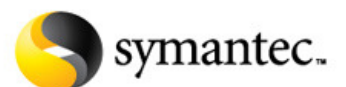


ALTIRIS.
SMART DECISIONS.



Patching the VMware ESX 3.0.x Hypervisor with Altiris® Software Delivery Solution™ for Servers

ALTIRIS: NOW PART OF SYMANTEC



Altiris, Now Part of Symantec

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Introduction

VMware ESX has become a widely adopted, production-worthy technology. Many organizations now realize that it offers significant benefits, including server consolidation, application partitioning, and server portability. As with any software solution, however, feature improvements and code changes require that patches be applied.

The hypervisor is not an operating system—it is a software layer that sits directly on the hardware. As a result, updating the virtual infrastructure has become a considerable challenge for some. How do you easily and consistently manage those updates across your entire datacenter?

Altiris, now part of Symantec, provides many different methods for distributing software that can be leveraged to roll out ESX updates. This document focuses on how to accomplish VMware updates with Altiris® Software Delivery Solution™, which is a component of Altiris Server Management Suite™. Software Delivery Solution allows administrators to easily combine one or more individual updates into a single package for delivery to VMware host virtual servers.

To better convey some of the concepts presented here, an accompanying demonstration video is also available for this white paper. You can view and download it at <http://ibase.altiris.com/resources/dell/videos/ESX301PatchDelivery.wmv>.

Process Overview

Ultimately, the update process can be broken down into four simple steps:

1. Ensure your virtual environment is configured for management. This means that an Altiris server with Software Delivery Solution for UNIX is installed and functional in your network and that the Altiris agent is installed on your ESX servers.
2. Download the required ESX patches from VMware's Web site onto the Altiris server or an accessible network share.
3. Create a Software Delivery Package for the patches.
4. Create a software delivery task that will schedule delivery of the package to a collection of ESX servers.

Now that you have a high level understanding of the process, let's review each of these steps in more detail.

Step-by-Step Instructions

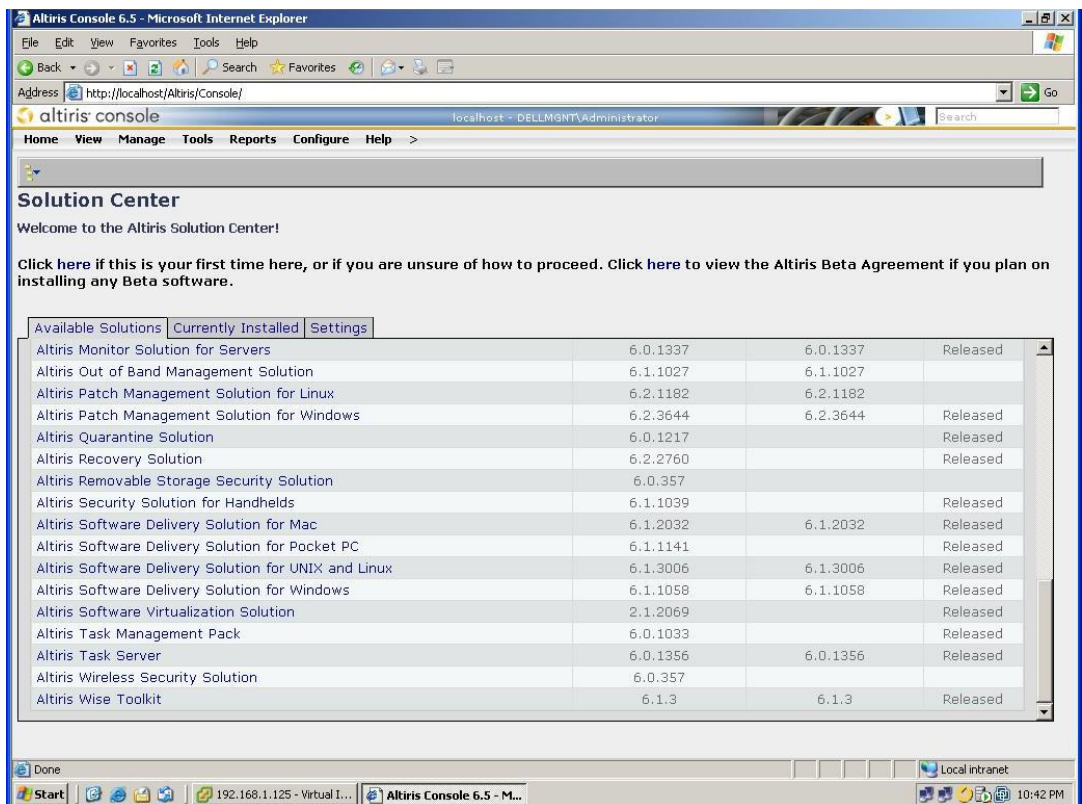
This section provides a detailed review of the steps required to roll out ESX updates with Altiris software.

