IPv6 Discussion

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Why bother with IPv6?

The pool of unassigned IPv4 addresses is running out

THE IPV4 DEPLETION SITE

Today's IANA depletion date estimate: 2011-04-27

IPv4 & IPv6 Statistics

v4 Addresses
181,242,243

v4 /8s Left
5% (14/256)

v6 Networks
7.3% (2,631/35,802)

v6 Ready TLDs
82% (243/294)

v6 Glue
3,317

v6 Domains
1,399,778

234
Days remaining

HURRICANE ELECTRIC
INTERNET SERVICES

But I've got tons of IPv4 addresses!

- New technologies will be (native) IPv6 only
- Developing areas
- IPv6 only eyeballs
- Eventually we will all run out of addresses

But I've got tons of IPv4 addresses!

- If you don't provide IPv6, someone else will
- Carrier Grade NAT for IPv6 only clients
- “Helpful” Users
- IPv6 is enabled by default on most OSes

What is different?

- Plenty of protocol level differences
- Biggest change is address length
- DHCP is to IPv4 as SLAAC is to IPv6

So what can I do now to prepare?

- Get an allocation and start learning IPv6
- Get it in the hands of all of your IT staff
- Determine what gear isn't IPv6 compatible

SLAAC

- StateLess Auto Address Configuration
- Provides address, default gateway, and MTU
- Addresses are assigned out of a 64bit pool
- e.g. 2001:1948:212:FACE:(EUI-64 here)/64

RA-Guard

- Would you run an IPv4 network without DHCP snooping?
- Most vendors are just now adding RA-Guard
- Try to use ACLs to block rogue RA servers

RA-Guard

- Demo

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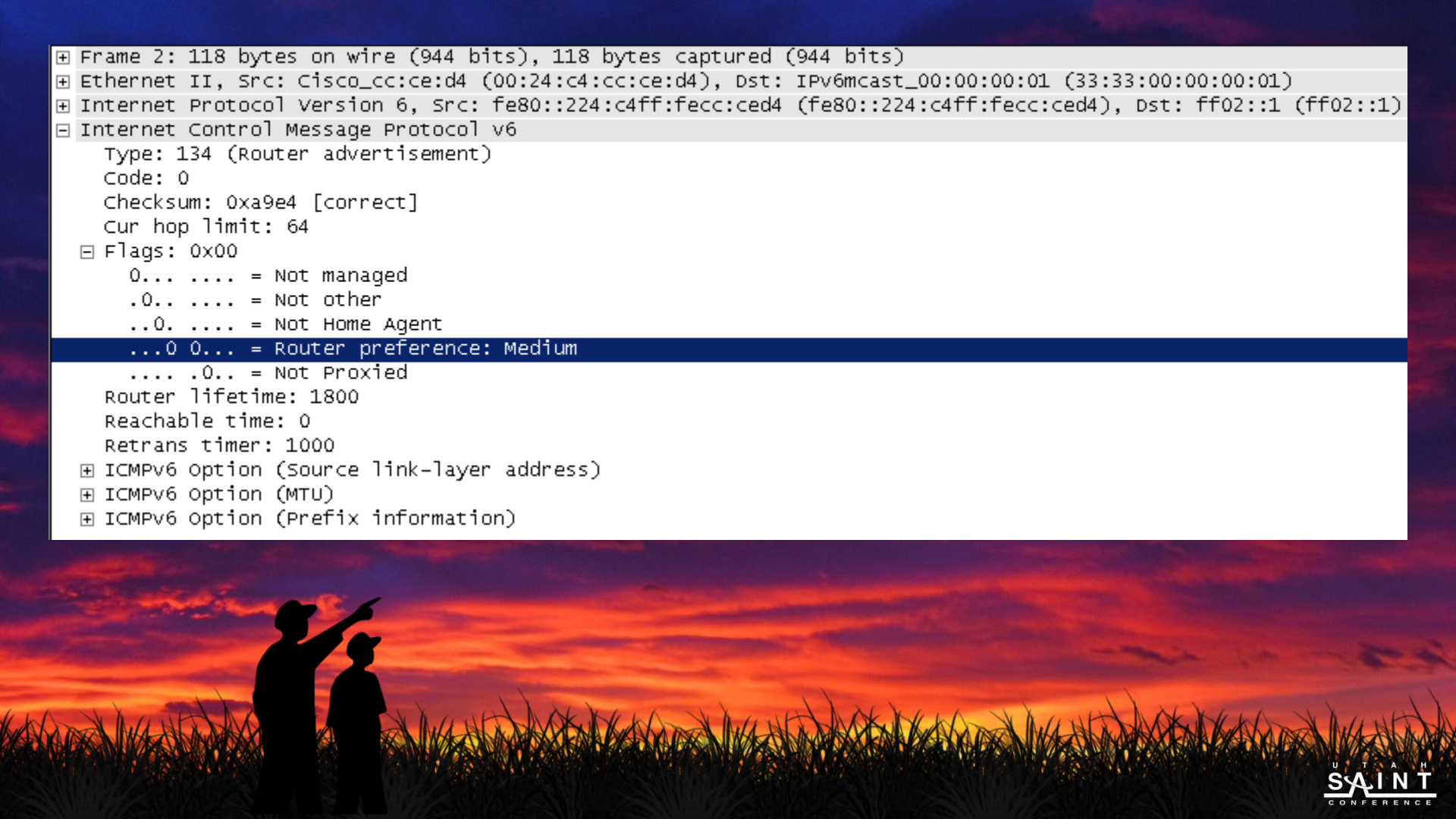
Frame 2: 118 bytes on wire (944 bits), 118 bytes captured (944 bits)
Ethernet II, Src: Cisco_cc:ce:d4 (00:24:c4:cc:ce:d4), Dst: IPv6mcast_00:00:00:01 (33:33:00:00:00:01)
Internet Protocol Version 6, Src: fe80::224:c4ff:fecc:ced4 (fe80::224:c4ff:fecc:ced4), Dst: ff02::1 (ff02::1)
Internet Control Message Protocol v6
Type: 134 (Router advertisement)
Code: 0
Checksum: 0xa9e4 [correct]
Cur hop limit: 64
Flags: 0x00
0... .... = Not managed
.0.. .... = Not other
..0. .... = Not Home Agent
...0 0... = Router preference: Medium
.... .0.. = Not Proxied
Router lifetime: 1800
Reachable time: 0
Retrans timer: 1000
ICMPv6 Option (Source link-layer address)
ICMPv6 Option (MTU)
ICMPv6 Option (Prefix information)

