HP-UX Mobile IPv6 A.01.00 Release Notes

HP-UX 11i version 1 and version 2

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

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Acknowledgements

This product contains cryptography code from the WIDE project.
`http://www.wide.ad.jp/index.html`

HP-UX Mobile IPv6 A.01.00 Release Notes

The information in this document is for HP-UX Mobile IPv6 A.01.00 only.

Product Overview: HP-UX Mobile IPv6 A.01.00

The Transport Optional Upgrade Release (TOUR) 2.0, available free of charge at HP's Software depot, `http://www.software.hp.com`, delivers the first release of HP-UX Mobile IPv6 software.

HP-UX Mobile IPv6 A.01.00 implements the Mobile IPv6 protocol, which uses and expands several IPv6 protocol mechanisms. HP-UX Mobile IPv6 A.01.00 provides mobility support for IPv6 on HP-UX 11i version 1 and version 2 servers.

NOTE HP-UX Mobile IPv6 is not Mobile Node client 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.

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 DHCP.

Use the information and resources listed in this document to learn more about HP-UX Mobile IPv6 A.01.00.

What's Included in HP-UX Mobile IPv6 A.01.00

The following sections describe the functionality, features, and content of HP-UX Mobile IPv6 A.01.00.

Functionality

HP-UX Mobile IPv6 includes a Kernel-resident STREAMS module, `mip6mod`, that processes and generates IPv6 Mobility Headers, and utilizes the HP-UX IPv6 Router Advertisement Daemon—also delivered in TOUR 2.0—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.

Corespondent 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.01.00 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
- 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 documents at `http://www.ietf.org`:

- *Mobility Support in IPv6*
- *Using IPsec to Protect Mobile IPv6 Signaling between Mobile Nodes and Home Agents*

Compatibility with HP-UX IPSec A.02.00

Available soon at HP's Software depot, `http://www.software.hp.com`, HP-UX IPSec A.02.00 can secure the Mobile IPv6 traffic between the Mobile Node and Home Agent.

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

When Mobile Nodes receive data-packets from Correspondent Nodes routed through the Home Agent, it indicates the Correspondent Node does not have binding information with the Mobile Node's current Care-of Address. In this case, the Mobile Node can use the Return Routability Procedure to establish Route Optimization and verify the Correspondent Node can contact the Mobile Node using both its Home Address and Care-of Address.

During the Return Routability Procedure the Mobile Node sends a Binding Update message to the Correspondent Node with its current Care-of Address. To prevent attackers from sending false Binding Update messages, the Binding Update is authenticated using a cryptographic signature.

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.

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.

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 you 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_30450 for HP-UX 11i version 1
- PHNE_30451 for HP-UX 11i version 2

Multi-Vendor Interoperability and Conformance Testing

HP tested HP-UX Mobile IPv6 A.01.00 in multi-vendor environments at the 2004 Connectathon interoperability event. HP also successfully tested HP-UX Mobile IPv6 A.01.00 with TAHI conformance suites.

Documentation and Additional Information

HP-UX Mobile IPv6 A.01.00 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)
- *HP-UX IPv6 Administrator's Guide for TOUR 2.0*
- *Transport Optional Upgrade Release (TOUR) 2.0 Release Notes*

Manpages

The following is a list of manpages you can access by using the `man [manpage-name]` command after installing TOUR 2.0:

- 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 IETF documents that can be found at `http://www.ietf.org`:

- *Mobility Support in IPv6*
- *Using IPsec to Protect Mobile IPv6 Signaling between Mobile Nodes and Home Agents*

Fixes

HP-UX Mobile IPv6 A.01.00 is the first release of the product. There are no defect fixes included in this version. HP will include defect fixes for reported defects subsequent releases. Contact your HP support representative to report a defect in HP-UX Mobile IPv6.

Known Problems

HP-UX Mobile IPv6 A.01.00 contains the following known problems:

- The `mip6config> exit` command does not terminate the mip6config session after verifying the file for unsaved data.
  - **Workaround:** Use the `mip6config> quit` command to terminate the mip6config session.

Availability in Native Languages

HP-UX Mobile IPv6 A.01.00 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`

Supported Operating Systems

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

- HP-UX 11i version 1 PA-RISC servers
- HP-UX 11i version 2 Intel® Itanium® servers

HP-UX 11i Version 1 Requirements

- The TOUR 2.0 depot is ~ 4.5 MB. After installation on HP-UX 11i version 1, TOUR 2.0 uses ~7.5 MB of disk space, distributed as follows:
  - `/usr` uses ~7 MB
  - `/var` uses ~.5 MB
  - `/stand` for building the kernel
- 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—Home Agents must use ethernet interfaces.

Patch Requirements

The following patches are required on all HP-UX 11i version 1 systems running HP-UX Mobile IPv6 A.01.00. If available, you can use more recently released patches that supersede and may include any of the patches listed below. The patches listed below are the minimum required patches. You can download patches from the HP IT Resource Center patch database at: `http://www.itrc.hp.com`:

- March 2003 Support Plus Patch Bundle (Quality Pack GOLDQPK11i)—B.11.11.0212.4
- PHCO_24287—patch for syslogd(1m)
- PHNE_27796—libnss_dns DNS backend patch
- PHNE_28895—cumulative ARPA Transport patch
- PHKL_29696—STREAMS functionality patch required for PHNE_29825
- PHNE_29825—STREAMS cumulative patch dependent on PHKL_29696
- PHCO_29287—libc cumulative patch
- PHCO_29328—libc manpage cumulative patch

NOTE HP-UX Mobile IPv6 A.01.00 requires PHNE_30450 to use the `nettl` and `netfmt` tools on HP-UX 11i version 1. HP-UX Mobile IPv6 A.01.00 does not require PHNE_30450 for installation.

