How to Deploy a New M-Lab Site

Scope of the document

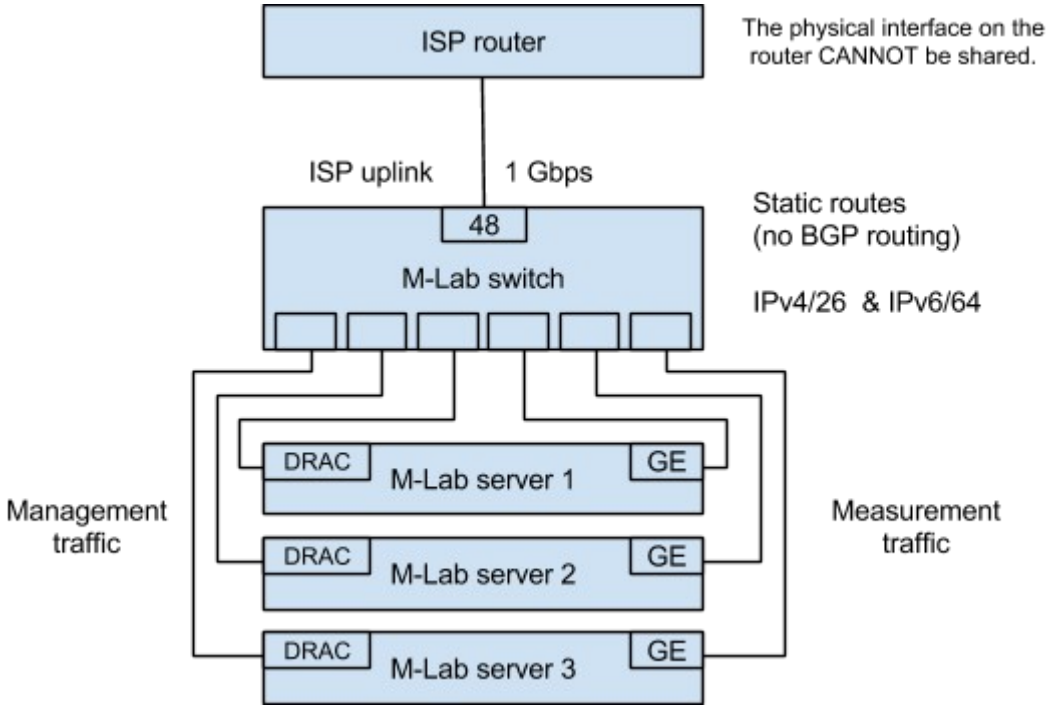
This document describes the procedures for deploying a new M-Lab site.

If you have any questions or comments about this document, please contact the M-Lab team at http://measurementlab.net/contact

