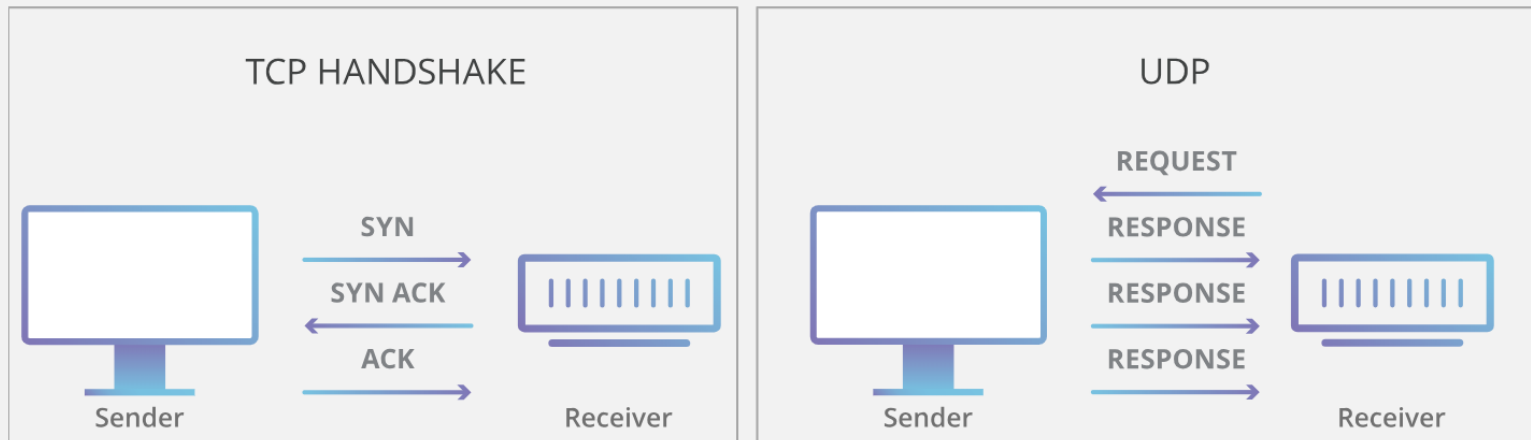


Virtual Routing

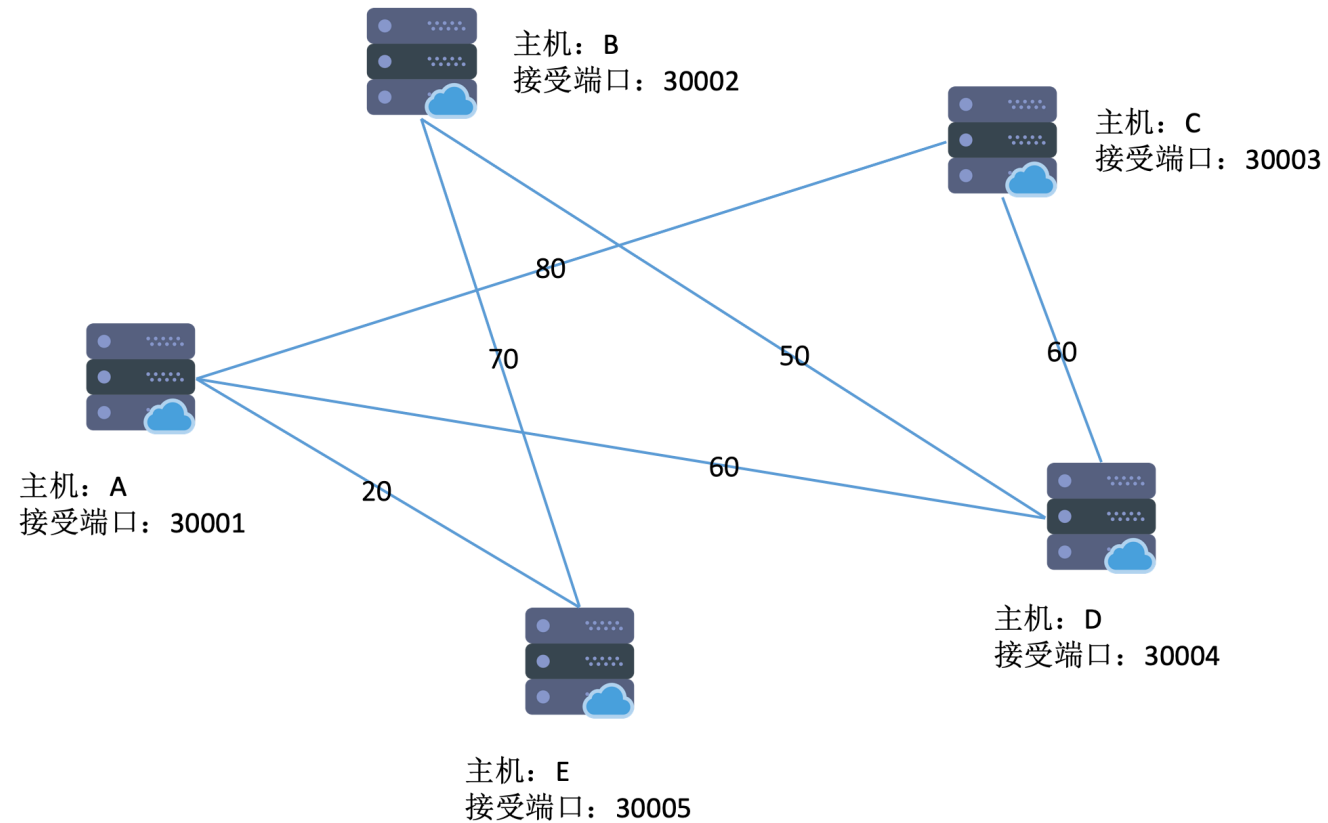
UDP Protocol

UDP is a communication protocol used across the Internet for especially time-sensitive transmissions such as video playback or [DNS](#) 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.

