White Paper

Intel® Platform
Administration Technology

Intel® Platform Administration Technology and

Intel® Platform Administrator White Paper

Intel® Platform
Administration
Technology

Overview

The main purpose of this document is to introduce **Intel® Platform Administration Technology** and **Intel® Platform Administrator**. It includes an overview of Intel® Platform Administration Technology, Intel® Platform Administrator introduction, the system architecture, and the system configuration. The objective of this document is to help users understand the system architecture and the main functions of Intel® Platform Administrator.

Intel® Platform Administration Technology is an integrated, cost-effective, and easy-to-use manageability platform solution for small and medium-sized network environments. It provides manageability functions that assist IT administrators in maintaining clean and stable systems with high efficiency. Its main target is medium and small size enterprises, such as i-Cafés. Intel® Platform Administration Technology is based on the Intel® Innovation Framework for EFI, including motherboard technology components, firmware components, software components for both clients and servers, and application programming interfaces (API's) for enabling further development of applications on Intel® Platform Administration Technology.

Intel® Platform Administrator is an Intel software solution built on top of **Intel® Platform Administration Technology** to deliver client and server functionality.

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Background

With the development of network technology, the i-Café industry has seen rapid growth in many Asian countries. China alone has more than 110,000 i-Cafés with over 6,200,000 personal computers in total （Data source: CBI Research 2005 China i-Café Industry Survey Report）. However the rapid expansion in terms of number and size of i-cafes, combined with a lack of appropriate management technology, has caused many problems related to maintenance and management tasks. Specific difficulties include mass computer system installation, mass computer software upgrading, time-consuming and troublesome operating system crash-and-recovery processes, the remote management of networked computers, and hardware theft issues. For Intel® Platform Administration Technology, these difficulties constitute an opportunity in the small and medium-sized enterprise network market. Intel® Platform Administrator addresses these problems completely by providing an integrated network solution that has been developed to specifically address these issues. This solution greatly reduces the workload of i-Café IT managers and improves operating efficiency. Intel® Platform Administration Technology's successful application in the i-Café industry also indicates a bright future for application in schools and other industries.

Intel® Platform Administration Technology Introduction

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Intel® Platform Administration Technology delivers high efficiency management service to help users in administrating computing platforms and applications in a networked environment. It includes:

- Motherboard technology components
- Firmware components
- Software components for both clients and servers
- Application Programming Interfaces (API's) for enabling further development of applications on Intel® Platform Administration Technology

Key features of the **Intel® Platform Administration Technology** include:

- Out-of-box PC setup by automating and simplifying OS and software installation for multiple PCs simultaneously
- Asset monitoring and remote management
- Software upgrades through the simultaneous deployment of new software packages to multiple PCs in a network environment
- System recovery and hard-disk protection capabilities

Intel® Platform Administrator Introduction

Intel® Platform Administrator is an Intel software solution built on top of Intel® Platform Administration Technology. The package includes:

- Intel® Platform Administrator Server
- Intel® Platform Administrator Client
- Intel® Platform Administrator Agent

Intel® Platform Administrator provides the following features:

- Multicast (1-to-many) deployment of a 1GB OS image to hundreds of clients within a few minutes in a 100Mbps Ethernet environment
- Block-level incremental disk image creation and deployment for faster application software deployment and upgrades
- Low performance-penalty hard-disk protection technology: The automatic creation of multiple checkpoints prevents damage from viruses and malicious attacks
- Network recovery to allow quick and easy restoration of crashed PCs
- Hardware and software asset management
- OS-independent remote control: Power on, power off, reset and status query of clients
- Remote BIOS updates based on firmware component technology and auto update of Intel® Platform Administrator client software
- Asset monitoring function with alerts for abnormal client LAN connections and the unauthorized modification of software and hardware

The main functions are listed in the table below:

Table 1. Intel® Platform Administrator Feature List

Main Function	Subsidiary Functions	Description
Mass Image Deployment through Network††	Remote server deployment of images to clients, including: • Operating System images • Data images • Disk partition images (used for computer recovery)	Multicast (1-to-many) deployment of a 1GB OS image to hundreds of clients within a few minutes in a 100Mbps Ethernet environment. Faster application software upgrades through package delivery within the network environment. Out-of-box PC set up by automating and simplifying OS and software installations for multiple PCs.
	Remote server deployment of incremental package to clients. (Used for software upgrades, removals, add-ons ,etc.)	
Remote management	Remote control of clients from the server management console: • Power on, power off, and reset of clients • Execute commands on clients	Remote control of the client PCs regardless of OS status: Power on, power off, reset and query the status of clients.
	Remote configuration of clients from server: • Set the client PC computer name, • Set the client PC as Golden Machine • Enable the client PC Abnormal Alert	
Hard-disk Protection and PC Recovery	High efficiency protection of client PC hard disks against viruses and malicious operations.	System will maintain and restore back to a standard clean image after each reboot. System recovery supports up to 32 checkpoints. Low performance-penalty hard-disk protection without the need for hard-disk protection cards. Remote deployment of all previously-deployed images and packages to clients for convenient system recovery
	Recovery from previously-recorded hard-disk configuration data	
Asset Monitoring and Management	Server can record and monitor the hardware and software configuration on client PCs, and report configuration	Asset monitoring and management capabilities for both software and hardware. Abnormal client computer behavior will be reported to the server console under certain conditions. Certain monitoring features may remain active regardless of the client computer's power state. Note: • Alert notification times may vary under different conditions • Specific alerts can be enabled or disabled at the discretion of the administrator
	Hardware component removal alerts on hard drive, RAM and graphics adapter removal on unauthorized hardware modification. Note that (alarm triggers only after PC is rebooted)	
	Server sounds an alarm when client PC hardware status operation system hung or CPU operating abnormally	
	Chassis intrusion alert enabled by pre-installed sensors in the chassis (only in selected chassis)	
	USB device removal alert (Out of Band available on Intel® Desktop Board D915PDT or D945PLNM. Only support USB devices that strictly comply with USB 1.1 or 2.0 standards)	
	Server can report alert at client PC LAN connection and power connection lost	
	Server report alert after hard-disk protection feature is disabled	
	Intel® Platform Administrator Client or Intel® Platform Administrator Server versions conflict alert	

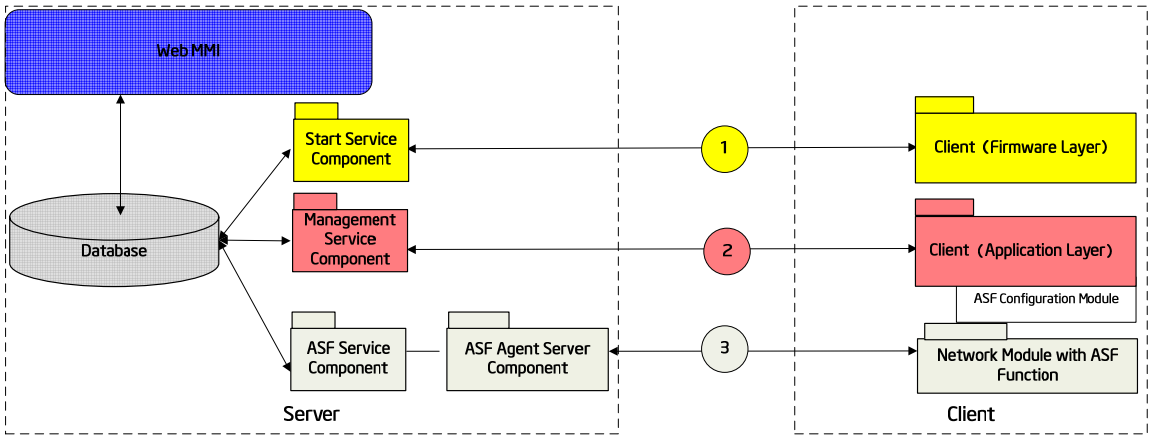
† Due to network environment difference, a very limited number of clients may experience failure during mass image deployment through network. Redeployment of images to these clients will solve this problem.

TIP
For detailed feature descriptions please refer to the **Intel® Platform Administrator Help**.

Intel® Platform Administrator, based on Intel® Platform Administration Technology, provides an integrated solution that includes not only server and client, but also firmware and application software. This solution delivers value added service for PC management in a network environment by improving work efficiency and reducing management costs. Its service targets are small and medium-sized network enterprise operations such as i-cafés.

System Architecture

Figure1. System Architecture Diagram



1. Server Start Service Component interacts with Client (Firmware Layer) to execute the tasks of disk image creation, image deployment and so on.
2. Server Management Service Component interacts with Client (Application layer) to execute some tasks such as remote control, etc.
3. Server ASF Service Component cooperates with ASF Agent Server Component and interacts with the Client Network Module with ASF Function to execute the tasks of hardware problems diagnosis, remote start, etc.

Intel® Platform Administrator Server is the server application that provides administration features and background services. The server requires the support from the database.

Intel® Platform Administrator Client is the client application that provides hard disk protection and background monitoring.

Intel® Platform Administrator firmware component is the software application built on top of BIOS. It communicates with the server and provides core functions including network management and image deployment.

Major technology includes:

- EFI / Intel® Innovation Framework for EFI: Developed using an advanced computer language, it functions between the hardware components and advanced operating systems such as windows, Linux, etc. It also provides a standardized framework for initializing the operation system and running programs before initialization. Furthermore, Intel has also developed a software framework that is used before computer starts to replace the BIOS. This framework is called Intel® Platform Innovation Framework for EFI. More information about EFI / Intel® Innovation Framework for EFI can be found at http://www.intel.com/technology/efi/.
- ASF（Alert Standard Format）is a recognized industry standard and is mainly used to provide alert information. ASF can function regardless of the system status: normal OS operation, standby OS operation, temporarily stopped OS operation, OS crash, BIOS crash, BIOS initializing, etc. ASF is not dependent on the status of the operating system or the microprocessor. ASF provides two features that support abnormal operation warnings and remote client control:

Abnormal operation warnings:

1. Security： Alerts for chassis intrusion, client connection lost, etc.
2. Operating Condition: Alerts for abnormal operating conditions including abnormal processor temperature, shortage of hard-disk capacity, damage to computer fan, etc.
3. Operations： Alerts for abnormal operating conditions such as temporarily unresponsive OS, BSOD, etc.

