

Deployment of a new M-Lab site

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Scope of the document

Description of the procedures for the deployment a new M-Lab site.

HW deployment - on-site

CHECKLIST for on-site staff, BEFORE going to the site

- Rack assignment.
- Power assignment.
- Port for uplink 1 G connection.
- 3 x ISO burned on CD.
- Internet access from POP.
- If servers and switch have NOT been staged before sending them to the site, see also CHECKLISTs for configuring switch and DRACs.

Procedure

1. Unpackage the Dell machines and rack into the rack units keeping all of the M-Lab equipment together.
 - Label pieces of equipment in the rack (MLAB1, MLAB2, MLAB3, and MLABSW) before moving on to the next step.
 - Connect the Dell machines to the switch via the 6 Ethernet cables according to the following switch port map (<https://docs.google.com/a/google.com/document/d/1OQ2eZAsuMCLNLhixkyvQMuAzvMInxnNO8DRq2VZ3G54/>)

[edit#heading=h.tssn8u2jzqxq](#)).

2. Connect the switch to the 1G transit service via the GBIC.
 - Label the cables before moving on to the next step.
3. Connect the switch and Dell machines to the power strip.
 - Label the cables before moving on to the next step.
4. Connect the 1GE transit port of the the GBIC.
 - You should verify connectivity with M-Lab team ideally before moving on to the next step. If M-Lab team is not available to verify connectivity but you have a physical link, move on to the next step and follow up with an email when suitable.



SW configuration - on-site and off-site

The steps below can be done

- on-site, or
- off-site, to stage servers and switch, before sending them to the POP.

Configure switch

CHECKLIST

- 1 x IP address for switch, default gateway and netmask.
- Manager and operator passwords.
- Laptop and cables for console access.

Procedure

If the switch has already been configured off-site, skip this step during on-site deployment.

Reference: [HP installation guide](#), for console setting etc.

In a nutshell, the HP2848 is configured similar to a Cisco switch, the console is standard at (9600 Baud, 8 data Bits, No parity, 1 stop bit). Note that the HP has a serial console port (not RJ45 like on Cisco).

- In case the HP is re-used, perform a clear config by using
 - The Clear button of the switch, OR

- The Reset and the Clear buttons to restore the factory default configuration of the switch. To do this, use the following procedure:
 - i. Press and hold the Reset button.
 - ii. While holding the Reset button, press and hold the Clear button.
 - iii. Release the Reset button and wait for about one second for the Self-Test LED to start flashing.
 - iv. When the Self-Test LED begins flashing, release the Clear button.

- Generate a key for SSH.
- Config for mlab switch with no routing, as follows

```

hostname "<supplied hostname>"
no cdp run
qos-passthrough-mode
qos-passthrough-mode one-queue
no web-management
no telnet-server
ip default-gateway <supplied default gateway>
snmp server 204.152.184.72
timesync snmp
snmp unicast
snmp-server community "supplied snmp community" Operator
vlan 1
  untagged 1-24
  ip address <supplied rackswitch ip address> <supplied netmask>
  exit
no lldp run
no stack
ip ssh
ip ssh filetransfer

no tftp client
no tftp server
;password manager <you specify the password and give back to M-Lab
team>
;password operator <you specify the password and give back to M-Lab
team>
;

