

n analysis of IPv6 anycast

<draft-ietf-ipngwg-ipv6-anycast-analysis-00.txt>

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Background

- **Anycast is adopted into IPv6 by RFC2373 (address arch)**
- **Looks quite useful**
 - Service discovery
 - Contacting actual services
 - No server discovery, use anycast address as is
 - DNS root servers?
- **Have not explored enough**
 - Scalability, usability, implication to other protocol components
- **Analyze the current status**
- **Compile suggestions**

B P anycast hack

- **done in server replication for specific set of servers**
 - Olympic games HTTP server
 - root name servers
- **Advertise a single prefix from multiple location by BGP**
- **Place unicast servers**
- **Slower failover/route switch than RFC2373 anycast**
- **Protocols has short transaction**

IPv6 anycast

- Documented in RFC2460/2373
- Anycast address
 - Identifies a set of nodes
 - Packet will reach only one out of many (usually, topologically closest one)
- Not distinguishable from unicast
- Nondeterministic packet delivery
 - Cannot fragment packets
 - Should discover unicast if you would like to exchange more than 2

Solutions/workarounds

- **Anycast address assignment to hosts**
 - Hosts (partially) participate into routing exchange, announce /128
 - Extend MLD/ND to let anycast listener(s) advertise itself
 - Scope/domain?

- **Persistent packet delivery, while putting anycast address in**
dst
 - Routing header - but you lose load balancing/service availability

Summary

□ Constraints

- Use of TCP is hard, UDP is possible
- Fragmentation, use of anycast in source, IPsec issues
- Routing constraints

□ Possible usage

- Direct use of anycast: uniform services only
- For discovery of unicast service address

□ Scalability

- Site-wide is okay, worldwide is hard

□ We need:

- More operational experiences
- Additional protocol components?
 - TCP session establishment w/ anycast

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