Function Requirement

REMOTE OS INSTALLATION WITH NFS SERVER

REVISION 1.01
2015/08/13

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Revision History

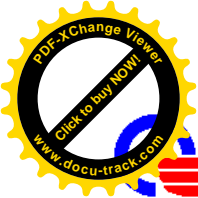| Revision	Date	Description	Note
1.00	2015/04/17	SI- Remote OS Installation with NFS Server 1. Adding control flow diagram 2. Adding commands description 3. Test Case for Set System Boot Option 4. Issue Record Typo in Table 2.1 5. Add command: Disable boot flag timeout 6. Add command: Set boot from UEFI/Legacy 7. Modify control flow diagram	Raincer Chu
1.01	2015/08/13	1. Supports to change port number of virtual device. 2. Updates Set System Boot Option command.	Keven Chen

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1. INTRODUCTION

1.1 Background

This feature would allow user to install OS remotely through OEM IPMI commands. For this function, as below Figure1.1, a NFS server is used to store the OS images, Linux/Windows, and the image would be mounted to BMC as a virtual CD-ROM through OEM IPMI commands so that BMC could access the OS images just like accessing itself files.
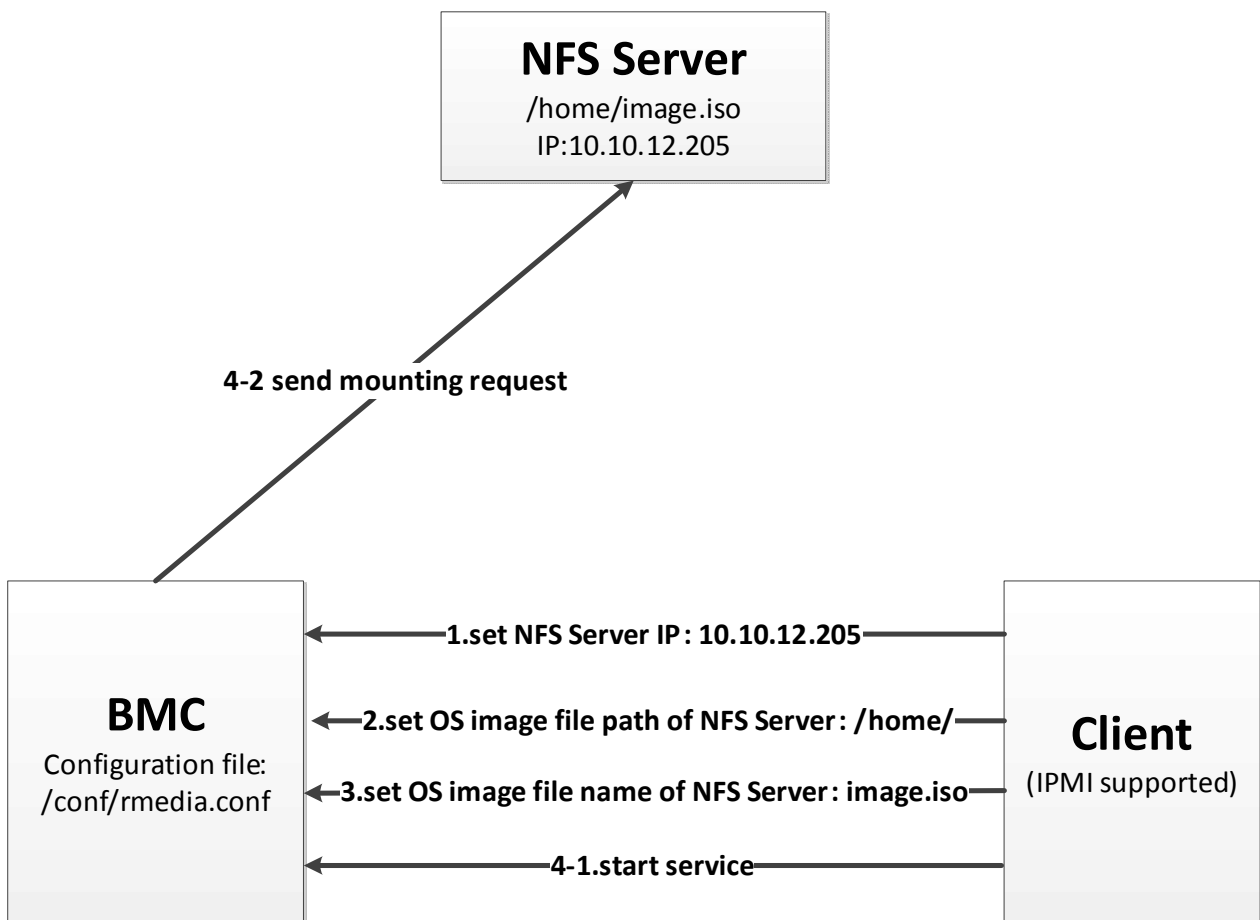
Figure1.1 The procedure of Remote OS Install with NFS Server

