



Faronics and Dell KACE Integration Technical Paper

**Steps to integrate the Faronics Deep Freeze
technology and the Dell KACE™ Appliances**



Table of Contents

Table of Contents	2
1.0 Introduction	3
2.0 Deep Freeze Requirements	3
3.0 Integration	3
3.1 Software recognition	3
3.2 Windows	4
3.3 Macintosh.....	5
4.0 Software Distribution.....	6
4.1 Windows	6
4.2 Macintosh.....	7
5.0 Custom Inventory Rules	8
5.1 Windows	8
5.2 Macintosh.....	8
6.0 Scripting	8
6.1 Windows	9
6.2 Macintosh.....	10
7.0 License Tracking.....	11
8.0 Reporting.....	11
9.0 Use Cases	13
9.1 Use case 1 – scripting	13
9.2 Use case 2 – maintenance windows	14

1.0 Introduction

Dell KACE technology partner solutions are based on best practices gained from implementing systems for organizations with varying technology needs and are designed to provide immediate customer benefits.

This document discusses the integration of Dell KACE Systems Management Appliances and Faronics Deep Freeze technology.

By utilizing the Deep Freeze Command Line Interface (CLI), the Dell KACE K1000 Management Appliance can be leveraged to automate workstation protection by installing, thawing, and freezing the Deep Freeze client. In addition to maintaining and protecting the workstations, you can also leverage the K1000 Appliance for tracking Deep Freeze licenses.

2.0 Deep Freeze Requirements

Deep Freeze Enterprise

- Deep Freeze Enterprise is supported on the following operating systems:
 - Windows® 2000, XP, Vista and Windows 7
 - Deep Freeze requires 10% of the hard drive to be left as free space
 - Both 32 and 64 bit versions of Windows are supported
 - Windows XP x64 must have Service Pack 2 or later installed
- Faronics recommends a minimum of 256 MB of system memory in the protected systems
- The Deep Freeze Configuration Administrator and Enterprise Console are supported on:
 - Windows 2000, XP, Vista, Windows 7, Server 2000, 2003 and 2008
 - 32 and 64 bit versions are supported

Deep Freeze Mac

- Deep Freeze Mac 5.x requires Mac OS X Lion v10.7 and up
- Deep Freeze Mac 4.x requires Mac OS X 10.4.11, Mac OS X 10.5.1 and up, or Mac OS X 10.6.0 and up.
- Deep Freeze Mac is a universal binary application
- A minimum of 256 MB RAM is recommended

3.0 Integration

3.1 Software recognition

In order to prevent software removal, Faronics Deep Freeze software does not include information operating systems use to identify it as an installed application (No entry in add/remove programs [Windows] or Applications [OS X]).

