HP drive key boot utility for ProLiant servers

Introduction

The HP drive key boot utility is a Smart Component that can be downloaded from the HP website to create a bootable drive key. Some ProLiant servers support the ability to boot a drive key in the system BIOS. For those products, this Smart Component can also be used to make the drive key capable of flashing firmware or booting floppy images that already exist. This white paper focuses on uses that would be beneficial to the customer for booting a drive key, and details the process for implementing those uses.

Replacement for the floppy drive

Some ProLiant servers do not include a floppy drive as a standard component, or may not offer a floppy drive as an option. As HP transitions to a floppy-less ProLiant server, other utilities and devices will become available that will allow the customer to do those tasks that used to be accomplished using a floppy drive. The drive key is a logical replacement for a floppy drive because it is small, easy to transport, supports various capacities, and in many cases, does not require a separate driver under the operating system.

BIOS support for USB devices

The system BIOS (ROM) requires additional functionality to support initializing and booting a USB drive key, as well as any other USB device. This is termed "legacy USB support" by HP. Basically, the system BIOS will attempt to boot the drive key as a mass storage device, thereby enabling the full capacity of the device. However, most drive key devices do not come properly formatted, meaning there is nothing for the system to boot. This is similar to attempting to boot a blank floppy diskette. The system BIOS would support initializing and booting that device, but no boot files are available to execute. The HP drive key Smart Component lands bootable files that the system BIOS can execute. This means that to boot a drive key, the server requires system BIOS support, as well as drive key support.

The system BIOS will handle booting and executing files from the drive key until an operating system loads and the USB driver is loaded. At this point, the system BIOS is no longer involved in the support for the device.

Operating system support for USB devices

Not all operating systems support USB drive key or USB devices. Check with the operating system vendor to determine if that specific OS supports USB devices. There are different levels of support by the vendor. Some operating systems load a USB driver once the OS installation is complete and the kernel has loaded. Other operating systems include support for use of USB devices during installation.

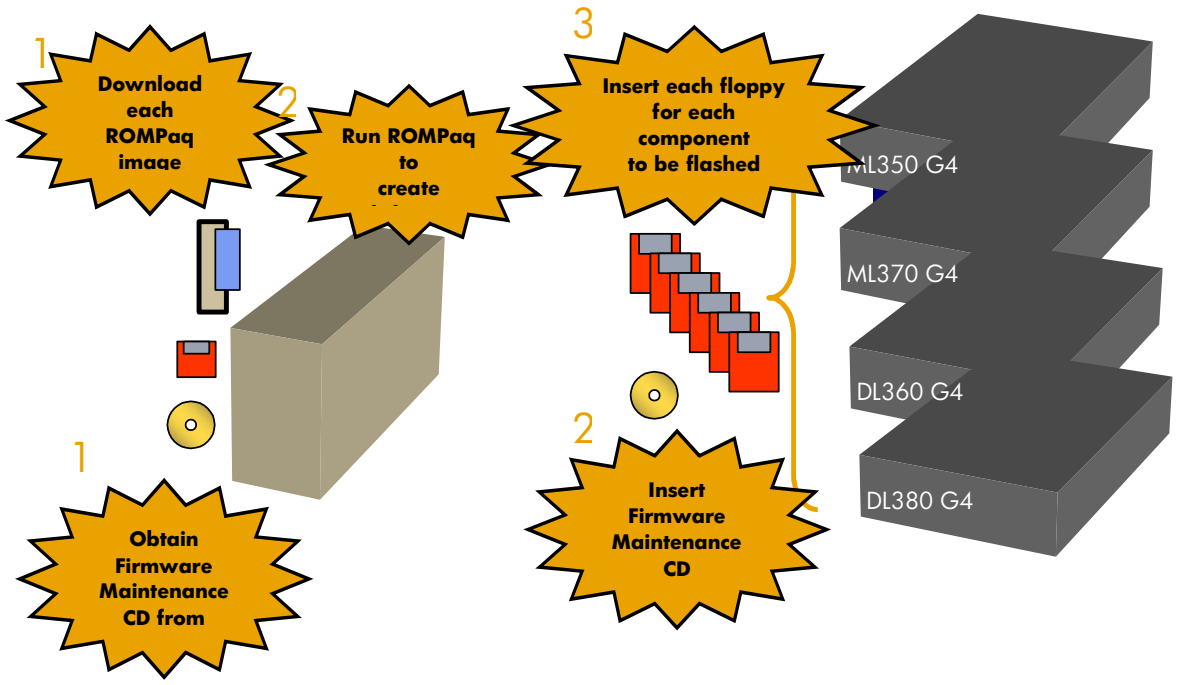
For example, Microsoft® Windows® 2000 Server does not natively support generic USB devices during installation, but does support generic USB devices during runtime. "Native USB support" means that the OS supports those devices inherently, and does not require additional drivers/firmware for support. Since Windows 2000 does not natively support generic USB, a user can only insert a USB drive key and use it at runtime, once the installation is complete. However, a drive key cannot be used during installation for any use, such as providing an updated driver during the F6 prompt. HP provides some alternatives for some operating systems to allow customers to use

USB devices during installation. For more information on this and other related topics, refer to the USB ProLiant homepage.

