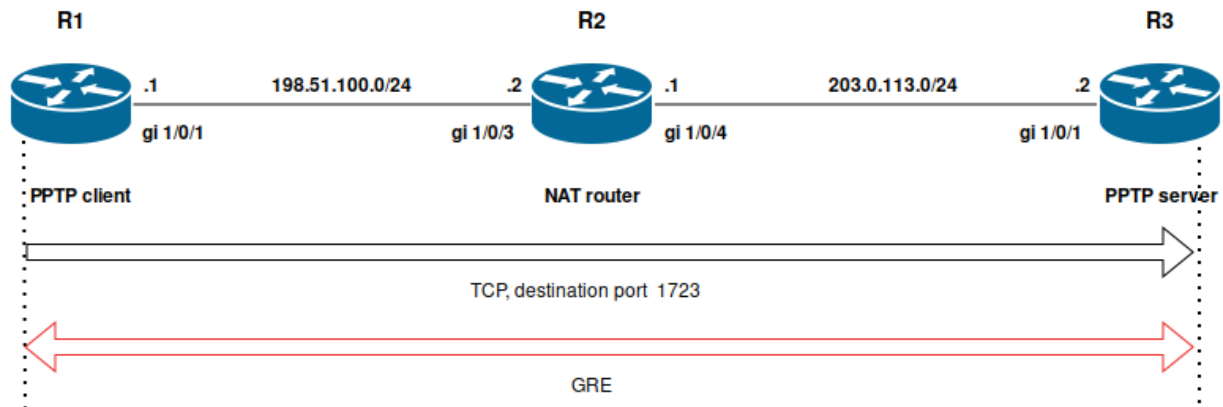


ESR PPTP -



: PPTP- SNAT.

: PPTP (Point-to-Point Tunneling Protocol) - PPTP — , . TCP, 1723. GRE, . , NAT, , - ., GRE, PPTP, Call ID, , SNAT, GRE, . NAT point-to-point GRE. , .

```

Frame 11: 70 bytes on wire (560 bits), 70 bytes captured (560 bits)
Ethernet II, Src: 68:13:e2:7f:f4:15 (68:13:e2:7f:f4:15), Dst: EltexEnt_ad:22:2f (a8:f9:4b:ad:22:2f)
Internet Protocol Version 4, Src: 203.0.113.1, Dst: 203.0.113.2
Generic Routing Encapsulation (PPP)
  Flags and Version: 0x3001
  Protocol Type: PPP (0x880b)
  Payload Length: 24
  Call ID: 2048
  Sequence Number: 1
  
```

PPTP-, TCP 1723.

tcp.port == 1723						
No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	203.0.113.1	203.0.113.2	TCP	74	51306 → 1723 [SYN] Seq=0 Win=29200 Len=0 MSS=1460 SACK_PERM=1...
2	0.000136	203.0.113.2	203.0.113.1	TCP	74	1723 → 51306 [SYN, ACK] Seq=0 Ack=1 Win=28960 Len=0 MSS=1460 ...
3	0.001236	203.0.113.1	203.0.113.2	TCP	66	51306 → 1723 [ACK] Seq=1 Ack=1 Win=29312 Len=0 TSval=745456 T...
4	0.004795	203.0.113.1	203.0.113.2	PPTP	222	Start-Control-Connection-Request
5	0.004841	203.0.113.2	203.0.113.1	TCP	66	1723 → 51306 [ACK] Seq=1 Ack=157 Win=30080 Len=0 TSval=911908...
6	0.009407	203.0.113.2	203.0.113.1	PPTP	222	Start-Control-Connection-Reply
7	0.010501	203.0.113.1	203.0.113.2	TCP	66	51306 → 1723 [ACK] Seq=157 Ack=157 Win=30336 Len=0 TSval=7454...
8	1.003875	203.0.113.1	203.0.113.2	PPTP	234	Outgoing-Call-Request
9	1.005292	203.0.113.2	203.0.113.1	PPTP	98	Outgoing-Call-Reply
10	1.006284	203.0.113.1	203.0.113.2	TCP	66	51306 → 1723 [ACK] Seq=325 Ack=189 Win=30336 Len=0 TSval=7455...

