与TrustSec SGT轴向标记和SGT意识基于区域的防火墙配置示例的GETVPN

目录

简介

此条款将提交如何配置GETVPN推送允许发送和接收的策略安全组标记(SGT)插入到加密的信息包。示例将介入标记所有流量用特定SGT标记和应用区域基于防火墙(ZBF)策略的两个分组根据已接收SGT标记。

先决条件

要求

Cisco 建议您了解以下主题：

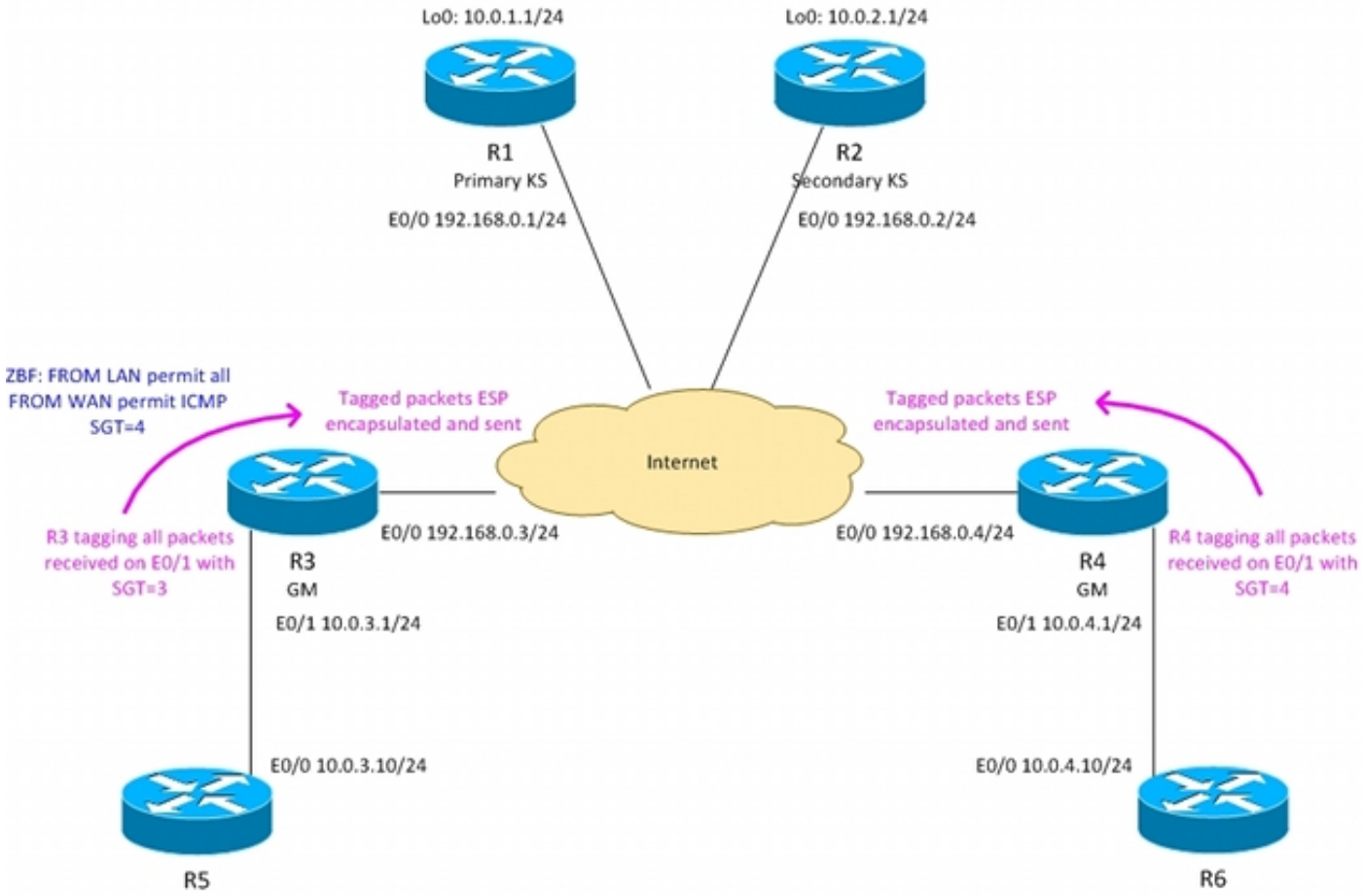
- IOS命令行界面(CLI)配置和GETVPN配置基础知识
- Trustsec服务基础知识。
- 基于区域的防火墙基础知识