Usage for the drive key boot utility

HP supports the use of a drive key as a premier method of transporting data, flashing firmware, and deploying operating systems. HP developed the drive key boot utility primarily to provide a newer method to maintain system firmware. On previous servers, the method of flashing firmware consisted of downloading an image to a floppy diskette from either the SmartStart CD or from the HP website. Each floppy diskette contained the firmware image for a single component (ROM, iLO, Smart Array controllers, etc.). See figure 1, below.

Figure 1. Firmware flash using floppy diskettes

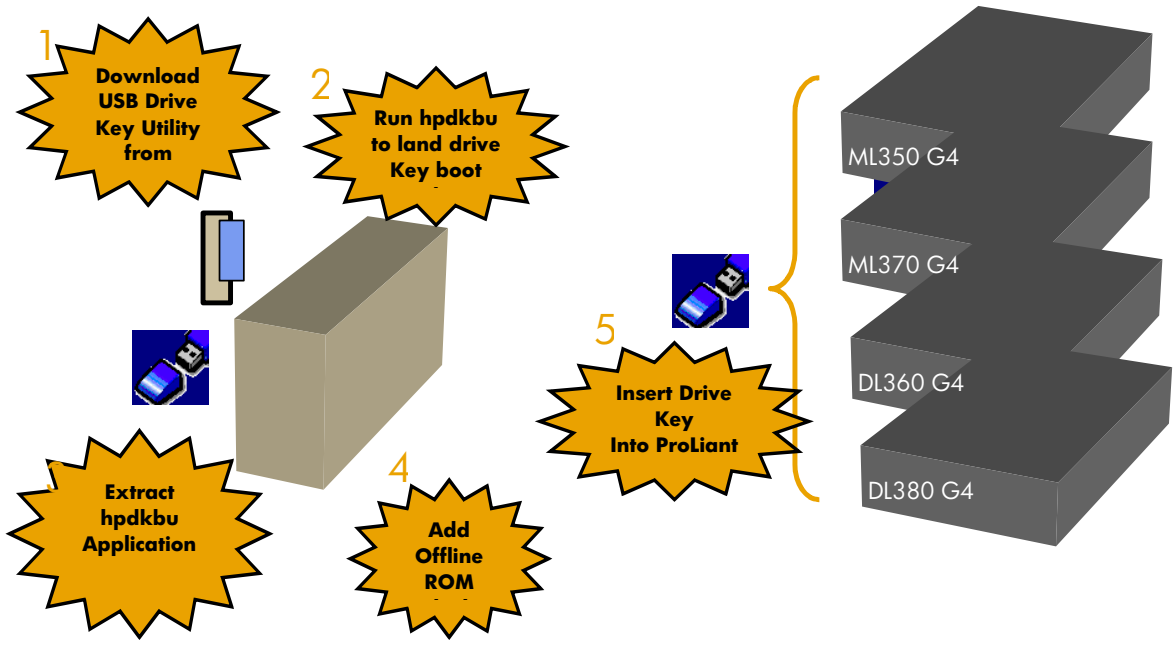


More recently, HP released an online version (meaning it runs when the server is up) of a ROM flash utility that allowed customers to setup a single server as an image repository. Each server ran a component that would communicate with the master server and receive updates as necessary. In this application, each component is flashed independently, and a reboot is still required for the new firmware image to become active. This is still a supported and efficient method of maintaining firmware images.

HP also released an offline version of the ROM flash utility, meaning it requires the server to be shut down. The benefit of the offline ROM flash utility is that all components are flashed at the same time, increasing the speed to maintain firmware images. This utility is packaged on the Firmware Maintenance CD and includes firmware images updated at a certain point in time. If a newer (or older) image is available that is desired for flash, there is no method currently to download the image and create a custom CD.

With the drive key boot utility, one of the primary features is the ability to flash and maintain system firmware. The drive key creates a boot environment and loads the offline ROM flash utility. By using this utility on a drive key, the user is able to control what firmware images are desired for flashing. Figure 2 shows how flashing firmware has transitioned from using floppy diskettes to using a drive key.

