Intel® Education

Theft Deterrent client

User Manual

December 2014

Legal Notices

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1. Introduction

1.1 Document Purpose and Scope

This document introduces the background and functions of the Intel® Education Theft Deterrent client version 4.x. The intended audiences of this document are the administrator and support personnel of the Theft Deterrent system.

This document also provides instructions on how to unlock devices. However, the detailed unlocking procedure varies from institution to institution and therefore it is beyond the scope of this document.

1.2 Terminology

1.2.1 Abbreviations

Abbreviation	*Description*
The server	Intel® Education Theft Deterrent server
The client	Intel® Education Theft Deterrent client

1.2.2 Definitions

Note: The term **device** is used to refer to Intel® Education Tablet and Intel® classmate PC.

Terms	*Definition*
Hardware ID	A 12-character string that is unique for each device.
Boot Tick	A hexadecimal number that increases by 1 after the client applies a package from the server successfully.
Expiration Date	The date from which the device will be locked.
Remaining Cycles	The number of times that a device can reboot or restore from sleep or hibernate before it is locked. This is not applicable to Intel® Education Tablet.
Provision Number (S/N)	A 20-digit hexadecimal number generated from the Public Key of the server.
Unlock Code	A 10-digit number generated by the server for unlocking a device.
Offline Package	A file named **tcopp.bin** for unlocking a device or updating the confidential information on a device.

1.3 Reference Document

Document	*Date*
Intel® Education Theft Deterrent server User Manual	2013-02
Intel® Education Theft Deterrent Deployment Guide	2013-02

2. What is Theft Deterrent client

Intel® Education Theft Deterrent client (client) is the client component of the Intel® Education Theft Deterrent system, which is designed to deter theft of Intel® Education Tablet and Intel® classmate PC.

2.1 Theft Deterrent client Requirements

The client is a pre-installed component on the device. The only requirement is to make sure that the client has a network connection to the Theft Deterrent server (server).

For information about the system requirements of the device, see the Intel® Education Theft Deterrent Deployment Guide.

2.2 First Time Setup and Activation

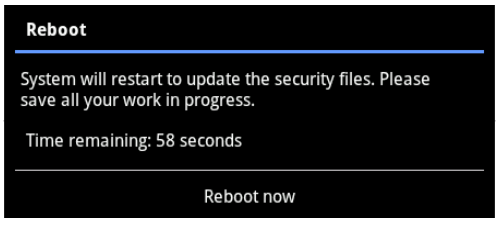
In general, the client is pre-activated in factory by default. You can skip this section if your client is already activated.

To ensure that your client is activated, you can check the client icon to make sure that the client is not in **Inactive**  status.

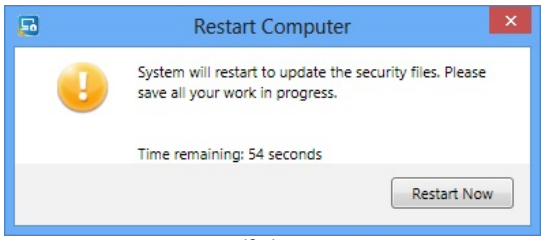
If your client has not been activated, follow these steps to activate your client with the server:

1. Ensure that the client is connected with the server. An activation request will be sent to the server automatically.
2. After the server approves your activation request, a reboot dialog will pop up on your device. The dialog contains a countdown timer that starts from 60 seconds and the system will automatically reboot after 60 seconds.

Figure 1 - Reboot Dialog



Intel® Education Tablet



Intel® classmate PC

During the activation process, the server sets the **Expiration Date** and the **Remaining Cycles** for the client to enable the Theft Deterrent mechanism. Once the client is activated, it can operate automatically without user interaction. It can be verified by the status icon  .

2.3 How Theft Deterrent client Works

After a client is activated, the server sets the **Expiration Date** and the **Remaining Cycles** for the client. By default, the **Expiration Date** is 90 days from the current date and the

Remaining Cycles is 300. The server admin can configure the default values according to his/her needs.

When either of the following cases occurs, the device is locked after it reboots or restores from sleep or hibernate:

- The **Expiration Date** has passed.
- The **Remaining Cycles** decreases to 0.

When either of the values is about to expire, the server resets them to the default values automatically. Therefore, you must ensure the device is connected with the server to avoid device lock.

Note: The **Remaining Cycles** is not applicable to Intel® Education Tablet.

