

<u>US 7,224,668</u>	<u>Cisco</u>	<u>Arista</u>
<b>Claim 1</b>		
<p>[1.0] An internetworking device comprising: a. a plurality of physical network interface ports, each for providing a physical connection point to a network for the internetworking device, the ports being configurable by control plane processes;</p>	<p>Cisco devices, at least the Cisco 7500 Series, include an internetworking device comprising a plurality of physical network interface ports, each for providing a physical connection point to a network for the internetworking device, the ports being configurable by control plane processes.</p> <p>See, e.g., Control Plane Policing Implementation Best Practices available at <a href="http://www.cisco.com/web/about/security/intelligence/coppwp_gs.html">http://www.cisco.com/web/about/security/intelligence/coppwp_gs.html</a> (Ex. 2016) (“IP networks provide users with connectivity to networked resources such as corporate servers, extranet partners, multimedia content, the Internet, and any other application envisioned within IP networks. While these networks function to carry data plane (user-generated) packets, they are also created and operated by control plane and management plane packets.”).</p> <p>Cisco devices, at least the Nexus 7000 Series, include an internetworking device comprising a plurality of physical network interface ports, each for providing a physical connection point to a network for the internetworking device, the ports being configurable by control plane processes. See, e.g., Cisco Nexus 7000 Series NX-OS Security Configuration Guide, Release 6.x (Modified 4/16/14) (Ex. 2017) at p. 646 (“Control plane—Handles all routing protocol control</p>	<p>Arista switches, including at least the 7050, 7050X, 7150, 7250X, 7250E, and 7500E series models, and including at least version 4.14 of the operating system, include an internetworking device comprising a plurality of physical network interface ports, each for providing a physical connection point to a network for the internetworking device, the ports being configurable by control plane processes.</p> <p>See, e.g., Arista Configuration Guides, Release 4.14.3F - Rev. 2 (10/2/14) (Ex. 2024) at p. 646 (“Arista Networks features switches with a control plane that is non-blocking 100/1000Mb and supports Ethernet ports that are control plane extensible modular network operating system.”). See, e.g., Arista Configuration Guides, Release 4.14.3F - Rev. 2 (10/2/14) (Ex. 2024) at p. 646 (“The control plane builds and maintains the network state.”). See, e.g., Arista Configuration Guides, Release 4.14.3F - Rev. 2 (10/2/14) (Ex. 2024) at p. 646 (“The data plane routes IP packets based on information derived by the control plane.”). See, e.g., Arista Configuration Guides, Release 4.14.3F - Rev. 2 (10/2/14) (Ex. 2024) at p. 646 (“The control plane command places the switch in control plane configuration mode.”). See, e.g., Arista 7508E Image available at <a href="http://www.arista.com/assets/7508E-specifications.png">http://www.arista.com/assets/7508E-specifications.png</a> (Ex. 2024).</p>

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	<p>traffic.”).</p> <p>Cisco devices, at least the Catalyst 6500, include an internetworking device comprising a plurality of physical network interface ports, each for providing a physical connection point to a network for the internetworking device, the ports being configurable by control plane processes. See, e.g., Cisco IOS Software Configuration Guide, Release 12.2(33)SXH and Later Releases (2007-2012) (Ex. 2018) at p. 53-2 (“The majority of traffic managed by the RP is handled by way of the control and management planes.”).</p> <p>See, e.g., Control Plane Policing Implementation Best Practices available at <a href="http://www.cisco.com/web/about/security/intelligence/coppwp_gs.html">http://www.cisco.com/web/about/security/intelligence/coppwp_gs.html</a> (Ex. 2016) (“IP networks provide users with connectivity to networked resources such as corporate servers, extranet partners, multimedia content, the Internet, and any other application envisioned within IP networks. While these networks function to carry data plane (user-generated) packets, they are also created and operated by control plane and management plane packets.”).</p>	
[1.1] b. port services, for operating on packets entering and exiting the physical network interface	Cisco devices, at least the Cisco 7500 Series, include port services, for operating on packets entering and exiting the physical network interface ports, the port services providing an ability to control and monitor packet flows, as	Arista switches, including at least 7050, 7050X, 7150, 7250X, 7500E series models, and including at least version 4.14 services, for operating on packets

