

HP-UX Mobile IPv6 A.01.01 Release Notes

HP-UX 11i version 2 September 2004

Documentation Website—<http://www.docs.hp.com>



i n v e n t

Manufacturing Part Number : 5990-8593

October 2005

© Copyright 2003- 004 Hewlett-Packard Development Company, L.P.

Legal Notices

The information in this document is subject to change without notice.

Hewlett-Packard makes no warranty of any kind with regard to this manual, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Hewlett-Packard shall not be held liable for errors contained herein or direct, indirect, special, incidental or consequential damages in connection with the furnishing, performance, or use of this material.

Warranty

A copy of the specific warranty terms applicable to your Hewlett-Packard product and replacement parts can be obtained from your local Sales and Service Office.

U.S. Government License

Proprietary computer software. Valid license from HP required for possession, use or copying. Consistent with FAR 12.211 and 12.212, Commercial Computer Software, Computer Software Documentation, and Technical Data for Commercial Items are licensed to the U.S. Government under vendor's standard commercial license.

Copyright Notice

Copyright © 2005 Hewlett-Packard Development Company L.P. Reproduction, adaptation, or translation of this document without prior written permission is prohibited, except as allowed under the copyright laws.

Trademark Notices

UNIX® is a registered trademark in the United States and other countries, licensed exclusively through The Open Group.

HP-UX Mobile IPv6 A.01.01 Release Notes

The information in this document is for HP-UX Mobile IPv6 A.01.01 only.

What Is New in HP-UX Mobile IPv6 A.01.01?

Following are new in HP-UX Mobile IPv6 A.01.01:

- HP-UX Mobile IPv6 A.01.01 offers the same functionality as HP-UX Mobile IPv6 A.01.00, but delivery method has changed.

HP-UX Mobile IPv6 A.01.01 is included in the base (default) HP-UX 11i v2 September 2004 operating system. The previous release of HP-UX Mobile IPv6 (A.01.00) was included in the Transport Optional Upgrade Release 2.0 (TOUR 2.0) for the HP-UX 11i v1 (B.11.11) and HP-UX 11i v2 (B.11.23) operating systems.

- HP-UX Mobile IPv6 A.01.01 delivers the Mobile IPv6 kernel-module, `mip6mod`, as part of the base (default) transport functionality of the HP-UX 11i v2 September 2004 release. The HP-UX IPv6 Router Advertisement Daemon, which HP-UX Mobile IPv6 A.01.01 utilizes, is also delivered as part of the base (default) transport functionality of the HP-UX 11i v2 September 2004 release.

However, the HP-UX Mobile IPv6 A.01.01 user-space tools, `mip6admin`, and `mip6config`, are delivered in `HPUXMOBILEIP`, a software that you can select on all Operating Environments (OEs). The `HPUXMOBILEIP` product contains HP-UX Mobile IPv6 A.01.01.

IMPORTANT When you migrate an HP-UX 11i v2 system containing HP-UX Mobile IPv6 A.01.00 to the HP-UX 11iv2 September 2004 release, the HP-UX Mobile IPv6 A.01.00 kernel component `MIPV6_2-KRN` still remains on the system. You must not remove `MIPV6_2-KRN` though the kernel component for Mobile IPv6 is delivered as part of the base HP-UX 11i v2 September 2004 operating system because `MIPV6_2-KRN` is essential for HP-UX Mobile IPv6 A.01.00 to function properly.

Similarly, if you install a higher version of Mobile IPv6, that is HP-UX Mobile IPv6 A.01.01, on an HP-UX 11i v2 September 2004 release system containing HP-UX Mobile IPv6 A.01.00, you must not remove the `MIPV6_2-KRN` component, because it is also essential for HP-UX Mobile IPv6 A.01.01 to function properly.

Product Overview: HP-UX Mobile IPv6 A.01.01

HP-UX Mobile IPv6 A.01.01 implements the Mobile IPv6 protocol, which uses and expands several IPv6 protocol mechanisms. HP-UX Mobile IPv6 A.01.01 provides mobility support for IPv6 on the HP-UX 11i version 2 September 2004 release servers.

NOTE HP-UX Mobile IPv6 A.01.00 was the first release of the product. The Transport Optional Upgrade Release (TOUR) 2.0, which is available free of charge at the HP Software depot, <http://www.software.hp.com>, delivered the first release of the HP-UX Mobile IPv6 software.

With Mobile IPv6, Mobile Nodes such as laptops, PDAs, and cellular phones, remain reachable and retain their network connections while moving and attaching to the network from different locations. Each Mobile Node sends and receives IP data packets using a single, fixed IPv6 address—known as its Home Address—for an extended period regardless of its location. HP-UX Mobile IPv6 A.01.01 is not Mobile Node client software.