使用的组件

本文档中的信息基于以下软件版本：

- 有软件的15.3(2)T思科2921路由器和更新

拓扑



R3 - Branch1的边界路由器， GETVPN组成员

R4 - Branch2的边界路由器， GETVPN组成员

R1,R2 - GETVPN密钥服务器在中心站点

运行在所有路由器的OSPF

从KS推送的ACL强制流量的加密10.0.0.0/16 <-> 10.0.0.0/16之间

R3路由器用SGT标记标记从Branch1发送的所有流量= 3

R4路由器用SGT标记标记从Branch2发送的所有流量= 4

R3删除SGT标记，当发送往LAN时(假定的流量R5不支持轴向标记)

R4删除SGT标记，当发送往LAN时(假定的流量R6不支持轴向标记)

R4没有防火墙(接受所有信息包)

R3配置与与以下策略的ZBF ：

-接受从LAN的所有流量往广域网

-接受用从广域网的SGT=4标记的仅ICMP往LAN

配置

R1 (关键服务器在中心站点)

要发送允许发送和接收的策略标记信息包“TAC cts sgt”命令需要存在：

```
interface Loopback0
 ip address 10.0.1.1 255.255.255.0
!
interface Ethernet0/0
 ip address 192.168.0.1 255.255.255.0

crypto ipsec transform-set TS esp-aes esp-sha256-hmac
 mode tunnel
!
crypto ipsec profile prof1
 set transform-set TS
!
crypto gdoi group group1
 identity number 1
 server local
 rekey authentication mypubkey rsa GETKEY
 rekey transport unicast
 sa ipsec 1
  profile prof1
  match address ipv4 GET-IPV4
  replay counter window-size 64
   tag cts sgt
 address ipv4 192.168.0.1
 redundancy
  local priority 100
  peer address ipv4 192.168.0.2

router ospf 1
 network 10.0.0.0 0.0.255.255 area 0
 network 192.168.0.0 0.0.0.255 area 0

ip access-list extended GET-IPV4
 permit icmp 10.0.0.0 0.0.255.255 10.0.0.0 0.0.255.255
```

R2的配置是非常类似的。

R3 (Branch1的组成员)

没有SGT标记， GETVPN配置是相同的象为方案。LAN接口配置与手工的trustsec ：

- “策略静态sgt 3委托” -标记从LAN接收的所有信息包使用SGT=3
- 当传送往LAN时的数据包“没有繁殖sgt” -删除所有SGT标记

```
crypto gdoi group group1
 identity number 1
 server address ipv4 192.168.0.1
 server address ipv4 192.168.0.2
!
!
crypto map cmap 10 gdoi
 set group group1

interface Ethernet0/0
 ip address 192.168.0.3 255.255.255.0
```

```
 crypto map cmap
!
interface Ethernet0/1
 ip address 10.0.3.1 255.255.255.0
cts manual
   no propagate sgt
   policy static sgt 3 trusted

router ospf 1
 network 10.0.0.0 0.0.255.255 area 0
 network 192.168.0.0 0.0.0.255 area 0
```

在R3的ZBF配置：

从LAN的所有信息包将接受。仅从用SGT=4标记的广域网ICMP数据包将接受：

```
class-map type inspect match-all TAG_4_ICMP
match security-group source tag 4
 match protocol icmp
!
policy-map type inspect FROM_LAN
 class class-default
 pass log
policy-map type inspect FROM_WAN
 class type inspect TAG_4_ICMP
 pass log
 class class-default
 drop log
!
zone security lan
zone security wan
zone-pair security WAN-LAN source wan destination lan
 service-policy type inspect FROM_WAN
zone-pair security LAN-WAN source lan destination wan
 service-policy type inspect FROM_LAN

interface Ethernet0/0
 zone-member security wan
!
interface Ethernet0/1
 zone-member security lan
```

