

FreeNAS - Bug #30675

Configure the serial console to support both BIOS and UEFI

03/25/2018 06:34 AM - Eric Loewenthal

Status: Done	
Priority: No priority	
Assignee: Benno Rice	
Category: OS	
Target version: 11.2-BETA1	
Seen in: Master - FreeNAS Nightlies	Needs Merging: No
Severity: Medium	Needs Automation: No
Reason for Closing:	Support Suite Ticket: n/a
Reason for Blocked:	Hardware Configuration:
Needs QA: No	ChangeLog Required: No
Needs Doc: No	

Description

The serial console does not have all the output present in the video console. This is a regression, as around 11.0 both consoles had identical output. This may be related to the new bootloader.

See attached images for examples of missing output in the serial console (top) present in the video console (bottom).

The serial console does show something not present in the video console, namely the following block:

```
>> FreeBSD EFI boot block
  Loader path: /boot/loader.efi

  Initializing modules: ZFS UFS
  Load Path: \EFI\BOOT\BOOTX64.EFI
  Load Device: PciRoot(0x0)/Pci(0x1d,0x0)/USB(0x0,0x0)/USB(0x0,0x0)/HD(1,GPT,2e5fadf1-6578-11e6-8
c8a-0cc47a073ee2,0x22,0x32000)
  BootCurrent: 0002
  BootOrder: 0002 0003 0004 0008 0009 0005
  Probing 24 block devices.....*..+.....+..+..+..+ done
  ZFS found the following pools: freenas-boot Flexo
  UFS found no partitions
Consoles: EFI console
Command line arguments: loader.efi
Image base: 0xcb202000
EFI version: 2.31
EFI Firmware: American Megatrends (rev 4.655)

FreeBSD/amd64 EFI loader, Revision 1.1
(Sat Mar 24 08:12:38 UTC 2018 root@nemesis.tn.ixsystems.com)
Loading /boot/defaults/loader.conf
console vidconsole is invalid!
Available consoles:
  spinconsole
\
|_____|      | \ | | / \ /_____|
| | _ _ _ _ _ | \ | | / \ | (____
| _ | ' _ / _ \ / _ \ . ` | / \ \ \ _ \
| | | | | _ / _ / | \ | / ____ \ ____ ) |
|_| |_| \ _ | \ _ | | \ / / \ \ _ \

+=====Welcome to FreeNAS=====+
```

```
|
| 1. Boot FreeNAS [Enter]
|
| Options:
| 2. Configure Boot [O]ptions...
| 3. Select Boot [E]nvironment...
|
|
|
|
|
|
|
|
|
|
+=====
```

```
/boot/kernel/kernel text=0x15e5078 data=0x3c0390+0x5a0ca8 syms=[0x8+0x1a9850+0x8+0x1f650e]
/boot/entropy size=0x1000
/boot/kernel/ispfw.ko size 0x1002b8 at 0x26e7000
/boot/modules/freenas_sysctl.ko size 0x8690 at 0x27e8000
Booting...
Start @ 0xffffffff80325000 ...
EFI framebuffer information:
addr, size      0xf6000000, 0x1d4c00
dimensions     800 x 600
stride         800
masks          0x00ff0000, 0x0000ff00, 0x000000ff, 0xff000000
```

(No image comparison for this one, unfortunately, it requires good timing by the fleshy operator. The video console starts showing everything from

```
KDB: debugger backends: ddb
KDB: current backend: ddb
Copyright (c) 1992-2017 The FreeBSD Project.
Copyright (c) 1979, 1980, 1983, 1986, 1988, 1989, 1991, 1992, 1993, 1994
    The Regents of the University of California. All rights reserved.
FreeBSD is a registered trademark of The FreeBSD Foundation.
FreeBSD 11.1-STABLE #0 Odf1alc85(freenas/11-stable): Sat Mar 24 08:23:35 UTC 2018
```

onwards)

The environment is as follows:

FreeNAS-11-MASTER-201803240729
Supermicro X10SLM+-F

Related issues:

- Related to FreeNAS - Bug #35467: More serial console fixes for installer **Closed**
- Copied to FreeNAS - Bug #35548: Explicitly make serial console preferred when... **Done**

History

#1 - 03/26/2018 03:52 AM - Dru Lavigne

Eric: to clarify, it is the missing boot menu that is the issue? Also, to make sure we're on the same page, what do you mean by "serial" console vs "video" console?

#2 - 03/26/2018 06:59 AM - Eric Loewenthal

The issue is that neither console displays the entirety of the boot process. The video console doesn't display the boot loader's menu and the serial console doesn't display a whole bunch of messages (including after boot - see serialconsole4.png - presumably because they're not being sent to this tty).

