

Packet Tracer 5.2

New IOS commands

REQ-1 Context Based Access List

Tag	Requirement	Priority
REQ-1.1	Router(config)# no ip inspect name <i>inspection-name</i> protocol [<i>timeout-seconds</i>] Protocols covered = http, icmp, tcp, telnet, udp, dns, https, ntp, radius, snmp, ssh, syslog, tacacs, and tftp	5
REQ-1.2	Router(config-if)# no ip inspect <i>inspection-name</i> { in out }	5
REQ-1.3	Router(config)# no ip inspect tcp synwait-time <i>seconds</i>	5
REQ-1.4	Router(config)# no ip inspect tcp finwait-time <i>seconds</i>	5
REQ-1.5	Router(config)# no ip inspect tcp idle-time <i>seconds</i>	5
REQ-1.6	Router(config)# no ip inspect udp idle-time <i>seconds</i>	5
REQ-1.7	Router(config)# no ip inspect dns-timeout <i>seconds</i>	5
REQ-1.8	Router(config)# no ip inspect max-incomplete high <i>number</i>	5
REQ-1.9	Router(config)# no ip inspect max-incomplete low <i>number</i>	5
REQ-1.10	Router(config)# no ip inspect one-minute high <i>number</i>	5
REQ-1.11	Router(config)# no ip inspect one-minute low <i>number</i>	5
REQ-1.12	Router# show ip inspect { name <i>WORD</i> config interfaces session [detail] all }	5
REQ-1.13	Router# debug ip inspect protocol <i>protocol-name</i>	5

REQ-2 Outside NAT

Tag	Requirement	Priority
REQ-2.1	Router(config)# no ip nat outside source list <i>list-num</i> pool <i>pool-name</i>	5
REQ-2.2	Router(config)# no ip nat outside source { static <i>global-ip local-ip</i> }	5
REQ-2.3	Router(config)# no ip nat outside source { static tcp udp <i>global-ip global-port local-ip local-port</i> }	5

REQ-3 Improved TCP/IP

Tag	Requirement	Priority
REQ-3.1.1	Router(config)# service nagle	5

REQ-4 Emulation of SLARP feature

Tag	Requirement	Priority
REQ-4.1	Router(config-if)# keepalive <time in seconds>	5

REQ-5 AAA

Tag	Requirement	Priority
REQ-5.1	ACS service on generic server device	5
REQ-5.2	Radius	5
REQ-5.3	TACACS+	5

Tag	Requirement	Priority
REQ-5.4	AAA commands	5
REQ-5.4.1	Commands to configure Router IOS to communicate with AAA server	5
REQ-5.4.1.1	Router(config)# aaa new-model	5
REQ-5.4.1.2	Router(config)# tacacs-server host ip-address [single-connection]	5
REQ-5.4.1.3	Router(config)# tacacs-server key key (key to encrypt data between ACS and NAS)	5
REQ-5.4.1.4	Router# show aaa [user sessions local user logout]	5
REQ-5.4.1.5	Router# clear aaa local user logout	5
REQ-5.5	TACACS+ Attributes and Features	5
REQ-5.6	Persistent TCP session configurable on ACS and AAA server both	5
REQ-5.7	Authentication	5
REQ-5.7.1	TACACS+ Authentication	5
REQ-5.7.2	Router(config)# aaa authentication login {default list_name} group {group_name tacacs radius} [method2 [method3 [method 4]]]	5
REQ-5.7.3	Router(config-line)# login authentication list-name (console, vty)	5
REQ-5.7.4	Router# debug aaa authentication	5
REQ-5.8	Authorization	5
REQ-5.8.1	Router(config)# aaa authorization {network exec commands level config-commands reverse-access} {default llist_name} method1 [method2...] – command only	5