MEET THE PRE-REQUISITES

Make sure the Altiris Console is installed on your network. This console is free and is typically bundled and installed with the Altiris solutions you have purchased. For updating ESX you will want to have both Altiris Inventory Solution® for Servers and Software Delivery Solution for Servers installed. Both of these products are bundled with Server Management Suite. They include features for inventorying and deploying Windows, UNIX, Linux and VMware servers. All of these solutions plug into the same console and leverage a single agent and database to perform their operations.

When you install your first Altiris solution the console is installed automatically. Once the console is up and running you can easily install additional Altiris solutions from within the Altiris Console by going to the Solution Center.

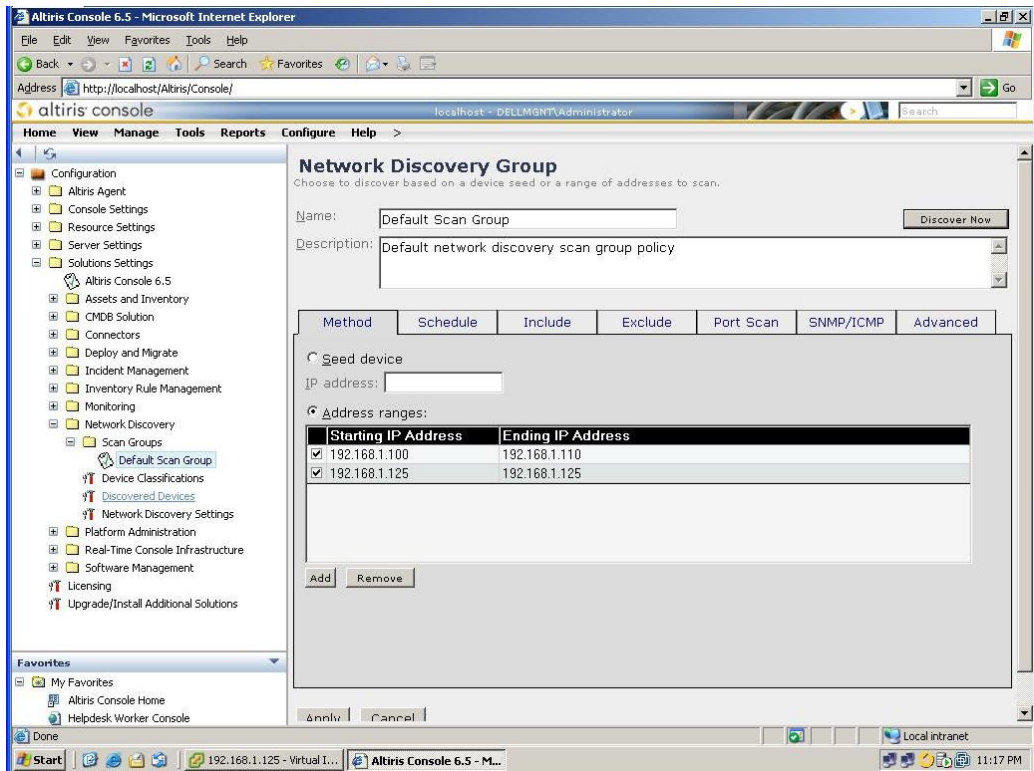
You can access the Solution Center from the Altiris Console menu bar by clicking **Configure → Solution Center**.