1.2 NFS Server Installation in Fedora 12

1. yum install packages: **nfs-utils** and **rpcbind**   *// portmap replaced by rpcbind*

2. user privilege setting:

   creat a new file "**exports**" in **/etc/**

   and write the content : **/home *(rw,no_root_squash)**

3. follow the command sequence to start NFS service

   /etc/init.d/rpcbind start

   /etc/init.d/nfs start

2. CONTROL FLOW DIAGRAM

Here present a control flow diagram, Figure 2.1, each control block will map to a command. Before entry, to make sure NFS server works fine. In Table 2.1, list all commands used in this service. **Set System Boot Option**, **Reset System** and **Power On System** are IPMI standard commands and the others are OEM commands.
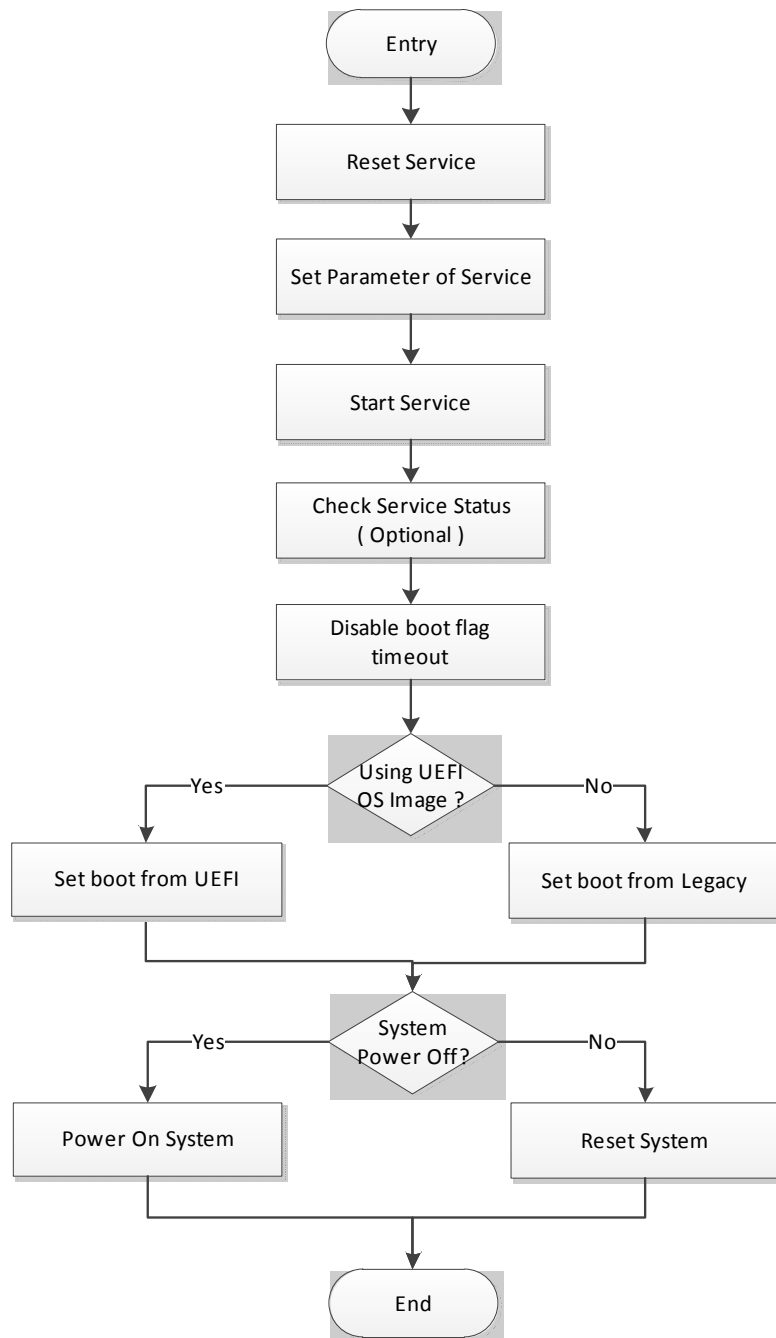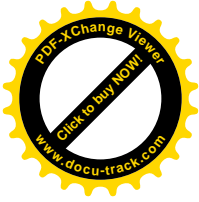

