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Running Multiple PLATs in 464XLAT
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Abstract

The IPv6 transition has been an ongoing process throughout the world due to the exhaustion of the IPv4 address space. The 464XLAT [RFC6877] provides a solution with limited IPv4 connectivity across an IPv6-only network, and the android system (version 2.3 and above) has already implemented the 464XLAT and the Prefix discovery solution [RFC7050]. However, the current 464XLAT architecture can only deal with the scenario with single PLAT in the network. When operator deploys multiple PLATs with different Pref64 prefixes, 464XLAT cannot cope with multiple prefixes for different destination addresses.

This document describes the architecture with multiple PLATs and also the deployment considerations.

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[1.](#) Introduction

The exhaustion of the IPv4 address space has been a practical problem that providers are facing today. Network address migration to IPv6 is ongoing or upcoming throughout the world. The 464XLAT architecture uses the IPv4/IPv6 translation technology standardized in [\[RFC6145\]](#) and [\[RFC6146\]](#). It encourages the IPv6 transition by making IPv4 service reachable across IPv6-only networks and providing IPv6 and IPv4 connectivity to IPv4 or IPv6 servers and peers of

single-stack. The android system (version 4.3 and above) has already implemented the 464XLAT [[RFC6877](#)] and the Prefix discovery method in [[RFC7050](#)].

However, as described in [section 6.3](#) [[RFC6877](#)], the CLAT will use the PLAT-side translation IPv6 prefix as the destination of all translation packets that require stateful translation to the IPv4 Internet. The Prefix Discovery method [[RFC7050](#)] cannot deal with the scenario when different PLATs are using with different Pref64 prefixes.

This document describes the solution of 464XLAT architecture with multiple PLATs and some deployment considerations

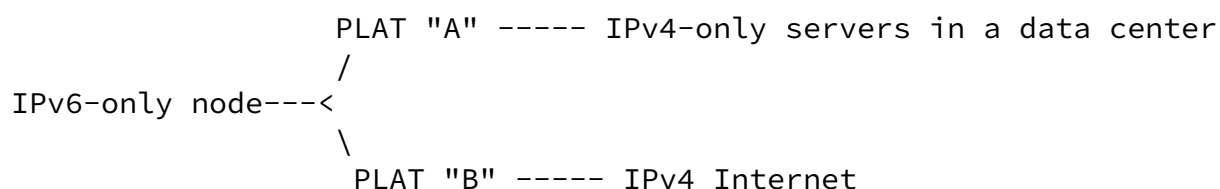
2. Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [[RFC2119](#)].

This document use the terminologies defined in [[RFC6877](#)] and [[RFC7050](#)].

3. Requirement of Multiple PLATs in 464XLAT

As defined in [[RFC6147](#)], it allows the implementations of DNS64 to be able to map specific IPv4 address ranges to separate Pref64::/n prefixes. That allows handling with special use of IPv4 addresses [[RFC6890](#)]. Therefore, operator may deploy multiple NAT64s (PLATs in 464XLAT) for different ranges of IPv4 servers. For example, one PLAT "A" is used when accessing IPv4-only servers in the data center, and a different PLAT "B" is used for Internet access as described in Figure 1. These two PLATs may have implemented different ALG types and different QoS treatment.



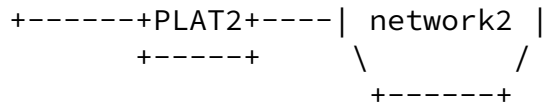


Figure 3: Architecture of multiPLATs in 464XLAT

4.1. Prefix Management Server

The Prefix Management Server includes the following modulars as described in Figure 4.