```

Configure DRACs

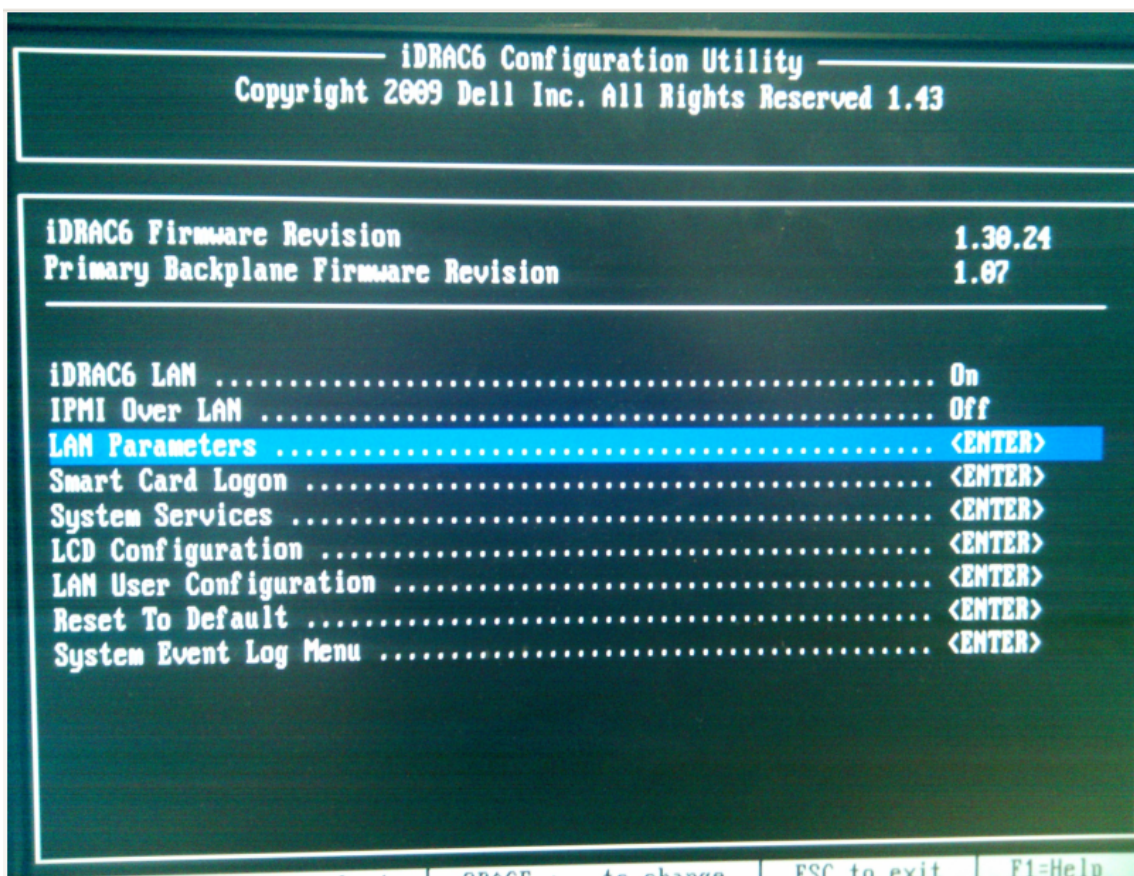
CHECKLIST

- 3 x IP address for DRAC, default gateway and netmask.
- Laptop and cables for console access.
- USB keyboard, monitor with VGA cable, kettle plug.
- 3 x ISO burned on CD.

Procedure

If the DRACs have already been configured off-site, skip this step during on-site deployment.

- Plug equipment (USB keyboard, monitor with VGA cable, kettle plug) into the server.
- Upon boot screen, there is an option to enter the DRAC interface, Press Control-E when prompted during startup. It's normally AFTER the Control-S prompt. (Do not press Control-S). Should display the menu below.



- Scroll down to the "LAN Parameters" option.
- Assign the **supplied IP address**.

iDRAC6 Configuration Utility
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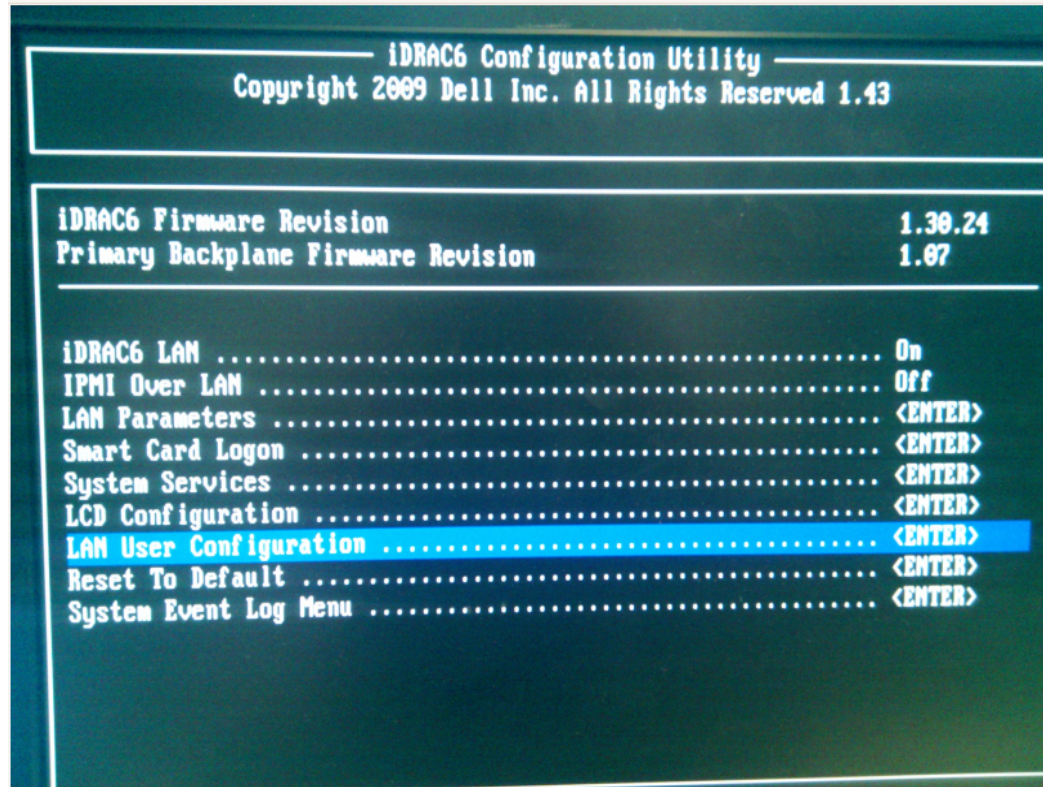
iDRAC6 Firmware Revision 1.30.24
Primary Backplane Firmware Revision 1.07