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<p>ports, the port services providing an ability to control and monitor packet flows, as defined by control plane configurations;</p>	<p>defined by control plane configurations.</p> <p>See, e.g., Control Plane Policing Implementation Best Practices available at <a href="http://www.cisco.com/web/about/security/intelligence/coppwp_gs.html">http://www.cisco.com/web/about/security/intelligence/coppwp_gs.html</a> (Ex. 2016) (“Interface ACL – The interface access control list (iACL) is the traditional and most generally available approach for managing all packets entering or exiting a network device. The iACLs are well understood and are generally applicable to data, services, control, and management plane packets. However, as illustrated in Figure 2, iACLs are applied at the interface level to each packet ingressing (or egressing) the interface—not just control plane packets, for example.”).</p> <p>Cisco devices, at least the Nexus 7000 Series, include port services, for operating on packets entering and exiting the physical network interface ports, the port services providing an ability to control and monitor packet flows, as defined by control plane configurations.</p> <p>See, e.g., Cisco Nexus 7000 Series NX-OS Security Configuration Guide, Release 6.x (Modified 4/16/14) (Ex. 2017) at p. 455 (“You can apply an IPv4 or IPv6 ACL to a Layer 2 interface, which can be a physical port or a port channel. ACLs applied to these interface types are considered port ACLs.”).</p>	<p>exiting the physical network interface ports, the port services providing an ability to control and monitor packet flows, as defined by control plane configurations.</p> <p>See, e.g., Arista Configuration Guide v. 4.14.3 Rev. 2 (10/2/14) (Ex. 2024) at p. 835 (“ACL, Prefix List Introduction An access control list (ACL) is an ordered set of rules that filter an inbound flow of packets into or out of port channel interfaces or the control plane. The switch supports the configuration of a wide variety of filtering criteria based on MAC addresses, TCP/UDP ports, and include/exclude options without impacting its performance or feature set.”) Configuration Guide v. 4.14.3 (Ex. 2024) at p. 848.</p> <p>These commands assign test1 to the interface, then verifies the assignment.</p> <pre>switch(config)#interface ethernet 3 switch(config-if-Et3)#ip access-group test1 in switch(config-if-Et3)#show running-config interface Ethernet3 ip access-group test1 in switch(config-if-Et3)#</pre> <p>See, e.g., Arista Configuration Guide v. 4.14.3 Rev. 2 (10/2/14) (Ex. 2024) at p. 848.</p>

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	<p>See, e.g., Cisco Nexus 7000 Series NX-OS Quality of Service Configuration Guide (April 2014) (Ex. 2020) at p. 2-17 (“A QoS policy attached to the physical port takes effect when the port is not a member of a port channel.”).</p> <p>Cisco devices, at least the Catalyst 6500, include port services, for operating on packets entering and exiting the physical network interface ports, the port services providing an ability to control and monitor packet flows, as defined by control plane configurations. See, e.g., Cisco IOS Software Configuration Guide, Release 12.2(33)SXH and Later Releases (2007-2012) (Ex. 2018) at p. 51-2 (“Port ACLs perform access control on all traffic entering the specified Layer 2 port.”).</p> <p>See, e.g., Cisco IOS Quality of Service Solutions Configuration Guide, Release 12.2, Quality of Service Overview (Ex. 2021) at p. QC-6 (“Policies can be set that include classification based on physical port....”).</p> <p>See, e.g., Control Plane Policing Implementation Best Practices available at <a href="http://www.cisco.com/web/about/security/intelligence/coppwp_gs.html">http://www.cisco.com/web/about/security/intelligence/coppwp_gs.html</a> (Ex. 2016) (“Interface ACL – The interface access control list (iACL) is the traditional and most generally available approach for managing all packets entering or exiting a network device. The iACLs are well</p>	<p>of Service Conceptual Overview apply to traffic that flows through data and control planes. These policies are applied to traffic classes for prioritization. Transmission queues are configured on individual Ethernet ports to shape its traffic class. Many switches support traffic policies that apply to distributed access control lists.”).</p>

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	<p>understood and are generally applicable to data, services, control, and management plane packets. However, as illustrated in Figure 2, iACLs are applied at the interface level to each packet ingressing (or egressing) the interface—not just control plane packets, for example.).</p>	
<p>[1.2] c. a control plane, comprising a plurality of internetworking control plane processes, the control plane processes for providing high-level control and configuration of the ports and the port services;</p>	<p>Cisco devices, at least the Cisco 7500 Series, include a control plane, comprising a plurality of internetworking control plane processes, the control plane processes for providing high-level control and configuration of the ports and the port services.</p> <p>See, e.g., Control Plane Policing Implementation Best Practices available at <a href="http://www.cisco.com/web/about/security/intelligence/coppwp_gs.html">http://www.cisco.com/web/about/security/intelligence/coppwp_gs.html</a> (Ex. 2016) (“IP networks provide users with connectivity to networked resources such as corporate servers, extranet partners, multimedia content, the Internet, and any other application envisioned within IP networks. While these networks function to carry data plane (user-generated) packets, they are also created and operated by control plane and management plane packets.”).</p> <p>Cisco devices, at least the Nexus 7000 Series, include a control plane, comprising a plurality of internetworking control plane processes, the control plane processes for providing high-level control and configuration of the ports and the port</p>	<p>Arista switches, including at least the 7050, 7050X, 7150, 7250X, 7500, and 7500E series models, and including at least version 4.14 of the control plane, comprising a plurality of internetworking control plane processes for providing high-level control and configuration of the ports and the port services.</p> <p>See, e.g., Arista Configuration Guide, Rev. 2 (10/2/14) (Ex. 2024) at ¶ 2 (“control plane builds and maintains the control plane”). See, e.g., Arista White Paper, Switch Architecture (March 2014) at p. 2 (“Supervisor modules on all Arista switches are used for control- and management-plane functions”).</p>

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