Once these solutions are installed you are ready to roll out the Altiris agent to your ESX servers. Using the Network Discovery tool in the Altiris Console is the easiest way to identify which servers are in your environment so you can then remotely push the agent to them.

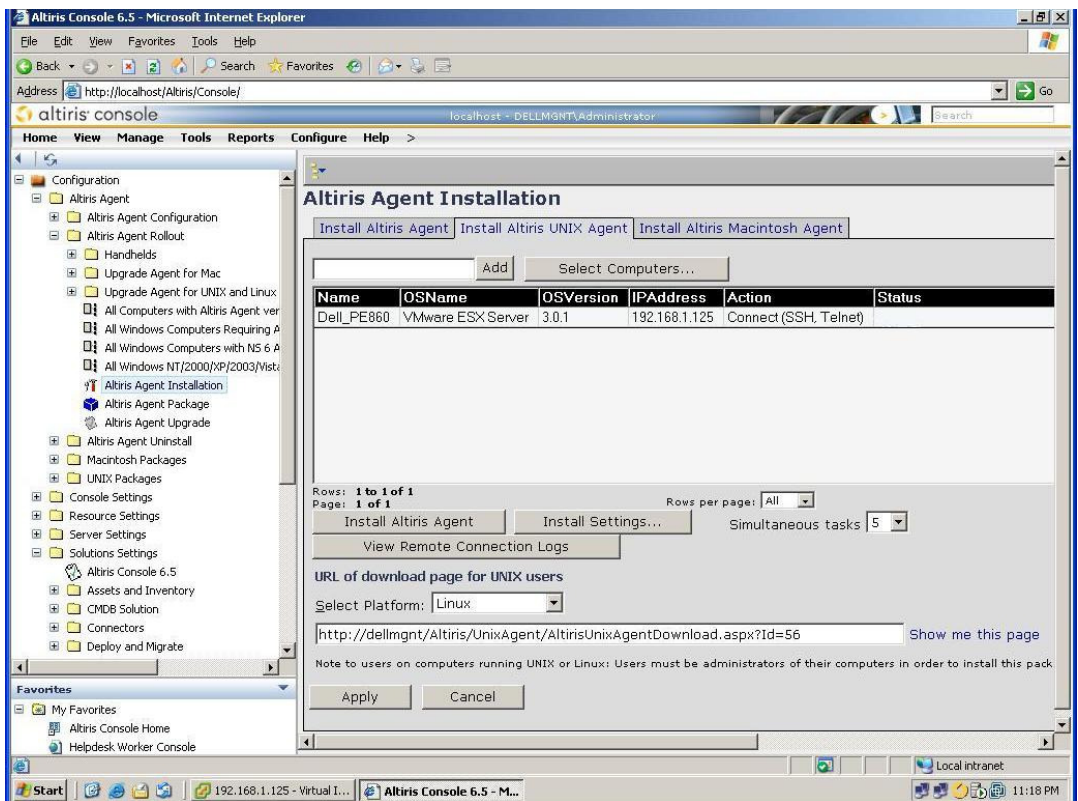
Access Network Discovery from the console menu bar by clicking **View → Configuration**. In the tree view, click **Configuration → Solution Settings → Network Discovery**.

You can enter a single IP address as a seed device or multiple IP ranges. Network Discovery can also scan subnets for computers that respond on the SSH port.



Running the discovery will create a list of devices that the Altiris server has identified. You can then use the console to push the Altiris agent out to the computers you select or you can pull the agent to install onto each server individually.

Access the Altiris Agent Rollout screen by clicking **View** → **Configuration** from the menu bar. Then click **Configuration** → **Altiris Agent** → **Altiris Agent Rollout** → **Altiris Agent Installation**. Select your server(s) from the list and then click **Install Altiris Agent**.



For more information about installing and configuring agent deployments, refer to product documentation.

For the latest information about the Altiris agent for UNIX and Linux, visit http://www.altiris.com/upload/altirisagentlinuxunix_002.pdf.

For the latest information about Software Delivery Solution, visit http://www.altiris.com/upload/swdeliverylinuxunix_sp1.pdf.