Without Mobile IPv6, Mobile Nodes cannot use a single, fixed IPv6 address while they roam. Instead, each time a Mobile Node moves and changes network attachment points, it must manually re-configure a new IP address and default router based on its current location—temporarily losing its network connections and ability to communicate in the process.

The Mobile Node's Home Address is an IPv6 unicast routable (global) address with a network prefix on the Mobile Node's Home Network. The Mobile Node's Home Network is the network that administers the Mobile Node, and the network to which the Mobile Node is normally attached.

When a Mobile Node is attached to a Foreign Network—any network other than its Home Network—it gets a temporary Care-of Address on the Foreign Network that identifies its current point of attachment to the Internet. The Care-of Address is an IPv6 unicast global address with the network prefix of the Foreign Network. The Mobile Node can get this address using IPv6 stateless autoconfiguration, or by using a stateful configuration method such as DHCPv6.

Use the information and resources listed in this document to learn more about HP-UX Mobile IPv6 A.01.01.

What Is Included in HP-UX Mobile IPv6 A.01.01?

The following sections describe the functionality, features, and content of HP-UX Mobile IPv6 A.01.01.

Functionality

HP-UX Mobile IPv6 A.01.01 includes a kernel-resident STREAMS module, `mip6mod`, that processes and generates IPv6 Mobility Headers, and utilizes the HP-UX IPv6 Router Advertisement Daemon to provide the following server functionality:

- Home Agent support
- Correspondent Node support

NOTE The same server can be both a Home Agent and a Correspondent Node.

Home Agent Support

Home Agents are nodes or routers that provide mobility services to Mobile Nodes from their home network. During Mobile IPv6 basic operation, a Mobile Node gets a temporary Care-of Address identifying its current location after it travels to a foreign network. The Home Agent intercepts data packets sent to the Mobile Node's Home Address and transparently routes them to the Mobile Node's current Care-of Address on the foreign network.

Correspondent Node Support

Correspondent Nodes are any IPv6 node communicating or corresponding with a Mobile Node, for example Web servers providing location-sensitive resources to Mobile Nodes. In most cases, the Mobile Node and Correspondent Node communicate using Route Optimization. Mobile IPv6 basic operation is only used in the initial communication, when the Correspondent Node does not have information about the Mobile Node's Care-of Address, and in cases where the Correspondent Node does not support Mobile IPv6 Route Optimization.

NOTE Correspondent Nodes do not use or require the HP-UX IPv6 Router Advertisement Daemon.

Features

HP-UX Mobile IPv6 A.01.01 provides the following features:

- IETF Standards Conformance
- Compatibility with HP-UX IPsec A.02.00
- Route Optimization
- Return Routability Procedure
- Dynamic Home Agent Address Discovery
- Prefix Discovery
- IPsec/IKE Dynamic Keying Support
- Multi-Processor Scaling
- Administration and Configuration File Tools
- nettl and netfmt Tool Support
- Multi-Vendor Interoperability and Conformance Testing

The following sections provide a brief description of each of the HP-UX Mobile IPv6 features listed above. Refer to the HP-UX Mobile IPv6 A.01.00 Administrator's Guide for more information on each feature.

IETF Standards Conformance

HP-UX Mobile IPv6 is based on the following IETF standards that can be found at <http://www.ietf.org>:

- RFC 3375 (*Mobility Support in IPv6*)
- RFC 3776 (*Using IPsec to Protect Mobile IPv6 Signaling between Mobile Nodes and Home Agents*)

Compatibility with HP-UX IPsec A.02.00

HP-UX IPsec A.02.00 secures the Mobile IPv6 traffic between the Mobile Node and Home Agent. You can download HP-UX IPsec A.02.00 from HP Software depot, <http://www.software.hp.com>.

What Is Included in HP-UX Mobile IPv6 A.01.01?

Route Optimization

In most cases, the Mobile Node and Correspondent Node communicate using Route Optimization, which improves data transmission rates between the two nodes. With Route Optimization, the Mobile Node and Correspondent Node communicate directly with each other and bypass the Home Agent. The Correspondent Node sends packets directly to the Mobile Node's Care-of Address, and the Mobile Node sends packets directly to the Correspondent Node.