Figure 2.1 Control flow diagram of the service
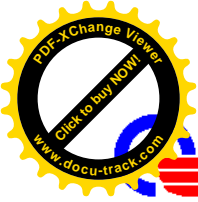
Table 2.1 IPMI Commands

Item	IPMI Commands	Command Type	Description
1	Reset Service	OEM	stop service and clear configuration of service
2	Set Parameter of Service	OEM	set parameters such as NFS server IP and the image path
3	Start Service	OEM	start service to simulate a virtual CD-ROM and mount the image
4	Stop Service	OEM	stop service for removing the virtual CD-ROM and un-mount the image
5	Check Service Status	OEM	check mounting status
6	Set System Boot Option	Standard	please refer to IPMI 2.0 spec. page 418/644 ✓ Disable boot flag timeout ✓ Set boot from Legacy/UEFI
7	Reset System	Standard	DC cycle system
8	Power On System	Standard	DC on system
9	Change the port number	OEM	Change the port number of virtual device.
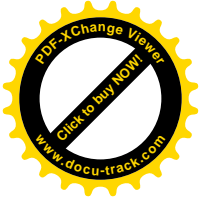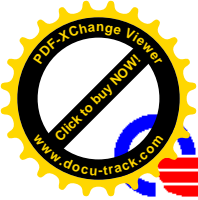
3. IPMI COMMANDS

3.1 Reset Service

ipmitool -H <HostIP>   -U <UserID> -P <Password> **raw 0x3c 0x00**

3.2 Set Parameter of Service

Please follow the ASCII table to set underlined parameter, the last byte of parameters ,0x00, is an end

byte. More ASCII codes, please refer to: http://en.wikipedia.org/wiki/ASCII .

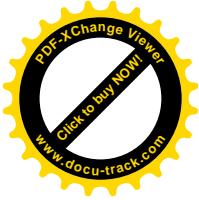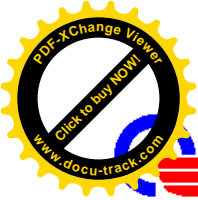| Hex	Glyph		Hex	Glyph
30	0		2E	.
31	1		2F	/
32	2		5F	_
33	3		2D	-
34	4		7E	~
35	5		40	@
36	6		26	&
37	7			
38	8			
39	9			

Hex	Glyph		Hex	Glyph		Hex	Glyph		Hex	Glyph		Hex	Glyph
41	A		47	G		4D	M		53	S		59	Y
42	B		48	H		4E	N		54	T		5A	Z
43	C		49	I		4F	O		55	U			
44	D		4A	J		50	P		56	V			
45	E		4B	K		51	Q		57	W			
46	F		4C	L		52	R		58	X			

Hex	Glyph		Hex	Glyph		Hex	Glyph		Hex	Glyph		Hex	Glyph
61	a		67	g		6D	m		73	s		79	y
62	b		68	h		6E	n		74	t		7A	z
63	c		69	i		6F	o		75	u			
64	d		6A	j		70	p		76	v			
65	e		6B	k		71	q		77	w			
66	f		6C	l		72	r		78	x			