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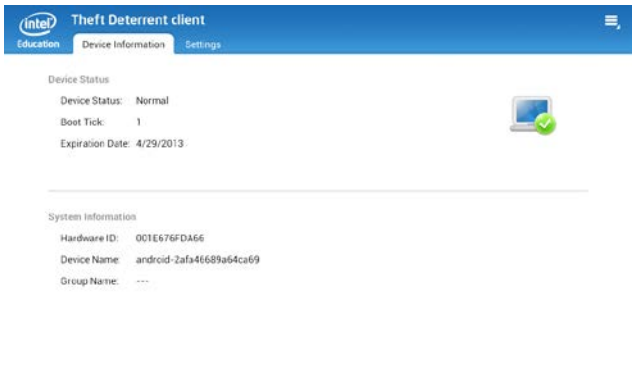
3. Functions of Theft Deterrent client

In general, once the client is set up correctly as shown in First Time Setup and Activation, minimal manual changes are needed.

3.1 View and Verify Theft Deterrent client Status

To view or verify the status and settings of the client, click the **Theft Deterrent client** application icon on the desktop to open the client.

Figure 2 - Theft Deterrent client



Intel® Education Tablet

Intel® classmate PC

On the **Device Information** page, check the status icon in the client status table. If you see an error message, see the error message table.

The following information is displayed on the **Device Information** page:

Device Status	
Device Status	The status of the client.
Boot Tick	A hexadecimal number that increases by 1 after the client applies a package from the server successfully.
Expiration Date	The date from which the device will be locked.
Remaining Cycles	The number of times that you can reboot the device or restore the device from sleep or hibernate until it is locked. This is not applicable to Intel® Education Tablet.

System Information	
Hardware ID	A 12-character string that is unique for each device.
Device Name	The computer name of the device.
Group Name	The name of the school or region that this device belongs to in the server.

Note: On Android, the client icon is displayed in the system notification area when the client is **About to Expire**, is downloading upgrade package, or has failed to upgrade. You can tap

the tray icon to view detailed notifications and tap the notifications to perform the required actions.

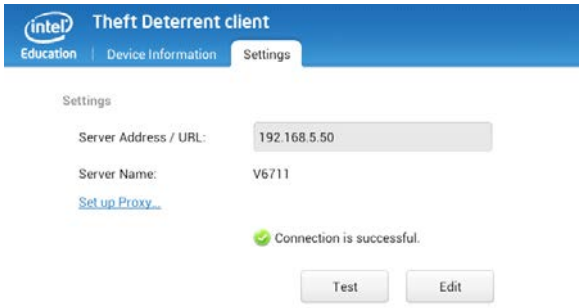
3.2 Configure Connection Settings

In general, the connection settings in the client are pre-configured in factory by default. You can skip this section if the settings are pre-configured.

Otherwise, you can configure the connection settings manually to ensure that the client is communicating with the server. Follow these steps:

1. Select the **Settings** tab, click the **Edit** button.
2. If you see a popup window, input the client password and then click **OK**. Please contact the designated support personnel if you do not have the password.
3. Input the IP address or the URL of the server in the **Server Address/URL** field and then click **Save**.
4. If you need to configure proxy to access the server, click the **Set up Proxy** link and select a setting option of your choice:
   a. If the proxy server address has been configured in the operating system, select **Use system proxy settings**. Otherwise, select **Manual proxy configuration** and input the server address and port number.
   b. Input the username and password of the proxy server if proxy authentication is required and then click **OK**.
5. Click the **Test** button to test the connection.
   a. If you see the message “Connection is successful!”, the client will connect with the server after a while. No further action is required.
   b. If you see the message “Connection failed” or “Connection failed because of invalid proxy”, check the server address and proxy settings and make sure that you are connected to the correct network. Then test the connection again.

Figure 3 - Connection Settings



Intel® Education Tablet

Intel® classmate PC

3.3 Change Display Language

You can configure the client to display one of the following languages:

Language	*On Intel® Education Tablet*	*On Intel® classmate PC*
English (United States)	√	√

