



# Intel® vPro™ Technology Use Case Reference Design

Create a Thinstation ISO with a Firefox\* Browser for Microsoft\*  
Outlook Web Access

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# Revision History

Revision	Revision History	Date
1.0	Initial release.	August, 2010
1.1	Changed task order (moved "fix mouse detect problem" section after "compress Firefox preferences" section); updated path in "fix mouse detect" section; added new section, "Adding Boot Completion Flags."	August, 2010

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# 1 Preface

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This document will show how to build a small bootable Linux\* ISO that can be used with Intel® vPro™ technology to enable Microsoft\* Outlook Web Access (OWA) on a remote client. This will be accomplished by using the Open Source Linux project called Thinstation. Examples will be given on how to build the ISO with applicable configuration changes to work well with OWA.

## 1.1 Document Scope

This document describes the required tools (and where to get them) and basic process for creating a Thinstation ISO that enables Outlook Web Access.

## 1.2 Intended Audience

This document is targeted at IT professionals interested in tools and processes to leverage Intel vPro technology in order to manage remote client PCs.

## 2 Introduction

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Thinstation is a small, basic, lightweight operating system based on the Linux operating system. It was created as a Linux Open Source project. Its relatively small size makes it ideal as a bootable ISO “recovery OS” that can be pushed remotely using Intel vPro technology to a PC whose installed operating system is not working. The ISO described in this document also includes a Mozilla Firefox\* browser, so that the downed PC’s owner can access email via Outlook Web Access once the Thinstation ISO has booted.

### 2.1 Requirements

An example deployment is used to illustrate the process described in this document. The steps outlined in the document example have the following requirements:

Build environment	<ul style="list-style-type: none"><li>• Ubuntu 10.04 32-bit Linux environment.</li><li>• Thinstation-2.2.2d</li></ul> See section 3.1, Prepare Your Build System and Environment on page 7 for instructions on obtaining these requirements.
Managed Client with Intel vPro technology	Needed to test the process.

### 2.2 Process Overview

The following are the high level steps for creating the Thinstation ISO including the browser to enable Outlook Web Access:

1. Prepare build system and environment
2. Configure Thinstation buildtime file
3. Configure Thinstation build file
4. Specify a background image
5. Configure the Firefox package
6. Add a certificate to the Firefox package
7. Correct mouse detect problem in Thinstation 2.2.2d
8. Compress the Firefox preferences package
9. Build the Thinstation ISO

## 3 Detailed Procedure

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Follow the steps in the subsections below to create a Thinstation ISO that enables Outlook Web Access.

### 3.1 Prepare Your Build System and Environment

#### 3.1.1 Ubuntu\*

In this example we will be configuring and building Thinstation in an Ubuntu\* 10.04 32-bit Linux environment. The Ubuntu Desktop Edition can be downloaded from the link below:

<http://www.ubuntu.com/desktop/get-ubuntu/download>

You can then burn an installation CD using the downloaded ISO.

#### 3.1.2 Thinstation

Once your Ubuntu environment is installed, you can download Thinstation to your Ubuntu system from the following link:

<http://sourceforge.net/projects/thinstation>

Select **Thinstation-2.2.2d.tar.gz** to download.

Once the download completes, unpack Thinstation to a build folder. In our example we placed the tar file on our desktop and unpacked Thinstation from a command prompt to our Ubuntu desktop with the following commands:

```
cd <your user desktop>
tar xzf Thinstation-2.2.2d.tar.gz
cd Thinstation-2.2.2d
```

## 3.2 Configuring Thinstation buildtime File

Double-click on the **Thinstation.conf.buildtime** link to open the **buildtime** file in an editor. You can set the default home page for Firefox to your exchange server in the option below. Make sure the file contains the following:

```
SCREEN_RESOLUTION=1024x768

SESSION_0_TYPE=blackbox
SESSION_0_AUTOSTART=on

SESSION_1_TYPE=firefox
SESSION_1_FIREFOX_HOMEPAGE=https://webmail.exchangeserver.com/exchange
SESSION_1_AUTOSTART=on

NET_USE_DHCP=on
NET_FILE_ENABLED=off
NET_HOSTNAME=owa_*
```



### NOTE

Be sure to change the `SESSION_1_FIREFOX_HOMEPAGE` value (“`https://webmail.exchangeserver.com/exchange`” in bold highlight above) to your default Outlook Web Access home page.

## 3.3 Configuring Thinstation build File

Double-click on the **build.conf** link will open the **build** file in an editor. Add or remove **#** symbols at the beginning of certain lines as described below to configure Thinstation.

### 3.3.1 Section #!Misc Modules

1. Add a **#** symbol to the **module pcm** line.

### 3.3.2 Section #!!!Ethernet 10-100 Mbit Modules

1. Add a **#** symbol to the **module 8139too** line.
2. Add a **#** symbol to the **module forcedeth** line.
3. Add a **#** symbol to the **module pcnet32** line.
4. Add a **#** symbol to the **module sis900** line.
5. Add a **#** symbol to the **module via-rhine** line.

### 3.3.3 Section #!!Ethernet 1000 Mbit Modules

1. Remove the **#** symbol from the **module e1000e** line.
2. Add a **#** symbol to the **module r8169** line.



### 3.3.4 Section #USB Devices

1. Add a **#** symbol to the **module usb-storage** line.
2. Add a **#** symbol to the **module usb-cdrom** line.

### 3.3.5 Section #X related

1. Add a **#** symbol to the **package xorg6-i810** line.
2. Add a **#** symbol to the **package xorg6-nv** line.
3. Add a **#** symbol to the **package xorg6-radeon** line.
4. Add a **#** symbol to the **package xorg6-s3** line.
5. Add a **#** symbol to the **package xorg6-trident** line.
6. Add a **#** symbol to the **package xorg6-via** line.

