Upgrading Intel® AMT 5.0 drivers to Linux kernel v2.6.31

For Intel® Q45 and Intel® GM45 based embedded platforms

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Introduction

The Intel® Active Management Technology (Intel® AMT) is a hardware based solution that provides Out of Band (OOB) remote manageability functions independent of the system’s power and operating system (OS) state. The following versions of Intel® AMT apply to this document:

<table>
<thead>
<tr>
<th>Intel® AMT 5.0</th>
<th>Intel® Q45 Express Chipset</th>
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<td>Intel® AMT 4.2</td>
<td>Intel® GM45 Express Chipset</td>
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The two components of Intel® AMT that allow interaction between the Intel® AMT client and the OS are the Manageability Engine Interface (MEI) device driver and the Local Manageability Service (LMS).

The MEI driver, also known as the Host Embedded Controller Interface (HECI) allows applications to access the Intel® AMT firmware via a host interface (rather than a network interface). The LMS allows applications to access the Intel® AMT firmware via the local MEI interface.

This document outlines the steps to upgrade the Intel® AMT 5.0 MEI and LMS drivers to build and run on Linux kernel 2.6.31. It also includes a patch of MEI 5.0.0.30 and LMS 5.0.0.30 to enable compilation of the MEI driver and LMS on kernel 2.6.31 respectively. The MEI and LMS 5.0.0.30 drivers can be downloaded from the SourceForge website.

This document also includes a patch that enables the power management feature in the MEI 5.0.0.30. This patch is optional and can be applied on systems where the driver fails to save the state of PCI configuration before going into standby (S3) or hibernate (S4) system states, resulting in loss of local functionality on the Intel® AMT client such as general info, storage, agent presence after resuming from S3 or S4 system states.

The MEI and LMS 5.0.0.30 drivers have also been validated with the Intel® Management Engine (ME) Firmware version 4.2.10 based on the Embedded Intel® GM45 Express Chipset.

**Note:** The document assumes that the user is familiar with Intel® Active Management Technology MEI and LMS drivers to support local OS access to Intel hardware manageability features. Refer to [http://www.openamt.org/](http://www.openamt.org/) for more information.

**Caution:** Disclaimer: Intel® AMT over wireless is currently not supported on GM45 and Q45 based embedded platforms.
**Supported Hardware**

- Intel® Core™ vPro™ processor and Intel® Q45 Express chipset
- Intel® Core™ 2 Duo processor and Intel® GM45 Express Chipsets

**Important Legal Notice**

Please read the following notice carefully before applying the patches mentioned in this document.

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* POSSIBILITY OF SUCH DAMAGE.

*******************************************************************************/
Implementation

Applying the patches

Always backup the source tree before applying any of the patches.

HECI 5.0.0.30 patch

The following is the patch of HECI 5.0.0.30 to upgrade to kernel 2.6.31. To apply the patch; copy and paste the code from this document to a text file and use "patch -p1 < filename>" or manually make the changes.

diff -Naur HECI-5.0.0.30/src/heci_main.c HECI-5.0.0.30_modified/src/heci_main.c
--- HECI-5.0.0.30/src/heci_main.c 2008-07-08 10:50:17.000000000 +0000
+++ HECI-5.0.0.30_modified/src/heci_main.c 2010-04-16 14:26:07.000000000 +0000
@@ -98,7 +98,7 @@
 static struct pci_dev *heci_device;

 struct class *heci_class;
-struct class_device *heci_class_dev;
+struct device *heci_class_dev;

 /* heci_pci_tbl - PCI Device ID Table */
@@ -276,7 +276,7 @@
 goto err_out;
 }
- heci_class_dev = class_device_create(heci_class, NULL,
+ heci_class_dev = device_create(heci_class, NULL,
 heci_cdev.dev,
 NULL,
 HECI_DEV_NAME);
@@ -293,7 +293,7 @@
 static void heci_sysfs_device_remove(void)
 {
 if (heci_class_dev)
- class_device_unregister(heci_class_dev);
+ device_destroy(heci_class,heci_cdev.dev);
 }
/**


LMS 5.0.0.30 patch

The following is a patch of LMS 5.0.0.30 to compile the LMS on kernel 2.6.31. To apply the patch, copy and paste the code from the document to a text file and use “patch –p1 < filename” or manually make the changes.

diff -Naur LMS-5.0.0.30/src/tools/ATNetworkTool.cpp LMS-5.0.0.30_modified/src/tools/ATNetworkTool.cpp
--- LMS-5.0.0.30/src/tools/ATNetworkTool.cpp 2008-07-08 10:50:24.000000000 +0000
+++ LMS-5.0.0.30_modified/src/tools/ATNetworkTool.cpp 2010-04-16 14:38:20.000000000 +0000
@@ -44,7 +44,7 @@
 bool ATNetworkTool::GetHostNameDomain(const char *name,
 std::string &domain)
 {
- char *domp = strchr(name, '.');
+ const char *domp = strchr(name, '.');
    if (domp) {
        domp++;
        if (*domp) {

Power Management patch

As mentioned earlier, the following patch of HECI 5.0.0.30 may be required to turn on power management features in the MEI driver. To apply the patch, copy and paste the code from the document to a text file and use “patch –p1 < filename” or manually make the changes.

diff -Naur HECI-5.0.0.30/src/heci_init.c HECI-5.0.0.30_modified/src/heci_init.c
--- HECI-5.0.0.30/src/heci_init.c 2008-07-08 10:50:17.000000000 +0000
+++ HECI-5.0.0.30_modified/src/heci_init.c 2010-04-17 14:57:53.000000000 +0000
@@ -600,7 +600,7 @@
 */
 static int host_enum_clients_message(struct iamt_heci_device *dev)
 { 
- long timeout = 5; /*5 second */
+ long timeout = 15; /* 15 second */
    struct heci_msg_hdr *heci_hdr;
    struct hbm_host_enum_request *host_enum_req;
    int err = 0;
    diff -Naur HECI-5.0.0.30/src/Makefile HECI-5.0.0.30_modified/src/Makefile
--- HECI-5.0.0.30/src/Makefile 2008-07-08 10:50:16.000000000 +0000
+++ HECI-5.0.0.30_modified/src/Makefile 2010-04-17 14:58:43.000000000 +0000
@@ -147,6 +147,9 @@
 EXTRA_CFLAGS += $(CFLAGS_EXTRA)
Building and Installing

In order to build and install the MEI driver, run "make install" from the source directory. Load the MEI driver using "modprobe heci".

To build and install the LMS driver, at the driver source directory call ".configure" and then "make install". This also ensures that the driver will load upon startup.

Verifying the Drivers

There are many ways to verify the functionality of the drivers. In this document, we will use the Intel General Info Interface which is a sample application provided in Intel® Software Development Kit (SDK). LMS uses General Info Interface to expose standard AMT functionality on local or remote Intel® AMT clients by retrieving information about the client. Download the Intel® SDK and run the application using "make" command from the General Info source directory. Make sure the Intel® AMT client is activated and the drivers are loaded on the client. Use the following command to retrieve information about the client:

```
./generalInfo http://localhost:16992/GeneralInfoService -user <user> -pass <pwd>
```

where user and pwd are username and password for the Intel® AMT client Management Engine BIOS Extension setup(MEBx).

Confirm information on the client is displayed. Refer to the resources section of this document for more information on Intel® SDK and General Info Interface.

Resources


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