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How to configure zone based firewall on cisco ios

IntroductionThe Cisco IOS Zone Based Firewall is one of the most advanced form of Stateful firewall used in the Cisco IOS devices. The zone based firewall (ZBFW) is the successor of Classic IOS firewall or CBAC (Context-Based Access Control). Cisco first implemented the router-based stateful firewall in CBAC where it used ip inspect command to inspect the traffic in layer 4 and layer 7. Even though ASA devices are considered as the dedicated firewall devices, Cisco integrated the firewall functionality in the router which in fact will make the firewall a cost effective device. The zone based firewall came up with many more features that is not available in CBAC. The ZBFW mainly deals with the security zones, where we can assign the router interfaces to various security zones and control the traffic between the zones. Also the traffic will be dynamically inspected as it passes through the zones. In addition to all the features which is available in classic IOS firewall, Zone based firewall will support Application inspection and control for HTTP, POP3, Sun RPC, IM Applications and P2P File sharing. For advanced configuration of IOS Zone Based Firewall refer Based Firewall Vs CBAC/CBAC Zone Based Firewall/Interface Based Configuration/Zone Based Configuration/Controls Inbound and Outbound access on an interface/Controls Bidirectional access between zones. Uses inspect statements and stateful ACL/Uses Class-Based Policy language -Not supported-Support Application Inspection and Control/Support from IOS Release 11.2/Support from IOS Release 12.4 (6) TThis document will guide you to configure a basic Zone Based Policy Firewall in an IOS router. Here I am going to divide the entire configuration into logical sets and finally will combine them to the get the full configuration.ZBFW Configuration ProcedureThe below are the configuration tasks that you need to follow:Configure ZonesAssign Router Interfaces to zonesCreate Zone PairsConfigure Interzone Access Policy (Class Maps & Policy Maps)Apply Policy Maps to Zone PairsConfiguration ScenarioFigure 1. In this example we have three zones. Inside Zone - Private LAN/DMZ Zone - DMZ hosts/Outside Zone - InternetHere I am defining a rule set for our ZBFW:1. From Inside to Outside -http,icmp and pop3 is allowed2. From Outside to Inside -icmp is allowed3. From Inside to DMZ -http and icmp is allowed4. From Outside to DMZ -http is allowedDefault Rules of Zone Based FirewallInterzone communication is Denied, traffic will be denied among the interfaces that are in the different zones unless we specify a firewall policy.Intrazone communication is Allowed, traffic will flow implicitly among the interfaces that are in the same zone.All traffic to Self zone is AllowedSelf Zone is created automatically by the router while we create the other zones in a Zone Based Firewall.Task 1 : Configure ZonesIn this example (refer Figure 1) we have three zones. Inside ,Outside, DMZ.To configure zones in a router, connect the router via putty or console, switch to the global configuration mode and type the command as below:Router(config)#zone security INSIDERouter(config)#zone security OUTSIDERouter(config)#zone security DMZTask 2 : Assign Router Interfaces to ZonesWe have to assign the router interface to a particular zone. Here I am going to assign Gigabyte Ethernet 0/0 to INSIDE zone , Ge0/1 to OUTSIDE zone and Ge0/2 to DMZ zone.To achieve this we have to go to the particular interface and attach that interface to the zone.Type the command as below:Router(config)#interface gigabitEthernet 0/0Router(config-if)#zone-member security INSIDERouter(config)#interface gigabitEthernet 0/1Router(config-if)#zone-member security OUTSIDERouter(config)#interface gigabitEthernet 0/2Router(config-if)#zone-member security DMZNow if you try to ping a zone from another zone the traffic will be denied because of the default firewall policy.Task 3 : Create Zone Pairszone pairs are created to connect the zones. If you want to make two zones to communicate you have to create Zone pairs. DO NOT create zone pairs for non-communicating zones. In our scenario I am sorting the traffic based on access group. So first we need to create an ACL and associate it with the class map.a.) 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