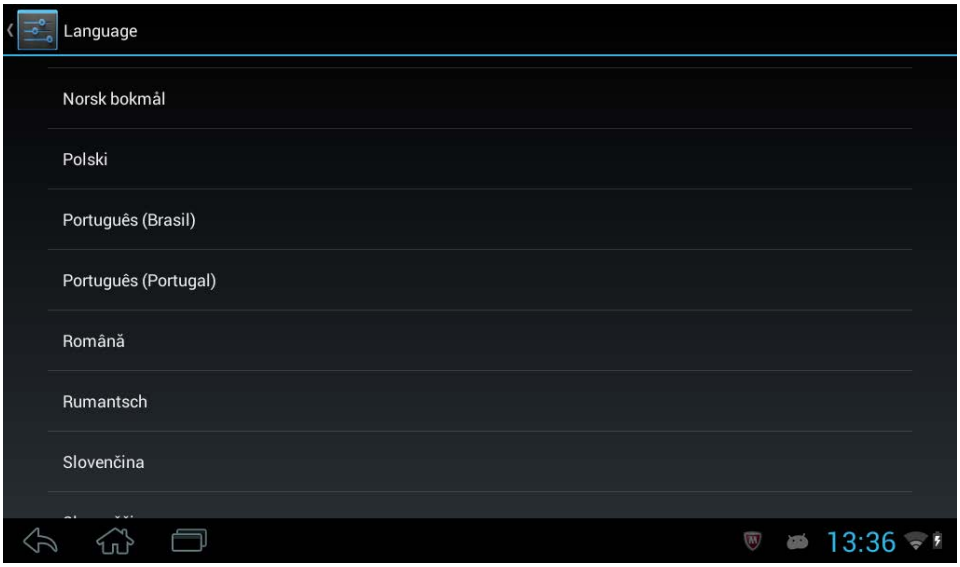
Español (Latinoamérica)	√	√
Português (Brasil)	√	√
Türkçe	√	√
Français (France)	√	
العربية	√	

3.3.1 Change Language on Intel® Education Tablet

On Intel® Education Tablet, the client displays the Android system language. To change the display language of the client, follow these steps:

1. Open **Settings** in Android desktop.
2. Select **Language & input** from the left menu and then click **Language**.
3. Select the language of your choice and the display language of the client is changed accordingly.

Figure 4 - Change Display Language (Intel® Education Tablet)



Note: Only the following languages are supported in the current client version. If you select a system language other than these, the client is displayed in English.

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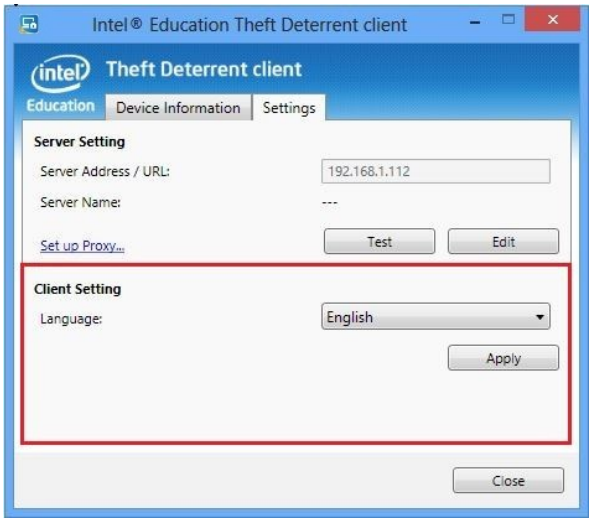
3.3.2 Change Language on Intel® classmate PC

To change the display language of the client on Intel® classmate PC, select the language of your choice and then click **Apply** on the **Settings** page.

Figure 5 - Change Display Language (Intel® classmate PC)



3.4 Log in Theft Deterrent server to Generate Unlock Code

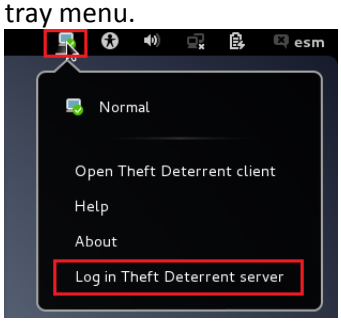
You can set up your student account on the server. In case when your device is locked, you can generate the unlock code by yourself.

3.4.1 Set up Student Account

To set up your student account, follow these steps:

1. Open the server webpage for student.
   - **Windows**: Right-click the client tray icon and click **Log in Theft Deterrent server** from the tray menu.

   - **Debian**: Click the client tray icon and click **Log in Theft Deterrent server** from the tray menu.



   - **Android**: Open the client and click the icon on the upper-right corner and then select **Log in server**.
2. On the server webpage for student, set up your account by inputting your name, password and email.

Note: The password must be 6 to 12 characters in length.

3.4.2 Generate Unlock Code by Student

In case when your device is locked, you can borrow a device to generate the unlock code for your device. Follow these steps:

1. Open the server webpage for student.
2. Log in with the **Hardware ID** displayed on the lock screen and your account password.
3. On the home page, click **Generate Unlock Code**.
4. Input the **Boot Tick** displayed on the lock screen and then click **Generate** to generate the unlock code.