Return Routability Procedure

The return routability procedure provides reasonable proof to the Correspondent Node that it can contact the Mobile Node through both the Home and Care-of Addresses; thereby, protecting the Correspondent Node from attackers that send false Binding Update messages. In this procedure, the Mobile Node exchanges messages with the Correspondent Node using both the Mobile Node's Home and Care-of Addresses and builds a shared key. The Mobile Node uses this shared key to attach a cryptographic signature to the Binding Update message, which the Correspondent Node authenticates to obtain the proof.

Dynamic Home Agent Address Discovery

With Dynamic Home Agent Address Discovery, a Mobile Node only needs a home network prefix configured and it can dynamically find the address of a Home Agent on its home network when it needs to register its Care-of Address.

Prefix Discovery

Prefix Discovery allows a Mobile Node to get network prefix information about its Home Network and to configure its Home Address if needed. The Home Agent monitors prefix information from Router Advertisement messages on the Home Network. The Mobile Node can request prefix information by sending a Mobile Prefix Solicitation message to the Home Agent.

IPsec/IKE Dynamic Keying Support

Dynamic keying uses the Internet Key Exchange (IKE) v1 protocol to ensure that pre-configured static keys are not exposed for long periods of time. IPsec can provide anti-replay protection only if dynamic keying is used. HP-UX Internet Protocol Security (IPsec) version A.02.01 and Transport Optional Upgrade Release (TOUR) 3.0 are required for dynamic keying support with HP-UX Mobile IPv6. For more information on dynamic keying, refer to *Installing and Administering HP-UX IPsec* at <http://docs.hp.com/en/J4256-90001/J4256-90001.pdf>.

Multi-Processor Scaling

HP designed and implemented HP-UX Mobile IPv6 for multi-processor scaling in environments using high-end systems supporting a large number of Mobile Nodes. Scaling the number of processors increases the number of Kernel-module instances processing IPv6 mobility message headers on the system.

What Is Included in HP-UX Mobile IPv6 A.01.01?

Administration and Configuration File Tools

HP-UX Mobile IPv6 includes a command line administration tool, `mip6admin`, to administer the HP-UX Mobile IPv6 kernel-resident STREAMS module. `mip6admin` performs several critical functions including; starting, stopping, and dynamically-reconfiguring `mip6mod`.

HP-UX Mobile IPv6 also includes a command line tool, `mip6config`, to quickly create, edit, and verify `mip6mod` Mobile IPv6 configuration files. The `mip6config` tool verifies `mip6mod` configuration parameters you configure and displays error messages after detecting invalid syntax or values.

nettl and netfmt Tool Support

HP enhanced the `nettl` data packet tracing tool and the `netfmt` formatting tool to support HP-UX Mobile IPv6. You can use `nettl` and `netfmt` to trace and format Mobile IPv6 Mobility Header and ICMPv6 messages after installing the appropriate patch for your operating system as shown in the following list. You can download the patches from the HP IT Resource Center patch database at <http://www.itrc.hp.com>:

- PHNE_30451 for HP-UX 11i version 2

Multi-Vendor Interoperability and Conformance Testing

HP tested HP-UX Mobile IPv6 A.01.01 in multi-vendor environments at the 2004 Connectathon interoperability event. HP also successfully tested HP-UX Mobile IPv6 A.01.01 with TAHI conformance suites.

Documentation and Additional Information

HP-UX Mobile IPv6 A.01.01 provides the following documentation and information resources:

Product Documentation

The documents in the following list are available on the Networking and Communications page <http://www.docs.hp.com>:

- *HP-UX Mobile IPv6 A.01.00 Administrator's Guide*
- *Introducing HP-UX Mobile IPv6 (White Paper)*

Manpages

The following is a list of manpages you can access by using the `man [manpage-name]` command:

- HP-UX Mobile IPv6
 - `mip6mod` Information about `mip6mod`, the Mobile IPv6 Kernel STREAMS module
 - `mip6admin` Information about `mip6admin`, the Mobile IPv6 administration tool
 - `mip6.conf` Information about `mip6.conf`, the Mobile IPv6 configuration file
 - `mip6config` Information about `mip6config`, the Mobile IPv6 configuration file tool
- Router Advertisement Daemon
 - `rtradvd` Information about `rtradvd`, the IPv6 Router Advertisement Daemon
 - `rtradvd.conf` Information about `rtradvd.conf`, the IPv6 Router Advertisement Daemon configuration file

IETF Documentation

HP-UX Mobile IPv6 is based on the following IETF standards that can be found at <http://www.ietf.org>:

- RFC 3775 (*Mobility Support in IPv6*)
- RFC 3776 (*Using IPsec to Protect Mobile IPv6 Signaling between Mobile Nodes and Home Agents*)

Fixes

HP-UX Mobile IPv6 A.01.01 does not have any defect fixes.