3.2.1   Setting NFS server IP: 10.10.12.205

ipmitool -H <HostIP>   -U <UserID> -P <Password> **raw 0x3c 0x01 0x00 0x31 0x30 0x2E 0x31 0x30 0x2e 0x31 0x32 0x2e 0x32 0x30 0x35 0x00**

3.2.2   Setting Image Path: /home/

ipmitool -H <HostIP>   -U <UserID> -P <Password> **raw 0x3c 0x01 0x01 0x2F 0x68 0x6F 0x6d 0x65 0x2f 0x00**

3.2.3   Setting Image Name: image.iso

ipmitool -H <HostIP>   -U <UserID> -P <Password> **raw 0x3c 0x01 0x02 0x69 0x6D 0x61 0x67 0x65 0x2E 0x69 0x73 0x6f 0x00**

3.3   Start Service

ipmitool -H <HostIP>   -U <UserID> -P <Password> **raw 0x3c 0x02 0x01**

3.4 Stop Service

```
ipmitool -H <HostIP>    -U <UserID> -P <Password> raw 0x3c 0x02 0x00
```

3.5 Check Service Status

```
ipmitool -H <HostIP>    -U <UserID> -P <Password> raw 0x3c 0x03
```

Note: Return 00: service started. (image Mounted)

Return FF: service stopped. (image Un-mounted)

3.6 Set System Boot Option: Disable boot flag timeout

```
ipmitool -H <HostIP> -U <UserID> -P <Password> raw 0x00 0x08 0x03 0x1f
```

3.7 Set System Boot Option: based on BIOS boot type

If BIOS is in legacy mode, please send the following to launch virtual CD/DVD device on Grant-ley platform:

```
ipmitool -H <HostIP> -U <UserID> -P <Password> chassis bootdev floppy

or

ipmitool -H <HostIP> -U <UserID> -P <Password> raw 0x0 0x08 0x05 0x80 0x3C 0x0 0x0 0x0
```

If BIOS is in UEFI mode, please send the following to launch virtual CD/DVD device on Grant-ley platform:

```
ipmitool -H <HostIP> -U <UserID> -P <Password> chassis bootdev floppy options=efiboot

or

ipmitool -H <HostIP> -U <UserID> -P <Password> raw 0x0 0x08 0x05 0xA0 0x3C 0x0 0x0 0x0
```

3.8 Reset System

```
ipmitool -H <HostIP> -U <UserID> -P <Password> power reset
```

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3.9   Power On System

ipmitool -H <HostIP>   -U <UserID> -P <Password> **power on**

3.10 Change the port number for virtual CD device.

● This example is to change the port number to 5550 for virtual CD device.

ipmitool -H <HostIP> -U <UserID> -P <Password> **raw 0x32 0x6a 0x4 0x00 0x0 0x0 0x1 0x62 0x6f**

0x6e 0x64 0x30 0x0 0x0 0x0 0x0 0x0 0x0 0x0 0x0 0x0 0x0 0x0 0x0 0xAE 0x15 0x0 0x0 0x04 0x14

0x0 0x0 0xff 0xff 0xff 0xff 0x00 0x00 0x00

● This example is to get the status of virtual CD device.

ipmitool -H <HostIP> -U <UserID> -P <Password> **raw 0x32 0x69 0x4 0x0 0x0 0x0**

return:

04 00 00 00 01 62 6f 6e 64 30 00 00 00 00 00 00

00 00 00 00 00 00 ae 15 00 00 04 14 00 00 ff ff

ff ff 82 80 00

Note:
04 00 00 00: CD-ROM Service.
01: Service is enabled.
62 6f 6e 64 30 00 00 00 00 00 00 00 00 00 00 00 00: the string is "bond0"
ae 15 00 00: Non security access port is 5550
04 14 00 00: Security access port is 5124
ff ff ff ff: Session inactivity timeout value is read-only.
82: Maximum allowed session is read-only.
80: Current active session is read-only.
00: Rerseved