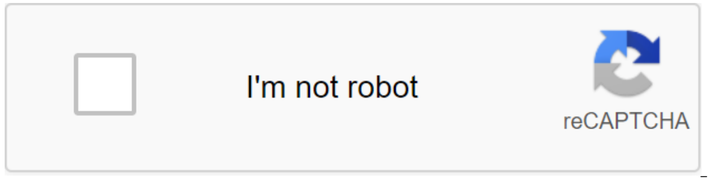
Spanning tree protocol cisco español pdf



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Spanning Tree Protocol (STP)SummarySTP works on bridges and switches under 802.1D. There are different types of STP, but 802.1D is the most popular and widely implemented. You implement STP on bridges and switches to prevent loops on the network. There are many protocols in the world of computer networks that provide the best access to communications. In this area there are quite popular protocols such as HTTP, SSH, TCP, UDP... There are others, which are not very talked about, are of great importance! Today I am briefed on the introduction to Spanning Tree Protocol (STP). The high availability of the computer network requires excess equipment as well as connectivity in many situations. However, the fact that there are redundant links/topology leads to loops in the network, impairing network performance. The STP.1 protocol was created to manage the level 2 cycles of the OSI model. The protocol on the covering tree (STP)STP is defined by the IEEE 802.1d standard protocol that works at the level of the OSI model layer 2 and its main purpose is to control excess binding, ensuring network performance. As is already known, the switches do not filter the broadcast and this situation causes all the broadcasts received in the interface of one switch, which will be sent by other interfaces, except for the interface that was received (flood), thus creating a storm.2 broadcast. How does STP work? Generally speaking, what STP does logically eliminates communication pathways. To do this, the protocol creates a tree of switches present in the network and selects the reference switch from which the tree will be created. As Spanning Tree Protocol/STP works in the STPBajo protocol, this switch is called the Root Bridge. The choice of the root bridge is based on priority, as well as based on the MAC address. There can only be one root bridge in the network. Given the example, SwitchA is chosen as the root bridge, as it has the lowest priority (default priority 32768), as well as the lowest physical address (MAC address). By choosing the root bridge in STPA, each switch, which is not a root bridge, determines what is the root port. This interface is based on the lowest cost (based on bandwidth) for the root bridge. This interface is placed in routing.root port mode on STPFor for each segment, the designated bridge is installed. This will be the switch with the lowest cost to the root bridge (in the example below switchD). The root bridge connection interface is in forward mode. Port switchE In lock mode, therefore, it blocks frames and avoid cycles in the network.designated bridge in STPIn in terms of configuration STP is a relatively simple protocol, but in theory there are some concepts that are needed to learn well. In the upcoming tutorial I will continue to talk about some fairly commonly used protocols in this area. Spaning Tree Protocol (STP) is Cisco's home protocol, which is used in order to avoid layer 2 cycles, When we connect the switch (Sw) to the network it will start communicating with the rest of the Sw network and publish its revision number, if it is higher than that of the rest of the Sw network, it will become RAI' SWITCH and the network will have to converge again and until the process finishes the network will be removed, so it is always that we are using Sw network we have to make sure that its revision of the zero number. If necessary, we can determine which Sw of our network will be RAI-SWITCH, and which will be secondary. In the following example we have 3 SWITCH, all the same model and with the default revision number. After the convergence, the STP protocol was selected as a SWITCH RAI, SWITCH_HABANA we want it to be SWITCH_CUBA. It would be nice to check SWITCH_HABANA RAI-SWITCH and then we set up SWITCH_CUBA as RAI-SWITCH. Let's do SHOW SPANNING-TREE first. Switch? Show covering the tree VLAN00001ing Tree Included Protocol ieee Root Identification Priority 32769 Address 0002.4A95.1982 This Sw is Root Hi Time 2 sec Max Age 20 sec Forward Delay 15 sec Bridge ID Priority 2 sec Max Age 20 sec Forward Delay 15 sec Bridge ID Priority 2 sec 32769 (priority 32768 sys-id-ext 1) Address 0002.4A95.1982 Hi Time 2 sec Max Age 20 sec Forward Delay 15 sec Age Aging time 20.....SWITCH_CUBA qlt;... 4 Show covering tree VLAN00001ing tree included protocol ieee Root ID Priority 32769 Address 0002.4A95.1982 Cost 19 Port 2 (FastEthernet0/2) Hi Time 2 sec Max Age 20 sec Forward Delay 15 sec Bridge ID Priority 32769 (priority 32768 sys-id-ext 1) Address 0060.477C.5DA0 Hi Time 2 sec Max Age 20 sec Forward Delay 15 sec Age ageing 20..... We can customize SWITCH_CUBA both SWITCH AND SWITCH_HABANA as secondary. This team prioritizes bridge ID automatically, giving it a lower value than any other SWITCH that is online. Team syntax. Switch (#spanning SWITCH_HABANA SWITCH_HABANA SWITCH_CUBA SWITCH_CUBA #spanning) He said that I was the one who was the one who was the one who was the one who was not . . . . если изменения были внесены правильно в SWITCH_CUBA и SWITCH_HABANA. SWITCH_CUBA This bridge is the root Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec Bridge ID Priority 24577 (priority 24576 sys-id-ext 1) Address 0060.477C.5DA0 Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec Aging Time 20 _____ This is no longer the RAIZ SWITCH and combed in SECONDARY SWITCH_HABANA show spanning-tree VLAN0001 Spanning tree

