

# Intel vPro Provisioning



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## Introduction

The HP Compaq dc7700p Business PC uses Intel vPro technology to simplify back-office management and reduce IT-related expenditures. Intel vPro technology is a combination of Active Management Technology (AMT) and Intel Virtualization Technology (IVT), which allows for improved management of PC systems and better security.

AMT provides Out-of-Band (OOB) remote access to a system regardless of the state of the operating system or power state as long as the system has AC power and is connected to a network. AMT is a hardware and firmware platform resident solution relying upon the Manageability Engine (ME) within the chipset.

By default, AMT is disabled in the ME firmware. AMT must be enabled in the ME firmware and configured before the system can benefit from its features.

This white paper assumes some basic knowledge of Intel AMT (Active Management Technology) and VT (Virtualization Technology).

Please refer to the EEP Web site: [www.hp.com/programs/earlyevaluation](http://www.hp.com/programs/earlyevaluation) for other white papers and technical information regarding new HP Compaq dc7700p Business PCs and new Intel vPro technology.

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## AMT Setup and Configuration

AMT must be set up and configured in a system before use.

AMT setup sets up the system for AMT mode and enables the network. This setup is generally performed only once in the lifetime of a system. When AMT is enabled, it can be discovered by management software over a network.

AMT Setup can be accomplished in one of two modes:

- Small Medium Business (SMB) mode
- Enterprise mode (default)

AMT Configuration sets up all other AMT options not covered in setup, such as enabling the system for Serial Over LAN (SOL) or IDE Redirect (IDE-R). Settings modified in the configuration phase can be changed many times over the course of a system's life span. Changes can be made to the system locally or through a management console.

### SMB Mode - AMT Setup and Configuration with MEBx

SMB mode is for customers who do not have ISV management consoles, or the necessary network and security infrastructures to use encrypted Transport Layer Security (TLS). SMB mode AMT set up and configuration is a manual process done through the Intel ME BIOS Extension (MEBx) during POST.

SMB mode is the easiest to implement since it does not require much infrastructure, but is the least secure since all network traffic is not encrypted. HP recommends using this process only in a closed network.

**NOTE:** The following steps are only a guide for setting up and configuring AMT. There are options that are not used. Do not modify those options randomly, or unexpected behavior could occur.



## SMB Mode - AMT Setup and Configuration Steps:

1. Press **Ctrl-P** during POST to enter Manageability Engine BIOS Extension (MEBx) Setup.
  - This option can only be displayed during POST if set in F10-Setup.



**Figure 1** Intel MEBx Password Screen

2. Type **admin**, which is the default password.

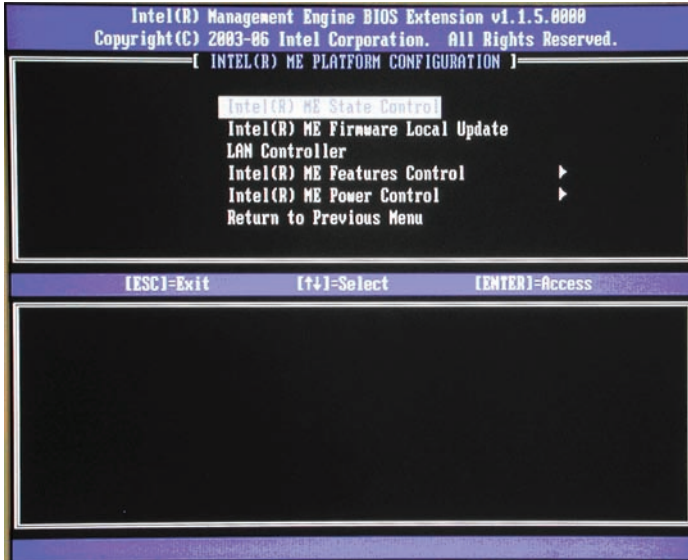
**NOTE:** You must change the default password before making changes to the MEBx options.

3. Change the MEBx password.

The new password must meet the criteria defined in the Password Guidelines Section, also known as a strong password. Type the password twice for verification.

