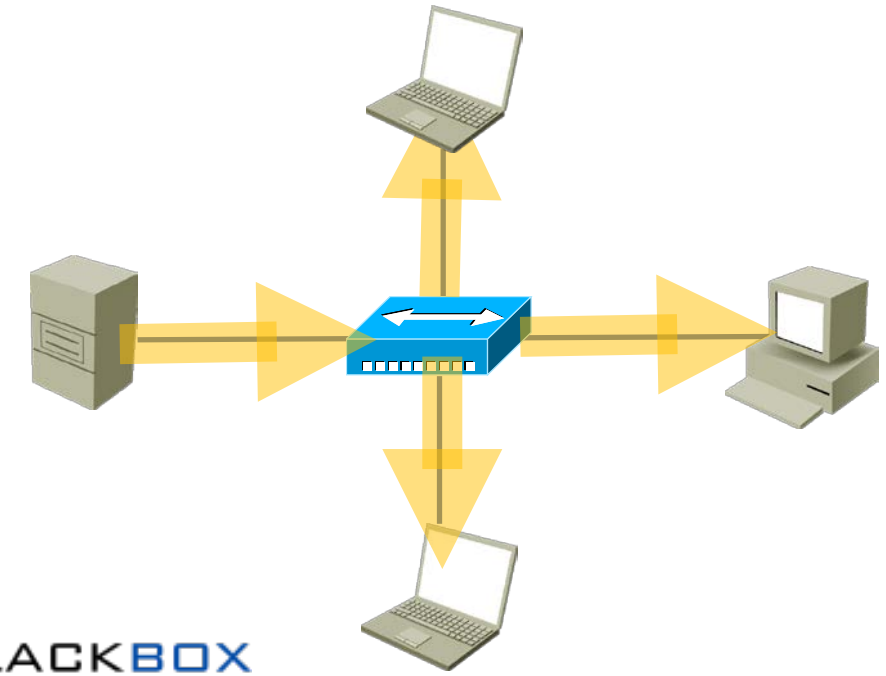
Hubs vs Switches

- Hubs were Layer 1 devices, switches are Layer 2 devices
- When traffic comes in to a hub it is flooded out all other ports
- Switches listen to source MAC addresses and learn which MAC addresses are connected on which port
- When traffic comes in to the switch with a known destination MAC address, it sends it out only the relevant port
- This provides better performance and security

Traffic Monitoring on Hubs

- To monitor the traffic going to and from a host connected to a hub, you can simply plug a device running packet sniffing software (such as Wireshark) in any port on the hub network
- This is useful for doing deep troubleshooting work