enabled protocol ieee Root ID Priority 24577 Address 0060.477C.5DA0 Cost 19 Port 2(FastEthernet0/2) Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec Bridge ID Priority 28673 (priority 28672 sys-id-ext 1) Address 0002.4A95.1982 Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec Aging Time 20 _____ , заключается в том, чтобы вручную положить SWITCH PRIORITY на нем. Теперь давайте конвертировать SWITCH_VARADERO в корень, вручную назначив им LOWER PRIORITY, чем тот, который SWITCH_CUBA (24577). Командный синтаксис: SW2 (конфигурация)#spanning-дерево vlan приоритет Команды для запуска конфигурации: SWITCH_VARADERO - настройка терминала SWITCH_VARADERO (конфигурация) - охватывающий дерево vlan 1 приоритет 4096 Результат показан на следующей цифре: Давайте проверить, если они были успешными Изменения в шоу SWITCH_VARADERO SWITCH_VARADERO охватывающих дерево VLAN0001 Spanning Tree Enabled Protocol ieee Root Identification Приоритет 4097 Адрес 0003.E49E.950C Этот мост является корнем Hello Time 2 сек. Возраст 20 сек. Задержка вперед 15 сек Bridge ID Приоритет 4097 (приоритет 4096 sys-id-ext 1) RAI' SWITCH должны быть изменены по-разному всегда с учетом RAI' SWITCH будет один с самым низким PRIORITY ID BRIDGE во всей сети. В области коммуникаций STP (Spanning Tree Protocol) — сетевой протокол уровня 2 модели OSI (Data Binding Layer). Его функция заключается в управлении наличием циклов в сетевых топологиях из-за наличия избыточных ссылок (необходимых во многих случаях для the presence of connections). The protocol allows interconnect devices to automatically turn on or off connection links to ensure that the loop is removed. STP is transparent to custom stations. Story It is based on an algorithm developed by Radia Perlman while working at DEC. There are two versions of STP: the original (DEC STP) and the standardized version of IEEE (IEEE 802.1D), which are not compatible with each other. It is currently recommended that IEEE BE standardized. There are several variants of STP mainly because of the time it takes to bring the algorithm used together. One such option is the Rapid Tree Expansion Protocol, the IEEE 802.1D-2004 standard, which today replaced the use of the original STP standard. 2012 IEEE 802.1aq has been approved as the standard for replacing IEEE 802.1D, IEEE 802.1w, IEEE 802.1s Motivation Loops occur when there are alternative routes to the same destination (whether it be a machine or network segment). These alternative routes are necessary to ensure redundancy and thus to ensure greater network reliability, as in the event of a communication failure, the rest can continue to maintain network traffic. Problems arise when using connection devices at the connection level, such as a network bridge or a packet switch. When cycles exist in the topology network, communication level devices link data forward broadcasting and multicast frames indefinitely, creating an endless loop that consumes both network bandwidth and processor routing devices. This leads to a deterioration in network performance in a very short time and may even become unusable. Because layer 2 frames don't have a TTL (life) field, they are trapped indefinitely until the system administrator breaks the loop. The router, on the other hand, can avoid such an uncertain overcooking. The solution is to allow excess physical bindings, but to create a non-cycle of logical topology. STP calculates one path, free of loops between devices on the network, but keeping redundant links off as a backup to activate them in the event of a failure. If the STP configuration changes, or if the segment in the redundant network becomes unavailable, the algorithm reconfigures the bindings and restores the connection by activating one of the backup attachments. If the protocol fails, both connections can be active at the same time, which can lead to an endless cycle of traffic to LAN. The covering tree remains in force until there is a change in the topology, the situation, Automatically. The maximum duration of covering the tree is five minutes. With one of these changes, the current root bridge redefines the covering topology of the tree or a new root bridge selected. Operation Algorithm converts a mesh physical network in which there are cycles over a logical network in the form of a tree (without loops). Bridges communicate via a configuration message called Bridge Protocol Data Units (BPDUs). The protocol sets identifiers on one bridge and selects the one that has the highest priority (the lowest number of numerical priority), such as the root bridge. This root bridge will create the cheapest path for all networks; Each port has a customizable setting: the cost of the Span path. Then, among all the bridges connecting the network segment, a designated bridge is chosen, the cheapest bridge (in the case of the same cost on two bridges, one with the lowest MAC ID) to transfer the frame to the root. On this designated bridge, the port that connects to the segment is the designated port and the one that offers a lower cost path to the root port. All other ports and roads are blocked, it is in an already stationary state of operation. The first decision made by all switches on the network is to determine the root bridge, as it will affect the traffic flow. When the switch is on, it assumes it is a root switch and sends BPDUs, which contain a mac address in itself on both the root and the IDB sender. The ICBM is the bridge IDentifier: Bridge Priority and Mac Bridge address. Bridge Priority is a customizable value that is assigned to 32768 by default. The Mac Bridge address is the (unique) MAC address of the bridge. Each switch replaces the highest root ICBM with the lower root ICBM in sent by BPDUs. All switches receive BPDUs and determine that the switch, whose root value BID is the lowest, will be the root bridge. In the case of a draw, the root switch will be the one with the smallest MAC. The network administrator can prioritize the switch