Software Requirements

The following software is required on all HP-UX 11i version 1 systems running HP-UX Mobile IPv6 A.01.00:

- TOUR product component in the TOUR 2.0 release:

```
TOUR.TOUR_PRODUCT    A.02.00   Transport Optional Upgrade Release for B.11.11
```

- IPv6 enablement product component in the TOUR 2.0 release:

```
TOUR.IPV6AA          A.02.00   IPv6 11i product
```

NOTE The TOUR 2.0 release depot for HP-UX 11i version 1 includes all software dependencies HP-UX Mobile IPv6 A.01.00 requires—patch dependencies are not included in the TOUR depot.

The following is a list of the components included in the TOUR 2.0 release depot for HP-UX 11i version 1:

- Mobile IPv6 A.01.00 product software
- TOUR A.02.00 product component
- IPv6AA A.02.00 enablement software

HP-UX 11i Version 2 Requirements

- The TOUR 2.0 depot is ~ 4.5 MB. After installation on HP-UX 11i version 2, TOUR 2.0 uses ~13 MB of disk space, distributed as follows:
  - `/usr` uses ~12 MB
  - `/var` uses ~1 MB
  - `/stand` for building the kernel
- 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.

Patch Requirements

HP-UX Mobile IPv6 A.01.00 does not require any patches for installation on HP-UX 11i version 2.

NOTE HP-UX Mobile IPv6 A.01.00 requires PHNE_30451 to use the `nettl` and `netfmt` tools on HP-UX 11i version 2. HP-UX Mobile IPv6 A.01.00 does not require PHNE_30451 for installation.

Software Requirements

The following software is required on all HP-UX 11i version 2 systems running HP-UX Mobile IPv6 A.01.00:

- TOUR product component in the TOUR 2.0 release:

```
TOUR.TOUR_PRODUCT    A.02.00    Transport Optional Upgrade Release for B.11.23
```

NOTE The HP-UX 11i version 1 TOUR 2.0 release depot includes all software dependencies for HP-UX Mobile IPv6 A.01.00 (patches not included). The following is a complete list of the components included in the depot:

- Mobile IPv6 A.01.00 product software
- TOUR A.02.00 product component

Acquiring HP-UX Mobile IPv6

The HP-UX Mobile IPv6 A.01.00 product is delivered as a component of TOUR 2.0. Use the following steps to download TOUR 2.0 and the Mobile IPv6 product free of charge from HP's Software Depot at `http://www.software.hp.com`:

NOTE The `TOUR_2.0.depot` filename in the following sections is an example. The exact filename of the TOUR 2.0 depot will vary for each HP-UX operating system version.

Step 1. Go to HP's Software Depot at `http://www.software.hp.com`

Step 2. Search HP's Software Depot for the TOUR 2.0 release (keyword: `TOUR 2.0`) and read the information on the TOUR 2.0 release page.

Step 3. Select `Receive for Free >>` at the bottom of the page.

Step 4. Choose the appropriate TOUR 2.0 release for your operating system version.

Step 5. Enter your registration information and accept the Terms and Conditions.

Step 6. Select `Download` at the bottom of the page and save the TOUR 2.0 release depot to a local file on your system, for example: `/tmp/TOUR_2.0.depot`

Step 7. Use the `swlist -d @ /tmp/TOUR_2.0.depot` command to verify the depot file is on your system.

Installing HP-UX Mobile IPv6

Use the following steps to install the HP-UX Mobile IPv6 software:

Step 1. Review the HP-UX Mobile IPv6 “Supported Operating Systems” on page 11.

Step 2. Download TOUR 2.0 by referring to “Acquiring HP-UX Mobile IPv6” on page 15.

Step 3. Install Mobile IPv6 and the TOUR components by running the swinstall tool using the location you saved the TOUR 2.0 release depot file to, for example:

```
swinstall -x autoreboot=true -s /tmp/TOUR_2.0.depot TOUR
```

IMPORTANT HP-UX Mobile IPv6 includes a kernel-resident module and requires a system reboot to rebuild the kernel after installing and un-installing the product.

Verifying the HP-UX Mobile IPv6 Installation

Use the following steps after swinstall finishes installing TOUR 2.0 to verify the HP-UX Mobile IPv6 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 TOUR` command to verify swlist installed the required software products for each version of HP-UX 11i on your system. The required software for each version of HP-UX Mobile IPv6 is listed in “Supported Operating Systems” on page 11.

Step 3. Verify swinstall installed the HP-UX Mobile IPv6 A.01.00 product files 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

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

Step 1. Use the `mip6admin stop` command to stop the mip6mod Mobile IPv6 kernel module on the system.

Step 2. Remove (un-install) the Mobile IPv6 product by running the swremove tool and specifying the Mobile IPv6 product name, for example:

```
swremove -x autoreboot=true MobileIPv6
```

IMPORTANT HP-UX Mobile IPv6 includes a kernel-resident module and requires a system reboot to rebuild the kernel after installing and un-installing the product.

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