Note: By default, you can only generate unlock code for 3 times within 30 days. The server admin can configure this default value according to his/her needs.

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4. Unlock a Device

A device can be locked or unlocked based on a set of policy defined by the server admin. The most common reasons a device is locked are as follows:

- The device is locked automatically when the **Expiration Date** passes the current date or the **Remaining Cycles** decreases to 0.
- The device is locked manually by the server admin when, for example, this device is reported stolen.

This section introduces the steps to unlock devices. The unlocking procedures for Intel® Education Tablet and Intel® classmate PC are different.

- How to Unlock Intel® Education Tablet
- How to Unlock Intel® classmate PC

Note: If unlocking failed, the device might reboot automatically after the unlocking process but returns to the lock screen. For more information, see Resolve Unlocking Errors.

4.1 How to Unlock Intel® Education Tablet

If you see a lock screen as shown in Figure 6, unlock the device with one of the following methods:

- Unlock with Unlock Code
- Unlock through Network
- Unlock with Removable Devices

Note: You must unlock the device with removable devices if the server is not available.

For security reasons, the system shuts down automatically 20 minutes after the lock screen is displayed. Hardware buttons such as the power and volume buttons are not supported when the device displays the lock screen.

Figure 6 - Intel® Education Tablet Lock Screen

To change the display language, click the button at the bottom-left side of the page and then select a language of your choice.

4.1.1 Unlock with Unlock Code

To unlock the device with the unlock code, follow these steps:

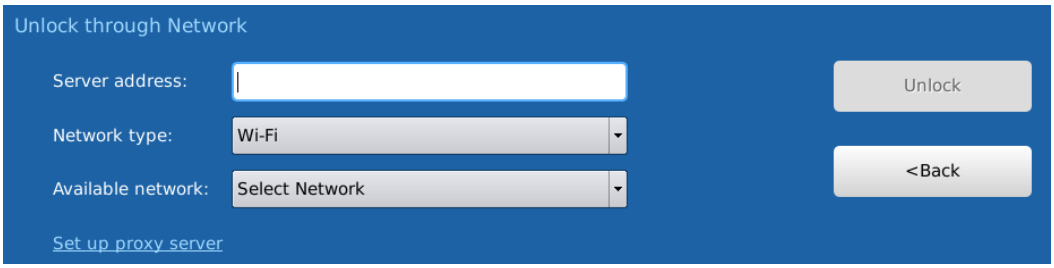
1. Provide the designated support personnel the **Hardware ID** and the **Boot Tick** shown on the lock screen to request an unlock code.
2. On the lock screen, click **Unlock with Unlock Code**.
3. Input the unlock code and then click **Unlock** to unlock the device.

4.1.2 Unlock through Network

To unlock the device through the network, ensure that the required network is available and follow these steps:

1. Click **Unlock through Network**.
2. Input the server address, leave the default network type and then select your network. Input the password of the network if required.

Figure 7 - Unlock through Network



3. If you need to set up the proxy server, click the **Set up proxy server** link.
4. The  icon is shown next to the **Available networks** field when the network connection between the device and the server is established. Click the **Unlock** button to unlock the device.

4.1.3 Unlock with Removable Devices

To unlock the device with a removable device such as a USB drive or a SD card, make sure the device to be unlocked has the corresponding physical interface and follow these steps:

1. Provide the designated support personnel the **Hardware ID**, **Boot Tick**, and the **Provision Number** shown on the lock screen to request an offline package.
2. Copy the offline package to a removable device.
3. Insert the removable device to the locked device and then click **Unlock with Removable Devices** to unlock the device.

Note: Do not rename the offline package.

