Agenda

• Switching 101
• Routing 101
• Packet Tracer
Agenda

Switching 101
Layer 2 switching uses the media access control address (MAC address) from the host's network interface cards (NICs) to decide where to forward frames. Layer 2 switching is hardware based, which means switches use special chips called application-specific integrated circuit (ASICs) to build and maintain filter tables (also known as MAC address tables or Content Addressable Memory or CAM tables).
Switching 101
Smallville

House A

House B

Same Local Zipcode

YourTown Post Office
Largeville

House A

House B

Same Local Zipcode

Smallville Post Office
Switching 101

Network Switch – Neighborhood with Streets and Mailboxes

<table>
<thead>
<tr>
<th>Port</th>
<th>Link</th>
<th>IP Address</th>
<th>IPv6 Address</th>
<th>MAC Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>FastEthernet0</td>
<td>Up</td>
<td>10.1.2.2/24</td>
<td>&lt;not set&gt;</td>
<td>0001.42D7.320B</td>
</tr>
</tbody>
</table>

Gateway: 10.1.2.1
DNS Server: <not set>
Line Number: <not set>
Physical Location: Intercity, Home City, Corporate Office, Main Wiring Closet

MAC Table for MFHS Core Switch

<table>
<thead>
<tr>
<th>VLAN</th>
<th>Mac Address</th>
<th>Port</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0001.C7E5.0901</td>
<td>GigabitEthernet1/1</td>
</tr>
<tr>
<td>2</td>
<td>0001.42D7.320B</td>
<td>FastEthernet0/1</td>
</tr>
<tr>
<td>2</td>
<td>0001.63D1.814C</td>
<td>FastEthernet0/2</td>
</tr>
<tr>
<td>2</td>
<td>0001.C7E5.0901</td>
<td>GigabitEthernet1/1</td>
</tr>
<tr>
<td>3</td>
<td>0001.C7E5.0901</td>
<td>GigabitEthernet1/1</td>
</tr>
<tr>
<td>3</td>
<td>030.F296.91EC</td>
<td>FastEthernet0/24</td>
</tr>
</tbody>
</table>

ARP Table for MFHS Laptop1

<table>
<thead>
<tr>
<th>IP Address</th>
<th>Hardware Address</th>
<th>Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.1.2.1</td>
<td>0001.C7E5.0901</td>
<td>FastEthernet0</td>
</tr>
<tr>
<td>10.1.2.2</td>
<td>0001.42D7.320B</td>
<td>FastEthernet0/2</td>
</tr>
</tbody>
</table>

ARP Table for MFHS Laptop2

<table>
<thead>
<tr>
<th>IP Address</th>
<th>Hardware Address</th>
<th>Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.1.2.1</td>
<td>0001.C7E5.0901</td>
<td>FastEthernet0</td>
</tr>
<tr>
<td>10.1.2.2</td>
<td>0001.42D7.320B</td>
<td>FastEthernet0/2</td>
</tr>
</tbody>
</table>

MFHS Laptop1

MFHS Laptop2
Routing 101
Routing 101

Network Router – Connect the Neighborhoods

A router is a device that forwards data packets between computer networks. It is connected to two or more data lines from different networks and when a data packet comes in one of the lines, the router reads the address information in the packet to determine its ultimate destination. Then, using information in its routing table, it directs the packet to the next network on its journey. Routers perform the "traffic directing" functions on the Internet.
Routing 101

Network Router – Connect the Neighborhoods

Starbucks

MFHS

HSH

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Smallville to Largeville

No Local Zipcode
Local Zipcode

Router

No Local Zipcode
Thank you.