Figure 2. Flashing firmware using HP drive key boot utility



Another feature of the drive key boot utility, is the ability to boot a floppy image that already exists. This allows the drive key to behave as a potential replacement for a floppy, depending upon the image being used. HP does not test the various images that could be used with this feature, but does test and support that the imaging engine is working properly. This feature should be sanity tested in each datacenter to ensure compatibility with your environment. There are some known cases where this feature does not work. For example, there is no support for booting a series of floppy images. This means that if your application consists of a series of floppies, this feature will not work for your environment because it only supports the capability to boot a single image at a time. Currently, there is no support for creating a ROMPaq diskette and booting the image on the drive key. This is a current limitation of the floppy emulation software.

Installing the web component

To install the web component, go to www.hp.com and download the image to a client. Once downloaded, run the file and install the application to the client by extracting the downloaded file. This will install an application to the client machine that can be run to make the drive key bootable.

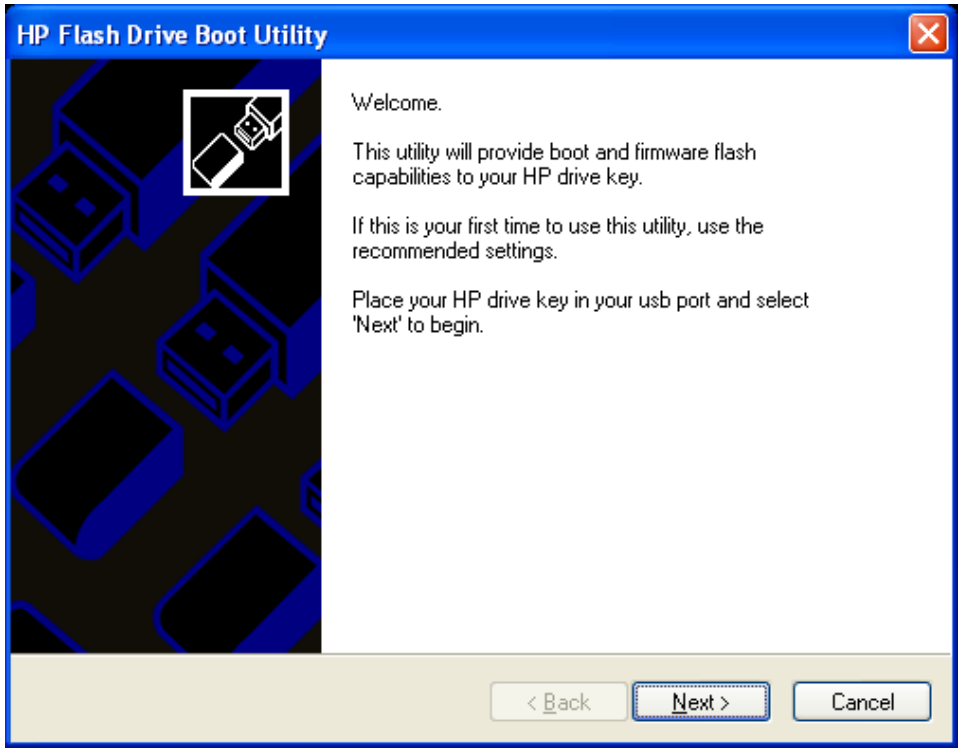
Running the application

The application includes a series of menu screens that will prompt the user for input on how to format the drive key. A radio button will be selected on each page, by default, to guide the user on on HP recommendations.

Insert the drive key and run the application by going to the extracted directory and running hpdkbu.exe. This is the drive key boot utility executable file, and will load the welcome screen shown in Figure 3.

Click **Next** to go to the next screen.