Remote control:

The server can control the clients remotely through the network. The server can set up the initialization path, and can power on/shut down/restart all clients remotely.

Most of the ASF functions are integrated into Intel® Platform Administrator.

More information about ASF can be found at http://www.dmtf.org/standards/asf.

System Configuration

Hardware Requirements

Table2. Hardware Configuration Requirements

Hardware	Recommended Server Specifications	Minimum Server Specifications	Recommended Client Specifications		
Mother Board	Any Intel certified server motherboard	Any Intel certified server motherboard	Intel® Desktop Board D865PCK	Intel® Desktop Board D915PDT	Intel® Desktop Board D945PLNM
CPU	Intel® Pentium® 4 processor, 2.8GHz	Intel® Pentium® 4 processor, 2.4GHz	Intel® Celeron® D processor, 2.4GHz Note: Support CPU frequency up to 3.4GHz	Intel® Pentium® 4 processor, 2.8GHz Note: Support CPU frequency up to 3.4GHz	Intel® Pentium® 4 processor, 2.8GHz Note: Support CPU frequency up to 3.4GHz Support Dual-Core Intel® Pentium® D Processor
Memory	1GB	512MB	512MB		
Hard Disk	160GB IDE	120GB IDE	80GB IDE		
CD-ROM	CD-ROM 16x	CD-ROM 16x			
NIC	1000Mbps	100Mbps	Built-in 100Mbps Network Interface Card		

Software Requirements

Server Requirements

Applicable Operating System
- Windows 2000 Server* (SP4)
- Windows 2000 Advanced Server* (SP4)
- Windows Server 2003 Standard Edition *
- Windows Server 2003 Enterprise Edition*
- Windows XP Professional* (SP2)

Windows Components
- Simple Network Management Protocol (SNMP) component
- Internet Information Services component (IIS), Version 5.0 or above
- Dynamic Host Configuration Protocol (DHCP) component（Optional）

3rd-Party Software
- Microsoft SQL Server 2000 Desktop Engine* (MSDE 2000) SP3 or Microsoft SQL Server 2000 (SP3)*
- Internet Explorer 6.0* (or above)
- Windows ASP. NET*
- Microsoft .NET Framework 1.1.4322* (default installed in Windows Server 2003*, need to install manually in Windows 2000 Advanced Server*)

Client Requirements

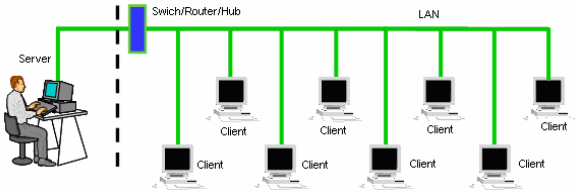
Applicable Operating System
- Windows 2000 Professional Edition* (SP4)
- Windows XP Professional Edition* (SP1/SP2)

System Component and Services
- DHCP Client（Optional）
- Network Connection
- Windows Management Instrumentation

* Third party brand and names may be claimed as the property of owners.

Installation Steps

Figure2. System Network Diagram



1. Install applications on the server and then configure the server
2. Choose a PC and install client OS and applications
3. Set the chosen client as a "golden machine" and create a disk image file
4. Multicast the image file to all clients simultaneously

TIP.
Please refer to **Intel® Platform Administrator Help** for the detailed installation steps.

Conclusion

Intel® Platform Administration Technology has been developed using Intel's leading chipset technology. Intel® Platform Administration Technology has four key features: Out-of-box PC setup, asset management and remote control, software updates through image deployment, and system recovery and hard-disk protection. For property owners such as i-café owners, Intel® Platform Administration Technology improves PC utilization efficiency and reduces operation costs, providing a foundation for future business expansion and increased profits.

Intel® Platform Administration Technology can also relieve IT managers of troublesome daily PC management tasks through fast PC installation/image deployment and software upgrades. And the remote asset management and monitoring features can greatly improve the working efficiency of IT managers. Furthermore, the comprehensive support from Intel and Intel channel OEMs will improve the competitive advantage of IT managers as well from a career development perspective.

Intel® Platform Administration Technology can reduce the entry barrier posed by network operation and management ability to attract more investment for network channels. Meanwhile, Intel® Platform Administration Technology provides an open application interface，which can be used by channels to easily develop Intel® Platform Administration Technology-based management software solutions.

Finally, **Intel® Platform Administration Technology** provides end users with a better, more reliable user experience. End users can enjoy an exciting network experience resulting from the most up-to-date software upgrades and a seamless integration between software and hardware.

Appendix

Table3. Frequently Used Terms	
API	Application Programming Interface
ASF	Alert Standard Format
BIOS	Basic Input/Output System
EFI	Extensible Firmware Interface

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