What Is Included in HP-UX Mobile IPv6 A.01.01?

Known Problems

HP-UX Mobile IPv6 A.01.01 does not have any known problems.

Availability in Native Languages

HP-UX Mobile IPv6 A.01.01 includes the following message catalogs for the `mip6admin` and `mip6config` tools that can be localized into various languages:

- `/usr/lib/nls/C/mip6admin.cat`
- `/usr/lib/nls/C/mip6config.cat`

HP-UX Mobile IPv6 A.01.01 Requirements

This section lists the resources needed and the software requirements for installing and running HP-UX Mobile IPv6 A.01.01.

Supported Operating Systems

HP-UX Mobile IPv6 A.01.01 is supported on the following 32 or 64-bit systems:

- HP-UX 11i v2 September 2004 release (B.11.23) PA-RISC servers
- HP-UX 11i v2 September 2004 release (B.11.23) Intel® Itanium® servers

Minimum System Resources

Mobile IPv6 on HP-UX 11i v2 September 2004 release requires the following minimum amount of system resources:

- HP-UX Mobile IPv6 A.01.01 uses about 400 KB of disk space, distributed as follows:
 - The root (/) directory uses ~8 KB
 - The /usr directory uses ~300 KB
 - The /opt directory uses ~8 MB
 - The /var directory uses ~88 KB
- Memory: Approximately 200 Bytes for each Mobile Node.
- At least one IPv6 ethernet interface on each system that will be a Home Agent. Correspondent Nodes can use any type of IPv6 network interface.

Software Dependencies for HP-UX Mobile IPv6 A.01.01

HP-UX Mobile IPv6 A.01.01 has the following software dependencies if the IPsec/IKE dynamic keying feature is used:

- IPSec version A.02.01
- Transport Optional Upgrade Release (TOUR) 3.0

Patch Requirements

HP-UX Mobile IPv6 A.01.01 does not require any patch for installation on the HP-UX 11i v2 September 2004 release operating system.

NOTE HP-UX Mobile IPv6 A.01.01 requires PHNE_30451 to use the `netttl` and `netfmt` tools on the HP-UX 11i v2 September 2004 system. HP-UX Mobile IPv6 A.01.01 does not require PHNE_30451 for installation.

Verifying the HP-UX Mobile IPv6 A.01.01 Installation

Use the following steps after installing the HP-UX 11i v2 September 2004 release operating system to verify the HP-UX Mobile IPv6 A.01.01 and required software installed successfully:

Step 1. Check the following log files for error messages:

- /var/adm/sw/swinstall.log
- /var/adm/sw/swagent.log

Step 2. Use the `swlist -l product MobileIPv6` command to verify the Mobile IPv6 A.01.01 product on your system. The following output displays if Mobile IPv6 A.01.01 is installed successfully on your system:

```
MobileIPv6          A.01.01          HP-UX Mobile IPv6 Software
```

The required software for each version of HP-UX Mobile IPv6 is listed in “Supported Operating Systems” on page 13.

NOTE

If you have migrated an HP-UX 11i v2 system containing HP-UX Mobile IPv6 A.01.00 to the HP-UX 11i v2 September 2004 release and if you have not installed HP-UX Mobile IPv6 A.01.01 on your system, you can see the following `swlist` output:

```
MobileIPv6          A.01.00          Mobile IPv6
```

Step 3. Verify whether all the HP-UX Mobile IPv6 A.01.01 product files are installed on your system. The “Getting Started with HP-UX Mobile IPv6” chapter in the *HP-UX Mobile IPv6 A.01.00 Administrator’s Guide* contains a list of the product files.

Removing (Uninstalling) HP-UX Mobile IPv6 A.01.01

Use the following steps to remove (uninstall) the HP-UX Mobile IPv6 A.01.01 product from your system:

- Step 1.** Use the `mip6admin stop` command to stop the `mip6mod` Mobile IPv6 A.01.01 kernel module on the system.
- Step 2.** Remove (uninstall) the Mobile IPv6 A.01.01 product by running the following command:

```
swremove MobileIPv6,r=A.01.01
```

IMPORTANT Do not remove HP-UX MobileIPv6 A.01.00 if it is installed on the system. Removing HP-UX Mobile IPv6 A.01.00 will remove the `mip6mod` kernel component, without which Mobile IPv6 will not function properly.

- Step 3.** Use the `swlist -l product MobileIPv6` command after the system reboots to verify the Mobile IPv6 A.01.01 product is not installed on the system. The `MobileIPv6` product will not appear in the `swlist` output if `swremove` successfully uninstalled the `MobileIPv6` product.