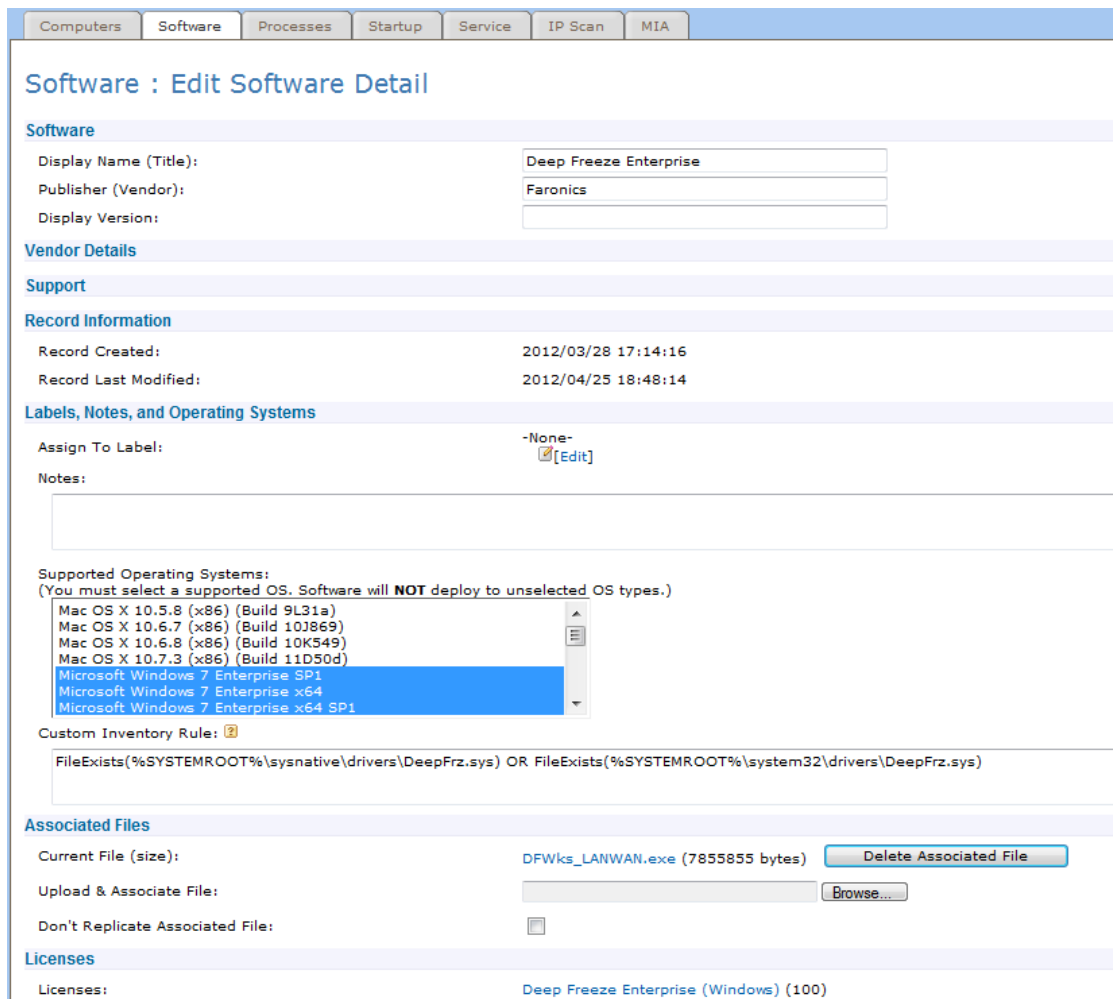
This installation method prevents the software from showing up in the software inventory tab of the K1000. In order to track the software within the K1000, you need to add a custom inventory rule to recognize that the software is installed.

3.2 Windows

On Microsoft Windows, you can create a custom inventory rule to detect that Deep Freeze Enterprise driver is installed.

To create a custom rule to identify the installed software, take the following steps:

1. Navigate to Inventory and then the Software tab within your appliance.
2. Select Add New Item from the Choose Action drop down menu.
3. Fill out the following values on the Edit Software Detail Screen:
 - Display Name (Title): Deep Freeze Enterprise
 - Publisher (Vendor): Faronics
 - Supported Operating Systems: *Select All Windows Operating Systems*
 - Custom Inventory Rule:
 - FileExists(%SYSTEMROOT%\sysnative\drivers\DeepFrz.sys) OR
FileExists(%SYSTEMROOT%\system32\drivers\DeepFrz.sys)
 - Upload & Associate File: Browse and upload your Deep Freeze installation file for use with software distribution
 - Scroll down and click Save



Software : Edit Software Detail

Software

Display Name (Title): Deep Freeze Enterprise

Publisher (Vendor): Faronics

Display Version:

Vendor Details

Support

Record Information

Record Created: 2012/03/28 17:14:16

Record Last Modified: 2012/04/25 18:48:14

Labels, Notes, and Operating Systems

Assign To Label: -None- [Edit]

Notes:

Supported Operating Systems:
(You must select a supported OS. Software will **NOT** deploy to unselected OS types.)

- Mac OS X 10.5.8 (x86) (Build 9L31a)
- Mac OS X 10.6.7 (x86) (Build 10J869)
- Mac OS X 10.6.8 (x86) (Build 10K549)
- Mac OS X 10.7.3 (x86) (Build 11D50d)
- Microsoft Windows 7 Enterprise SP1
- Microsoft Windows 7 Enterprise x64
- Microsoft Windows 7 Enterprise x64 SP1

Custom Inventory Rule: `FileExists(%SYSTEMROOT%\sysnative\drivers\DeepFrz.sys) OR FileExists(%SYSTEMROOT%\system32\drivers\DeepFrz.sys)`

Associated Files

Current File (size): DFWks_LANWAN.exe (7855855 bytes) [Delete Associated File]

Upload & Associate File: [Browse...]

