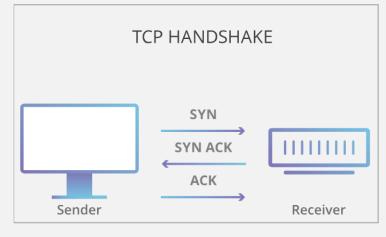
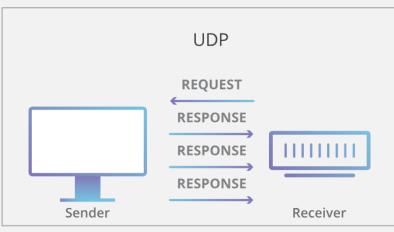
Virtual Routing

UDP Protocol

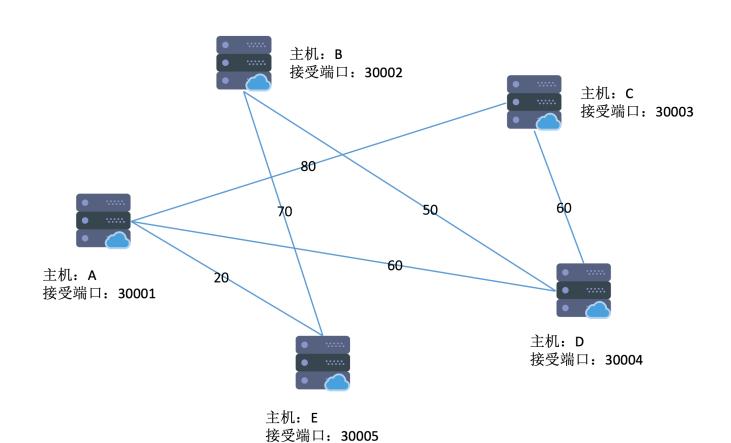
UDP is a communication protocol used across the Internet for especially time-sensitive transmissions such as video playback or <u>DNS</u> lookups. It speeds up communications by not requiring what's known as a "handshake", allowing data to be transferred before the receiving party agrees to the communication. This allows the protocol to operate very quickly, and also creates an opening for exploitation.