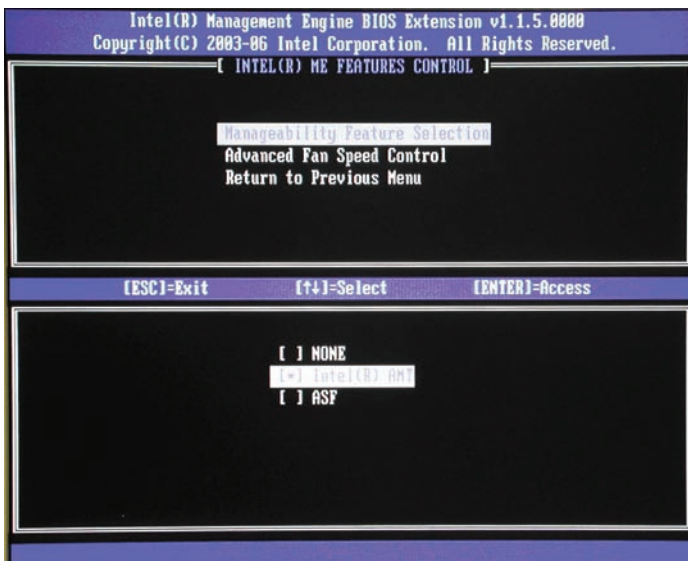
Change the password to establish AMT ownership. This allows access from the AMT Web interface later. The AMT Web interface requires a username and password. The default username is **admin** and the password is the new strong password.

4. Select the Intel ME Platform Configuration. A window displays indicating that the system resets after configuration.
5. Select **Y**. ME platform configuration allows IT personnel to configure ME features such as AMT/ASF selection, power options, firmware update capabilities, etc.



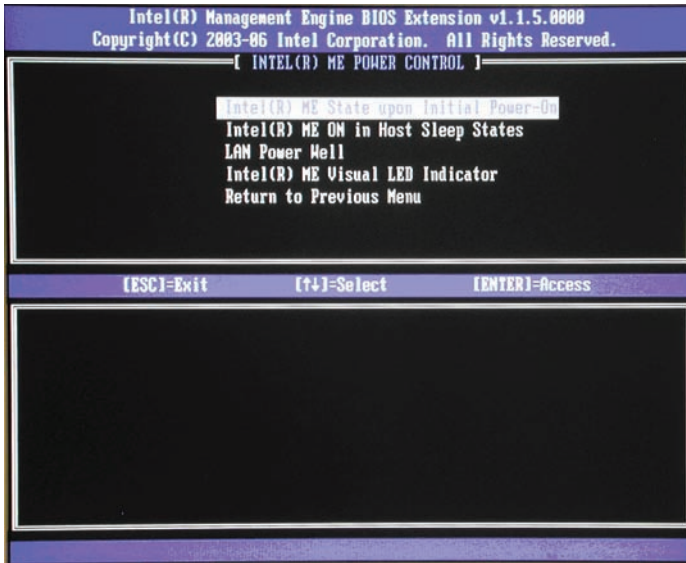
**Figure 2** Intel MEBx Configuration Screen

6. Select **Intel ME State Control**, and then select **Enabled**.
7. Select **Intel ME Firmware Local Update**, and then select **Enabled**.
8. Select **Intel ME Features Control**.
  - a. Select **Manageability Feature Selection**.
    - i. Select **Intel AMT**.
    - ii. Select **Return to previous menu**.



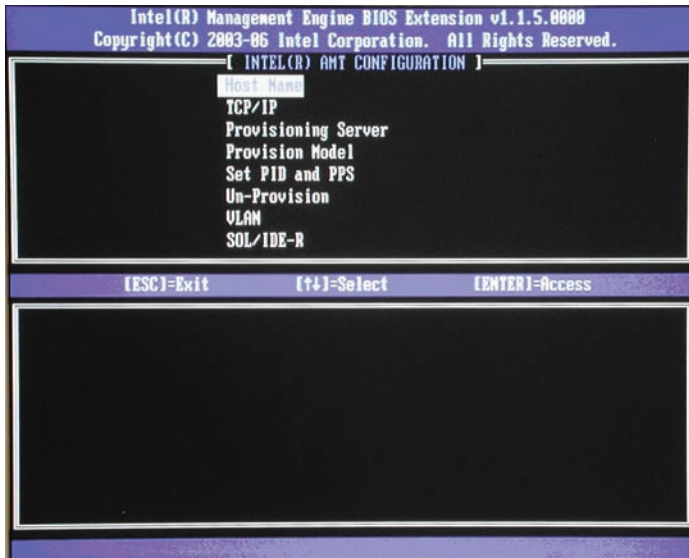
**Figure 3** Intel ME Features Control Screen with AMT selected

- b. Select **Intel ME Power Control**.
  - i. Select **ME State upon Initial Power-On**, and then select **ON**.
  - ii. Select **ME ON in Host Sleep States**, and then select **ALWAYS**.
  - iii. Select **ME Visual LED Indicator**, and then select **ON**.
  - iv. Select **Return to previous menu**.