Don't Replicate Associated File:

Licenses

Licenses: Deep Freeze Enterprise (Windows) (100)

3.3 Macintosh

On Macintosh OS X systems, you will create a custom inventory rule that looks for the Deep Freeze Service executable (deepfreeze). The install location is:

- /Library/Application Support/Faronics/Deep Freeze

You will create two custom rules for Mac OS X systems. One rule will be used for version 4.x and the other will be used for version 5.x. See the requirements section for supported OS versions.

To create a custom rule to identify the installed software, take the following steps:

1. Navigate to Inventory and then the Software tab within your appliance.
2. Select Add New Item from the Choose Action drop down menu.
3. Fill out the following values on the Edit Software Detail Screen:
 - Display Name (Title): Deep Freeze Mac
 - Publisher (Vendor): Faronics
 - Display Version: 4.x or 5.x
 - Supported Operating Systems: *Select All Supported Mac OS X Operating Systems*
 - Custom Inventory Rule:
 - FileExists(/Library/Application Support/Faronics/Deep Freeze/deepfreeze)
 - Upload & Associate File: Browse and upload your Deep Freeze installation file for use with software distribution
 - The .pkg will have to be compressed to upload to the KACE 1000
 - Scroll down and click Save

Software : Edit Software Detail

Software	
Display Name (Title):	Deep Freeze Mac
Publisher (Vendor):	Faronics
Display Version:	5.01
Vendor Details	
Support	
Record Information	
Record Created:	2012/04/10 13:55:26
Record Last Modified:	2012/04/10 13:55:27
Labels, Notes, and Operating Systems	
Assign To Label:	-None- [Edit]
Notes:	<div style="border: 1px solid #ccc; height: 20px;"></div>
Supported Operating Systems: (You must select a supported OS. Software will NOT deploy to unselected OS types.)	
<div style="border: 1px solid #ccc; padding: 2px;"> <ul style="list-style-type: none"> Mac OS X 10.5.8 (x86) (Build 9L31a) Mac OS X 10.6.7 (x86) (Build 10J869) Mac OS X 10.6.8 (x86) (Build 10K549) <li style="background-color: #e0e0e0;">Mac OS X 10.7.3 (x86) (Build 11D50d) Microsoft Windows 7 Enterprise SP1 Microsoft Windows 7 Enterprise x64 Microsoft Windows 7 Professional </div>	
Custom Inventory Rule:	[X] FileExists(/Library/Application Support/Faronics/Deep Freeze/deepfreeze)
Associated Files	
Current File (size):	DFX_5.01.2200.0520_Custom.pkg.zip (27980882 bytes) Delete Associated File
Upload & Associate File:	Choose File No file chosen
Don't Replicate Associated File:	<input type="checkbox"/>

4.0 Software Distribution

There are two different methods of installing software via the K1000: Managed Installations and Scripting. Each has a use case for installing Deep Freeze.

4.1 Windows

Deep Freeze Enterprise is used to protect Microsoft Windows-based systems. A single installation file will work on all supported versions of Windows OS. To install the software with the K1000, take the following steps:

1. Navigate to Distribution and then the Managed Installation tab within your appliance.
2. Select Add New Item from the Choose Action drop down menu.
3. Select Deep Freeze Enterprise from the Software drop down menu.
 - If you did not upload your installer when you created the software record, choose “Also show software without an Associated File”, search for Deep Freeze Enterprise, and upload your installer.

Software:

Filter: (24)

Also show software without an Associated File

Upload & Associate New File: No file chosen

4. Set the Run Parameters:
 - “/Install” can be used to silently install the software
 - See the Deep Freeze Enterprise manual for a complete list of command options

Installation Command: Use Default Configure Manually

Run Parameters:

5. Choose Managed Action
6. Choose Machine Targets
 - Smart labels should be used to target all machines without Deep Freeze Enterprise

Deploy to All Machines:

Limit Deployment To Labels: Install Deep Freeze Enterprise [Edit]

----- Machine Names -----

Limit Deployment To Listed Machines:

Filter: (20/48)

7. Set Deployment Window
8. Scroll Down and click Save

4.2 Macintosh

Deep Freeze Mac is used to protect Macintosh OS X-based systems. There are two versions of Deep Freeze Mac as noted in the requirements section. To install the software with the K1000, take the following steps:

1. Navigate to Distribution and then the Managed Installation tab within your appliance.
2. Select Add New Item from the Choose Action drop down menu.
3. Select Deep Freeze Enterprise from the Software drop down menu.
 - If you did not upload your installer when you created the software record, choose “Also show software without an Associated File”, search for Deep Freeze Enterprise, and upload your installer.