R4在Branch2配置方面是非常类似的除了没有配置那里的ZBF。

R5，R6配置

R5和R6模拟在两个分组的本地LAN。R5的配置示例：

```
class-map type inspect match-all TAG_4_ICMP
match security-group source tag 4
 match protocol icmp
!
policy-map type inspect FROM_LAN
 class class-default
 pass log
policy-map type inspect FROM_WAN
 class type inspect TAG_4_ICMP
 pass log
```

```
 class class-default
 drop log
!
zone security lan
zone security wan
zone-pair security WAN-LAN source wan destination lan
 service-policy type inspect FROM_WAN
zone-pair security LAN-WAN source lan destination wan
 service-policy type inspect FROM_LAN

interface Ethernet0/0
 zone-member security wan
!
interface Ethernet0/1
 zone-member security lan
```

验证

Tesing SGT意识GETVPN

检查是否Branch1的(R3)组成员支持SGT标记：

```
R3#show crypto gdoi feature cts-sgt
      Version    Feature Supported
       1.0.8           Yes
```

检查推送的TEK策略分组Branch1的(R3)成员是否使用SGT ：

```
R3#show crypto gdoi
GROUP INFORMATION

<...some output ommited for clarity...>

TEK POLICY for the current KS-Policy ACEs Downloaded:
 Ethernet0/0:
   IPsec SA:
       spi: 0xD100D58E(3506492814)
       transform: esp-aes esp-sha256-hmac
       sa timing:remaining key lifetime (sec): expired
       Anti-Replay(Counter Based) : 64
        tag method : cts sgt
       alg key size: 16 (bytes)
       sig key size: 32 (bytes)
       encaps: ENCAPS_TUNNEL

   IPsec SA:
       spi: 0x52B3CA86(1387514502)
       transform: esp-aes esp-sha256-hmac
       sa timing:remaining key lifetime (sec): (1537)
       Anti-Replay(Counter Based) : 64
        tag method : cts sgt
       alg key size: 16 (bytes)
       sig key size: 32 (bytes)
       encaps: ENCAPS_TUNNEL
```

发送ICMP流量从R6到R5 ：

```
R6#ping 10.0.3.10 repeat 10
Type escape sequence to abort.
Sending 10, 100-byte ICMP Echos to 10.0.3.10, timeout is 2 seconds:
!!!!!!!!!!
Success rate is 100 percent (10/10), round-trip min/avg/max = 1/1/6 ms
```

检查R3是否附加SGT标记到加密的信息包：

```
R3#show crypto ipsec sa detail

interface: Ethernet0/0
   Crypto map tag: cmap, local addr 192.168.0.3

  protected vrf: (none)
  local  ident (addr/mask/prot/port): (10.0.0.0/255.255.0.0/1/0)
  remote ident (addr/mask/prot/port): (10.0.0.0/255.255.0.0/1/0)
  Group: group1
  current_peer 0.0.0.0 port 848
    PERMIT, flags={}
   #pkts encaps: 39, #pkts encrypt: 39, #pkts digest: 39
   #pkts decaps: 39, #pkts decrypt: 39, #pkts verify: 39
   #pkts compressed: 0, #pkts decompressed: 0
   #pkts not compressed: 0, #pkts compr. failed: 0
   #pkts not decompressed: 0, #pkts decompress failed: 0
   #pkts no sa (send) 0, #pkts invalid sa (rcv) 0
   #pkts encaps failed (send) 0, #pkts decaps failed (rcv) 0
   #pkts invalid prot (recv) 0, #pkts verify failed: 0
   #pkts invalid identity (recv) 0, #pkts invalid len (rcv) 0
   #pkts replay rollover (send): 0, #pkts replay rollover (rcv) 0
   ##pkts replay failed (rcv): 0
    #pkts tagged (send): 39, #pkts untagged (rcv): 39

<...some output ommited for clarity...>
```