at less than the default (32768), the new value should be multiples of 4096, making the ICBM smaller. This should only be implemented when you have an in-depth knowledge of the flow of traffic to the Root Port Choice Network Once you have chosen the root bridge, you should calculate the root port for other bridges that are not root. The procedure to follow for each bridge is the same: among all the ports on the bridge, the port that has the lowest cost of the root bridge is chosen as the root port. If there are two or more ports with the same To the root bridge, the MAC address with the lowest value is used to calculate the cost and set up the root port. Selecting designated ports After the root bridge and root ports of other bridges have been selected, we move on to the calculation of the designated ports of each segment of the network. On each link that exists between the two switches will be the designated port, which will switch the port that has the lowest cost to reach the root bridge, this administrative cost will be the value that will be associated with the type of link that exists in the port (Ethernet, FastEthernet, GigabitEthernet). Each type of connection will have a different administrative cost, with the lower cost is the port with a higher speed. If there is a link between the administrative costs that the two switches must reach the root bridge, then it will be selected as the designated port, the switch port, which has a lower bridge ID (IDB). Blocked ports those ports that are not selected as root or designated should be blocked. These ports avoid cycles. Spanning Tree Maintenance The topology change can occur in two ways: the port is disconnected or blocked port passes from locked or disconnected to If a change is detected, the switch notifies the root bridge of this change, and then the root bridge transmits this change. To do this, you enter a special BPDU notification called topology change (TCN). When the switch has to warn about a change in topology, it begins to send TCN to the root port. TCN is a very simple BPDU that contains no information and is sent during the hi-time interval. The switch that receives TCN is called a designated bridge and performs confirmation, immediately sending a normal BPDU with a bit of topological change confirmation (TCA). This exchange continues until the root bridge reacts. The bridge protocol data units of the above rules describe a way to determine which tree will be calculated by the algorithm, but the rules, as written, require network knowledge. Bridges should identify the root bridge and calculate the functions of ports (root, marked or blocked) only with the information they have. To ensure that each bridge has sufficient information, bridges use a special data framework called the Bridge Protocol Data Units (BPDUs) to share information about bridge identifiers and the cost of root routes. The bridge sends the BPDU frame using the port's unique MAC address as the source address, and the destination address is the multi-ticket address STP 01:80:C2:00:00:00:00:00. There are two types of BPDUs in the specification STP (Fast Tree Covering) (RSTP) uses a specific RSTP BPDU No. 4.): The BPDU configuration (CBPDU) used to expand the calculation of the Topology Change Notification (TCN) BPDU tree used to announce changes to the BPDU topology network, is regularly exchanged (every 2 seconds by default) and allows you to switch, track network changes and initiate and stop the port as needed. When the device first connects to the port on the switch, it will not immediately start sending data. Instead, it will go through a number of states when processing BPDUs and determining network topology. When a host joins, such as a computer, printer, or server, the port will always be in the sending state, albeit with a delay of about 30 seconds, passing through the listener's state and learning (see below). The time spent listening and learning is determined by a value known as a delay in sending (the default is 15 seconds and the root bridge is set). However, if another switch is connected instead, the port can remain in lock mode if it is found to cause a loop on the network. BPDUs (TCN) change notifications are used to inform other port switch changes. TCNs are injected into the network using a non-rooted switch that extends to the root. After receiving the TCN root switch will set the flag of the topology change on its usual BPDU. This flag extends to all other switches to instruct them to quickly age their re-hunting table entries. The status of the Port States in which the port may be located is as follows: Lock: In this state, BPDU can be received but will not send them. Data frames are discarded and MAC (mac-address-table) tables are not updated. Switches start in this state because if they send (forward), they can generate a loop or loop. Listen: This state is reached from Lock. In this state, switches determine if there is another path to the root bridge. If the new route has a higher cost, it returns to lock state. Data frames are discarded and the MAC address table (mac-address-table) is not updated. BPDUs are processed. Learning: This state is reached from Listen. Data frames are discarded, but MAC address tables are already being updated (this is where they are first explored). BPDUs are processed. Send: This status is achieved from training, in this state the port can send and receive data. Footage of the data is sent and viewed by IEEE 802.1w - 2004 Tree Rapid Expansion Protocol IEEE 802.1s - 2005 Multiple Spanning Tree Protocol (MSTP) IEEE 802.1aq - 2012 Самый короткий путь преодоления (SPB) Enlaces externos Como se construye un spanning tree Datos: No852555 Мультимедиа: Spanning дерево протокол Obtenido де