REQ-6 IPsec & GRE VPN

Tag	Requirement	Priority
REQ-6.1	Supports 5 steps of Ipsec.	5
REQ-6.2	Support for SA (security associations)	5
REQ-6.3	Support for IPsec encryption, authentication and data integrity algorithms.	5
REQ-6.3.1	DES	5
REQ-6.3.2	AES	5
REQ-6.3.3	3DES	5
REQ-6.3.4	SHA1	5
REQ-6.3.5	DH key exchange	5
REQ-6.4	AH	5
REQ-6.5	ESP	5
REQ-6.5.1	Transport mode, tunnel mode	5
REQ-6.6	IKE	5
REQ-6.6.1	ISAKMP, key exchange and negotiating security policies mechanics	5
REQ-6.6.2	IKE phase 1 & 2 phase 1 in two modes main and aggressive, phase 2 in quick mode	5
REQ-6.6.3	IKE modes (main, aggressive, quick)	5
REQ-6.6.4	IKE policy establishment	5
REQ-6.6.4.1	Router(config)# crypto isakmp policy priority	5
REQ-6.6.4.2	IKE pre-share	5
REQ-6.6.4.2.1	Router(config-isakm)# authentication pre-share	5
REQ-6.6.4.3	Router(cofig-isakmp)# hash {sha MD5}	5
REQ-6.6.4.4	Router(config-isakmp)# encryption {des 3des aes {128 192 256}}	5
REQ-6.6.4.5	Router(config-isakmp)# group{1 2 5}	5
REQ-6.6.4.6	Router(config-isakmp)# lifetime seconds	5
REQ-6.6.4.7	Router(config)# crypto isakmp key key address peer-ip-address	5
REQ-6.7	Define IPSec transform set (parameters for IPsec tunnel)	5
REQ-6.7.1	Router(config)# crypto ipsec transform-set transport-set-name transform1 [trasnform2] [trasnform3] [transform4]	5
REQ-6.8	Create crypto map (defines IPsec peer)	5

Tag	Requirement	Priority
REQ-6.8.1	Router(config)# Crypto map <i>crypto-map-name sequence-number ipsec-isakmp</i>	5
REQ-6.8.2	Router(config-crypto-map)# set peer <i>ip-address</i>	5
REQ-6.8.3	Router(config-crypto-map)# match address <i>access-list-id</i>	5
REQ-6.8.4	Router(config-crypto-map)# set transform-set <i>transform-set-name [transform-set-name2... transform-set-name6]</i>	5
REQ-6.9	Apply the crypto map to the interfaces	5
REQ-6.9.1	(config-if)# crypto map <i>crypto-map-name</i>	5
REQ-6.10	Router# show crypto isakmp {sa policy}	5
REQ-6.11	Router# show crypto ipsec {sa transform-set}	5
REQ-6.12	Router# show crypto map	5
REQ-6.13	Router# debug crypto {isakmp ipsec}	5
REQ-6.14	GRE	5
REQ-6.14.1	Router(config)# interface tunnel <i>tunnel-id</i>	5
REQ-6.14.2	Router(config-if)# tunnel source <i>interface-name-id</i>	5
REQ-6.14.3	Router(config-if)# tunnel destination <i>ip-address</i>	5
REQ-6.14.4	Router# show crypto isakmp sa	5
REQ-6.14.5	Router# show crypto ipsec sa	5
REQ-6.14.6	Router# show interfaces (add tunnel interfaces)	5
REQ-6.15	VPN to pass through wireless	5
REQ-6.16	VPN software for PC	5
REQ-6.17	VPN to work with NAT	5
REQ-6.18	VPN software for PC (EASY VPN)	5
REQ-6.18.1	Router(config)# [no] ip local pool { <i>named-address-pool</i> } { <i>first-ip-address</i> } [<i>last-IP-address</i>]	5
REQ-6.18.2	Router(config)# [no] crypto isakmp client configuration group { <i>group-name</i> }	5
REQ-6.18.3	Router(config-isakmp-group)# [no] key <i>name</i>	5
REQ-6.18.4	Router(config-isakmp-group)# [no] Pool <i>name</i>	5
REQ-6.18.5	Router(config-isakmp-group)# [no] netmask <i>ipaddress</i>	5
REQ-6.18.6	Router(config)# [no] crypto dynamic-map <i>dynamic-map-name dynamic-seq-num</i>	5
REQ-6.18.7	Router(config-crypto-map)# [no] set transform-set <i>transform-set-name [transform-set-name2...transform-set-name6]</i>	5
REQ-6.18.8	Router(config-crypto-map) # [no] reverse-route	5
REQ-6.18.9	Router(config)# [no] crypto map <i>map-name client configuration address respond</i>	5
REQ-6.18.10	Router(config)# [no] crypto map <i>map-name isakmp authorization list list-name</i>	5
REQ-6.18.11	Router(config)# [no] crypto map <i>map-name seq-num ipsec-isakmp dynamic dynamic-map-name</i>	5
REQ-6.18.12	Router(config)# [no] crypto map <i>map-name client authentication list list-name</i>	5