[[Software Detail for Deep Freeze Mac \(4.65\)](#)]

This software will only be installed on the following Operating Systems: [\(edit\)](#)

Mac OS X 10.5.8 (x86)

Mac OS X 10.6.7 (x86)

Mac OS X 10.6.8 (x86)

Software:

Filter: (27)

Also show software without an Associated File

4. Set the Run Parameters:
 - Select the ‘Configure Manually’ radio button
 - Enter the command: `installer -pkg YOUR_PACKAGE_NAME -target /`
 - See the Deep Freeze Mac manual for a complete list of command options

Installation Command:

Use Default Configure Manually

`installer -pkg dfx_4.65.2200.0407_custom.pkg -target /`

[\[Share with AppDeploy Live!\]](#)

5. Fill out the notes section to describe the installation: Installs Deep Freeze Mac on 10.6.X and below. The system needs to be rebooted to complete the installation.

Notes:

Installs Deep Freeze Mac on 10.6.X and below. The system needs to be rebooted to complete the installation.

6. Choose Managed Action
7. Choose Machine Targets
 - Smart labels should be used to target all supported Mac machines without Deep Freeze Mac

Limit Deployment To Labels:

[Install Deep Freeze Mac on 10.6.x and Below](#)

[\[Edit\]](#)

----- Machine Names -----

Remove

Select machine to add...

Filter: (20/48)

Limit Deployment To Listed Machines:

8. Set Deployment Window

9. Scroll Down and click Save

Duplicate this process for version 5.x.

5.0 Custom Inventory Rules

Deep Freeze software allows you to identify if machines are in a frozen or thawed state. In order to make configuration changes on a machine, it must be in a thawed state. Using Custom Inventory Fields, you can make the machine state a part of the inventory view, making it available for labeling criteria and report building.

5.1 Windows

Microsoft Windows Deep Freeze status is stored in the registry. In order to add this information to the K1000 machine inventory, you will use a Custom Inventory Rule that calls **RegistryValueReturn()**.

To create a custom rule to return the Deep Freeze status, take the following steps:

1. Navigate to Inventory and then the Software tab within your appliance.
2. Select Add New Item from the Choose Action drop down menu.
3. Fill out the following values on the Edit Software Detail Screen:
 - Display Name (Title): Deep Freeze Enterprise Status
 - Publisher (Vendor): Dell KACE
 - Display Version: 1.0
 - Supported Operating Systems: *Select All Windows Operating Systems*
 - Custom Inventory Rule:
 - RegistryValueReturn(HKLM\Software\Faronics\Deep Freeze 6,DF Status,TEXT)
 - Scroll down and click Save

5.2 Macintosh

Macintosh OS X Deep Freeze status can be accessed by running a command on the system. In order to add this information to the K1000 machine inventory, you will use a Custom Inventory Rule that calls **ShellCommandTextReturn()**.

To create a custom rule to return the Deep Freeze status, take the following steps:

1. Navigate to Inventory and then the Software tab within your appliance.
2. Select Add New Item from the Choose Action drop down menu.
3. Fill out the following values on the Edit Software Detail Screen:
 - Display Name (Title): Deep Freeze Mac Status
 - Publisher (Vendor): Dell KACE
 - Display Version: 1.0
 - Supported Operating Systems: *Select All Mac OS X Operating Systems*
 - Custom Inventory Rule:
 - ShellCommandTextReturn(DFXPSWD=[password] /Library/Application\ Support/Faronics/Deep\ Freeze/deepfreeze -u [DeepFreeze_admin_username] -p status)
 - Scroll down and click Save

6.0 Scripting

Utilizing the Deep Freeze CLI and the K1000 scripting engine, you can ‘Thaw’ and ‘Freeze’ machines for maintenance and configuration activities. This section will cover how to create these scripts.