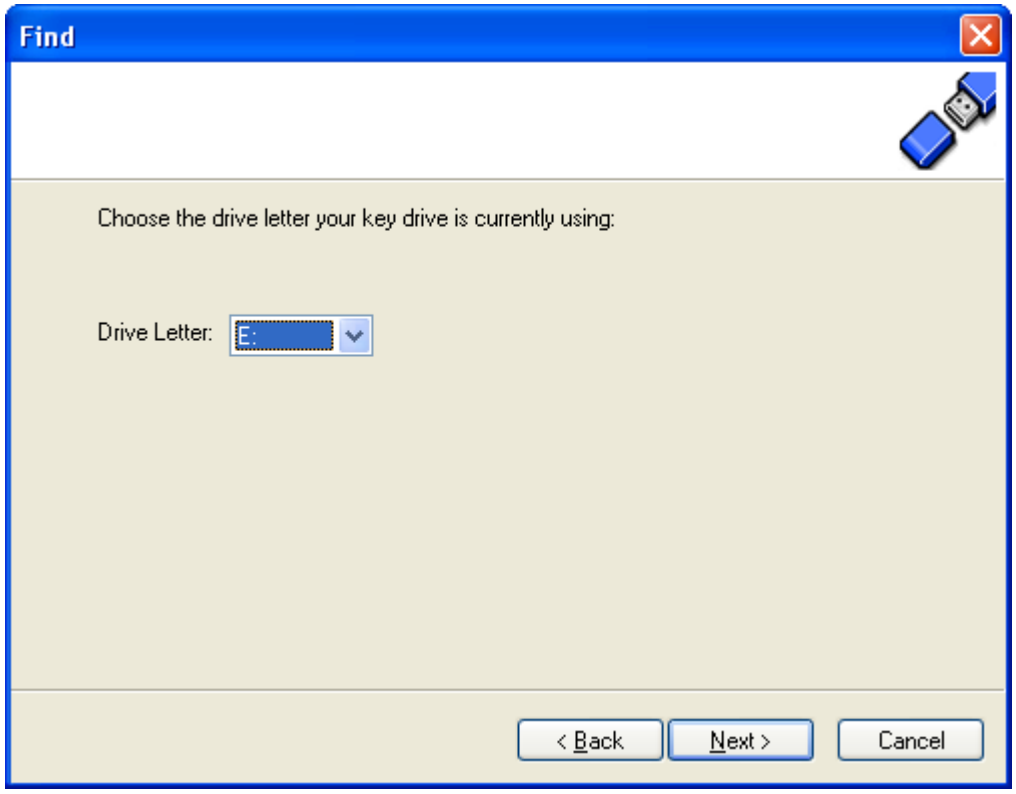
Figure 3. Welcome screen



From the Drive Letter dropdown menu, select the drive being used for the drive key. The drive letter you select refers to the drive that the running operating system has assigned to the drive key.

Click **Next.**

Figure 4. Select drive in use for drive key.

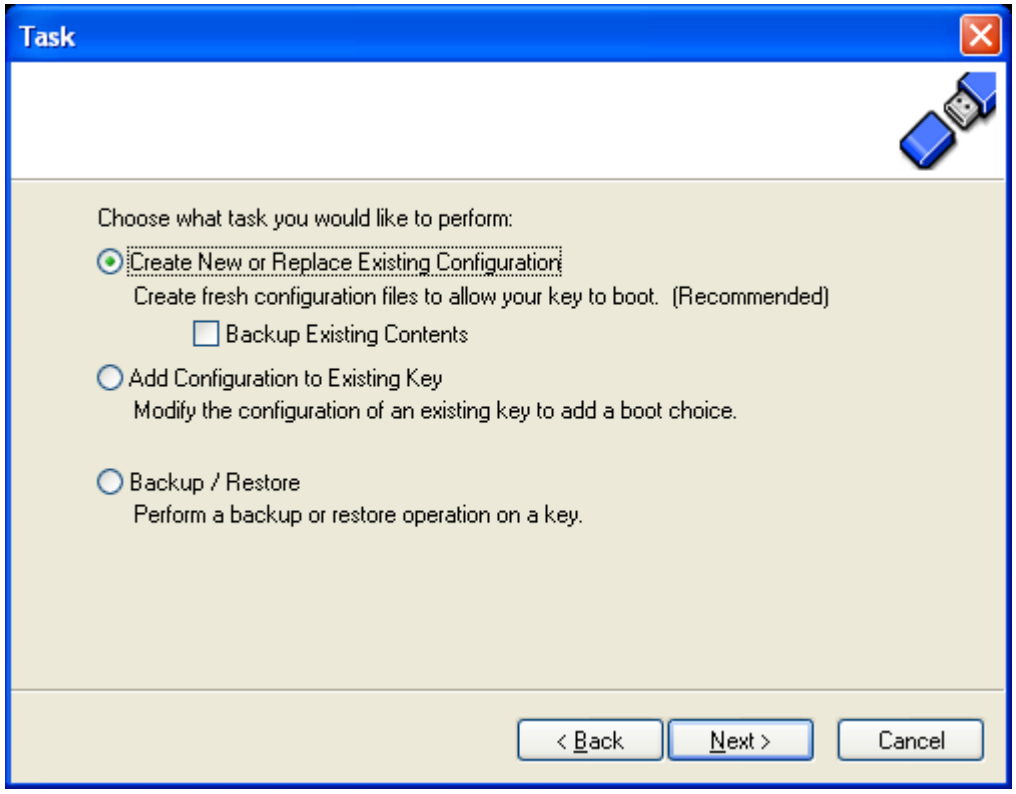


The Task screen allows the user to select what task they would like to perform using the drive key boot utility. There are three options:

- Create New or Replace Existing Configuration: If this option is selected, the contents of the drive key will be completed erased, and you can select a checkbox item that will back up the contents on the drive key to a file. This can be restored at a later time, if desired, and requires the exact same type and capacity drive key, but it does not have to be the exact same physical drive key.
- Add Configuration to Existing Key: An example when this might be preferred is when a user wants to add a new floppy image to the boot choices.
- Backup / Restore: This feature will restore the data from the file (see option 1 above) to the drive key.