REQ-7 Firewall

Tag	Requirement	Priority
REQ-7.1	Setting audit trails and alerts	5
REQ-7.1.1	Router(config)# logging on	5
REQ-7.1.2	Router(config)# logging host <i>ip-address</i>	5
REQ-7.1.3	Router(config)# ip inspect audit-trail	5
REQ-7.1.4	Router(config)# [no] ip inspect alert-off (real time alert)	5
REQ-7.2	Support for inspection rules for application protocols	5
REQ-7.2.1	Router(config)# ip inspect <i>name inspection-name protocol [alert {on off}] [audit-trail { on off }] [timeout <i>seconds</i>]</i>	5

Tag	Requirement	Priority
REQ-7.2.2	Router(config-if)# ip inspect <i>inspect-name</i> {in out}	5
REQ-7.2.3	Router# show ip inspect name <i>inspection-name</i>	5
REQ-7.2.4	Router# show ip inspect config	5
REQ-7.2.5	Router# show ip inspect interfaces	5
REQ-7.2.6	Router# show ip inspect session [detail]	5
REQ-7.2.7	Router# show ip inspect statistics	5
REQ-7.2.8	Router# show ip inspect all	5
REQ-7.2.9	Router# debug ip inspect {function-trace object-creation object-deletion events timers protocol detailed}	5
REQ-7.3	Creates a session entry in the session table	5
REQ-7.4	Dynamically removes the ACL when entry times out application terminates	5

REQ-8 IPS

Tag	Requirement	Priority
REQ-8.1	Router(config)# [no] ip ips fail closed	5
REQ-8.2	Router(config)# [no] ip ips name <i>ips-rule-name</i> [[list <i>access-list</i>]	5
REQ-8.3	Router(config)# [no] ip ips config location <i>location</i> <i>retries</i> <i>retries</i>	5
REQ-8.4	Router# mkdir <i>dir-name</i>	5
REQ-8.5	Router# rmdir <i>dir-name</i>	5
REQ-8.6	Router(config)# [no] ip ips signature-category	5
REQ-8.7	Router(config-ips-category)# [no] category {all ios_ips basic}	5
REQ-8.8	Router(config-ips-category-action)# [no] retired {true false}	5
REQ-8.9	Router(config-if)# [no] ip virtual-reassembly	5
REQ-8.10	Router(config-if)# ip ips rule-name {in out }	5
REQ-8.11	Router(config)# [no] ip ips notify log	5
REQ-8.12	Router(config)# no ip ips signature-definition	5
REQ-8.13	Router(config-sigdef)# signature <1-65535> [<0-65535>]	5
REQ-8.14	Router(config-sigdef-sig)# engine	5
REQ-8.15	Router(config-sigdef-sig-engine)# event-action [deny-packet-inline produce-alert]	5
REQ-8.16	Router(config-sigdef-sig)# status	5
REQ-8.17	Router(config-sigdef-sig-status)# enabled retired [true false]	5
REQ-8.18	Router# show ip ips configuration	5
REQ-8.19	Router# show ip ips signature sigid <i>sigid</i> <i>subid</i> <i>subid</i>	5
REQ-8.20	Supports only ICMP signature file.	5

REQ-9 SNMPv1, SNMPv2

Tag	Requirement	Priority
REQ-9.1	Managers, Agents, MIB	5
REQ-9.2	SNMP v1 & v2 command	5
REQ-9.2.1	set, get, getbulk	5
REQ-9.3	Authentication message (Community Strings)	5
REQ-9.4	Router(config)# [no] snmp-server <i>community-string</i>	5

REQ-10: Parser Views and Command Privileges

Tag	Requirement	Priority
REQ-10.1	Parser Views	5
REQ-10.1.1	Router# enable view [<i>view-name</i>]	5
REQ-10.1.2	Router(config)# [no] parser view <i>view-name</i>	5

Tag	Requirement	Priority
REQ-10.1.3	Router(config-view)# [no] secret password	5
REQ-10.1.4	Router(config-view)# commands exec include <i>LINE</i>	5
REQ-10.1.5	Router# show parser view	5
REQ-10.2	Command Privileges	5
REQ-10.2.1	Router(config)# [no] enable {password secret} level <i>level</i> {password encryption-type encrypted-password}	5
REQ-10.2.2	Router(config)# [no] privilege mode [all] {level <i>level</i> reset} <i>command</i>	5
REQ-10.2.3	Router(config)# [no] username <i>name</i> privilege level secret password	5
REQ-10.2.4	Router(config-line)# [no] privilege level <i>level</i>	5
REQ-10.2.5	Router# show privilege	5