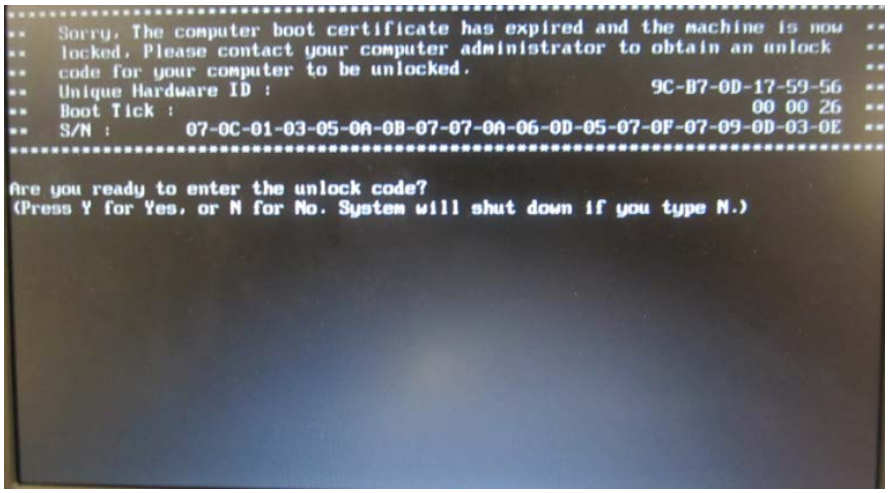
4.2 How to Unlock Intel® classmate PC

If you see a lock screen as shown in Figure 8, unlock the device with one of the following methods:

- Unlock with Unlock Code
- Unlock with USB

Note: You must unlock the device with USB if the server is not available.

Figure 8 - Intel® classmate PC Lock Screen



4.2.1 Unlock with Unlock Code

To unlock the device with the unlock code, follow these steps:

1. Provide the designated support personnel the **Hardware ID** and the **Boot Tick** shown on the lock screen to request an unlock code.
2. On the lock screen, type **Y**.
3. Input the unlock code and then press **ENTER** to unlock the device.

4.2.2 Unlock with USB

To unlock the device with a USB drive, follow these steps:

1. Provide the designated support personnel the **Hardware ID** and the **Provision Number (S/N)** shown on the lock screen to request an offline package.
2. Copy the offline package to a USB drive.
3. Insert the USB drive to the device and then press **CTRL+INSERT** to unlock the device.

Note: Do not rename the offline package.

4.3 Additional Steps

Right after a device is unlocked, the client is set with a **Remaining Cycles** or **Expiration Date** that would expire soon:

- Intel® Education Tablet: expires after 10 **Remaining Cycles**.
- Intel® classmate PC: expires after 10 days.

Therefore, you must connect the device with the server to renew the values of the **Remaining Cycles** and the **Expiration Date** to avoid device lock again.

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5. Troubleshooting Tips

5.1 Theft Deterrent client Status

Device Status	*Tray Icon*	*Description*	*Action*
Normal		The client is working correctly.	No action is required.
Permanent		The client is working correctly. Its **Expiration Date** and **Remaining Cycles** are set to a value that will never expire.	No action is required.
About to Expire		The device will be locked in a few days or after a few boots, sleep, or hibernation.	Make sure that the client is connected with the server so that the **Expiration Date** and **Remaining Cycles** will be renewed automatically.
Downloading upgrade package		The client is downloading an upgrade package.	Make sure that the client is connected with the server and do not restart the system.
Upgrading Theft Deterrent client		The client upgrade is in progress.	In Windows, no action is required. In Android, confirm to install the upgrade package.
Error	 	The client has error.	Check error messages and error codes.
Inactive		The client has not been activated and thus is not protected by the Theft Deterrent mechanism.	Connect the client with the server and then contact the server admin to activate the client.

5.2 Error Message

If an error message is displayed on the client, follow these solutions:

Message	*Solution*
Cannot connect with the server	Connect the client with the server.
Waiting for server approval...	Wait for the server to approve the client and reboot the device when you see the popup dialog requesting system reboot.

Rejected by the server	Make sure that the client is connected with the correct server.
Connected with the wrong server	Make sure that the client is connected with the correct server.
The server is busy. Please wait...	Wait a while and check the status again.
The server is under maintenance	Wait a while and check the status again.
Boot Tick inconsistent	Contact the designated support personnel to reset the Boot Tick value.
Certificate download limit exceeded	Contact the designated support personnel to reset the download limit.
Download/ Upgrade Failed	Make sure that the network connection between the server and the client is successfully. Wait a while and check the status again.
Server error	The server has error.
Device error	Check the device error codes.
No Secure Storage	Theft Deterrent is not supported in this device.

5.3 Error Code

If you see an error code on the client or on the Intel® Education Tablet lock screen, check the error codes in the following table:

client Error Code	*Unlock Screen Error Code*	*Description*
0X02010001	0X01010001	The TPM device cannot be found.
0X02010002	0X01010002	The TPM is disabled.
0x02011006	/	
0X02010003	0X01010003	The TPM is deactivated.
0x02011007	/	
0X02010004	0X01010004	Error occurred during TPM initialization in the manufactory line. The possible reasons include the following: 1. The TPM does not have an Endorsement Key pre-installed. 2. The TPM NV partition or NV index creation failed. 3. The TPM status is incorrect.
0X02010005	0X01010005	
0X0201000A	0X0101000A	
0X0201000C	0X0101000C	
0X0201000E	0X0101000E	
0X0201000F	0X0101000F	
0X0201FFFF	0X0101FFFF	Internal error accessing the TPM.