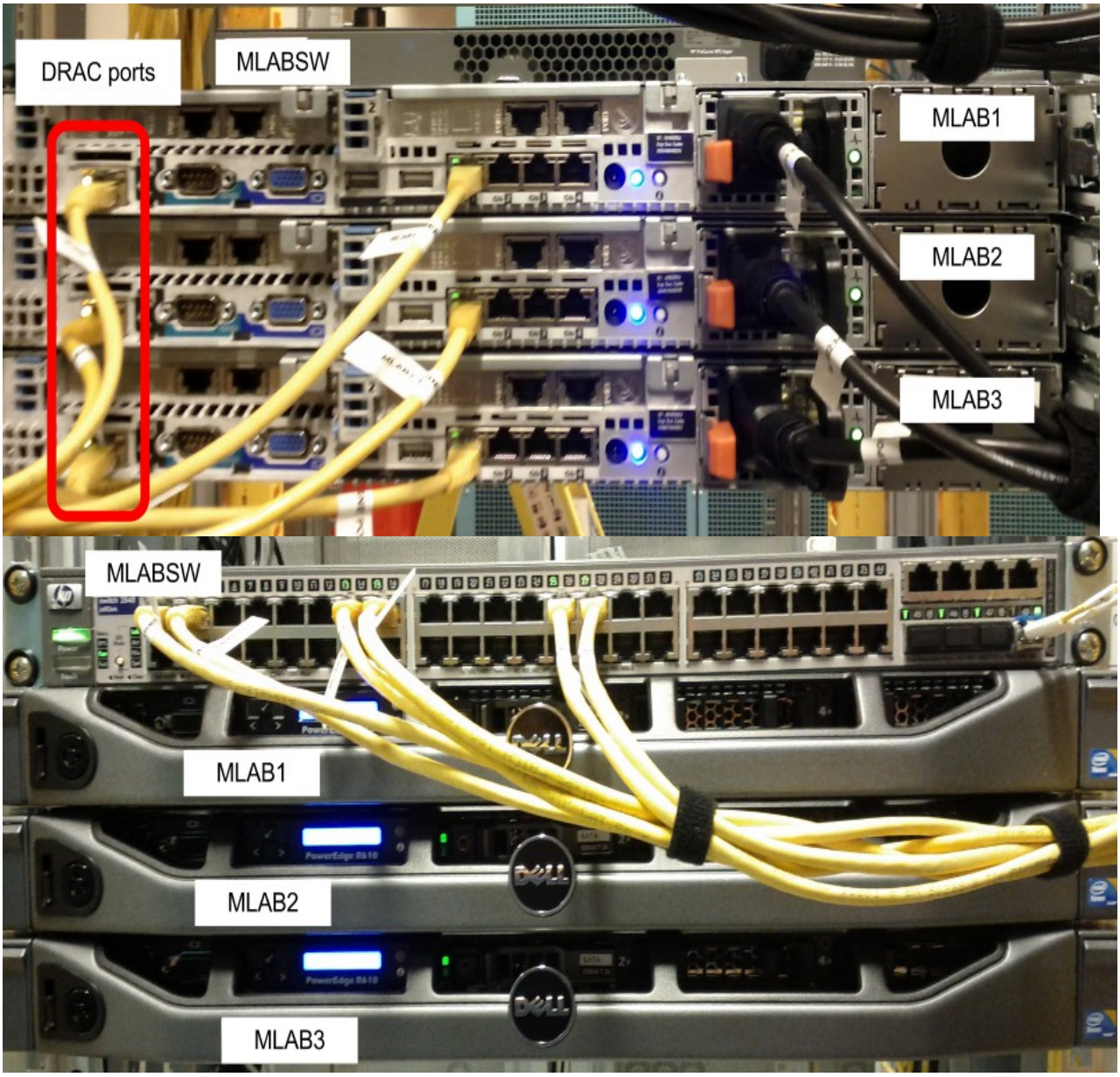
Description of an M-Lab site

Site Architecture

An M-Lab site is comprised of at least 4 devices: 3 **servers** and 1 **switch**.
Every server is managed remotely via VPN, ssh, or management interface which is independently cabled to the switch. The switch is used to connect the servers to the Internet.



Picture of a Typical Installation



Switch Port Assignments

- **48-port switch:**
  - 1G Transit: Port 48
  - MLAB1
    - Ethernet: Port 1
    - DRAC: Port 3
  - MLAB2
    - Ethernet: Port 13
    - DRAC: Port 15
  - MLAB3
    - Ethernet: Port 25
    - DRAC: Port 27
  - In **rare** cases, a site has 4 servers. If so
    - MLAB4
      - Ethernet: Port 37
      - DRAC: Port 39.
- **24-port switch:**
  - 1G Transit: Port 24
  - MLAB1
    - Ethernet: Port 1

        - DRAC: Port 3
    - MLAB2
        - Ethernet: Port 5
        - DRAC: Port 7
    - MLAB3
        - Ethernet: Port 13
        - DRAC: Port 15

FQDNs of Servers, DRACs, and Switches

The site_id for your site is based on the three-letter airport code of the nearest airport to your site. This will be assigned by an M-Lab operator. If you do not know it, please ask.