The video console is the "graphical" console, in other words, the output is VGA (in this case, it is being viewed remotely via the IPMI iKVM application). FreeBSD identifies it as ttyv0.

The serial console is an ASCII output to the server's serial port (FreeNAS is configured to use uart2 at 0x3e8, uart0 is also available at 0x3f8 but is not in use, the server doesn't have a third serial port that could account for uart1. uart2 is being remotely monitored using the IPMI serial redirection functionality, which is piping it into an SSH session established with the BMC). FreeBSD identifies this console as ttyu2, as expected for uart2.

#3 - 03/26/2018 07:51 AM - Dru Lavigne

- Assignee changed from Release Council to Erin Clark
- Target version set to 11.2-RC2

#4 - 03/28/2018 05:50 PM - Erin Clark

- Status changed from Unscreened to Not Started
- Assignee changed from Erin Clark to William Grzybowski

We are currently using "filesystem.file_tail_follow:/var/log/messages:500"; to get these messages. William, do you know if there is something we are doing wrong or is this something that needs to be fixed on your end?

#5 - 03/28/2018 07:09 PM - William Grzybowski

- Assignee changed from William Grzybowski to Erin Clark

I dont understand your question Erin. The ticket is about console it seems, how is this related to filesystem.file_tail_follow and UI? I must be missing something.

#6 - 04/06/2018 07:38 PM - Erin Clark

- Assignee changed from Erin Clark to Lola Yang

I think Lola implemented this in the new UI, could you look at this?

#7 - 04/09/2018 03:20 PM - Vaibhav Chauhan

- File Screen Shot 2018-04-09 at 3.16.23 PM.png added
- Assignee changed from Lola Yang to Eric Loewenthal

Eric: so we are trying to determine how you are accessing the console(Serial|Video) ? are you using any of VM `VNC|Serial` display options(see attached screenshot). we are asking you this question, so that we can determine if this is a frontend or backend issue ?

#8 - 04/09/2018 03:37 PM - Eric Loewenthal

This has nothing to do with VMs. The server is neither virtualized nor is it running any VMs. This is FreeNAS itself, with the new bootloader, on a Supermicro X10SLM+-F.

I see two underlying issues here, which may or may not be connected:

Issue 1: The bootloader doesn't recognize vidconsole, only spinconsole. This keeps it from actually displaying anything on VGA. Curiously, it doesn't recognize a serial console either, even though it is outputting on it (as evidenced by the output I pasted).

Issue 2: When the actual OS takes over from the bootloader, it is not outputting all messages on the serial console (VGA console is fine). The output of ttyv0 is complete *after FreeBSD takes over from the bootloader*, but the output of the serial console, ttyu2 on uart2, is missing messages (see the first screenshot for an example, ttyu2, on the top, is missing everything that is not bolded in ttyv0, bottom).

#9 - 04/09/2018 04:06 PM - Dru Lavigne

- Assignee changed from Eric Loewenthal to Vaibhav Chauhan

#10 - 04/09/2018 04:19 PM - Eric Loewenthal

- Assignee changed from Vaibhav Chauhan to Eric Loewenthal

This ticket from upstream may be of interest for 1):

https://bugs.freebsd.org/bugzilla/show_bug.cgi?id=209275

#11 - 04/09/2018 04:23 PM - Dru Lavigne

- Assignee changed from Eric Loewenthal to Vaibhav Chauhan

#12 - 04/09/2018 05:01 PM - William Grzybowski

- Category changed from Console to OS

- Assignee changed from Vaibhav Chauhan to Alexander Motin

Alexander, any idea in this one? Does this belong to OS/Services?

There is a PR removing vidconsole but not sure that alone will help?

#13 - 04/12/2018 08:31 AM - Alexander Motin

- Assignee changed from Alexander Motin to Benno Rice

Init/rc output going to only one console should not be a new issue. I suppose it was like that forever, since serial and video consoles are different TTY devices, and user-space messages are going to only one of them. We may add a control which one to use for that, but not sure we can make them identical, even though I agree that would be very useful.

What's about the loader messages, that indeed likely to be a new issue, related to switch from GRUB to BSD loader. Benno, do you have some system with UEFI and serial console to test that?

#14 - 04/12/2018 10:37 AM - Eric Loewenthal

Alexander, I'm pretty sure both ttys had complete outputs before. I went back to check an older serial console log I had lying around, and it does include some stuff that it currently missing (the plugin_load messages and the ConnectionRefusedError traceback*, for instance). Note that this was around September of last year, so it *may* have been broken independently since then.

BTW: Supermicro X10 and X11 boards support Serial over LAN by SSHing into the BMC (same credentials as the GUI), cding to the sol1 interface (cd system1/sol1, typically) and entering start. The SSH session should now show the local serial console, as configured in the BIOS.

