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DESIGN THE STAR TOPOLOGY IN NETWORKING. FEASIBLE SOLUTION WITH CISCO

Packet Tracer is a protocol simulator developed by Dennis Frezzo and his team at Cisco Systems. Packet Tracer (PT) is a powerful and dynamic tool that displays the various protocols used in networking, in either Real Time or Simulation mode. This includes layer 2 protocols such as Ethernet and PPP, layer 3 protocols such as IP, ICMP, and ARP, and layer 4 protocols such as TCP and UDP. Routing protocols can also be traced.

INTRODUCTION

This investigation can be used as the lab examples and possible networking design of the new student laboratory.This lab assumes some understanding of the Ethernet protocol. At this article we have not discussed other protocols, but will use Packet Tracer in later labs to discuss those as well.

A star topology is designed with each node (like workstations, printers, laptops, servers etc.) connected directly to a central device called as a network switch. Each workstation has a cable that goes from its network card to a network switch.

Most popular and widely used LAN technology Ethernet currently operates in Star Topology. Advantages of Star Topology: easy to install and wire no disruptions to the network when connecting or removing devices, easy to detect faults and to remove parts.

Disadvantages of Star Topology: requires more cable length than a linear bus topology. If the connecting network device (network switch) fails, nodes attached are disabled and cannot participate in network communication. It's more expensive than linear bus topology because of the cost of the connecting devices (network switches). To connect devices it was used a hub and a switch, we will use a cross-over cable.

I. STAR TOPOLOGY

How to best explain this topology is paying attention to the central device used which is known as a hub. A hub is a common connection point for devices in a network. Hubs are commonly used to connect segments of a LAN. A hub contains multiple ports. The star topology diagram is in the scheme 1.

There have applied the switches (2960), wireless devices (WRT300N), hub-PT, end devices werPC, laptop, server etc. When all configurations have been done the copy from the running-config1. to startup-config, which will save it even after the switch is rebooted. Then it is possible verifying connectivity in Simulation Mode

At first all events like ICMP, TCP, IPsec, HTML, FTP etc. were all checked meaning they will be carried out, so it clicked on show all/none button to uncheck all.The show all/none button goes both ways, it can either be all been checked or none.It had used the Internet Control Message Protocol. ICMP is a network-layer Internet protocol that provides message packets to report errors and other information regarding IP packet processing back to the source. ICMP is documented in RFC 792.The version of ICMP for Internet Protocol version 4 is also known as ICMPv4, as it is part of IPv4. IPv6 has an equivalent protocol, ICMPv6.Best known for its use by the "ping"and "traceroute"programs on IP enabled hosts/devices.
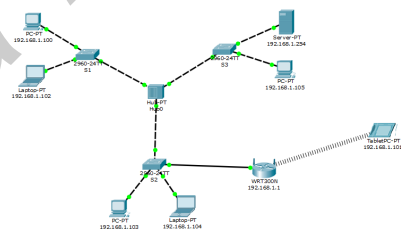

Рис. 1 – Star topology

Next test is using the PDU (Protocol Data Unit). This protocol data unit is information delivered as a unit among peer entities of networks containing control information, address information or data. In layered systems, PDU represents a unit of data specified in the protocol of a given layer, which consists of protocol control information and user data. PDU is a significant term related to the initial four layers of the OSI model. In Layer 1, PDU is a bit, in Layer 2 it is a frame, in Layer 3 it is a packet and in Layer 4 it is a segment. In Layer 5 and above, PDU is referred to as data.

Cisco Packet Tracer [Electronic resource]. – Mode of access: http://www.cisco.com/c/dam/en$_u$s/training − events/netacad/course$_c$atalog/docs/Cisco$_P$acketTracer$_D$S.pdf. − −Dateofaccess : 14.03.2016.

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