**Figure 4** Intel ME Power Control Screen

- c. Select **Return to Previous Menu** to exit. The system displays an Intel ME Configuration Complete message, and then reboots.
9. Press **Ctrl+P** during POST to enter MEBx Setup.
  10. Type the MEBx password.
  11. Select **Intel AMT Configuration**.



**Figure 5** Intel AMT Configuration Screen

**12.** Select **Host Name**, and then type a host name.

**NOTE:** Spaces are not allowed. Make sure there is not a duplicate host name on the network.

**13.** Select **TCP/IP**.

- a. To disable the network interface, select **N**.
- b. To disable DHCP, select **Y**. You can use DHCP if available. If you use DHCP, skip to step 14.
- c. Type a static address (Ex: 192.168.0.1) in the **IP Address** field. Make sure all AMT systems have a unique static IP address if more than one system is on the same network. Multiple systems sharing the same static IP address can lead to network collisions, which cause the systems to incorrectly respond.
- d. Type a subnet mask (Ex: 255.255.255.0) **Subnet Mask** field.
- e. Leave the default value in the **Default Gateway Address** field and press **Enter**.
- f. Leave the default value in the **Preferred DNS Address** field and press **Enter**.
- g. Leave the default value in the **Alternate DNS Address** field and press **Enter**.
- h. Type a domain name (Ex: hp.com) in the Domain Name field.

**14.** Select **Provision Model**.

- a. To change to **AMT 05 Legacy Mode**, select **N**.
- b. To change to **Small Medium Business**, select **Y**. The Provisioning Server and the Set PID and PPS options are no longer available since the system is in SMB mode.
- c. Select **Return to previous menu**.

15. Select **SOL/IDE-R**.
  - a. Select **Y** when the window displays indicating the system resets after configuration.
  - b. Select **Enabled** for **User Name** and **Password**.
  - c. Select **Enabled** for **Serial Over LAN**.
  - d. Select **Enabled** for **IDE Redirection**.
16. Select **Enabled** for **Select Remote Firmware Update**.
17. Select **Return to previous menu** to exit. The system displays an Intel ME Configuration Complete message.
18. The system reboots.
19. Unplug the power cord for at least five seconds, plug back in, and then turn on the system.

**NOTE:** You must perform the last step to successfully complete the setup.

Once AMT is configured, the system displays its status and validates the AMT tables at every boot.

```
Intel(R) Management Engine BIOS Extension v1.1.5.0000
Copyright(C) 2003-06 Intel Corporation. All Rights Reserved.

Intel(R) AMT enabled - Firmware version 2.0.0.1007
Intel(R) AMT is configured and running
Inventory Update

Field Replaceable Unit List:
  Intel(R) AMT Table Valid

Media List:
  Intel(R) AMT Table Valid

SMBIOS Table:
  Intel(R) AMT Table Valid

ASF Table:
  Intel(R) AMT Table Valid

Intel(R) ME Configuration Complete
```

**Figure 6** Intel AMT Enabled and Configured

## AMT Configuration with Web Interface

In SMB mode, use the AMT Web interface for AMT Configuration. You can access this interface from any Web browser.

### Web Interface AMT Configuration Steps

1. Power on an AMT-enhanced system.
2. Open a Web browser on a separate management computer that is on the same subnet as the AMT computer.



3. Connect to the IP address specified in the MEBx and port of the AMT system.

- The default port is 16992.
- If DHCP was used, the IP address is the same as the NIC IP address.

The management computer makes a TCP connection to the AMT system, and then accesses the top level AMT embedded Web page within the Management Engine of the AMT system.

4. Type the user name and password. The default user name is **admin** and the password is what you set during AMT Setup in the MEBx.