REQ-11 NTP

Tag	Requirement	Priority
REQ-11.1	Single-level NTP server on server device	5
REQ-11.2	NTP client on routers	5
REQ-11.2.1	Router# show ntp status	5
REQ-11.2.2	Router(config)# [no] ntp authentication-key <i>key-number</i> md5 <i>password</i> [encryption-type]	5
REQ-11.2.3	Router(config)# [no] ntp authenticate	5
REQ-11.2.4	Router(config)# [no] ntp trusted-key <i>key-number</i>	5
REQ-11.2.5	Router(config)# [no] ntp server <i>server-ip</i> [key <i>key-number</i>]	5

REQ-12 Zone-Based Policy Firewall

Tag	Requirement	Priority
REQ-12.1	Router(config)# [no] class-map type inspect [match-all match-any] <i>class-map-name</i>	5
REQ-12.1.1	Router(config-cmap)# [no] match {any not}	5
REQ-12.1.2	Router(config-cmap)# [no] match protocol <i>protocol</i>	5
REQ-12.1.3	Router(config-cmap)# [no] match class-map <i>class-map-name</i>	5
REQ-12.1.4	Router(config-cmap)# [no] match access-group <i>access-list-name</i>	5
REQ-12.2	Router(config)# [no] policy-map type inspect <i>policy-map-name</i>	5
REQ-12.3	Router(config-pmap)# [no] class {type inspect <i>class-map-name</i> class-default}	5
REQ-12.4	Router(config-pmap-c)# [no] inspect	5
REQ-12.5	Router(config-pmap-c)# [no] pass	5
REQ-12.6	Router(config-pmap-c)# [no] drop log	5
REQ-12.7	Router(config)# [no] zone security <i>zone-name</i>	5
REQ-12.8	Router(config)# [no] zone-pair security <i>zone-pair-name</i> source <i>source-zone-name</i> destination <i>destination-zone-name</i>	5
REQ-12.9	Router(config-sec-zone-pair)# [no] service-policy type inspect <i>policy-map-name</i>	5
REQ-12.10	Router(config-if)# [no] zone-member security <i>zone-name</i>	5
REQ-12.11	Router# show policy-map type inspect zone-pair session	5

REQ-13 Syslog and Logging

Tag	Requirement	Priority
REQ-13.1	Syslog Server	5
REQ-13.1.1	Server device supports syslog server to receive log messages	5
REQ-13.1.2	Server device supports displaying of received log messages	5

Tag	Requirement	Priority
REQ-13.2	Syslog Client on routers and switches	5
REQ-13.2.1	Router(config)# [no] logging server-ip	5
REQ-13.2.2	Router(config)# [no] logging trap debugging	5
REQ-13.2.3	Router# show logging	5
REQ-13.3	Other logging commands	5
REQ-13.3.1	Router(config)# [no] service timestamps {debug log} datetime sec	5
REQ-13.3.2	Router(config)# [no] logging console [critical]	5
REQ-13.3.3	Router(config)# [no] logging buffered buffer-size	5

REQ-14 DiffServ QoS

Tag	Requirement	Priority
REQ-14.1	Layer 2 QoS	5
REQ-14.1.1	802.1p User Priority in 802.1Q encapsulation	5
REQ-14.1.2	Switch(config-if)# [no] switchport voice vlan vlan-id	5
REQ-14.1.3	Switch(config-if)# [no] mls qos trust {cos dscp device cisco-phone}	5
REQ-14.1.4	Switch(config-if)# [no] mls qos cos cos	5
REQ-14.1.5	Switch(config-if)# [no] switchport priority extend cos cos-value	5
REQ-14.1.6	Switch# show interfaces interface-name switchport	5
REQ-14.1.7	Switch# show mls qos interfaces interface-name	5
REQ-14.2	Layer 3 QoS	5
REQ-14.2.1	IP Precedence	5
REQ-14.2.2	DSCP	5
REQ-14.3	Modular QoS CLI (MQC)	5
REQ-14.3.1	Router(config)# [no] class-map [match-all match-any] class-map-name	5
REQ-14.3.2	Router(config-cmap)# [no] description description	5
REQ-14.3.3	Router(config-cmap)# [no] match {any not}	5
REQ-14.3.4	Router(config-cmap)# [no] match protocol protocol	5
REQ-14.3.5	Router(config-cmap)# [no] match qos-group group	5
REQ-14.3.6	Router(config-cmap)# [no] match access-group access-list-name	5
REQ-14.3.7	Router(config-cmap)# [no] match class-map class-map-name	5
REQ-14.3.8	Router(config-cmap)# [no] match destination-address mac mac	5
REQ-14.3.9	Router(config-cmap)# [no] match precedence precedence	5
REQ-14.3.10	Router(config-cmap)# [no] match ip dscp dscp-value	5
REQ-14.3.11	Router(config-cmap)# [no] match cos cos-value	5
REQ-14.3.12	Router(config-cmap)# [no] match ip rtp start-port-number port-range	5
REQ-14.3.13	Router(config-cmap)# [no] match input-interface interface-name	5
REQ-14.3.14	Router(config)# [no] policy-map policy-map-name	5
REQ-14.3.15	Router(config-pmap)# [no] class {class-name class-default}	5
REQ-14.3.16	Router(config-pmap-c)# [no] bandwidth bandwidth	5
REQ-14.3.17	Router(config-pmap-c)# [no] bandwidth percent percent	5
REQ-14.3.18	Router(config-pmap-c)# [no] bandwidth remaining percent percent	5
REQ-14.3.19	Router(config-pmap-c)# [no] queue-limit limit	5
REQ-14.3.20	Router(config-pmap-c)# [no] priority priority	5
REQ-14.3.21	Router(config-pmap-c)# [no] priority percent percent [burst]	5
REQ-14.3.22	Router(config-pmap-c)# [no] shape average bandwidth	5
REQ-14.3.23	Router(config-pmap-c)# [no] service-policy policy-map-name	5
REQ-14.3.24	Router(config-pmap-c)# [no] fair-queue queues	5
REQ-14.3.25	Router(config-pmap-c)# [no] set ip dscp ...	5
REQ-14.3.26	Router(config-pmap-c)# [no] set precedence precedence	5
REQ-14.3.27	Router(config-pmap-c)# [no] random-detect [precedence ...]	5