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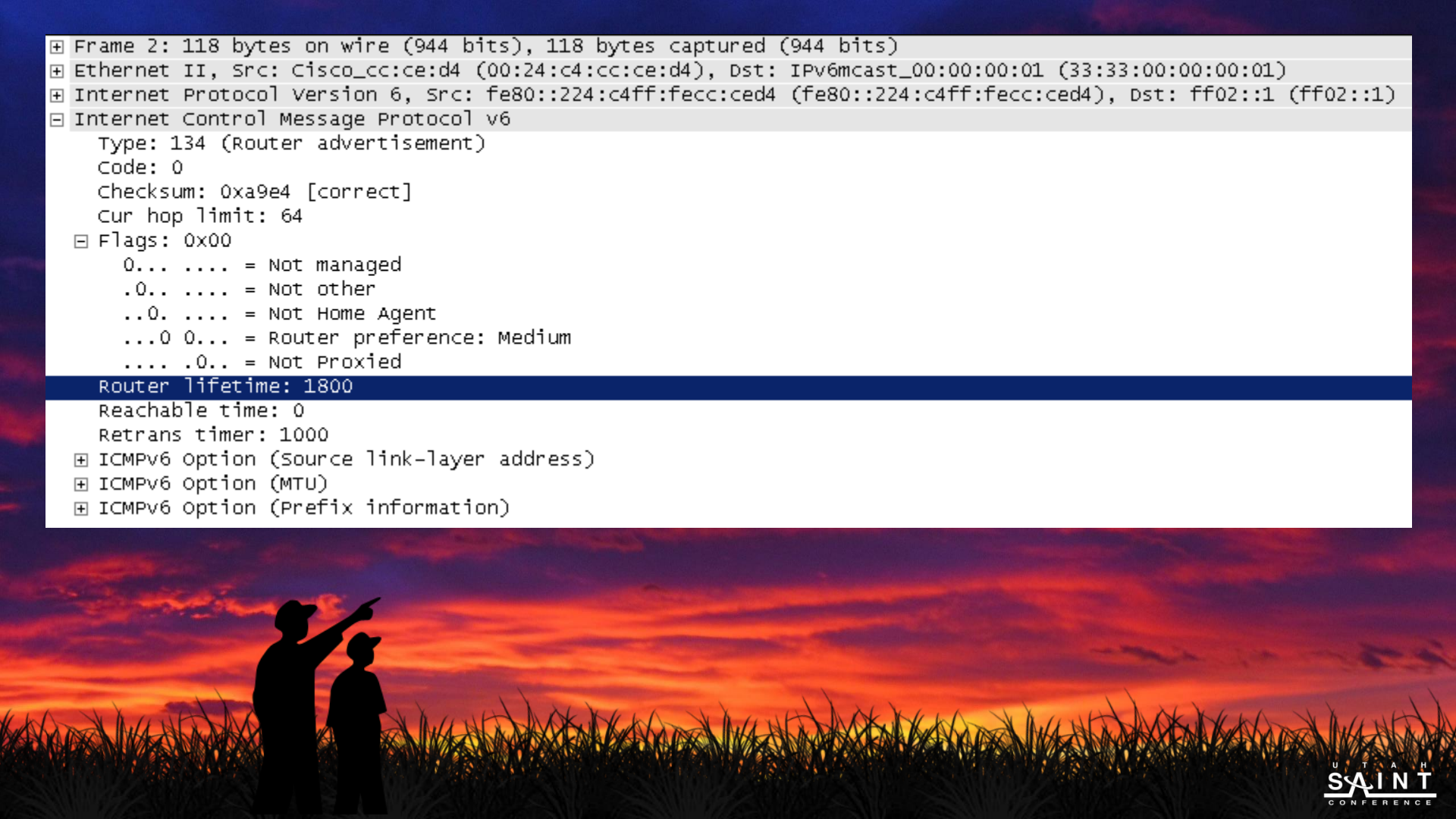

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