6.1 Windows

On Microsoft Windows, you can pass parameters to the Deep Freeze CLI (DFC.exe) to ‘Thaw’ and ‘Freeze’ machines. There are a number of different options that you can pass to DFC.exe, however, this document will focus on ‘Thaw’ and ‘Freeze’ only. The install location on respective systems is:

- X86 - %WINDIR%\System32
- X64 - %WINDIR%\Syswow64

The DFC.exe command line options we will use in this document are:

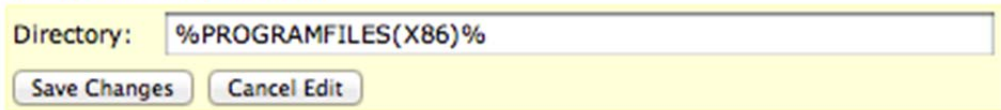
- DFC password /BOOTTHAWED – Restarts the computer in a ‘Thawed’ state
- DFC password /BOOTFROZEN – Restarts the computer in a ‘Frozen’ state

To create the scripts in the K1000, take the following steps:

1. Navigate to Scripting and then the Scripts tab within your appliance.
2. Select Add New Item from the Choose Action drop down menu
3. Fill out the following values on the Script: Edit Detail page:
 - Script Type: Offline KScript
 - Name: Deep Freeze Enterprise – Boot Thawed
 - Description: Reboots the workstation into a ‘Thawed’ (‘Frozen’) state
 - Supported Operating Systems: Microsoft Windows
4. Policy or Job Rules: Add Task Section
 - Verify: Verify a directory exists
 - %PROGRAMFILES(X86)%

Verify

1. Verify a directory exists...

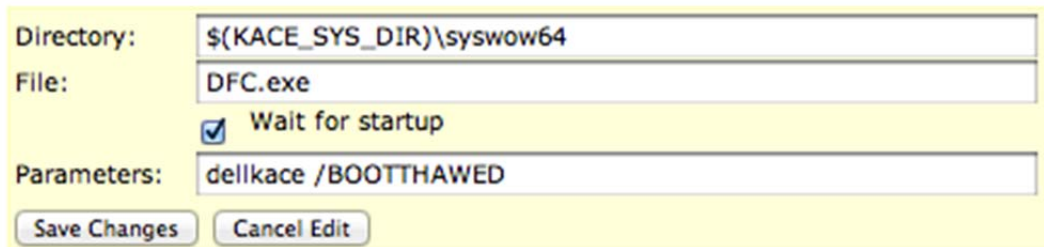


Directory:

- On Success: Launch a program
 - Directory: \$(KACE_SYS_DIR)\syswow64
 - File: DFC.exe
 - Parameters: password /BOOTTHAWED

On Success

1. Launch a program...



Directory:

File:

Wait for startup

Parameters:

- Remediation: Launch a program
 - Directory: \$(KACE_SYS_DIR)\System32
 - File: DFC.exe

- Parameters: password /BOOTTHAWED

Remediation

1. Launch a program...

Directory:	\$(KACE_SYS_DIR)\system32
File:	DFC.exe
	<input checked="" type="checkbox"/> Wait for startup
Parameters:	dellkace /BOOTTHAWED
<input type="button" value="Save Changes"/> <input type="button" value="Cancel Edit"/>	

Duplicate the process for the 'Freeze' script.

6.2 Macintosh

On Macintosh OS X systems, you can pass parameters to the Deep Freeze CLI (deepfreeze) to 'Thaw' and 'Freeze' machines. There are a number of different options that you can pass to deepfreeze, however, this document will focus on 'Thaw' and 'Freeze' only. The deepfreeze CLI is located in:

- /Library/Application Support/Faronics/Deep Freeze

The deepfreeze command line options we will use in this document are:

- DFXPSWD=[password] /Library/Application\ Support/Faronics/Deep\ Freeze/deepfreeze -u [DeepFreeze_admin_username] -p bootThawed – Sets the computer to restart in a 'Thawed' state
- DFXPSWD=[password] /Library/Application\ Support/Faronics/Deep\ Freeze/deepfreeze -u [DeepFreeze_admin_username] -p bootFrozen – Sets the computer to restart in a 'Frozen' state

To create the scripts in the K1000, take the following steps:

1. Navigate to Scripting and then the Scripts tab within your appliance.
2. Select Add New Item from the Choose Action drop down menu
3. Fill out the following values on the Script: Edit Detail page:
 - Script Type: Online Shell Script
 - Name: Deep Freeze Mac – Boot Thawed
 - Description: Sets the computer to restart in a 'Thawed' state and then reboots the system
 - Supported Operating Systems: Mac OS X
 - Script Text:

```
#!/bin/sh
```

```
# Thaw Deep Freeze Mac Client
```

```
echo - Deep Freeze Mac Thaw Executing
```

```
DFXPSWD=dellkace /Library/Application\ Support/Faronics/Deep\ Freeze/deepfreeze -u dellkace -p bootThawed
```

```
echo - Rebooting system
```

```
shutdown -r now
```

Script Text:

```
#!/bin/sh

# Thaw Deep Freeze Mac Client

echo - Deep Freeze Mac Thaw Executing

DFXPSWD=dellkace /Library/Application\ Support/Faronics/Deep\ Freeze/deepfreeze -u
dellkace -p bootThawed

echo - Rebooting system
shutdown -r now
```

Script File Name:

- Script File Name: DPM_Thawed.sh

Duplicate the process for the 'Freeze' script.

7.0 License Tracking

You can utilize K1000 asset management capabilities to track and report on your Deep Freeze licenses. More information on tracking licenses can be found in the 'Configuring Software License Compliance Section' of the Dell KACE K1000 Asset Management Guide.

Assets

Choose Action ▾ Found 2 assets		
<input type="checkbox"/> Name ↓	Installed	License Count
<input type="checkbox"/> Deep Freeze Enterprise (Windows)	4	100
<input type="checkbox"/> Deep Freeze Mac (OSX)	1	100

8.0 Reporting

Reporting can be used to identify machines and the machine state of all computers with Deep Freeze installed. To create the report in the K1000, take the following steps:

1. Navigate to Reporting and then the Reports tab within your appliance.
2. Select Add New SQL Report from the Choose Action drop down menu.
3. Fill out the following values on the K1000 Reports: Edit Report page:
 - Title: Deep Freeze Status
 - Category: Computer
 - Description: Lists the Deep Freeze status of machines for DFE and DF Mac
 - SQL Select Statement:

```
SELECT
MACHINE.NAME AS SYSTEM_NAME,
IP,
MACHINE.DOMAIN,
LAST_REBOOT,
LAST_SHUTDOWN,
```

```
(SELECT MACHINE_CUSTOM_INVENTORY.STR_FIELD_VALUE
FROM MACHINE_CUSTOM_INVENTORY
JOIN SOFTWARE
ON SOFTWARE.ID=MACHINE_CUSTOM_INVENTORY.SOFTWARE_ID
WHERE MACHINE_CUSTOM_INVENTORY.ID=MACHINE.ID
and (SOFTWARE.DISPLAY_NAME = 'Deep Freeze Enterprise Status' OR
SOFTWARE.DISPLAY_NAME='Deep Freeze Mac Status')) AS DEEP_FREEZE_STATUS
FROM MACHINE
WHERE ((1 in
(select 1 from MACHINE_CUSTOM_INVENTORY
join SOFTWARE
on SOFTWARE.ID=MACHINE_CUSTOM_INVENTORY.SOFTWARE_ID
where MACHINE.ID = MACHINE_CUSTOM_INVENTORY.ID
and (SOFTWARE.DISPLAY_NAME = 'Deep Freeze Enterprise Status' OR
SOFTWARE.DISPLAY_NAME='Deep Freeze Mac Status')
and MACHINE_CUSTOM_INVENTORY.STR_FIELD_VALUE is not null)) )
ORDER BY DEEP_FREEZE_STATUS, SYSTEM_NAME
```

- Scroll down and click Save

K1000 Reports : Edit Report

Created: 2012/03/26 18:25:07
 Last Modified: 2012/04/02 21:55:34

Title:

Category:

Description:

Output Types: HTML: CSV: TEXT:

SQL Select Statement:

```
SELECT
MACHINE.NAME AS SYSTEM_NAME,
IP,
MACHINE.DOMAIN,
LAST_REBOOT,
LAST_SHUTDOWN,
(SELECT MACHINE_CUSTOM_INVENTORY.STR_FIELD_VALUE
FROM MACHINE_CUSTOM_INVENTORY
JOIN SOFTWARE
ON SOFTWARE.ID=MACHINE_CUSTOM_INVENTORY.SOFTWARE_ID
WHERE MACHINE_CUSTOM_INVENTORY.ID=MACHINE.ID
and (SOFTWARE.DISPLAY_NAME = 'Deep Freeze Enterprise Status' OR SOFTWARE.DISPLAY_NAME='Deep
Freeze Mac Status')) AS DEEP_FREEZE_STATUS
FROM MACHINE
WHERE ((1 in
(select 1 from MACHINE_CUSTOM_INVENTORY
join SOFTWARE
on SOFTWARE.ID=MACHINE_CUSTOM_INVENTORY.SOFTWARE_ID
where MACHINE.ID = MACHINE_CUSTOM_INVENTORY.ID
and (SOFTWARE.DISPLAY_NAME = 'Deep Freeze Enterprise Status' OR SOFTWARE.DISPLAY_NAME='Deep
Freeze Mac Status')
and MACHINE_CUSTOM_INVENTORY.STR_FIELD_VALUE is not null)) )
ORDER BY DEEP_FREEZE_STATUS, SYSTEM_NAME
```

Break on Columns:

Show Line Number Column:

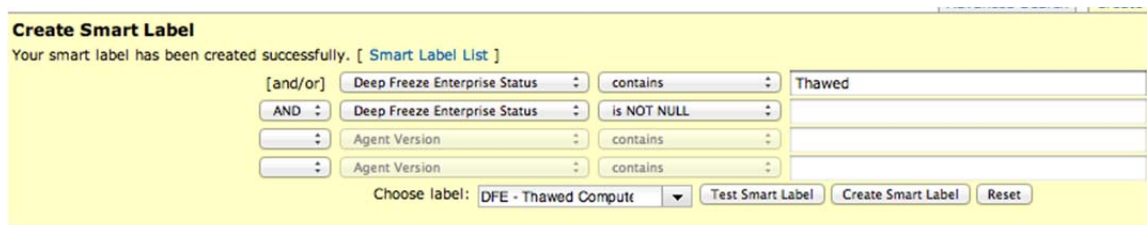
9.0 Use Cases

There are two interesting use cases for integrating Deep Freeze within the Dell KACE K1000. Method 1 utilizes the K1000 scripting engine to schedule workstation ‘Thaw’ for maintenance tasks. Method 2 utilizes Deep Freeze maintenance windows to ‘Thaw’ machines on a predetermined schedule for maintenance.

9.1 Use case 1 – Scripting

By utilizing the ‘Thaw’ and ‘Freeze’ scripts you created in your K1000 appliance, you can schedule maintenance windows for your computers. It gives you the flexibility to patch machines, deploy software, or deploy policies to workstations without having to wait for the scheduled Deep Freeze maintenance window. There are 3 parts to any maintenance workflow: Labeling, Scripting and Maintenance Task.

- Create a smart label to identify ‘Thawed’ and ‘Frozen’ computers
 - Filter on Deep Freeze Enterprise status contains ‘Thawed AND Deep Freeze Enterprise status is NOT NULL



- Create a schedule within your Offline KScripts
 - Offline KScripts cache on the local system and execute at the scheduled time. This will allow all of your managed machines to ‘Thaw’ or ‘Freeze’ at the same time with no impact to the server or network.
- Schedule patch management to execute after the scheduled ‘Thaw’ is executed.
 - Target the ‘Thawed’ machine label.
 - Schedule your task to execute after the thaw script has executed.
 - Check the ‘Run on next connection if offline’ option to ensure machines that miss the patch kick-off will feed into the queue

Schedule Description:

Patch Action:

Machine Selection

Run On All Machines:

Limit Run To Selected Machine Labels: **DFE - Thawed Computers**

Reboot Options

Reboot Mode:

Reboot Message:

Message Timeout: (minutes)

Patch Schedule

- Don't Run on a schedule
- Run every hours
- Run every at :
- Run on the of at :
- Run custom: ?

Schedule according to time-zone ?

Run on next connection if offline

Delay Schedule by minutes

9.2 Use case 2 – Maintenance Windows

By utilizing the Deep Freeze maintenance windows, you can minimize the tasks needed from the K1000 to maintain your systems. When you create your custom Deep Freeze installer, you can specify maintenance windows around which you can build policies. For example, you can set the Deep Freeze maintenance window to thaw machines on weekends. You can schedule all of your scripts, patches, and managed installations to run during these maintenance windows, which will eliminate the need to maintain systems during working hours. This increases productivity by minimizing machine downtime.