DOWNLOAD ESX PATCHES FROM THE VMWARE SUPPORT SITE

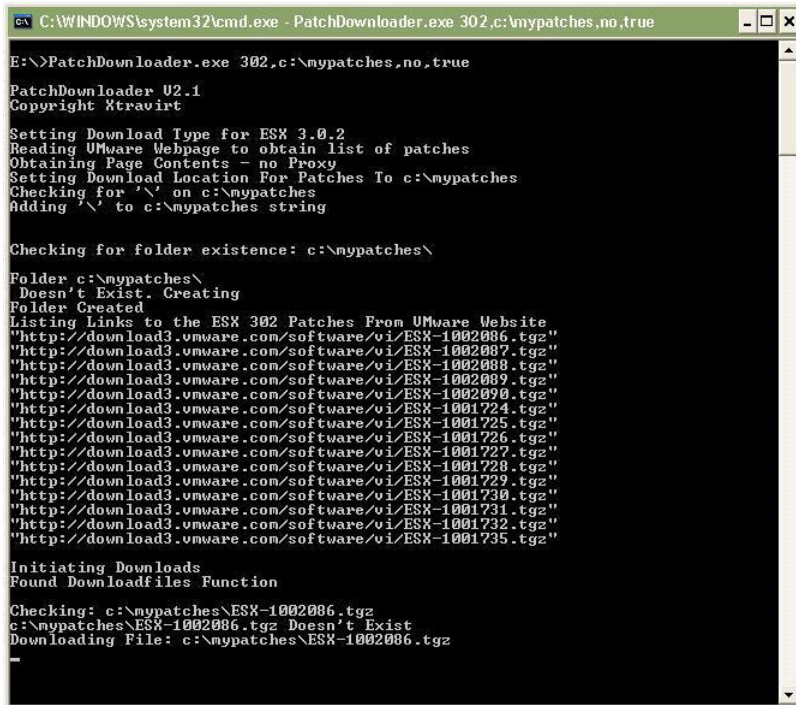
VMware maintains a support area of their site (http://www.vmware.com/download/vi/vi3_patches.html) dedicated to VI3 patches. From this site you can download (one at a time) required patches based on the ESX version you are running. You have two options for downloading the patches from this site: (1) you can individually download them or (2) you can use third-party freeware products that will connect to the site and download all of the patches for you.

It may make sense to pick and choose which patches you will install by reviewing the list and then downloading only the ones you need. At the same time, it may be impractical to individually download the 58 patches currently available for ESX 3.0.1 or the 22 patches currently available for ESX 3.0.2.

Many users do not think it is practical to only be able to download one patch at a time. Xtravirt.com provides a download utility (http://www.xtravirt.com/index.php?option=com_repository&Itemid=75&func=fileinfo&id=12) that allows you to download all of the patches for a given version with one command line execution. Xtravirt includes detailed instructions about how to automate the downloading of patches by scheduling their utility to run on a regular basis.

There is an advantage using this method: You can completely automate the patching of all of your ESX servers. First, you automate the downloading of any new patches found once a week. Next, as we discuss later in this document, you will create a Software Delivery Task that runs on a schedule for a given Software Delivery Package against a pre-selected collection of ESX servers. You can schedule the downloads and then pick subsets of ESX servers where once a month they automatically go into maintenance mode (that is, they safely migrate VMs to another host) and then apply any new patches that have been found. Through schedule waves you repeat the same process for all of your subsets of ESX servers.