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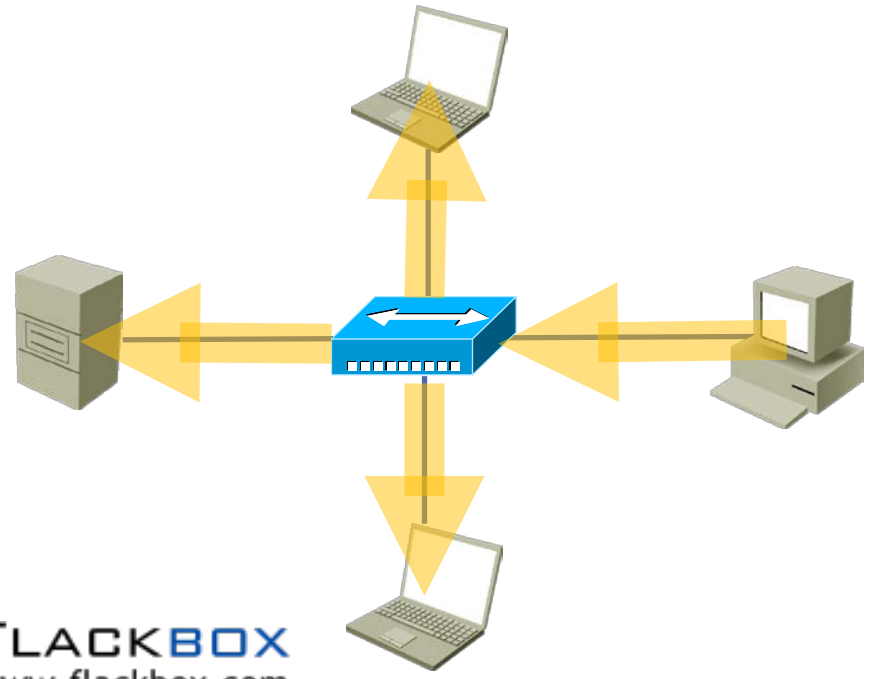
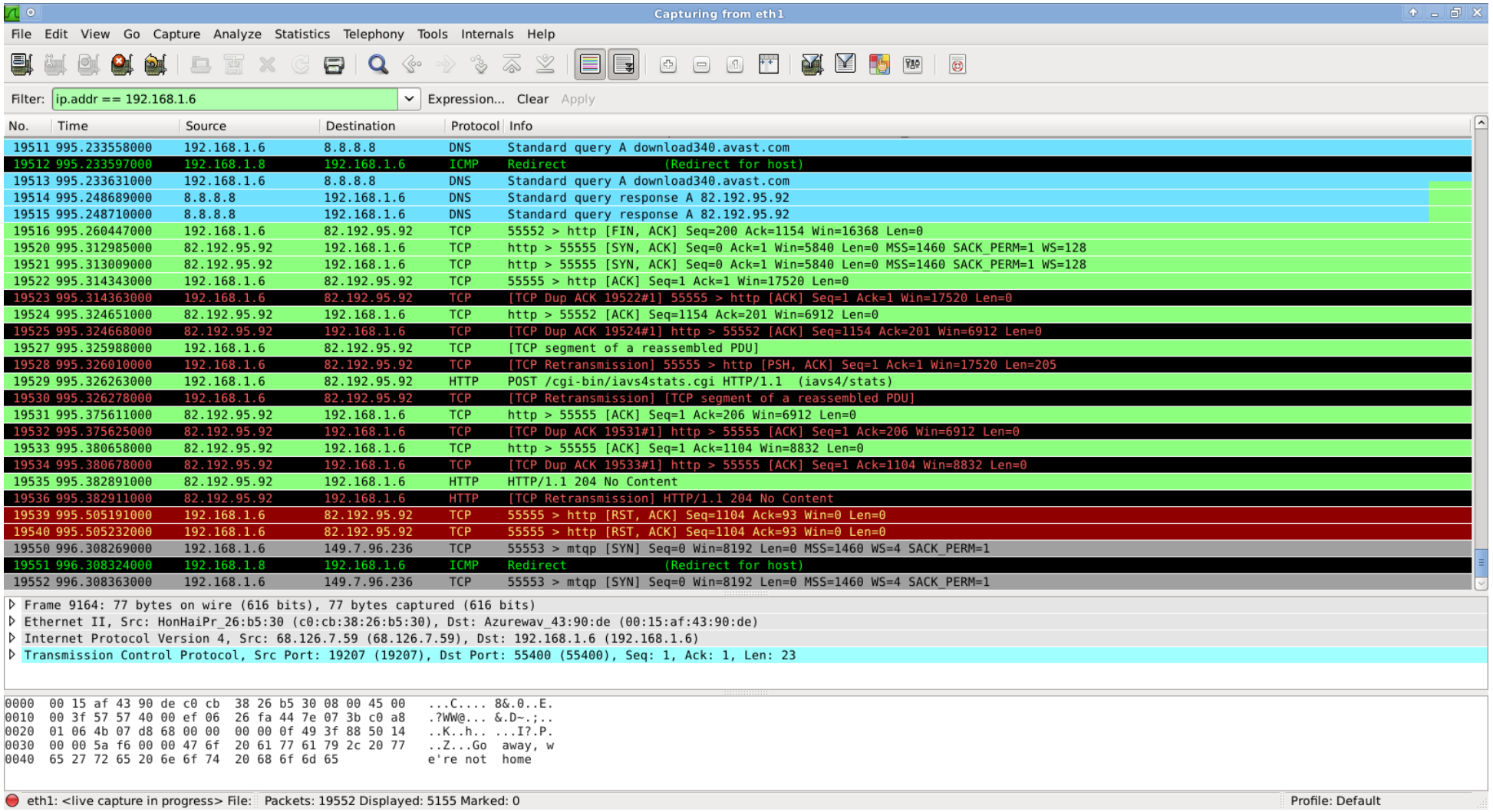