- Server FQDNs:
    - mlab1.<site_id>.measurement-lab.org
    - mlab2.<site_id>.measurement-lab.org
    - mlab3.<site_id>.measurement-lab.org
- DRAC FQDNs:
    - mlab1d.<site_id>.measurement-lab.org
    - mlab2d.<site_id>.measurement-lab.org
    - mlab3d.<site_id>.measurement-lab.org
- Switch FQDN
    - s1.<site_id>.measurement-lab.org

Labels Templates

- Cable labels:

    - mlab1:eth0,mlabsw1:1
    - mlab1:drac0,mlabsw1:3
    - mlab2:eth0,mlabsw1:13
    - mlab2:drac0,mlabsw1:15
    - mlab3:eth0,mlabsw1:25
    - mlab3:drac0,mlabsw1:27
    - mlab4:eth0,mlabsw1:37
    - mlab4:drac0,mlabsw1:39
    - mlab1:ps0,mlab-c.1:3
    - mlab2:ps0,mlab-c.1:4
    - mlab3:ps0,mlab-c.1:5
    - mlab4:ps0,mlab-c.1:6
- Device labels:
    - mlab1
    - mlab2
    - mlab3
    - mlab4
    - mlabsw1
    - mlab-c.1

Checklist

For On-site Installation

- Equipment:
    - 3 x DELL PowerEdge R610, 1U, 2x Xeon E5606 2.13GHz, 8x1GB 1333MHz UDIMM, 2x 250GB SATA 7.2K 2.5in Hotplug HDDs, SAS 6/iR, iDRAC6 Enterprise, 1x 502W PSU, 2x Dual-Port 1GbE PCIe-4 NICs w/TOE iSCSI, DVDROM, 6x2.5in Chassis, Custom.
    - 3 x DRAC module (iDRAC6 Enterprise RJ-45 port) - Either ships separately or comes installed in the server.
    - 3 x Rack mount kit (should be shipped with the server, but are in a separate box).
    - 1 x HP Procurve 2848, 48 ports, 10/100/1000Base-T, 1U.
- Network cables -- check length:
    - 6 x Ethernet cables, yellow cat5 patch w/ approved RJ45 (3 for regular LAN interfaces, 3 for DRACs).
    - 1 x HP, GIGABIT MINI-GBIC (one of these models http://h18000.www1.hp.com/products/quickspecs/11988_div/11988_div.html).
    - 1 x cable to connect switch to upstream router.
- Power cords -- check length and other site-specific power requirements:
    - 2 options
        - basic, cheaper
            - 3 x servers to power strip
            - 1 x switch to power strip
        - more expensive, allows remote reboot if DRACs are not reachable over IP
            - 1 x Servertech Horizontal Power Strip (8port) MASTER (1U)
            - 4 x 6FT UNIV AC POWER COMPUTER EXTENSION MALE/FEMALE - c13 to c14 (For Servertech) - connection to devices.
            - 1 x Power Cord, C19 to IEC 60309, (15') - connection to commando sockets.

- Software:
    - 3 x ISO boot images, provided by M-Lab team.

- Information about the hosting location:
    - Rack assignment
    - Power assignment
    - Port for uplink 1 G connection
- Tools:
    - Screwdrivers

To Configure the Switch

- 1 x IP address and default gateway.
- FQDN of the switch.
- Laptop and cables for console access.
- To get console access to the switch, you might need to use null-modem adapters.

To Configure the DRACs

- 3 x ISO burned on 3 DVDs (1 ISO for each DVD).
- 3 x IP address of the DRACs and default gateway.
- Laptop and cables for console access.
- USB keyboard, monitor with VGA cable, kettle plug.

Procedure

BEFORE Going On-site

- Verify checklist.
- Ping the gateway IP address.
- Burn ISOs into CDs/DVDs, 1 ISO per CD/DVD.
    - Label each CD (MLAB1, MLAB2, MLAB3).
- Print labels.
- Print this document.
- [OPTIONAL] Configure the switch. Alternatively, the switch can be configured on-site.
- [OPTIONAL] Configure the DRACs. Alternatively, the DRACs can be configured on-site.

On-site

1) Rack and Connect Equipment

1. Unpackage and rack the servers and the switch, keeping all of the M-Lab equipment together.
    - Label pieces of equipment in the rack (MLAB1, MLAB2, MLAB3, and MLABSW1) before moving on to the next step.
2. Connect the servers to the switch using 6 Ethernet cables according to the switch port map.
3. Connect the switch to the 1G transit service via the GBIC.
    - Label the cables before moving on to the next step.
4. Connect the servers and the switch to the power strip.
    - Label the cables before moving on to the next step.
5. Connect the 1GE transit port of the GBIC.

Ideally, before moving on to the next step, verify connectivity with M-Lab team. 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