Here is an example of how Patch Downloader provided by xtravirt.com looks:



```
C:\WINDOWS\system32\cmd.exe - PatchDownloader.exe 302,c:\mypatches,no,true

E:\>PatchDownloader.exe 302,c:\mypatches,no,true
PatchDownloader U2.1
Copyright Xtravirt

Setting Download Type for ESX 3.0.2
Reading VMware Webpage to obtain list of patches
Obtaining Page Contents - no Proxy
Setting Download Location For Patches To c:\mypatches
Checking for '\' on c:\mypatches
Adding '\' to c:\mypatches string

Checking for folder existence: c:\mypatches\
Folder c:\mypatches\
Doesn't Exist. Creating
Folder Created
Listing Links to the ESX 302 Patches From VMware Website
"http://download3.vmware.com/software/vi/ESX-1002086.tgz"
"http://download3.vmware.com/software/vi/ESX-1002087.tgz"
"http://download3.vmware.com/software/vi/ESX-1002088.tgz"
"http://download3.vmware.com/software/vi/ESX-1002089.tgz"
"http://download3.vmware.com/software/vi/ESX-1002090.tgz"
"http://download3.vmware.com/software/vi/ESX-1001724.tgz"
"http://download3.vmware.com/software/vi/ESX-1001725.tgz"
"http://download3.vmware.com/software/vi/ESX-1001726.tgz"
"http://download3.vmware.com/software/vi/ESX-1001727.tgz"
"http://download3.vmware.com/software/vi/ESX-1001728.tgz"
"http://download3.vmware.com/software/vi/ESX-1001729.tgz"
"http://download3.vmware.com/software/vi/ESX-1001730.tgz"
"http://download3.vmware.com/software/vi/ESX-1001731.tgz"
"http://download3.vmware.com/software/vi/ESX-1001732.tgz"
"http://download3.vmware.com/software/vi/ESX-1001735.tgz"

Initiating Downloads
Found Downloadfiles Function
Checking: c:\mypatches\ESX-1002086.tgz
c:\mypatches\ESX-1002086.tgz Doesn't Exist
Downloading File: c:\mypatches\ESX-1002086.tgz
-
```

CREATE A SOFTWARE DELIVERY PACKAGE

Creating a Software Delivery package is the process of bundling the files you want pushed out with the logic of how to process those files on the receiving computer. In the example of patching an ESX server, creating a Software Delivery package would require gathering the patch files and then defining the command line to install those patches once they have been pushed to the ESX server.

Building the Package

1. From the menu bar in the Altiris Notification Server console, click **View → Solutions → Software Delivery**.
2. In the left tree pane, expand **Software Delivery → Packages**.
3. Right-click on the **UNIX** item, click **New → UNIX Package**, and then configure the form to your desired settings. In the Package tab (see screenshot below), specify the basic properties of the package: Name and File Location.

The screenshot shows a web browser window titled "Packages - Microsoft Internet Explorer" displaying the configuration form for a new UNIX package. The form is divided into three tabs: "Package", "Programs", and "Advanced". The "Package" tab is active, showing the following fields:

- Name:** AllESX301Patches
- Description:** This package represents all of the ESX 3.0.1 patch files
- Publisher:** Altiris Admin
- Language:** English
- Version:** 1.0
- Package source:** Access package from a local directory on the NS computer
- Package location:** E:\ESX301PatchBundle_All (with a "Browse..." button)
- Package files will be deleted from the client computer if unused for:** 1 Week

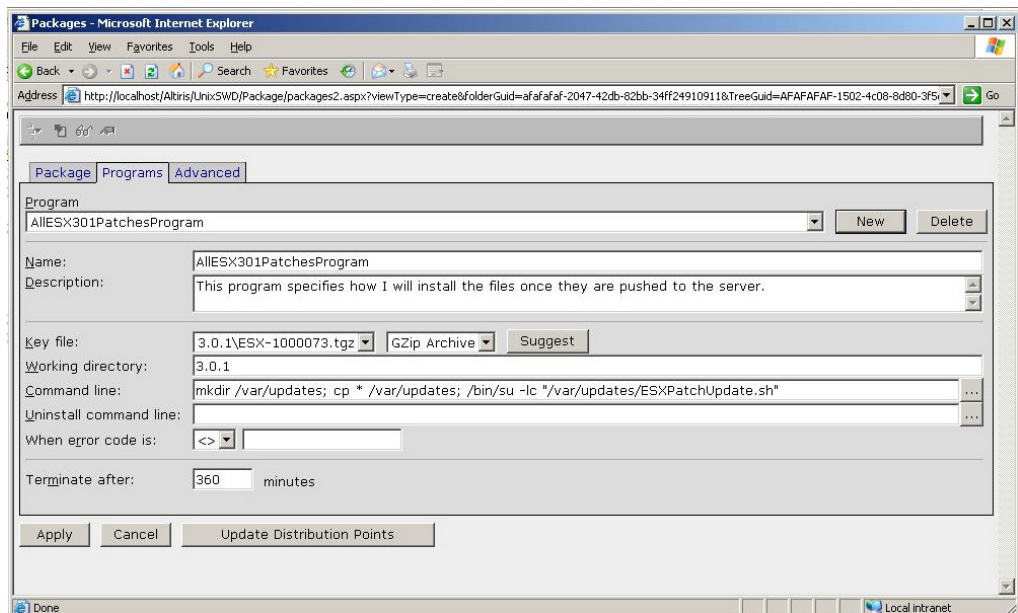
At the bottom of the form, there are three buttons: "Apply", "Cancel", and "Update Distribution Points". The browser's status bar at the bottom indicates "Done" and "Local intranet".

