VS

RFC 8415

Dynamic Host Configuration Protocol for IPv6 (DHCPv6)

The Recap - IPv6 Address Configuration

Stateless Address Auto-Configuration (SLAAC)

- Baked into IPv6 (ICMPv6)
- Mandatory Support
- Must be a /64-sized prefix
- End-host decides the Interface-ID (and ∴ IP)
- End-host decides **how many** IP addresses to use

Stateful DHCPv6

- Server decides what address(es) the client can use
- No routes are signaled to client

DHCPv6 Lease types:

Temporary Address (TA) (deprecated [1])

- Single Address (/128)
- Not-renewable

Non-Temporary Address (NA)

- Single Address (/128)

Prefix Delegation (PD)

- Any prefix length

[1] By RFC8415-bis, currently in the RFC Editor Queue

The Problem

Identity Management - “Who had what when?”

i.e., Stateless vs Stateful

Without stateful addressing, other hacks have been implemented by enterprise networks.

e.g., Neighbour[1] Table/Cache logging

[1] Because this is the **UK** IPv6 Council

The History

Android Public Tracker 36949085

Support for DHCPv6 (RFC 3315)

+1 590 | Hotlists (11) | Mark as Duplicate

Comments (99+) | Dependencies (0) | Duplicates | Blocking (0) | Resources (99)

WAI | Feature Request | P4 | + | [AOSP] assigned

STATUS UPDATE No update yet.

DESCRIPTION to...@fud.no created issue #1 — Jun 3, 2012 02:17PM

Android does currently not support DHCPv6 as defined by RFC 3315. This results in an incomplete IPv6 implementation, as it will not act correctly when receiving an ICMPv6 Router Advertisement with the OtherConfig and/or Managed flags set.

When this feature is implemented correctly, the behaviour should be as follows:

- Upon receiving an ICMPv6 Router Advertisement with the Managed flag set, Android should start a DHCPv6 client in stateful mode. In this mode it should request both an address (IA_NA), as well as other configuration data (including, but not limited to, a list of recursive DNS servers). The DHCPv6 client should be left running, to ensure Renew/Rebind transactions are started when the T1/T2 timers expire.

- Upon receiving an ICMPv6 Router Advertisement with the OtherConfig flag set and the Managed flag unset, Android should start a DHCPv6 client in stateless mode (using a Information-Request transaction). In this mode it should only request configuration data that are not addresses (for example, a list of recursive DNS servers). Again, the DHCPv6 client should be left running, to ensure Renew/Rebind transactions are started when the T1/T2 timers expire.

This feature is required in order for Android to fully support IPv6 on the WiFi interface.

I have confirmed that this feature is missing as of Android 4.0.2 (on a stock Samsung Galaxy Nexus).

Reporter	to...@fud.no
Type	Feature Request
Priority	P4
Severity	S3
Status	Won't fix (Intended behavior)
Access	Default access View
Assignee	
Verifier	
Collaborators	
CC	gh...@google.com lo...@google.com ma...@google.com ma...@google.com sp...@google.com ya...@google.com

The Drama

da...@pobox.com <da...@pobox.com> #147 Jul 23, 2015 04:19AM

Dear Lorenzo Colliti, please implement stateful DHCPv6. For questions on how to implement DHCP forwarding with tethering, refer to http://www.howtogeek.com/137784/it-geek-how-to-use-a-dhcp-relay-junos/

Anyone who claims DHCP inhibits tethering is an idiot. Yeah, I said it.

I just returned a couple brand new android phones because of this bug. iOS forevah! Death to droid!

br...@mainsequence.net <br...@mainsequence.net> #166 Jan 24, 2016 03:08AM

I cannot believe it is 2016 and Android still does not support IPv6 properly. The android users at my company cannot get an IPv6 address because I utilized DHCPv6. I don't want to rely on our Cisco router to assign IP addresses. Not that it wouldn't work, it doesn't seem clean to me.

So what gives? Fix the damn problem.

[Deleted User] <[Deleted User]> #192 Oct 27, 2016 12:59PM

3 years later, Lorenzo is still dictating network design for companies around the world.

Lorenzo, You clearly care about IPv6 being done right. Unfortunately, you care so much that you are actually hindering it. You are forcing people to continue a dual-stack environment with partial support for Android because you feel you have some higher ground. Not only that, you are impacting the reputation of your employer.

Seriously.. between here, Reddit, Nanog, and ipv6-ops, it should be clear that most people want DHCPv6 support in Android.