Wireshark



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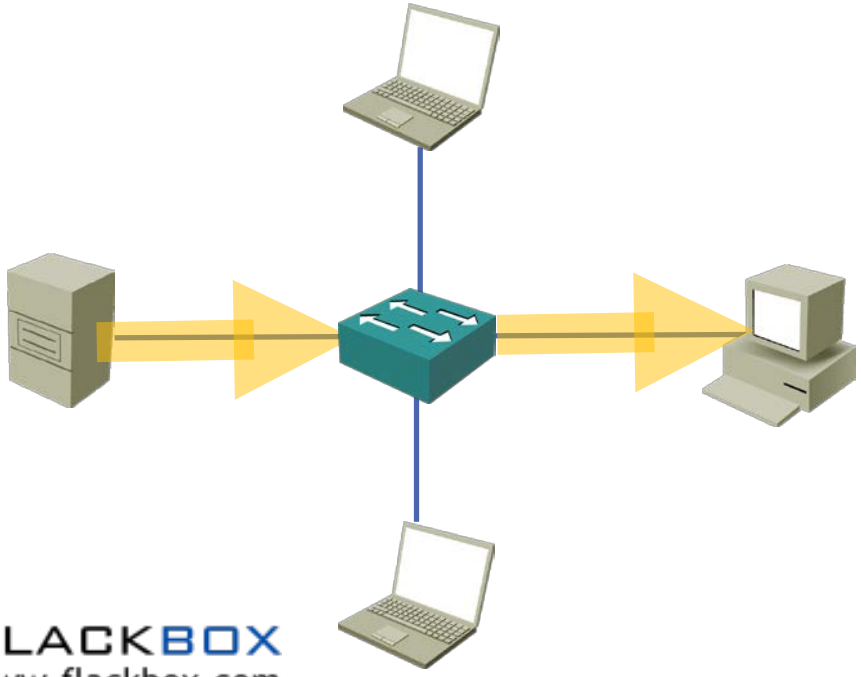

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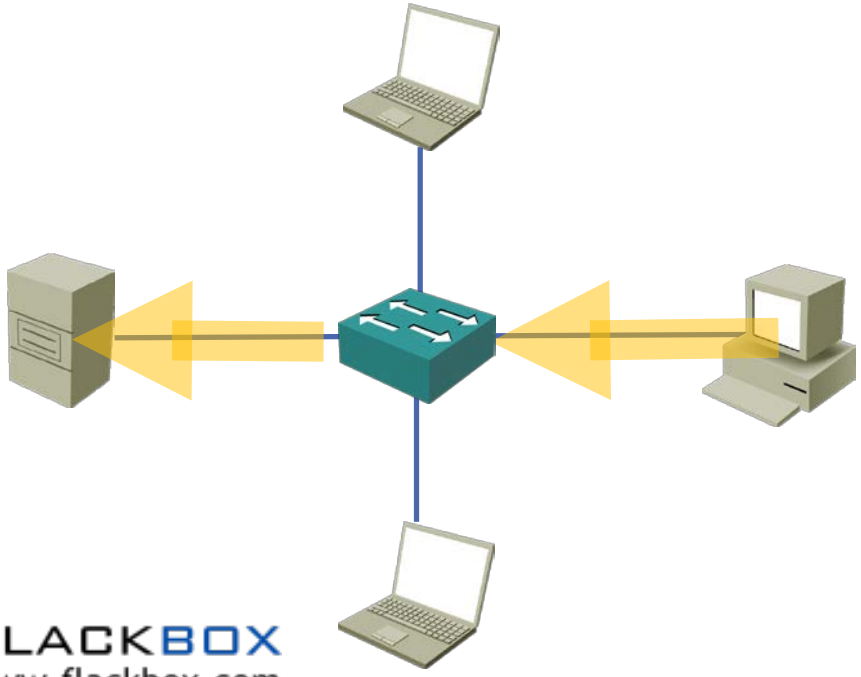
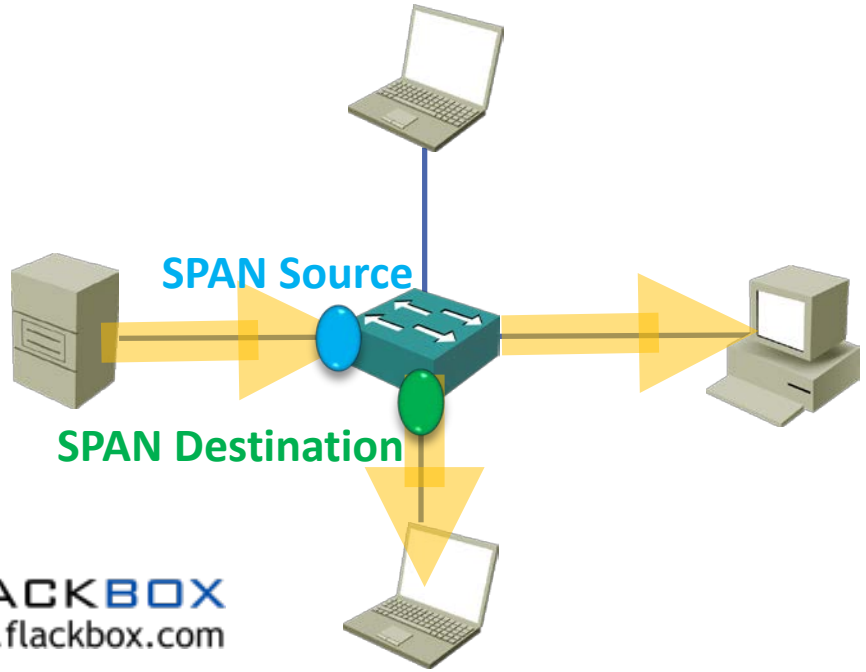