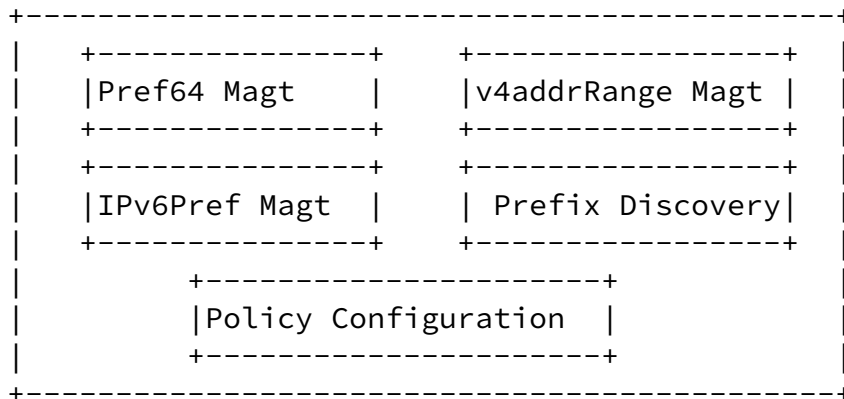


Figure 4: The implementation modular of Prefix Management Server

It would be configured with the policy to allocate multiple Pref64s. There may be different policies to apply. For example, it may map specific IPv4 destination address ranges to separate Pref64 prefixes, or map specific IPv6 source address ranges to separate Pref64 prefixes, or map both destination IPv4 address and source IPv6 address to Pref64 prefixes. The policy in Prefix Management Server should be consistent with the one of the PLAT deployment.

The prefix discovery method should be able to cope with multiple Pref64 prefixes. It may implement PCP based prefix discovery method [[RFC7225](#)] to allocate multiple Pref64 prefixes.

4.2. Enhanced CLAT for multiPLAT

In addition to satisfy the requirements of existing CLAT, the enhanced CLAT for multiPLAT should also implement the following modulars as described in figure 5:

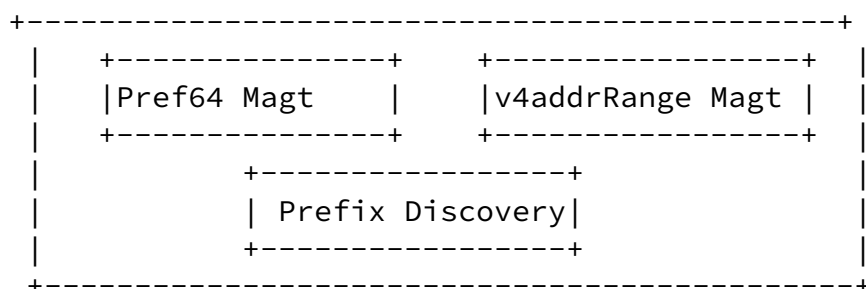


Figure 5: The implementation modulars of enhanced CLAT

The prefix discovery method should be consistent with the one in the Prefix Management Server. The Pref64 Management modular will extract the multiple Pref64 prefixes from the prefix discovery procedure and the v4addrRange Management modular will store the corresponding IPv4 address ranges. The prefix discovery method will get multiple Pref64

prefixes after the process of authentication and IPv6 address allocation. Then, the CLAT will use the Pref64 prefix as the destination for specific IPv4 address ranges.

The translation and DNS modular is the same with the traditional XLAT in [[RFC6877](#)].

5. Deployment Considerations

5.1. Prefix Management

The prefix management modular is important for multiPLATs in 464XLAT. However, since it would compare the destination address range with each packet in CLAT, it might affect the performance efficiency of the client. So, operators should limit the number of address ranges,

and aggregate the addresses into a larger address range.

Besides, there might also be a maximum limit configured in CLAT on the number of Pref64 prefixes and the number of address ranges. When the number of address ranges exceeds the limit, the CLAT may ignore the next Pref64 prefixes and use a default prefix for the rest of destinations. However, this may cause issues for unexpected results.

[5.2.](#) DNS64 Consistency

464XLAT does not require DNS64 [[RFC6147](#)] when IPv4 host sends IPv4 packets to reach IPv4 servers. But 464XLAT networks may use DNS64 to enable single stateful translation [[RFC6146](#)]. In this case, the configuration policy in DNS64 should be consistent with the Prefix Management Server. For example, how to map different IPv4 address ranges to Pref64 prefixes and IPv6 prefixes for Preference prefixes.

[6.](#) IANA Considerations

This document has no IANA actions.

[7.](#) Security Considerations

TO BE COMPLETED

[8.](#) Acknowledgements

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This document was produced using the xml2rfc tool [[RFC2629](#)].

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