Setting Up the Program

1. To specify how the files will be processed once they are pushed to the server, click the **Programs** tab at the top of this screen.

2. Fill in the basic fields here with your desired settings. The most important field on this screen is the Command Line field, which defines how the patches will be installed. Type all of the actions or commands that you would normally be doing on the ESX server into this field. For example, if the first thing you would do is to make a directory and copy all of the updates to it, then your command line would start as follows: `mkdir /var/updates; cp * /var/updates` (no quotes necessary for these two commands).

We recommend that you use a shell script to install all of your patches. This offers the most control while also simplifying the command line. The shell script also allows you to loop through and install multiple patches.



Note that you can suppress the reboot until all of the patches have been installed inside of your shell script. At the end of the script you can trigger a reboot or you can simply add “; reboot” to the end of the command line displayed in this screen shot.

3. Click **Apply** and close the window.

For more information, view the Software Delivery for UNIX and Linux documentation at http://www.altiris.com/upload/swdeliverylinuxunix_sp1.pdf.

CREATE A SOFTWARE DELIVERY TASK (SCHEDULE)

The Software Delivery Task is where all the pieces come together. This process includes associating a package you've defined to a collection of ESX servers and then scheduling it for delivery.

Building the Task

1. From the menu bar in the Altiris Notification Server console, click **View → Solutions → Software Delivery**.

2. In the left tree pane, expand **Software Delivery** → **Tasks** → **UNIX** → **Software Delivery Tasks**.
3. Right-click on the **Software Delivery Tasks** item and then click **New** → **UNIX Software Delivery Task**.
4. Click the **Enable** checkbox and then fill in the **Name** and **Description** fields with something relevant to you.

General | Advanced | Status

Enable (currently enabled)

Name: Delivery All ESX301 Patches

Description: This SD Task will be responsible for pushing ESX 301 patches out to a collection of ESX servers.

Priority: Normal

5. Click --- **Select a Package** --- and then choose the package you just created.

Package Selection Dialog -- Web Page Dialog

altiris

Select the package from the package tree

Package Folder:

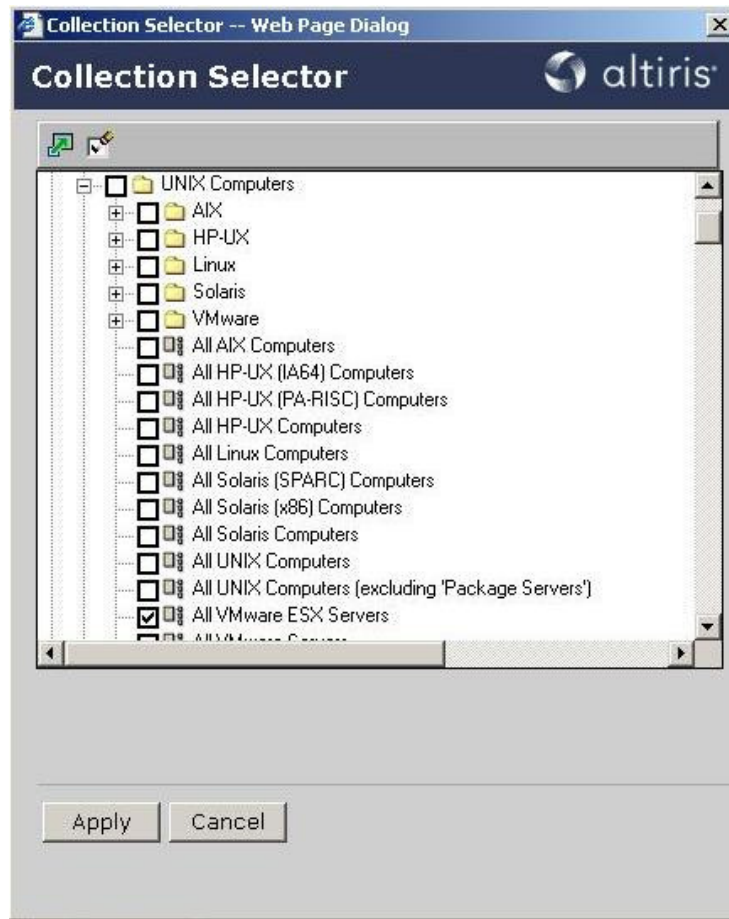
- UNIX
 - ESXPatchBundle2
 - AllESX301Patches
 - ESX Patch Bundle 1
 - Sample UNIX Package

Package :

Details	Information
Package name	AllESX301Patches
Package description	This package represents all...
Package location	E:\ESX301PatchBundle_All

OK Cancel

6. Click **OK**.
7. Click --- **Select a Collection** --- and then choose which grouping of ESX servers to apply the Software Delivery Package to.



Note that you can create your own collections; you do not have to rely on the default collections offered by the Notification Server.

8. Click **Apply**.

9. Scroll down and specify the schedule. The default settings have it running as soon as the package is pushed down and only one time. If you want to schedule the task to run on a recurring basis, check the **Run on a schedule:** checkbox and then the **No schedule has been defined** link. This will open a standard scheduling screen.

Run

Manual
 On a schedule

This task will...

Run as soon as computer is notified (only runs once)
 Run on a schedule:

At the designated time the server should...

Power up the computer (Wake On LAN)
 Immediately notify each computer of task

When this task becomes available...

User can run this task immediately

Prior to running...

Use Recovery to backup the computer.

Removal

Remove this task after successful install

Availability

From and

using the Server's time

10. Click **Apply**.

11. To view the servers to which tasks have been applied, click the **Status** tab.

General | **Advanced** | Status

View details about the execution of this task on the client computers.

Display computers on which this task ran:

Computer Name	Status	Attempt Time
Dell_PE860	Success	9/6/2007 1:20:35 PM

Rows: 1 to 1 of 1
Page: 1 of 1
Rows per page: All

Conclusion

Altiris Software Delivery for Servers offers a simple, repeatable approach to maintaining the ESX servers across your datacenter. Altiris supports VMWare ESX as a managed platform and offers many different benefits to VMware administrators, including standardized, bare-metal deployment of virtual and physical servers, inventory, compliance, and so on.

Consult the resources below to learn more about how Altiris solutions support of VMware.

Additional Resources

For more information, visit:

- Altiris/VMware alliance
<http://www.altiris.com/vmware>
- Product guide for Altiris Software Delivery for UNIX and Linux
http://www.altiris.com/upload/swdeliverylinuxunix_sp1.pdf
- Product guide for Altiris agent for UNIX and Linux
http://www.altiris.com/upload/altirisagentlinuxunix_002.pdf
- ESX patching in action (video)
<http://ibase.altiris.com/resources/dell/videos/ESX301PatchDelivery.wmv>