After you make your selection, click **Next.**

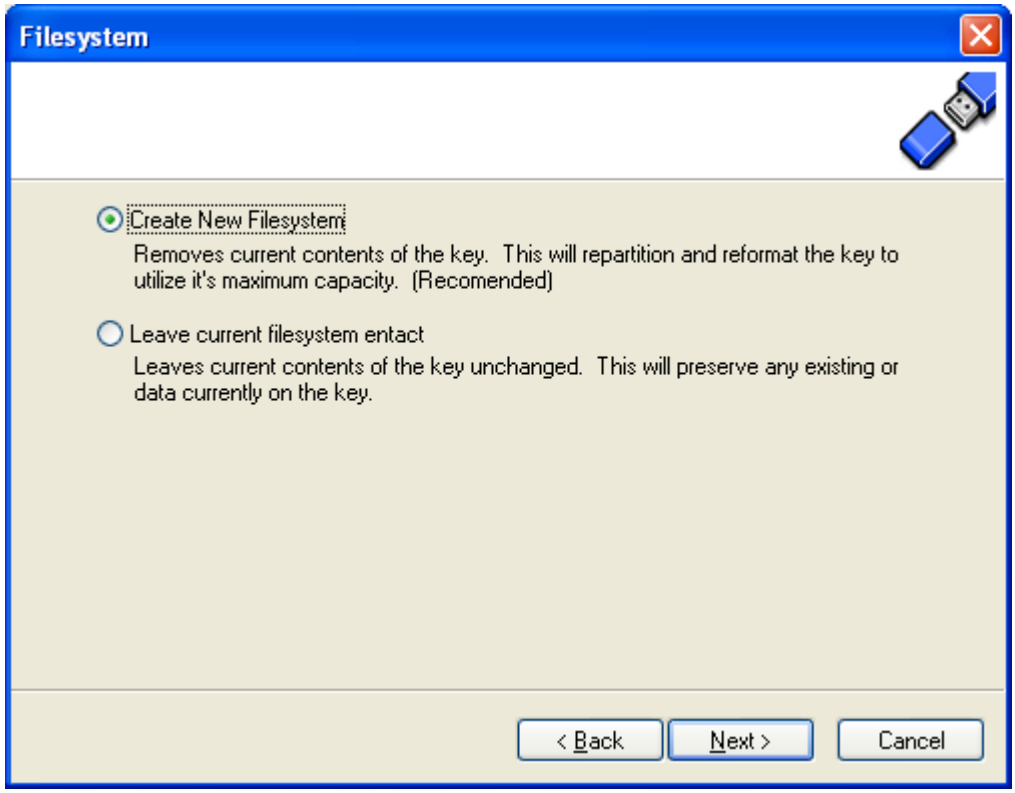
Figure 5. Task selection



The next screen is the Filesystem screen. The drive key does not have to be reformatted, but there are some operating systems that may not work properly with the filesystem that is on the drive key by default. For this reason, it is recommended that you select **Create New Filesystem.**