, - gre-.

gre						
No.	Time	Source	Destination	Protocol	Length	Info
11	1.006928	203.0.113.1	203.0.113.2	PPP LCP	70	Configuration Request
12	1.015843	203.0.113.2	203.0.113.1	PPP LCP	69	Configuration Request
13	2.008454	203.0.113.1	203.0.113.2	PPP LCP	69	Configuration Ack
14	2.008777	203.0.113.2	203.0.113.1	PPP LCP	64	Configuration Reject
15	2.009840	203.0.113.1	203.0.113.2	PPP LCP	68	Configuration Request
16	2.010047	203.0.113.2	203.0.113.1	PPP LCP	68	Configuration Ack
17	2.010129	203.0.113.2	203.0.113.1	PPP CHAP	94	Challenge (NAME='pptpd-remote-workers', VALUE=0xfe4feb7962302...
18	2.011284	203.0.113.1	203.0.113.2	PPP LCP	60	Echo Request
19	2.011286	203.0.113.1	203.0.113.2	PPP CHAP	73	Response (NAME='ivan', VALUE=0x86ed72a8c2d38bea5c16931a7e6e99...
20	2.011501	203.0.113.2	203.0.113.1	PPP LCP	60	Echo Reply
21	2.011671	203.0.113.2	203.0.113.1	PPP CHAP	66	Success (MESSAGE='Access granted')

PPTP- (R3):

- firewall TCP 1723 self;
- firewall gre self.

R2, SNAT, :

- ip firewall sessions tracking pptp - ;
- nat alg gre - IP- gre;
- nat alg pptp - IP- pptp.

R1

PPTP

```
hostname R1

interface gigabitethernet 1/0/1
  description "LAN"
  ip firewall disable
  ip address 198.51.100.1/24
exit
tunnel ptp 1
  ip firewall disable
  authentication method mschap-v2
  description "worker"
  username ivan password ascii-text encrypted 8CB5107EA7005AFF
  remote address 203.0.113.2
  enable
exit

ip route 203.0.113.2/32 198.51.100.2
```

R2

NAT

```
hostname  
R2
```

```
interface gigabitethernet 1/0  
/3
```

```
    ip firewall  
disable
```

```
    ip address 198.51.100.2  
/24
```

```
exit
```

```
interface gigabitethernet 1/0  
/4
```

```
    ip firewall  
disable
```

```
    ip address 203.0.113.1  
/24
```

```
exit
```

```
ip firewall sessions tracking  
pptp
```

```
nat  
source
```

```
    ruleset  
pptp
```

```
        to interface gigabitethernet 1/0  
/4
```

```
        rule  
10
```

```
            action source-nat  
interface
```

```
enable
```

```
exit
```

```
exit
```

```
exit
```

```
nat alg  
gre
```

```
nat alg pptp
```

PPTP

```
hostname R3

ip firewall sessions counters
object-group service PPTP
  port-range 1723
exit

object-group network pptp_outside
  ip address-range 203.0.113.2
exit
object-group network pptp_local
  ip address-range 10.0.0.1
exit
object-group network pptp_remote
  ip address-range 10.0.0.10-10.0.0.20
exit
object-group network pptp_dns
  ip address-range 8.8.8.8
exit

security zone PPTP
exit
security zone trusted
exit

interface gigabitethernet 1/0/1
  security-zone trusted
  ip address 203.0.113.2/24
exit
security zone-pair PPTP self
  rule 10
    action permit
    match protocol icmp
    enable
  exit
exit
security zone-pair trusted self
  rule 10
    action permit
    match protocol tcp
    match destination-port PPTP
    enable
  exit
  rule 20
    action permit
    match protocol gre
    enable
  exit
exit

remote-access pptp remote-workers
  authentication mode local
  authentication method mschap-v2
  local-address object-group pptp_local
  remote-address object-group pptp_remote
  outside-address object-group pptp_outside
  dns-servers object-group pptp_dns
  security-zone PPTP
  username ivan
    password ascii-text encrypted 8CB5107EA7005AFF
    enable
  exit
  enable
exit

ip route 198.51.100.1/32 203.0.113.1
```

- NAT- R2

```
R2# show ip nat translations
```

Prot	Inside source	Inside destination	Outside source	Outside destination	Pkts	Bytes
gre	198.51.100.1	203.0.113.2:2	203.0.113.1:39556	203.0.113.2:2	--	--
tcp	198.51.100.1:33946	203.0.113.2:1723	203.0.113.1:33946	203.0.113.2:1723	--	--

```
R1# show tunnels status
```

Tunnel	Admin state	Link state	MTU	Local IP	Remote IP	Last change
pptp_1	Up	Up	1500	10.0.0.10	10.0.0.1	24 seconds

```
R3# show remote-access status pptp
```

User	IP-address	Server
ivan	10.0.0.10	pptp(remote-workers)

Count sessions: 1

:

- pptp , NAT "" IP, . . .
- pptp R2 expected - . gre- firewall, expected - . . expected - 256 . R2 pptp - , expected - .

R (config)# ip firewall sessions max-expect 512