Appendix A: ESXPatchUpdate.sh

This shell script below was tested during the writing of this white paper. There are a couple of "counter" issues, but it is fully functioning. This script is available on the VMTN forum site and is also hosted at [rtfm-ed.co.uk](http://www.rtfm-ed.co.uk) under the Free Tools section (http://www.rtfm-ed.co.uk/?page_id=343). This is an excellent site for in-depth knowledge on virtualization.

```
#!/bin/sh
#
# ESX 3.0.1
#
# Purpose: Script to apply ESX 3.x patches
#
# Author : MichaelJKnight@gmail.com
# Version: 1.0
# Release: 09/03/2007
#
#
# Purpose: Manage patch bundle
#
# Patched: luigi.berengan@email.it
# Version: 1.1
# Release: 15/04/2007
#
# No warranty is provided with this script, test and use at your own risk
# This script is freeware, please contact me with any bugs.
#

# Ensure ESX Patches have been MD5SUM checked and precopied into
/var/updates.....

if [ `vmware -v | grep -i "Server 3." | wc -l` -eq 0 ]

then
echo
echo This script requires an ESX 3.x platform, this server is on
echo
vmware -v
echo
echo Exiting.
echo
exit
fi

list=`ls /var/updates/ESX*.tgz 2>/dev/null | wc -l`

if [ $list -ne "0" ]

then

pcount=0

cd /var/updates/

for i in `ls -l ESX*.tgz 2>/dev/null | awk '{ print $9}'`
do

# Now expand each patch found into its corresponding folder

let "pcount = $pcount + 1"

echo
echo Found patch $pcount $i
echo Now expanding....$i
echo

tar -xvzf "$i"

dirpatch=`echo $i | awk -F\. '{ print $1 }'`
nptchbnd=`ls $dirpatch | grep 'ESX-' | wc -l`
if [ $nptchbnd -gt 0 ] ; then
```

```

echo
echo Now moving single patches from $i patch bundle
mv $dirpatch/ESX-* .
rm -rf $dirpatch
let "pcount = $pcount + $nptchbnd"
let "pcount = $pcount - 1"
fi

done

rm -rf /var/updates/ESX*.tgz

# Start creation of patch bundle script....

esxpatches=`ls -d /var/updates/ESX* 2>/dev/null | wc -l`
echo "#!/bin/bash" > /tmp/patchbundle.sh
#echo "export PATH=$PATH:/usr/bin"
#echo "export LD_LIBRARY_PATH=$LD_LIBRARY_PATH:/usr/lib/python2.2/site-
packages:/usr/lib"
echo "# Start of patch bundle of $esxpatches ESX Patches " >>
/tmp/patchbundle.sh
chmod +x /tmp/patchbundle.sh
echo
echo Found $esxpatches ESX patches in /var/updates/
echo

# Cycle through patches and determine release date and then set
# datestamp on patch directory to ensure patch sequence is in release date
order.

cd /var/updates/

for i in `ls -ltr ESX-* 2>/dev/null | awk '{ print $9} '`
do
tstamp=`cat /var/updates/$i/descriptor.xml | grep "<releasedate>" | cut -
f2 -d">" | cut -f1 -d"<"`
echo
echo Patch $i release date is $tstamp
echo
touch /var/updates/$i -d"$tstamp"
done

# Update patch bundle script with patches now in release date equence....

pcount=1

echo

for i in `ls -ltr 2>/dev/null | awk '{ print $9} '`
do
echo Sequencing $i into patch bundle script

echo cd /var/updates/`echo $i |cut -f1 -d. `>> /tmp/patchbundle.sh

echo echo ' `date +%e/%m/%y` "%H:%M:%S` ' "Patch `echo $i |cut -f1 -d. ` `
echo $pcount of $esxpatches ` Installation Started " >>
/tmp/patchbundle.sh

echo "/usr/sbin/esxupdate -v 20 -n update" >> /tmp/patchbundle.sh

echo echo ' `date +%e/%m/%y` "%H:%M:%S` ' "Patch `echo $i |cut -f1 -d. `
Installation Completed " >> /tmp/patchbundle.sh

let "pcount = $pcount + 1"

done

echo "# End of patch bundle" >> /tmp/patchbundle.sh

echo
echo Applying patches, please wait....

```

```
echo

/tmp/patchbundle.sh

# Tidy up post installs

rm -rf /tmp/patchbundle.sh
rm -rf /var/updates/ESX*

echo
echo All $esxpatches patches applied. Schedule reboot asap..
echo

else

echo No ESX Patches to be applied...

fi
```