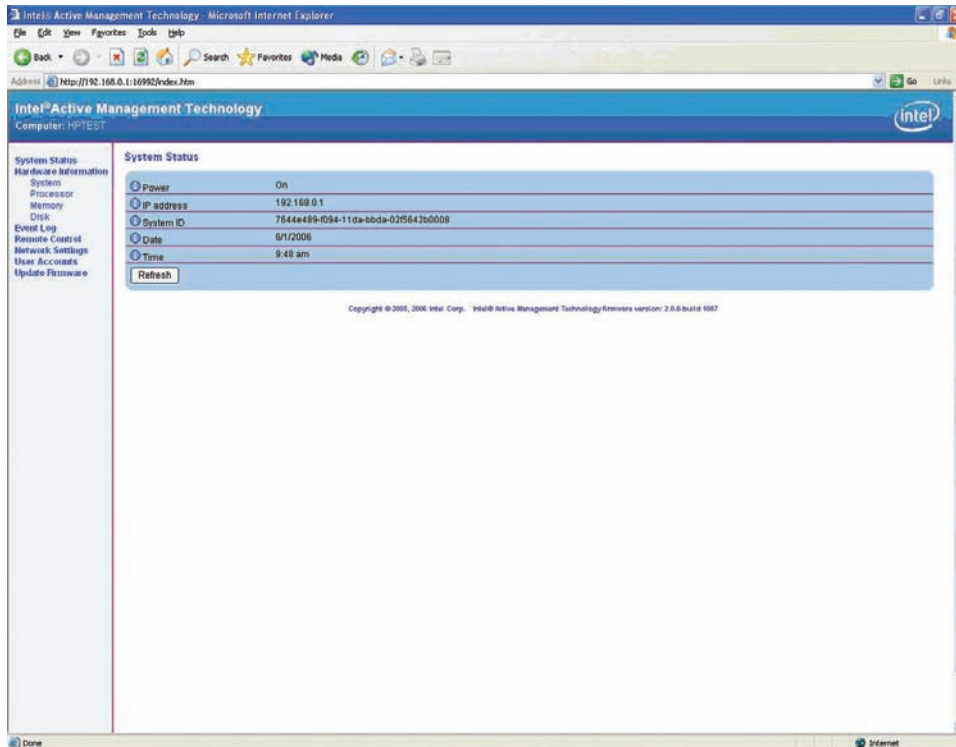


Figure 7 Web Interface Screen

5. Enable necessary AMT configuration features.

- The password to remotely access an AMT system can be changed in the Web interface.
- Changing the password in the Web interface results in two passwords. The new password, known as the AMT BIOS Extension (AMTBx) password, works only for the Web interface. You cannot change the MEBx password. You must keep track of both passwords to access the system remotely and locally.
- The MEBx password always works with a Web interface accessing the system remotely as long as an AMTBx password is not set within the Web interface.
- The AMTBx password must also follow the criteria defined in the Password Guideline Section for a strong password.

6. Click **Exit**.



## Enterprise Mode Setup and Configuration

Enterprise mode is for large corporate customers. In this mode, both AMT Setup and AMT Configuration require a Setup and Configuration Server, which is a server that runs an application over a network that performs AMT Setup and Configuration. The Setup and Configuration Server is also known as a Provisioning Server as seen in the MEBx. Setting up and configuring the AMT is also known as “provisioning.”

A Setup and Configuration Server is typically provided by ISVs and is contained within the ISV management console product. Consult with your management console supplier for more information.

Soon this white paper will include additional details about Enterprise mode Setup and Configuration.

## Setup and Configuration Server Preparation

A Setup and Configuration Server must generate a Provisioning ID (PID) and Provisioning Passphrase (PPS) for each AMT system it will provision. PIDs are 8 characters and PPS's are 32 characters. Once PIDs and PPS are generated, they are added to the Setup and Configuration servers secure PSK (Pre-Shared Key) database. This database can be transferred to another Setup and Configuration servers database.

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## Provisioning Methods

Enterprise mode includes three methods of provisioning a system:

- Legacy
- IT TLS-PSK
- OEM TLS-PSK

### Legacy

Execute the legacy method of provisioning on an isolated network separate from the corporate network if you want TLS. Provisioning server requires a secondary network connection to a Certification Authority for TLS configuration.

Customers perform legacy provisioning manually. Systems are shipped with AMT disabled, and need to be pre-provisioned as described in the SMB Mode - AMT Setup section. After pre-provisioning, connect the AMT system to a network where it can connect to a Setup and Configuration Server and begin Enterprise Mode - AMT Configuration.

The Legacy method places all of the work of provisioning AMT on the customer.

### IT TLS-PSK

IT departments usually perform IT TLS-PSK provisioning, which requires the following:

- Setup and Configuration Server
- Network and security infrastructure

AMT Setup and AMT Configuration must occur over an encrypted network. This encryption is achieved by the Transport Layer Security Pre-Shared Key (TLS-PSK) protocol. PID and PPS generation is needed.