After you make your selection, click **Next.**

Figure 6. Filesystem selection

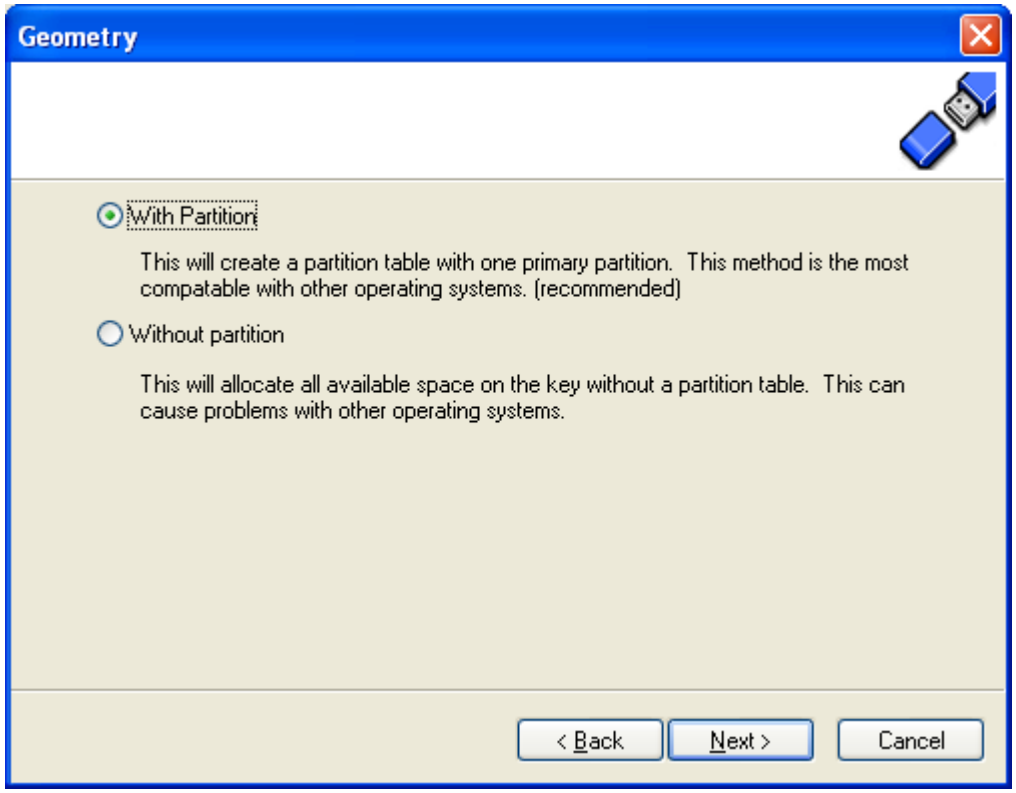


The following menu provides the utility with information on drive geometry,and allows the user to select whether or not a partition is desired. The recommended path is to create a primary partition because this is the most compatible with the majority of operating systems. The user can also select not create a partition. This will allocate all available space on the key without creating a partition.

Once Next is clicked, the drive key will be formatted and the boot environment will be created for the drive key. The user can select the Back tab at any point prior to this screen without modifying the data on the drive key. Once the next screen is shown, the drive key is formatted.

After you make your selection, click **Next.**

Figure 7. **Drive Geometry Selection**

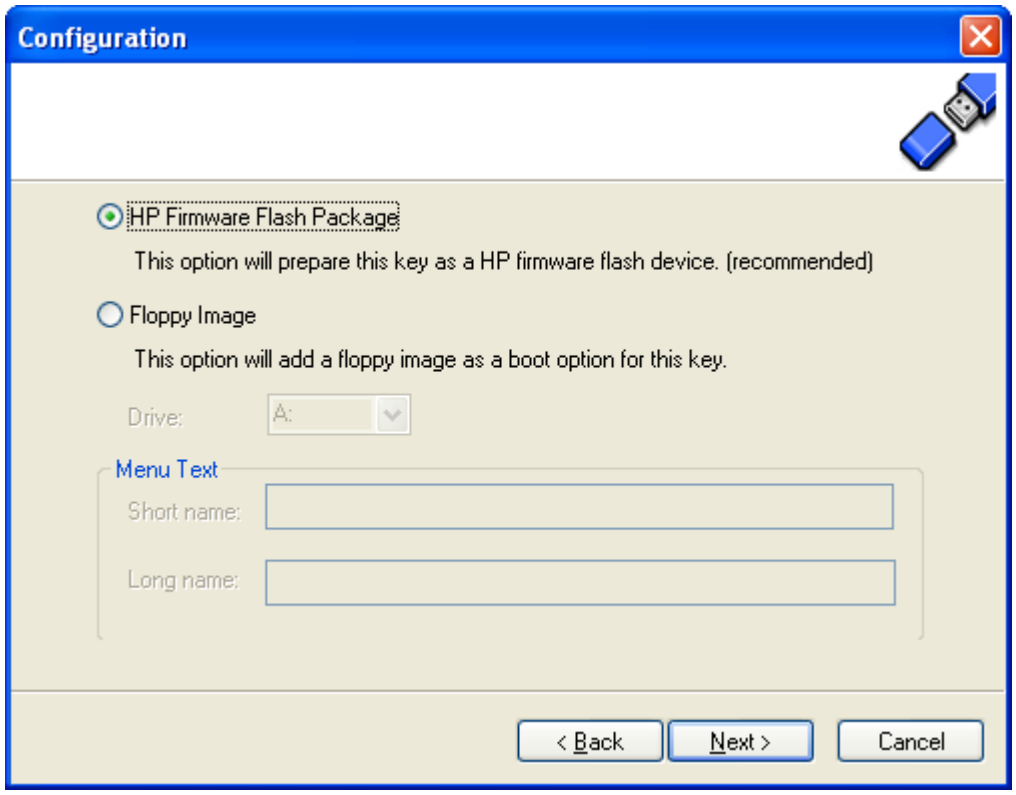


The following screen will prompt the user for what usage model they plan to use. There are two options:

- HP Firmware Flash Package: This option will prepare the drive key for firmware flashing using the Offline ROM Flash utility as described in this document. This is the recommended usage for the boot utility.
- Floppy Image: This option will add a floppy image and place it in the boot menu on the drive key. If this option is selected, the user will be required to provide the floppy to image. In the Short name field, the user should input a unique short name (8 or less characters) to type at the boot menu to boot the image. In the Long name field, the user should input a verbose one-line description to distinguish the floppy image from others.