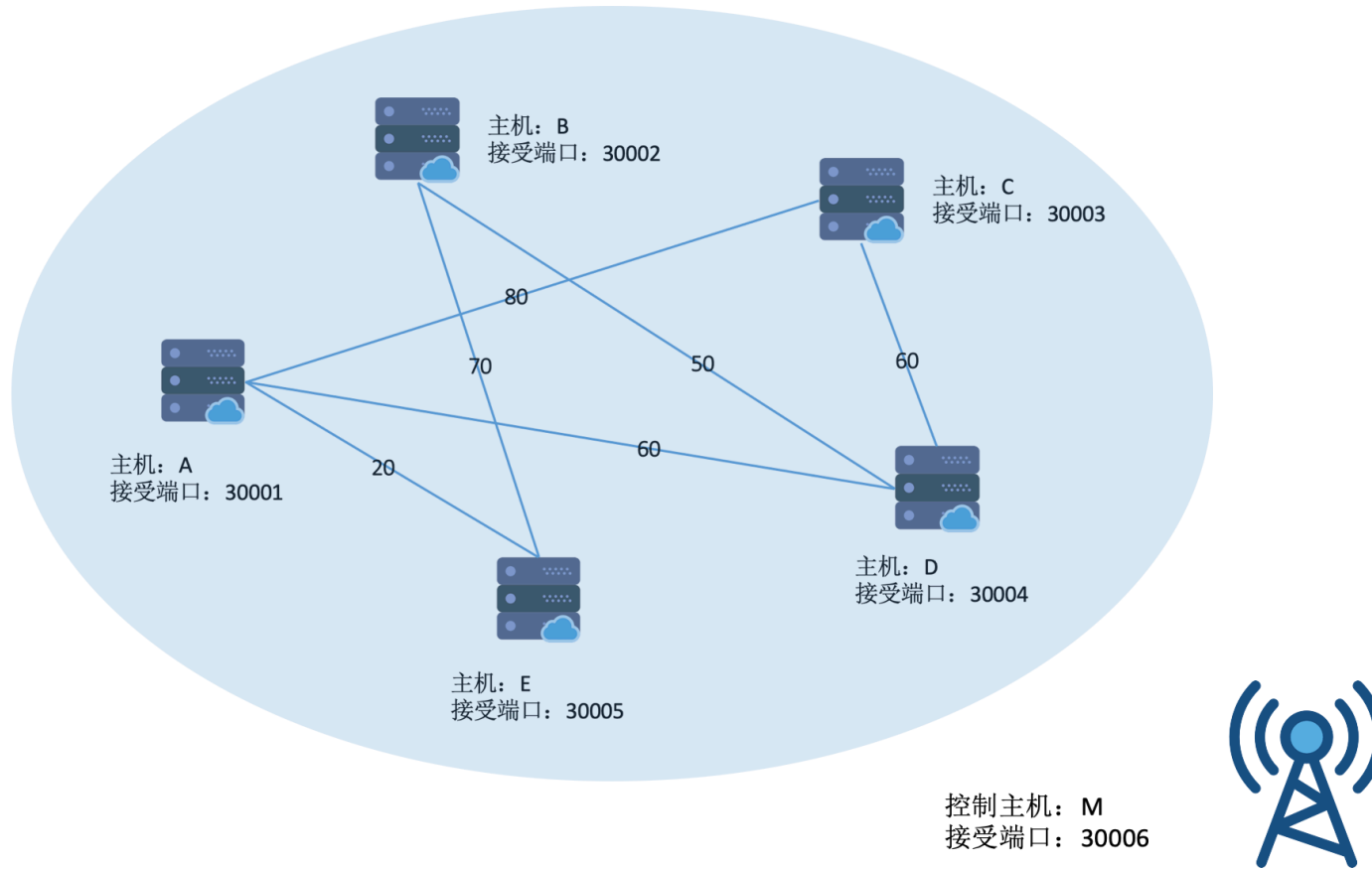
TCP vs UDP Communication



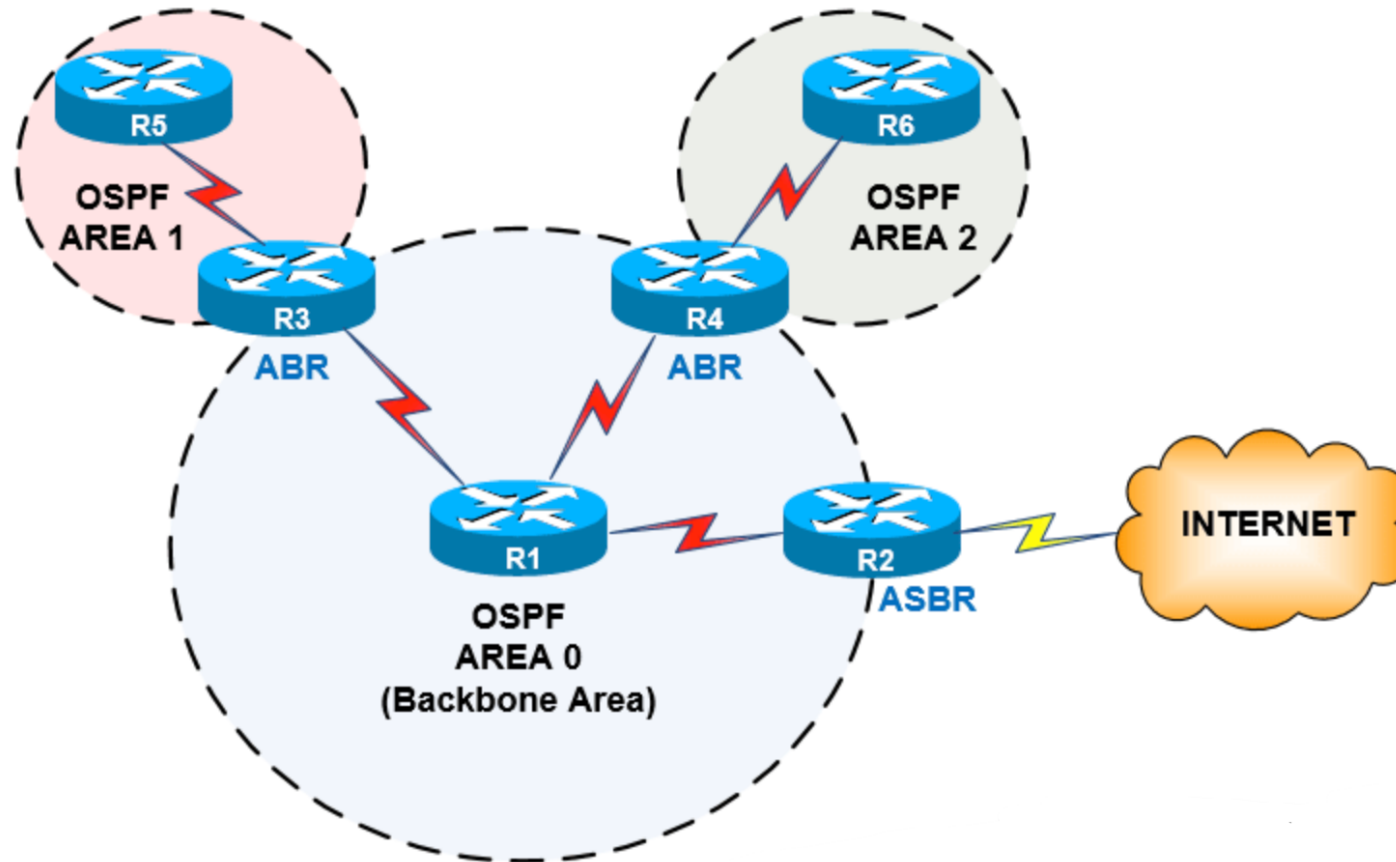
Self-organized Routing



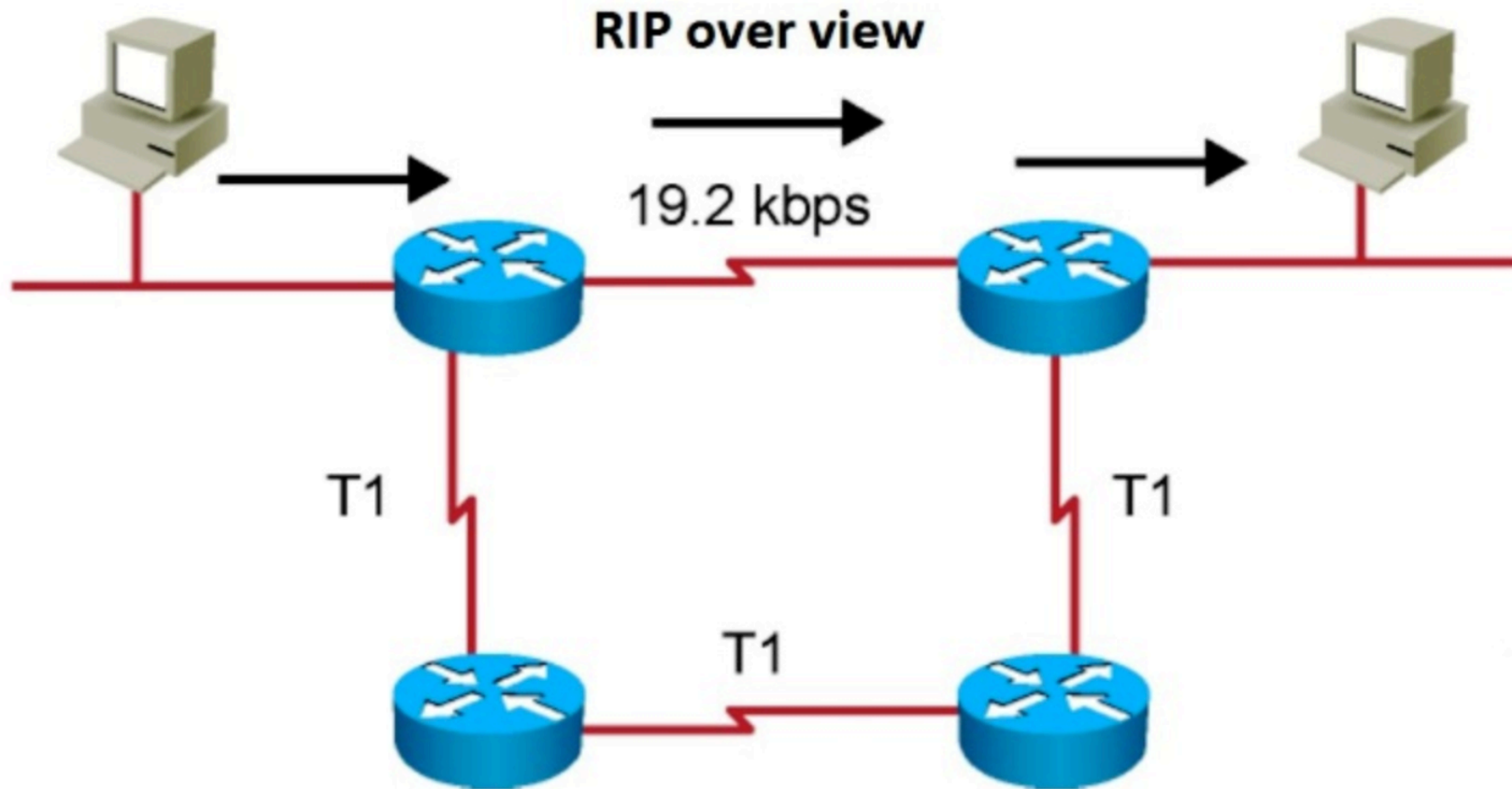
Centralized Routing



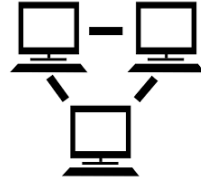
OSPF Protocol



RIP Protocol



Our Experiments



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) >>> alive nodes: {'B', 'A', 'C', 'D'}
A(15:00:06) >>> OSPF forwarding table after updating...
  OSPF Forwarding Table of A :
0 ***** dest: C, next-hop: C
1 ***** dest: D, next-hop: D
2 ***** 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...
  OSPF Forwarding Table of A :
0 ***** dest: C, next-hop: C
1 ***** dest: D, next-hop: D