i
I IPv4 Settings
L IPv4 Enabled
S RMCP+ Encryption Key <ENTER>
S IPv4 Address Source Static
L IPv4 Address
L Subnet Mask
R Default Gateway
S DNS Servers from DHCP Off
DNS Server 1 8 . 8 . 8 . 8
DNS Server 2 8 . 8 . 4 . 4

Enter
details here

Up,Down Arrow to select SPACE,+,- to change ESC to exit F1=Help

- Assign the Username and password, make sure the username is = "admin" and password = "changeme" <- literally put the password as changeme.
 - From the main menu, go to "LAN User Configuration" option.



- Then change the username from "root" to "admin", and enter the password "changeme".

iDRAC6 Configuration Utility
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iDRAC6 Firmware Revision 1.30.24
Primary Backplane Firmware Revision 1.07

iDRAC6 LAN		n
IPMI Over LAN ..	Auto-Discovery	ff
LAN Parameters .		ENTER>
Smart Card Logon	Provisioning Server ..	ENTER>
System Services		ENTER>
LCD Configuratio	Account Access	ENTER>
LAN User Configu	IPMI LAN Privilege ...	ENTER>
Reset To Default		ENTER>
System Event Log	Account User Name	ENTER>
	Enter Password]
	Confirm Password]

Up/Down Arrow to select | SPACE,+,- to change | ESC to exit | F1=Help

- Save configuration of DRAC and exit. (Press escape a few times, it will prompt you to save).

Boot

- Power on the machines one at a time and insert the respective boot CD into the respective machine (i.e. MLAB1 boot CD goes into the MLAB1 machine, and so on). Once you've inserted the boot CD and closed the cdrom, power off the machine (hold power button in for 5sec), wait 15 seconds. Leave the machine off (This way the M-Lab admin will be able to check the installation+boot msgs, once he turns the machine on via DRAC). Repeat for each machine.
- Once booted the screen should look something like below.

```

PU: L3 cache: 4096K
PU: Physical Processor ID: 0
PU: Processor Core ID: 2
intel machine check architecture supported.
intel machine check reporting enabled on CPU#2.
CPU2: Intel(R) Xeon(R) CPU           E5504 @ 2.00GHz stepping 05
SMP alternatives: switching to SMP code
Booting processor 3/6 eip 2000
CPU 3 irqstacks, hard=c07a4000 soft=c0784000
Initializing CPU#3
Calibrating delay using timer specific routine.. 3990.04 BogoMIPS (lpj=1995023
monitor/mwait feature present.
CPU: L1 I cache: 32K, L1 D cache: 32K
CPU: L2 cache: 256K
CPU: L3 cache: 4096K
CPU: Physical Processor ID: 0
CPU: Processor Core ID: 3
Intel machine check architecture supported.
Intel machine check reporting enabled on CPU#3.
CPU3: Intel(R) Xeon(R) CPU           E5504 @ 2.00GHz stepping 05
SMP alternatives: switching to SMP code
Booting processor 4/16 eip 2000
CPU 4 irqstacks, hard=c07a5000 soft=c0785000

```

- If on-site, leave the CDs in the cdrom readers.

Testing - on-site and off-site

- The steps below can be done
 - on-site, or
 - off-site, to test whether servers and switch were staged correctly, before sending them to the POP.
- Use a laptop as test machine (preferably a MAC).
- Configure the wired ethernet port of the test machine with some unused IP in the subnet allocated for MLAB (for example the last usable IP in that subnet).
- Plug an ethernet cable from the server to the switch.

- Plug an another ethernet cable from switch to test machine.
- If on-site, check that LEDs are green on HP switch for all connected ports (3x to DRACs, 3x to DELL Ethernets, 1G uplink).
- Test connectivity
 - From test machine, ping switch, if ok proceed.
 - From test machine, ping server (should go 'through' switch), if ok proceed.
- Test ssh
 - From test machine, ssh admin@<serverip>, WAIT (if there is no dns resolution, might take a little bit, e.g. 60seconds). If you can login with admin/changeme, then OK, proceed.
- Test HTTPS test
 - From test machine, open browser, open up https://<server ip>/, if a login page comes up, then great!, try logging in with admin/changeme and if that works.
 - Test whether you can power on the server from HTTPS (section "Power").
- If on-site and if have Internet connection, make the ssh and https test also from test machine to M-Lab's IPs (switch + DRACs).
- If on-site, contact M-Lab team to verify connectivity. Once given the green light, the job is complete.