SPAN Switched Port Analyzer

- An administrator can configure SPAN on a switch to send a copy of the traffic sent and/or received on a source to another port
- The source can be a physical port, an EtherChannel, or an entire VLAN
- The destination is a physical port



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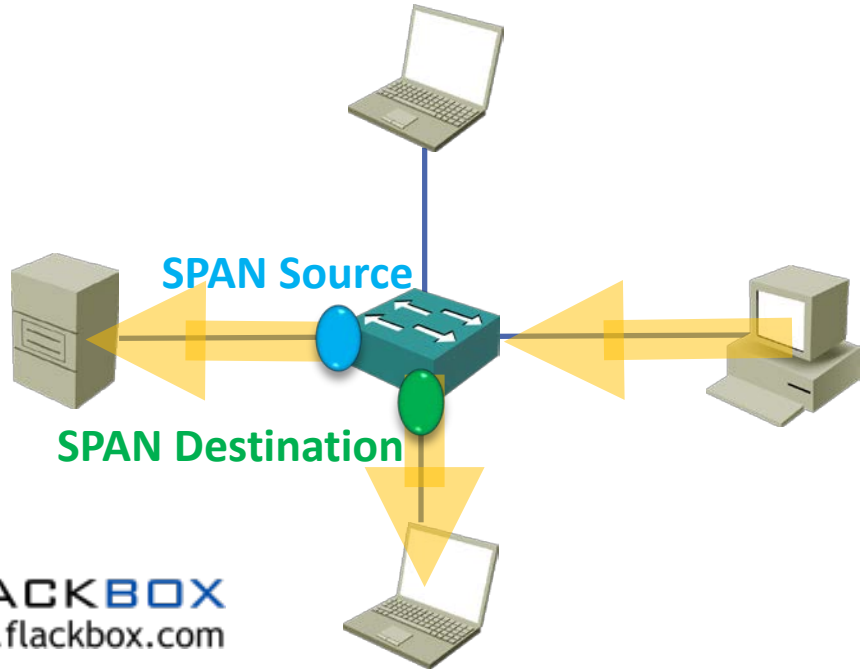

SPAN, RSPAN and ERSPAN

- With SPAN the source and destination port must be on the same switch
- With RSPAN (Remote SPAN) the source and destination ports can be on different switches in the same Layer 2 network
- With ERSPAN (Encapsulated RSPAN) the source and destination ports can be on different switches across a Layer 3 network

SPAN Configuration

```
SW1(config)#monitor session 1 source interface FastEthernet0/1
SW1(config)#monitor session 1 destination interface FastEthernet0/2

SW1#show monitor
Session 1
---------
Type : Local Session
Description : -
Source Ports :
Both : Fa0/1
Destination Ports : Fa0/2
Encapsulation : Native
Ingress : Disabled
```