Tag	Requirement	Priority
REQ-14.3.28	Router(config-pmap-c)# [no] random-detect [dscp ...]	5
REQ-14.3.29	Router(config-if)# [no] service-policy {input output} policy-map-name	5
REQ-14.3.30	Router(config-if)# [no] fair-queue [cdt [dynamic-queues [reservable-queues]]]	5
REQ-14.3.31	Router# show class-map	5
REQ-14.3.32	Router# show policy-map [interface interface-name]	5
REQ-14.3.33	Router# show queue [interface-name]	5
REQ-14.3.34	Router# show queueing	5
REQ-14.3.35	Router# show interfaces [interface-name]	5
REQ-14.4	Custom Queuing	5
REQ-14.4.1	Router(config)# [no] queue-list queue-list-number protocol protocol queue-number list acl	5
REQ-14.4.2	Router(config)# [no] queue-list queue-list-number protocol protocol queue-number {tcp udp} port-number	5
REQ-14.4.3	Router(config)# [no] queue-list queue-list-number default queue-number	5
REQ-14.4.4	Router(config)# [no] queue-list queue-list-number queue queue-number limit limit	5
REQ-14.4.5	Router(config)# [no] queue-list queue-list-number queue queue-number byte-count byte-count	5
REQ-14.4.6	Router(config-if)# [no] custom-queue-list queue-list-number	5
REQ-14.4.7	Router# [no] debug custom-queue	5
REQ-14.5	Priority Queuing	5
REQ-14.5.1	Router(config)# [no] priority-list queue-list-number protocol protocol {high medium normal low} tcp port-number	5
REQ-14.5.2	Router(config)# [no] priority-list queue-list-number default queue-name	5
REQ-14.5.3	Router(config)# [no] priority-list queue-list-number queue-limit high-limit medium-limit normal-limit low-limit	5
REQ-14.5.4	Router(config-if)# [no] priority-group priority-list-number	5
REQ-14.6	ACL	5
REQ-14.6.1	Router(config)# [no] access-list ... precedence precedence	5
REQ-14.6.2	Router(config)# [no] access-list ... dscp dscp	5
REQ-14.7	NBAR	5
REQ-14.7.1	Deep packet inspections to classify traffic	5
REQ-14.7.2	Router(config-cmap)# [no] match protocol http	5
REQ-14.7.3	Router(config-cmap)# [no] match protocol http url url	5
REQ-14.7.4	Router(config-cmap)# [no] match protocol http host host	5
REQ-14.7.5	Router(config-cmap)# [no] match protocol http mime mime-type	5
REQ-14.7.6	Router(config-cmap)# [no] match protocol rtp [audio video payload-type type]	5
REQ-14.8	Visualizations	5
REQ-14.8.1	Display of queuing and dropping packets	5
REQ-14.8.2	Display of different queues on devices	5
REQ-14.8.3	Combine all packets on same device as one queue icon and display how full it is.	5