A company's IT department will receive non-provisioned systems and will use a Setup and Configuration Server to generate the necessary PIDs and PPS. Once generated, an IT technician can enter this information along with a new administrator password for each system. The exact method of data entry is still being finalized, but it could be in the form of a USB key or pure manual entry.

After the PID/PPS/password information is entered into the MEBx and the system is in Enterprise Mode, the system looks for a Setup and Configuration Server. If a Setup and Configuration Server is found, Enterprise Mode - AMT Configuration begins. Configuration can be executed on the corporate network with both the AMT system and Configuration Server and would be setup for TLS transfers.

The IT TLS-PSK method places the work of provisioning AMT on the IT departments of major corporations, which must have the personnel and infrastructure in place for system configuration and deployment.

## OEM TLS-PSK

OEM TLS-PSK provisioning is done in two stages. The first stage is performed during OEM manufacturing and the second stage at the customer location. PID (Provisioning ID) and PPS (Provisioning Passphrase) generation is needed.

In the first stage, customers purchase systems from HP. HP will pre-provision those systems during manufacturing. The PIDs and PPS generated during HP manufacturing are transferred to the customer in a separate and secured fashion. That information, along with the new administrator password, is provided to the customer. After manufacturing, the systems are shipped to the customer in the pre-provisioned state.

In the second stage, the customer receives the pre-provisioned systems and the PID/PPS/password information. The PID/PPS/password information is integrated into the customer's Setup and Configuration Server. The pre-provisioned systems are then connected to a network and powered on. Enterprise Mode - AMT Configuration occurs.

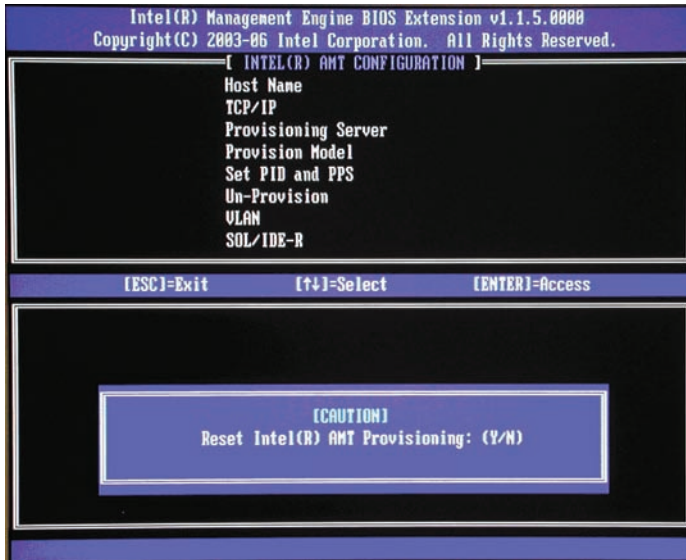
The OEM TLS-PSK method places the work of setting up AMT on the OEM. All the customer does is plug in the systems and finish the configuration.

HP will provide a fee-based customized service that will configure (pre-provision) AMT systems in the factory and securely provide pre-shared keys to the customer. HP offers a secured service that eliminates manual setup/configuration (provisioning) of each unit at the customer site. Contact HP for more information about this valuable service.



## Unprovisioning

You can unprovision a provisioned system through the AMT Configuration Screen and the Un-Provision option.



**Figure 8** Intel AMT Unprovisioning Screen

1. Select **Un-Provision**.
2. Select **Full Unprovision**. An Unprovisioning message displays, and it takes the system about a minute to perform the task. After unprovisioning is complete, control is passed back to the AMT Configuration screen.
3. Select **Return to previous menu**.
4. Select **Y** to exit. The system reboots.

Full unprovisioning returns all AMT Configuration settings to factory defaults. It does not reset ME Configuration settings or passwords.

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## Password Guidelines

The “strong” password must meet the following criteria. These restrictions are enforced by AMT to reduce vulnerability of passwords to a dictionary attack.

### Criteria

- Password must be at least 8 characters long. Characters allowed are 7-bit ASCII characters in the values of 32-126 inclusive. The characters “ ’ , and : are not allowed.
- Password must have at least one digit (e.g. 0, 1, 2, ... 9).
- Password must have at least one 7-bit ASCII non-alphanumeric character (e.g. !, @, \$).
- Password must contain both upper and lower case Latin characters (e.g. A, a, B, b).

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