The following error codes describe the detailed reasons of unlocking failure during Unlock through Network:

Unlock Screen Error Code	*Description*
0x01040001	Server has error.
0x01040002	Cannot connect with the server.
0x01040040	The server address is invalid because it is shorter than 4 characters.
0x01040080	Cannot connect with the server because the proxy username or password is invalid.
0x04020003	Server is busy. Please try again later.
0x04020004	Server is under maintenance. Please try again later.
0x04070001	Cannot unlock this device because it is not managed by the server yet.
0x04070002	Cannot unlock this device because it is still waiting for the server's approval.
0x04070003	Cannot unlock this device because it has been rejected by the server.
0x04070005	Connected to the wrong server. (The Root Public Key in the server is not the same as that in the device)
0x04070006	Connected to the wrong server. (The server Public Key is not the same as that in the device)
0x04070007	Failed to unlock the device because the Boot Tick in the client is inconsistent with that in the server.
0x04070008	Failed to unlock the device because the certificate download limit exceeded the threshold in the server.

5.4 Resolve Unlocking Errors

If your device reboots and returns to the lock screen after you unlock the device with an unlock code, make sure that you input the correct unlock code. If the problem remains, see Resolve Unlock Code Problems.

If your device reboots and returns to the lock screen after you unlock the device with a removable device, make sure that you use the correct offline package.

If you failed to unlock the device through the network, make sure that the device is connected with the server correctly. If you see an error code on the lock screen of Intel® Education Tablet, check the error codes for unlocking through network.

5.5 Resolve Unlock Code Problems

If you cannot unlock the device with the unlock code, this might be because the confidential information in the server is not the same as that in the client. Therefore, it is recommended that you update the confidential information with a removable device by following the unlock steps for your Intel® Education Tablet or Intel® classmate PC.

The device is still locked after you update the confidential information. You can now unlock the device with an unlock code.

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6. FAQ

1. What is the removable device format supported for unlocking?

Answer： The FAT file system.

2. What is the network protocol supported for device unlocking through network?

Answer: The wireless encryption standards supported are as follows:

- WPA
- WPA2
- WEP (Hex Security Key only)
- NONE

3. Why doesn't the Theft Deterrent client start up?

Answer: The client should be loaded automatically at system start-up. If your client is not running properly, reboot the device to start the client automatically.

Also, if the client runs on Windows, you can check the following services from the **Start** menu -> **Computer Management** -> **Services and Applications**.

- **Theft Deterrent agent service**
- **Theft Deterrent guardian service**

If either of the services is stopped, start it manually. If the problem remains, it is recommended that you re-install the client and guardian.

4. Can I uninstall the Theft Deterrent client? If so, what will happen after uninstall?

Answer: As a management program, the Theft Deterrent client should be kept running at all times. However, you can still uninstall the client but a protection application named Theft Deterrent guardian must be uninstalled before uninstalling the client.

To uninstall the guardian and the client, follow these steps:

- **Windows**: use **Add or Remove Programs** in the **Control Panel**. The client protection password might be required.
- **Android**: use **Manage applications** in **Settings**.

5. Will the About to Expire status affect the device functions?

Answer: No. The **About to Expire** status only informs the user to ensure that the client is connected with the server so that the server can update this status automatically.

6. Can the useable time be extended by modifying the device's system time/date?

Answer: For Intel® Education Tablet, changing the system time will not affect the useable time of the device.

For Intel® classmate PC, changing the system time can extend the usable time of the device. However, this will not impact the **Remaining Cycles** and the device will eventually be locked after the **Remaining Cycles** decreases to 0.

7. Why can't the Theft Deterrent client connect with the server?

Answer: If you cannot establish a connection between the client and the server, make sure that the following settings are configured:

- The network settings are properly set up.
- The antivirus software and the firewall on your device allow the following ports: **5000, 7911, 8911, 9911.**

8. Why can't I enter the login page when I open the server webpage for student?

Answer: The login page is displayed only after the device owner completes the student account settings. Therefore, to generate an unlock code with a device borrowed from your classmate, ask your classmate to complete his or her account settings and then you can log in the server with your own **Hardware ID** and password.

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