Some other systems may present a busybox shell, which may complicate things.

ASRock boards (such as the C2750D4I in the FreeNAS mini) apparently allow for SoL via ipmitool, of all things:

<https://forums.freenas.org/index.php?resources/how-to-use-ipmitool-sol-with-asrock-motherboards-alternative-to-jviewer.51/>

If you can't get your hands on a system for testing, I might be able to provide access next wednesday.

- The ConnectionRefusedError tracebacks have been hard to reproduce and are an unrelated, seemingly cosmetic issue. They just happened to be a decent illustration.

#15 - 04/16/2018 09:23 AM - Nick Wolff

- Severity set to Medium

As this seems to always happens and has minor impact of possibly effecting troubleshooting I am marking as medium

#16 - 04/19/2018 03:17 PM - Benno Rice

- Status changed from Not Started to In Progress

Looks like the issue is that we set the following in all cases:

```
console="comconsole,vidconsole"
```

This works for BIOS/VESA/VGA/whatnot but doesn't work for EFI which wants:

```
console="comconsole,efi"
```

I'm working on a patch for this.

#17 - 04/20/2018 10:48 AM - Benno Rice

- Status changed from In Progress to Ready for Testing

Fixed in <https://github.com/freenas/freenas/pull/1142>

#18 - 04/20/2018 01:30 PM - Eric Loewenthal

Which nightly is this going to be in? 20180423something?

#19 - 04/23/2018 07:47 AM - Dru Lavigne

- Subject changed from Serial console is missing output present in VGA to Configure the serial console to support both BIOS and UEFI

- Target version changed from 11.2-RC2 to 11.2-BETA1

- Needs Merging changed from Yes to No

#20 - 05/02/2018 03:56 PM - Eric Loewenthal

- File tty_comparison.PNG added

- File working_eficonsole.PNG added

I can confirm that the bootloader is now correctly recognizing the EFI console, in addition to the serial console. (See attached screenshot)

I can also confirm that after the Kernel takes over, the two ttys are still **not** identical, which I'm pretty sure is a regression from earlier versions, as described in comment number 14. I can't confirm this 100% at the moment, because my other server's SoL isn't working at all and I don't know where my null modem cable is. (See screenshot, taken using a 2018-05-02 nightly)

There is one cosmetic oddity that didn't happen before:

```
JH _____
H| _____|          | \ \ | | / \ / \ / _____|
H| | _ _ _ _ _ _ _ _ _ _ | \ \ | | / \ / \ | ( _ _ _ _ |
H| | _ _ | ' _ / _ \ / _ \ \ . ` | / ^ \ \ \ _ _ \
H| | | | | | | _ / _ / | \ | / _ _ _ \ \ _ _ ) |
H|_ | | | | \ _ _ \ \ _ _ | | \ \ / / \ \ \ _ _ _ /

H+=====HWelcome to FreeNAS=====H+
H|
H| HH.HBoot FreeNAS [Enter]
H|
H| HOptions:
H| HH.HConfigure Boot [O]ptions...
H| HH.HSelect Boot [E]nvironment...
H|
H|
H|
H|
H|
H|
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H|
H+=====H+
H
```

Some characters aren't correct. If the fix isn't immediately obvious, I'll investigate further and bring it up here or upstream, as appropriate, since it's merely a cosmetic issue. My serial setup is expecting a VT100, by the way.

- #21 - 06/20/2018 03:17 PM - Dru Lavigne
- Related to Bug #35467: More serial console fixes for installer added
- #24 - 06/21/2018 01:15 PM - Dru Lavigne
- Copied to Bug #35548: Explicitly make serial console preferred when it is enabled added
- #27 - 06/26/2018 02:01 PM - Bonnie Follweiler
Nick Wolff will be testing this on 6/27/18

#28 - 06/27/2018 03:53 PM - Nick Wolff

- Status changed from Ready for Testing to Passed Testing

Passed testing.

Checked that it is identical output

#29 - 06/27/2018 04:16 PM - Dru Lavigne

- Status changed from Passed Testing to Done

- Needs QA changed from Yes to No

Files

serialconsole.PNG	206 KB	03/25/2018	Eric Loewenthal
serialconsole2.PNG	179 KB	03/25/2018	Eric Loewenthal
serialconsole4.PNG	165 KB	03/25/2018	Eric Loewenthal
serialconsole3.PNG	180 KB	03/25/2018	Eric Loewenthal
Screen Shot 2018-04-09 at 3.16.23 PM.png	375 KB	04/09/2018	Vaibhav Chauhan
working_eficonsole.PNG	835 KB	05/02/2018	Eric Loewenthal
tty_comparison.PNG	939 KB	05/02/2018	Eric Loewenthal