### 3.3.6 Section #Applications

1. Add a **#** symbol to the **package rdesktop** line.
2. Add a **#** symbol to the **package rxvt** line.
3. Remove the **#** symbol from the **package firefox** line.

### 3.3.7 Section #Window Managers

1. Remove the **#** symbol from the **package blackbox** line.
2. Add a **#** symbol to the **package icewm** line.
3. Add a **#** symbol to the **package icewm-theme-xp** line.

### 3.3.8 Section #Window Manager Utils

1. Add a **#** symbol to the **package xtdesk** line.
2. Remove the **#** symbol from the **package ttf-freefont** line.

### 3.3.9 Section #Parameters

1. Change all five instances of **pleasechangeme** to passwords of your choice.
2. Remove the **#** symbol from the **param desktop** line.

After completing the above edits, save your build file.

## 3.4 Configuring a Background Image

You can change the background that is running behind Firefox to a background of your choosing. Rename any 1024x768 resolution jpg image to **background.jpg** and copy this to the base Thinstation-2.2.2d directory.

## 3.5 Configuring the Firefox\* Package

First, you need to modify the **install** file in the Firefox package to fix a build issue using Ubuntu.

1. From the base Thinstation-2.2.d directory, go to the **packages/firefox/build** directory and edit the file **install**.
2. In the line that reads **let returnval=\$?**, remove the **let** command so that line just reads **returnval=\$?**.
3. Save the file.

Next you need to perform configuration steps to the Thinstation preferences files for Firefox.

1. From the base Thinstation-2.2.d directory go to the **packages/firefox/etc** directory and extract the folder **.mozilla** from the file **FF3.0\_TS-2.2.tar** to the **packages/firefox/etc** directory.
2. In your File Browser, double-click on the .tar file and select **Extract**.
3. In order to see the **.mozilla** folder, you will need to change the **Preferences** in your File Browser. Select **Preferences** from the **Edit** menu and then select the **Views** tab. Place a checkmark for the option 'Show hidden and backup files' under 'Default View'.
4. In the **.mozilla** directory you just extracted, go to the **firefox/TS.default** directory and right-click on the file **localstore.rdf**. Edit line number 20 and change value of **sizemode** from **normal** to **maximized**.
5. Save the file.

## 3.6 Adding a Certificate to the Firefox Preferences Package

You may need to add a certificate to the Firefox package in Thinstation in order to access a Microsoft\* Exchange server running Outlook Web Access. To do this you will need to add an application to your Ubuntu installation.

1. From a command line run the following:  

```
sudo apt-get install certutil
```

 This will install **certutil** which you will use in the next step.
2. Acquire the certificate file from your Exchange server administrator for the Exchange server to which Firefox will connect for OWA.
3. Copy this file to the **packages/firefox/etc** directory where you extracted the **.mozilla** directory.

4. In this example we will assume that the base Thinstation-2.2.2d directory is located at **/home/administrator/Desktop/Thinstation-2.2.2d**. From the command line enter the following command replacing **CERTNAME** with the name of your certificate:

```
cd /home/administrator/Desktop/Thinstation-2.2.2d/packages/firefox/etc

certutil -A -n CERTNAME -t "CT,C,C" -i CERTNAME.CER -d
.mozilla/firefox/TS.default

rm CERTNAME.CER
```



#### NOTE

*Be sure to remove the certificate from the directory so the raw file does not get built into the Thinstation ISO.*

5. You can verify that the certificate was installed by looking in the **.mozilla/firefox/TS.default** directory and making sure that the following files are there with the current date and time:

```
secmod.db
key3.db
cert8.db
```

## 3.7 Compressing the Firefox Preferences Package

Now you need to compress the **.mozilla** directory back into its **.tar** file.

1. Using the File Browser, right-click on the **.mozilla** directory and select **Compress....**
2. In the **Compress** dialog, make sure the **Filename:** text box displays **FF3.0\_TS-2.2** and that the dropdown box next to it displays **.tar**.
3. Click **Create** and then **Overwrite** to compress your modified **.mozilla** directory.
4. Delete the **.mozilla** directory after compressing it so that the uncompressed directory does not become part of the Thinstation ISO.

## 3.8 Fixing a Mouse Detect Problem

From the Thinstation-2.2.2d base directory go to **packages/base/etc/init.d** and double-click on the file **mdetect** to edit it as follows:

1. Just before the **case "\$1"** in line, add the following line:

```
exit 0
```

2. Save the file.

This will disable checking for a mouse so that machines with track pads will work.

## 3.9 Adding Boot Completion Flags

From the Thinstation-2.2.2d base directory go to **packages/base/sbin** and double-click on the file **start-session**, then choose **Display** to edit it as follows:

1. Just before the **case "\$1" in** line, add the following lines:

```
echo "AWK" >/dev/ttyS0
echo "AWK" >/dev/ttyS1
echo "AWK" >/dev/ttyS2
echo "AWK" >/dev/ttyS3
```

2. Save the file.

This will send the string "AWK" back to the Launcher to signal that the boot process has completed.

## 3.10 Building the Thinstation ISO

From the command line in the base Thinstation-2.2.2d directory, enter the following command:

```
./build
```

Answer to **Yes** to download and build Firefox.

If you ever need to modify the Thinstation preferences for Firefox, modify the **.mozilla** directory as described above, then go to the **packages/firefox/build** directory and delete the **installed** file (this is just an empty file signaling that Firefox has been downloaded and built). When you build the ISO again, Firefox will be downloaded and reconfigured using your new preferences.

## 3.11 Where Is the ISO?

When the build is complete, the newly built ISO will be in the **boot-images/iso** directory and will be called **thinstation.iso**.