TCP vs UDP Communication

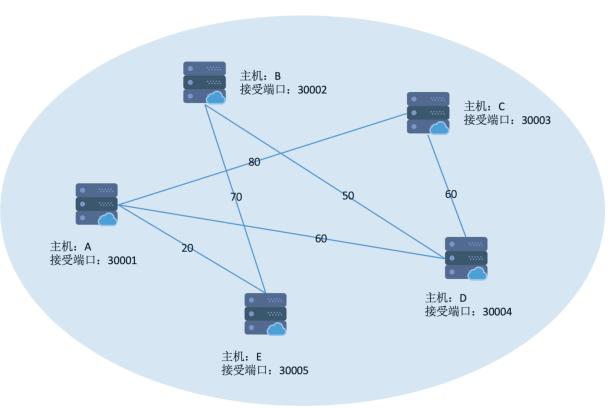




Self-organized Routing

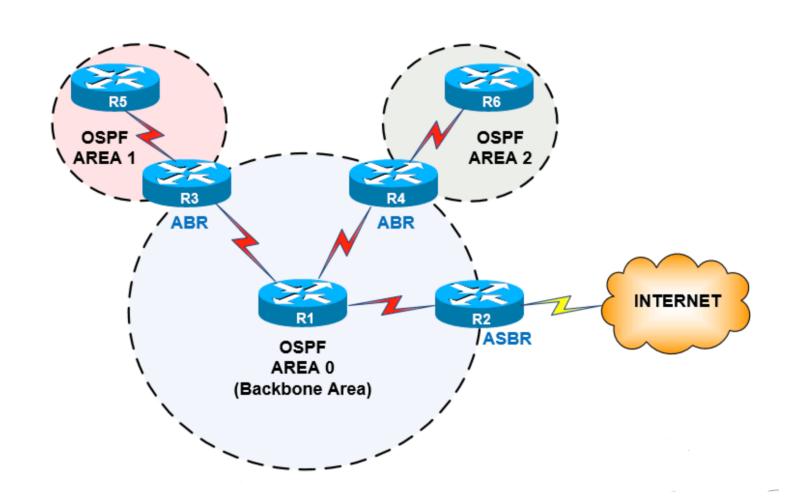


Centralized Routing

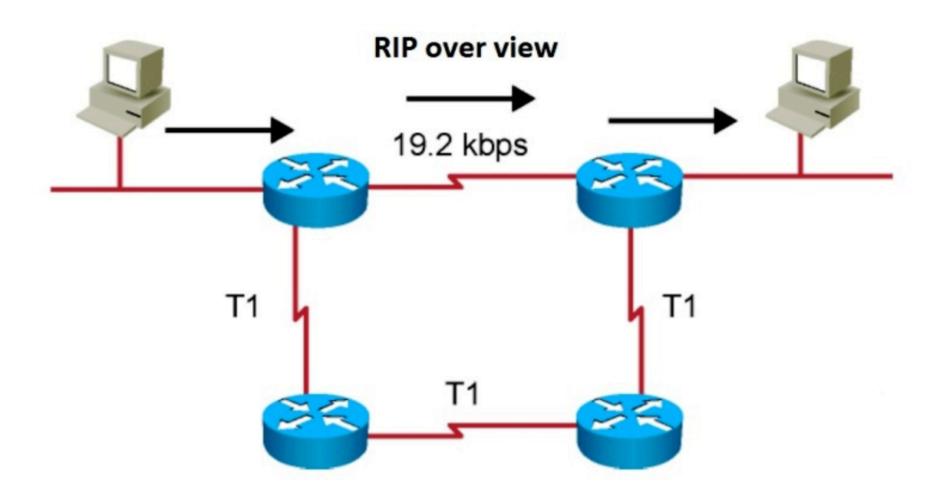


控制主机: M 接受端口: 30006

OSPF Protocol



RIP Protocol

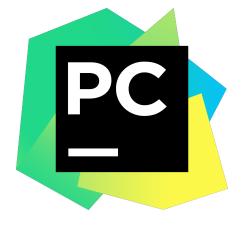


Our Experiments















Socket

Results

Link State Broadcast

```
A(14:59:43) >>> alive nodes: {'B', 'A'}
A(14:59:43) >>> OSPF forwarding table after updating...
   OSPF Forwarding Table of A:
A(14:59:44) >>> broadcasting link state...
A(14:59:58) >>> receive OSPF packet from: C 30003 1
A(14:59:58) >>> alive nodes: {'B', 'A', 'C'}
A(14:59:58) >>> OSPF forwarding table after updating...
   OSPF Forwarding Table of A:
0 ***** dest: C, next-hop: C
A(15:00:06) >>> receive OSPF packet from: D 30004 1
A(15:00:06) >>> plive nodes: {'B', 'A', 'C', 'D'}
A(15:00:06) >>> OSPF forwarding table after updating...
   DSPF Forwarding Table of A:
  ***** dest: C, next-hop: C
   ***** dest: D, next-hop: D
   ***** dest: B, next-hop: D
A(15:00:13) >>> receive OSPF packet from: B 30002 1
A(15:00:13) >>> alive nodes: {'B', 'A', 'C', 'D'}
A(15:00:13) >>> OSPF forwarding table after updating...
   DSPF Forwarding Table of A:
  ***** dest: C, next-hop: C
   ***** dest: D, next-hop: D
   ***** dest: B, next-hop: D
A(15:00:14) >>> receive OSPF packet from: E 30005 1
A(15:00:14) >>> plive nodes: {'E', 'D', 'B', 'A', 'C'}
```

• Package Transmission

```
8 ***** dest: 8, next-hop: 8
1 ***** dest: A, next-hop: A
2 ***** dest: 0, next-hop: A
3 ***** dest: C, next-hop: A
E(23:37:58) >>> OSPF forwarding table after updating...
   OSPF Forwarding Table of E :
8 ***** dest: 8, next-hop: 8
1 ***** dest: A, next-hop: A
 * ***** dest: 0, next-hop: A
3 ***** dest: C, next-hop: A
E(23:38:28) >>> OSPF forwarding table after updating...
   OSPF Forwarding Table of E:
8 ***** dest: 8, next-hop: 8
   ***** dest: A, next-hop: A
2 ****** dest: D, next-hop: A
3 eeeeee dest: C. noxt-hop: A
E(23:38:38) >>> Receive a normal packet. [ FROM: 0 , CONTENT: Hello, I'm 0. ]
E(23:38:58) >>> OSPF forwarding table after updating...
   OSPF Forwarding Table of E:
8 ***** dest: 8, next-hop: B
1 ***** dest: A, next-hop: A
2 ***** dest: 0, next-hop: A
3 ***** dest: C, next-hop: A
E(23:39:28) >>> OSPF forwarding table after updating...
   OSPF Forwarding Table of E:
8 ***** dest: B, next-hop: B
```

Downing Detection

```
(田)林(美) >>> alive nodes: 〈ヤ、ヤ、ヤ、ヤ、ヤ、ヤ)
 #(21541:17) yes alive make: ('W', 'W', 'W', 'W', 'W')
利益利益 xxx alive notes: 〈ヤ, ヤ, ヤ, ヤ, ヤ)
#(23:41:28) xxx alive nodes: {'V', 'Y', 'Y', 'Y', 'X'}
  四は13時 xxx alive nodes: (ヤ, ヤ, ヤ, ヤ, ヤ, ヤ)
#EBHUAD we alive notes: {W, W, W, W,
#(II):#1:52) xxx althe modes: 《항', '항', '항', '항',
#IEB41580 www alive nodes: { $\bar{\pi}$, $\bar{\pi}$, $\bar{\pi}$, $\bar{\pi}$.
 NEBARRED AND alline modes: {\P', \P', \P', \Y')
#(31)43:22) xxx althe nodes: {'V', 'U', 'U', 'Y', 'Y',
 MEDIALES --- alive nodes: {\V', \V', \V', \V')
利用が設備 xxx althe nodes: 〈ヤ, ヤ, ヤ, ヤ, ヤ)
#2354547 no alive nodes: {\bar{b}, 'b', 'b', 'b', 't'}
 知知論 xx sibe noise (お, ま, ま, ま)
#(23:42:58) see alive modes: {'b', 'b', 'b', 't']
 MEDIARCH we alive node: ('V', 'V', 'Y', 'Y',
#EDsは高か xx albe notes: (学, 学, 学, 学, 学)
 CINICIS see alive modes: {W, W, W, Y, Y}
制(II)がおが) xxx alive modes: (なんぜんぜんだんだん)
 (四48:5) >>> alive notes: (ヤ, ヤ, ヤ, ヤ, ヤ)
#[21:41:58] >>> alive modes: {'b', 'b', 'b', 'b', 't'}
 KEB||株||株|| see alike nodes: (ヤ、ヤ、ヤ、ヤ、ヤ)
```

More Info ...

• Demo on You Tube

• Code in



• Article in Jianshu



• Report



Collaborators

Nino Lau

Hongqi Lau

Boye Nie

Boyang Xu