2 ***** dest: B, next-hop: D
A(15:00:14) >>> receive OSPF packet from: E 30005 1
A(15:00:14) >>> alive nodes: {'E', 'D', 'B', 'A', 'C'}
```

- Package Transmission

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

- Downing Detection

```
0 ***** dest: B, next-hop: B
1 ***** dest: A, next-hop: A
2 ***** dest: D, next-hop: A
3 ***** dest: C, next-hop: A
E(23:40:38) >>> OSPF forwarding table after updating...
  OSPF Forwarding Table of E :
0 ***** dest: B, next-hop: B
1 ***** dest: A, next-hop: A
2 ***** dest: D, next-hop: A
3 ***** dest: C, next-hop: A
E(23:41:08) >>> OSPF forwarding table after updating...
  OSPF Forwarding Table of E :
0 ***** dest: B, next-hop: B
1 ***** dest: A, next-hop: A
2 ***** dest: D, next-hop: A
3 ***** dest: C, next-hop: A
E(23:41:38) >>> OSPF forwarding table after updating...
  OSPF Forwarding Table of E :
0 ***** dest: B, next-hop: B
1 ***** dest: A, next-hop: A
2 ***** dest: D, next-hop: A
3 ***** dest: C, next-hop: A
E(23:42:08) >>> OSPF forwarding table after updating...
  OSPF Forwarding Table of E :
0 ***** dest: B, next-hop: B
1 ***** dest: A, next-hop: A
2 ***** dest: D, next-hop: A
3 ***** dest: C, next-hop: A
E(23:42:38) >>> OSPF forwarding table after updating...
  OSPF Forwarding Table of E :
0 ***** dest: B, next-hop: B
1 ***** dest: A, next-hop: A
2 ***** dest: D, next-hop: A
3 ***** dest: C, next-hop: A
E(23:43:08) >>> OSPF forwarding table after updating...
  OSPF Forwarding Table of E :
0 ***** dest: B, next-hop: B
1 ***** dest: A, next-hop: A
2 ***** dest: D, next-hop: A
3 ***** dest: C, next-hop: A
E(23:43:38) >>> OSPF forwarding table after updating...
  OSPF Forwarding Table of E :
0 ***** dest: B, next-hop: B
1 ***** dest: A, next-hop: A
2 ***** dest: D, next-hop: A
3 ***** dest: C, next-hop: A
E(23:44:08) >>> OSPF forwarding table after updating...
  OSPF Forwarding Table of E :
0 ***** dest: B, next-hop: B
1 ***** dest: A, next-hop: A
```


More Info ...

- Demo on **You**

- Code in 

- Article in Jianshu 

- Report 

Collaborators

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