#457

The Fake News

"Android hates DHCPv6"

Internet Engineering Task Force (IETF)
Request for Comments: 7934
BCP: 204
Category: Best Current Practice
ISSN: 2070-1721

L. Colitti
V. Cerf
Google
S. Cheshire
D. Schinazi
Apple Inc.

July 2016

Host Address Availability Recommendations

Abstract

This document recommends that networks provide general-purpose end hosts with multiple global IPv6 addresses when they attach, and it describes the benefits of and the options for doing so.

8. Recommendations

In order to avoid the problems described above and preserve the Internet's ability to support new applications that use more than one IPv6 address, it is RECOMMENDED that IPv6 network deployments provide multiple IPv6 addresses from each prefix to general-purpose hosts. To support future use cases, it is NOT RECOMMENDED to impose a hard limit on the size of the address pool assigned to a host. Particularly, it is NOT RECOMMENDED to limit a host to only one IPv6 address per prefix.

Due to the drawbacks imposed by requiring explicit requests for address space (see Section 4), it is RECOMMENDED that the network give the host the ability to use new addresses without requiring explicit requests. This can be achieved either by allowing the host to form new addresses autonomously (e.g., via SLAAC) or by providing the host with a dedicated /64 prefix. The prefix MAY be provided using DHCPv6 PD, SLAAC with per-device VLANs, or any other means.

The Solution

Android 11+ now supports DHCPv6—PD

The Benefits

Near-infinite addressing per host, with little impact to scale of the network.

e.g., for containers, or tethering.

The Caveats

Android will only ask for a PD if:

- It receives a Router Advertisement **including a PIO with the P flag set** (RFC 9762)

Or

- It receives **no** Router Advertisements **with a PIO** or with a PIO but **without the A flag set** (i.e., the network has SLAAC disabled). 5 seconds after learning a default route.

Android **will not** accept a DHCPv6-PD lease for prefixes longer than a /64

Coming Soon to an Android Near You

Internet Engineering Task Force (IETF)
Request for Comments: 9686
Category: Standards Track
ISSN: 2070-1721

W. Kumari
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December 2024

RFC 9686 - Registering Self-Generated IPv6 Addresses Using DHCPv6

This document provides a mechanism for a device to inform the DHCPv6 server that the device has a self-configured IPv6 address (or has a statically configured address), and thus provides parity with IPv4 by making DHCPv6 infrastructure aware of self-assigned IPv6 addresses.

A Call to Arms

draft-ietf-v6ops-6mops

IPv6-Mostly Networks:

Deployment and Operations Considerations

Workgroup:	IPv6 operations		
Internet-Draft:	draft-ietf-v6ops-6mops-04		
Published:	20 October 2025		
Intended Status:	Informational		
Expires:	23 April 2026		
Authors:	N. Buraglio	O. Caletka	J. Linkova
	Energy Sciences Network	*RIPE NCC*	*Google*

In a nutshell, an IPv6-mostly network is very similar to a dual-stack one with two additional key elements:

* The network provides NAT64 ([RFC6146]) functionality, enabling IPv6-only clients to communicate with IPv4-only destinations.
  - The network also provides the information about the NAT64 prefix (PREF64), for example via RAs ([RFC8781]), via DNS64 ([RFC6147], [RFC7050]), or both. This is to ensure that clients and the network's NAT64 use the same PREF64 to translate between IPv6 and IPv4. Section 4.3.3 and Section 4.3.4 discuss those mechanisms in more detail.
* The DHCPv4 server infrastructure offers DHCPv4 Option 108 as per [RFC8925]. This is to ensure that IPv6-only capable devices are not consuming IPv4 addresses. Section 4.2 discusses other approaches to provide IPv4 addresses on demand.

Upon connecting to an IPv6-mostly network segment, an endpoint configures its IP stack based on its capabilities:

* IPv4-Only Endpoint: Acquires an IPv4 address through DHCPv4.
* Dual-Stack Endpoint (Not IPv6-only capable): Configures IPv6 addresses using any supported protocol. Additionally, it obtains an IPv4 address via DHCPv4.
* IPv6-only capable endpoint configures its IPv6 addresses and, while performing DHCPv4, includes option 108 ([RFC8925]) into the Parameter Request List. The DHCP server returns the option and, as per [RFC8925] , the endpoint forgoes requesting an IPv4 address, remaining in IPv6-only mode.

An IPv6-mostly network segment can support a mix of IPv4-only, dual-stack, and IPv6-only devices. IPv6-only endpoints utilize the network-provided NAT64 to reach IPv4-only destinations.