

Note, I was a proponent of running a dual stack, but I have very little clue as to how I would scale a v4 space-based network with cross-strapped radios, mobility, and dynamic networking. With v6, this appears to be a non-issue. Also, it makes the system a whole lot easier to secure as one can setup my network addressing and not have to be constantly changing things or adding and deleting static routes and such.

WARNING WARNING WARNING.

We have seen/heard of concepts like having one address for all radios and associated interfaces for particular vehicles.

How one would route to that using networking is a mystery to me. I believe such an implementation would drive one to use link-layer mapping to virtual circuits or something to that effect. IMHO, that would kill networking and be a nightmare to manage. It is the equivalent of having every house on the street have the same address or worse - probably worse.

Additional backup material:

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<http://www.iana.org/assignments/ipv6-multicast-addresses>

Current IPv6 multicast addresses are listed below.

Fixed Scope Multicast Addresses

These permanently assigned multicast addresses are valid over a specified scope value.

Node-Local Scope

FF01:0:0:0:0:0:0:1	All Nodes Address	[RFC4291]
FF01:0:0:0:0:0:0:2	All Routers Address	[RFC4291]
FF01:0:0:0:0:0:0:FB	mDNSv6	

[Cheshire]

Link-Local Scope

FF02:0:0:0:0:0:0:1	All Nodes Address	[RFC4291]
FF02:0:0:0:0:0:0:2	All Routers Address	[RFC4291]
FF02:0:0:0:0:0:0:3	Unassigned	[JBP]
FF02:0:0:0:0:0:0:4	DVMRP Routers	

[RFC1075, JBP]

FF02:0:0:0:0:0:0:5	OSPF/IGP	
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[RFC2328, Moy]

FF02:0:0:0:0:0:0:6	OSPF/IGP Designated Routers	
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[RFC2328, Moy]

FF02:0:0:0:0:0:0:7	ST Routers	
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[RFC1190, KS14]

FF02:0:0:0:0:0:0:8	ST Hosts	
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[RFC1190, KS14]

FF02:0:0:0:0:0:0:9	RIP Routers	[RFC2080]
FF02:0:0:0:0:0:0:A	EIGRP Routers	
[Farinacci]		
FF02:0:0:0:0:0:0:B	Mobile-Agents	[Bill
Simpson]		
FF02:0:0:0:0:0:0:C	SSDP	[Kostic]
FF02:0:0:0:0:0:0:D	All PIM Routers	
[Farinacci]		
FF02:0:0:0:0:0:0:E	RSVP-ENCAPSULATION	[Braden]
FF02:0:0:0:0:0:0:F	UPnP	[Fairman]
FF02:0:0:0:0:0:0:16	All MLDv2-capable routers	[RFC3810]
FF02:0:0:0:0:0:0:6A	All-Snoopers	[RFC4286]
FF02:0:0:0:0:0:0:FB	mDNSv6	
[Cheshire]		
FF02:0:0:0:0:0:0:1:1	Link Name	
[Harrington]		
FF02:0:0:0:0:0:0:1:2	All-dhcp-agents	[RFC3315]
FF02:0:0:0:0:0:0:1:3	Link-local Multicast Name Resolution	
[[RFC-ietf-dnsext-mdns-47.txt]]		
FF02:0:0:0:0:0:0:1:4	DTCP Announcement	[Vieth,
Tersteegen]		
FF02:0:0:0:0:0:1:FFXX:XXXX	Solicited-Node Address	[RFC4291]
FF02:0:0:0:0:0:2:FF00::/104	Node Information Queries	[RFC4620]
 Site-Local Scope -----		
FF05:0:0:0:0:0:0:2	All Routers Address	[RFC4291]
FF05:0:0:0:0:0:0:FB	mDNSv6	
[Cheshire]		
FF05:0:0:0:0:0:0:1:3	All-dhcp-servers	[RFC3315]
FF05:0:0:0:0:0:0:1:4	Deprecated (2003-03-12)	
FF0X:0:0:0:0:0:0:1:1000	Service Location, Version 2	[RFC3111]
-FF0X:0:0:0:0:0:0:1:13FF		

-----Original Message-----

From: ivancic [<mailto:ivancic@syzygyengineering.com>]
 Sent: Thursday, January 18, 2007 5:32 PM
 To: tbell@grc.nasa.gov; wivancic@grc.nasa.gov
 Subject: OSPF v 6

"IPv6 uses the term "link" to indicate "a communication facility or medium over which nodes can communicate at the link layer" ([Ref14]).

"Interfaces" connect to links. Multiple IP subnets can be assigned to a single link, and two nodes can talk directly over a single link, even if they do not share a common IP subnet (IPv6 prefix)."

2.1. Protocol processing per-link, not per-subnet

IPv6 uses the term "link" to indicate "a communication facility or medium over which nodes can communicate at the link layer" ([Ref14]).

"Interfaces" connect to links. Multiple IP subnets can be assigned to a single link, and two nodes can talk directly over a single link, even if they do not share a common IP subnet (IPv6 prefix).

For this reason, OSPF for IPv6 runs per-link instead of the IPv4 behavior of per-IP-subnet. The terms "network" and "subnet" used in the IPv4 OSPF specification ([Ref1]) should generally be replaced by link. Likewise, an OSPF interface now connects to a link instead of an IP subnet, etc.

This change affects the receiving of OSPF protocol packets, and the contents of Hello Packets and Network-LSAs.

Will

That's it. The only way you can do this with IPv4 is as describe in the first email or to use mobile-ipv4 mobile networking.

Will

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-----Original Message-----

From:
Sent: Monday, January 22, 2007 3:17 PM
To: Ivancic, William D. (GRC-RCN0)
Subject: Re: [Sis-csi] Notes from today

ok. I got it. On purpose, you demonstrated different addressing on the same link to show the possibility of using link-local addressing when the other addressing does not work. Interesting concept.

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Le 07-01-22 à 14:42, Ivancic, William D. (GRC-RCN0) a écrit :

>
>question of clarification: from my understanding of the graphic,
>there is one link between R2 and R3. However, it appears,

again from

>my understanding, that R2 interface on that link is using x:x:x:

>3::/64 while R3 interface on the same link is using

x:x:x:4::/64. The

>addressing means that they are on a different link. Am I wrong?

>

R3 and R4 are on the same physical link.

>

R3 is 2001:db8:1:3::/64

R3 Global interface is 2001:db8:1:3::1/128

>

R4 is 2001:db8:1:4::/64

R4 Global interface is 2001:db8:1:4::1/128

>

Thus, R3 and R4 are on different subnetworks. However they

are on the

same local link. Thus, they can communicate on using link-local
addressing!

>

Link-local addressing is only available using IPv6. Such a
capability

does not exist in IPv4.

>

>

Will

>

>