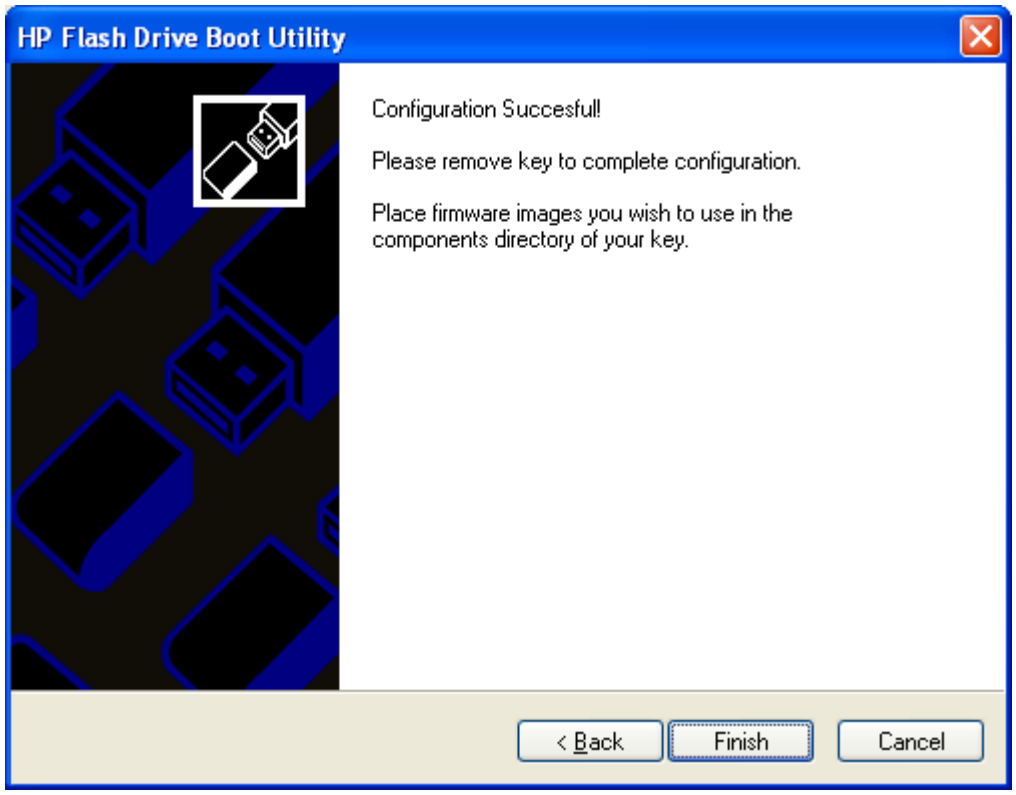
After making your selection, click **Next.**

Figure 8. Configuration Screen



If the previous steps were completed properly, the user will be prompted with a completion screen.

Figure 9. Completion Screen



The drive key is now capable of flashing firmware, but still requires offline ROM flash components from the HP website.

Maintaining system firmware images

To maintain system firmware images, run the application to make the drive key capable of flashing firmware. This will make the drive key bootable and install the application to flash firmware.