检查dataplane计数器在组成员的GETVPN Branch2的(R3) ：

```
R3#show crypto gdoi gm dataplane counters

Data-plane statistics for group group1:
   #pkts encrypt            : 53       #pkts decrypt            : 53
   #pkts tagged (send)      : 53       #pkts untagged (rcv)     : 53
   #pkts no sa (send)       : 0        #pkts invalid sa (rcv)   : 0
   #pkts encaps fail (send) : 0        #pkts decap fail (rcv)   : 0
   #pkts invalid prot (rcv) : 0        #pkts verify fail (rcv)  : 0
   #pkts not tagged (send)  : 0        #pkts not untagged (rcv) : 0
   #pkts internal err (send): 0        #pkts internal err (rcv) : 0
```

使用调试，根据平台更多详细信息可以被透露。例如在R3 ：

```
R3#debug cts platform l2-sgt rx
R3#debug cts platform l2-sgt tx
```

从LAN的R3接收的数据包应该是被标记的SGT ：

```
01:48:08: cts-l2sgt_rx:l2cts-policysgt:[in=Ethernet0/1 src=0100.5e00.0005 dst=aabb.cc00.6800]
Policy SGT Assign [pak=F1B00E00:flag=0x1:psgt=3]
```

并且加密的信息包通过通道发送将是标记为的：

```
01:49:28: cts_ether_cmd_handle_post_encap_feature:pak[36BF868]:size=106 in=Ethernet0/1
```

```
out=Ethernet0/0 enctype=1 encsize=0 sgt_offset=18 [adj]:idb=Ethernet0/0 is_dot1q=0 linktype=7
mac_length=22 SGT=3
```

测试SGT意识ZBF

R3将接受用SGT=4标记的仅ICMP数据包来自广域网。当发送ICMP数据包从R6到R5时：

```
R6#ping 10.0.3.10 repeat 11
Type escape sequence to abort.
Sending 1, 100-byte ICMP Echos to 10.0.3.10, timeout is 2 seconds:
!
Success rate is 100 percent (1/1), round-trip min/avg/max = 1/1/6 ms
```

R3将收到标记为的ESP数据包，解密它。然后ZBF将接收流量：

```
*Mar 17 12:45:28.039: %FW-6-PASS_PKT: (target:class)-(WAN-LAN:TAG_4_ICMP) Passing icmp pkt
10.0.4.10:0 => 10.0.3.10:0 with ip ident 57
```

并且策略映射将提交计数器用接受的数据包编号：

```
R3#show policy-firewall stats all
Global Stats:
       Session creations since subsystem startup or last reset 0
       Current session counts (estab/half-open/terminating) [0:0:0]
       Maxever session counts (estab/half-open/terminating) [0:0:0]
       Last session created never
       Last statistic reset never
       Last session creation rate 0
       Maxever session creation rate 0
       Last half-open session total 0

policy exists on zp WAN-LAN
 Zone-pair: WAN-LAN

 Service-policy inspect : FROM_WAN

   Class-map: TAG_4_ICMP (match-all)
      Match: security-group source tag 4
      Match: protocol icmp
     Pass
        18 packets, 1440 bytes

   Class-map: class-default (match-any)
     Match: any
     Drop
       3 packets, 72 bytes

policy exists on zp LAN-WAN
 Zone-pair: LAN-WAN

 Service-policy inspect : FROM_LAN

   Class-map: class-default (match-any)
     Match: any
     Pass
       18 packets, 1440 bytes
```

当尝试从R6远程登录到将由R3丢弃的R5时-，因为telnet未允许：

```
*Mar 17 12:49:30.475: %FW-6-DROP_PKT: Dropping tcp session 10.0.4.10:37500 10.0.3.10:23 on zone-
```

```
pair WAN-LAN class class-default due to  DROP action found in policy-map with ip ident 36123
```

参考

- 思科TrustSec交换机配置指南：了解思科TrustSec
- 配置安全工具用户授权的一个外部服务器
- 思科ASA系列VPN CLI配置指南， 9.1
- 思科身份服务引擎用户指南，版本1.2
- 技术支持和文档 - Cisco Systems