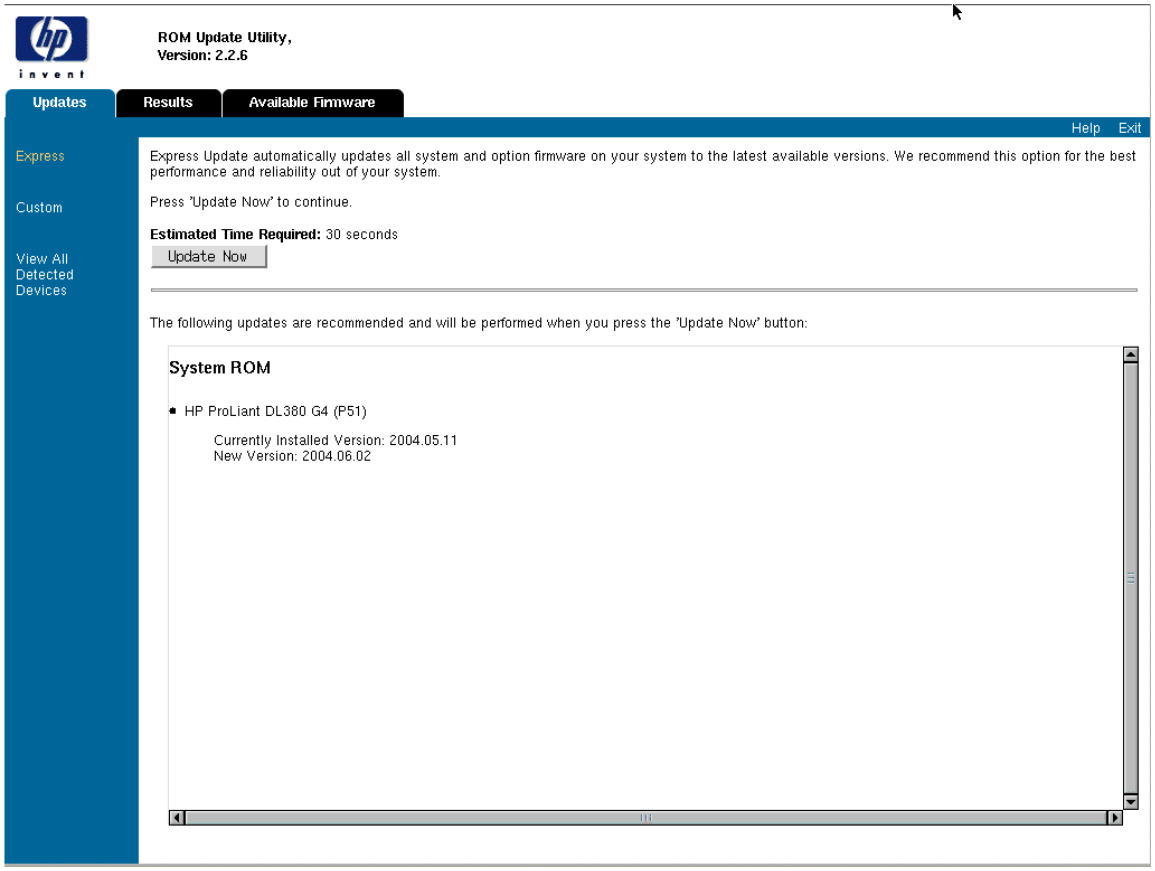
Proceed to www.hp.com and go to **Support and Drivers.** Select the server that you wish to maintain firmware and download the Offline ROM Flash component for each component you wish to flash. Supported components consist of system firmware, integrated Lights-Out, Smart Array controllers, and hard drives. Download the components for all devices to the drive key and place the image in the components' directory.

Note
This utility uses the Offline ROM Flash components that correspond to the Offline ROM flash utility. This utility is supported on most ProLiant servers. However, the system BIOS does not support the ability to boot the drive key on every server. Reference the "Supported servers and devices" section of this document to ensure that the servers and components you wish to flash firmware from a drive key actually support booting the drive key.

Once the drive key is bootable, capable of flashing firmware ,and the components are downloaded, the drive key can be inserted into the supported server. Power on the server and the utility will be loaded as shown in figure 10, below. By default, the area that shows "System ROM" (on figure 10, below), will display all firmware for which the utility finds a newer version and will also display the currently installed version. Select the **Available Firmware** tab to display all supported components that are capable of being flashed. Once ready to flash firmware, click **Update Now** and all components will be flashed at the same time. Then click **Exit.**

The drive key can be removed and the system can be rebooted via a power cycle. A power cycle is required for the new firmware images to take effect. Simply rebooting the server may not load the new firmware images.

Figure 10. **HP drive key boot utility firmware update utility menu**



If the component that is desired for flash does not show up on the detected components screen, select the Components tab. This will display all component images that are on the drive key and available for firmware flash. Verify that the component is actually available, meaning the correct image was downloaded. This will also display the current and available versions of firmware. If the firmware version is the latest, it will not show up on the home screen because it does not need to be flashed.

Supported servers and devices

All ProLiant servers do not support booting a USB drive key. Refer to the USB homepage for additional information on what servers support this functionality, and what minimum ROM is required for this support.

The Offline ROM flash utility currently supports the ability to flash system BOIS, Integrated Lights-Out (iLo) firmware, Smart Array controllers, and hard drives. Other components may release components for offline firmware flash. Refer to the software and drivers section of www.hp.com to determine if there is a ROM flash component available for the device you wish to flash.

The HP server team works closely with the HP desktop team to ensure that the drive key devices they support work on ProLiant servers. However, we cannot guarantee that every HP branded drive key will work properly in every ProLiant server. Part numbers for supported devices are available on the product QuickSpecs and are listed on the USB home page. Please refer to these documents for supported part numbers.

Since there are various implementations for USB devices, not all USB devices work properly with ProLiant servers. Due to fast-changing roadmaps and the number of USB vendors, HP only claims support for HP branded drive key devices listed on the QuickSpecs and USB homepages. There is nothing in the drive key boot utility that prevents a different vendor drive key from working. However, HP cannot guarantee complete integration of the drive key boot utility with non-supported devices.

Additional Information

Please refer to the USB home page at

http://h18004.www1.hp.com/products/servers/platforms/usb-support.html for additional

for additional information regarding USB support on HP ProLiant servers.

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