Looma Software Installation Manual

File information

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Overview

The Release 1 Looma software can run on Looma hardware or on a Ubuntu computer. The Looma uses an ARM architecture processor; Ubuntu computers use an Intel architecture processor. On Ubuntu, the Looma system can be installed on the normal boot drive, or the complete Ubuntu/Looma system can be installed on a bootable USB memory stick that can be booted on any Intel computer (PC, Linux or Mac).

On any of these platforms, the installation process has the following steps:

1. Install Ubuntu
2. Configure Ubuntu
3. Install and configure the Looma code and content

Once Ubuntu and Looma have been installed and configured, a single step can be done to update the Looma code and content when a new version is available:

4. Update Looma

Background

Looma runs on Ubuntu 11.10.

The Looma "system" code is written in python. It is contained in the folder

/home/looma/Documents/Back_End/src.

The Looma "user interface" code is written HTML and PHP. It is contained in the folder
/var/www/Front_End.

The Looma content is in various formats, such as .pdf, .mp4, .jpg, etc. It is contained in folders under /var/www/Front_End/Resources/Documents. Content files must be stored in folders with the corresponding name, e.g. /Videos, /Pictures, /Textbooks, /WhiteBoardFiles, etc. /External is for files loaded into Looma from a USB drive. /Others contains any miscellaneous files not otherwise categorized.

Looma also has some E-Paath activities from OLE Nepal loaded on the system. The E-Paath content is contained in the folder
/var/www/Front_End/Resources/Documents/EpaathActivities

Content on Looma

To access content:

Content, other than the Textbooks, can be accessed in Looma from the Documents page (4th button from the Left on the Looma toolbar). There are 6 buttons on the LHS to access different types of content: Video, White-Board Files, Pictures, Library (which is the textbooks), Other Files and USBstick.

Bug: in the Documents pages, the files listed are not sorted alphabetically, making it hard to find the file you want.

[Textbooks can also be accessed from the Home page in their Class/Subject organization. E-Paath activities are accessed from the same Home Page and are listed beside the corresponding Class and Subject textbook.

To load content:

You can load content two ways:

a. from Ubuntu (with Looma NOT running) use the Home Folder button on the left side toolbar (like MAC's "Finder") to navigate in "File System" (down the list under "Computer" and before "Network") to /var/www/Front_End/Resources/Documents. In this Documents folder are the folders for Videos, Pictures, WhiteBoardFiles and Other Files. if you put files in these folders they will show up in the Documents pages described above. There is no way to further organize them or use sub-folders. [Activities and TextBooks folders are here, too, but putting new files in them doesn't help, because the HTML code has to be changed to access these files.]

b. from Looma: insert a USB stick with files you want to load, go to Looma's Documents page, then click the bottom lefthand button (USB symbol). you will see the name of the USB stick and can click down through its folders to the file(s) you want. You can Rename and Delete files and in particular, can Move them into their Looma content folders. You cannot specify which folder the file is Moved into; the system decides that based on the filetype. The Rename/Delete/Move interface is a bit primitive. Try it and suggest changes. you have to find the file you want, then click the action you want to do, then select the file(s) the press another button to "do it". It's OK, but might be improved someday.

In summary, managing Content is pretty primitive. Please take notes of things you would like to be able to do (download and store webpages, sort files alphabetically, make subfolders, attach files to particular class/subject, etc) and we'll add these ideas to the next gen features list.

Textbooks:

The textbooks are stored on Looma under /var/www/Front_End/Resources/Documents/Textbooks.

[From Ubuntu (with Looma NOT running) use the Home Folder button on the left side toolbar (like MAC's "Finder") to navigate in "File System" (down the list under "Computer" and before "Network") to /var/www/Front_End/Resources/Documents/Textbooks.]

The folder structure for textbooks is: …Textbooks/Class<number>/<subject>/<subject>.pdf.   [example: Textbooks/Class2/Math/Math.pdf]

There may be more than one pdf file in a leaf folder. One must be named "<subject>.pdf", e.g. "Math.pdf". Spelling matters exactly, including capitalization. For some Classes, in Math, we have Nepali language versions, named "Math-Nepali.pdf". For some Classes, in English, we have "English-Reader.pdf".

Replacing textbooks with better copies:

We should have a log of all textbooks we have and their quality. David has a spreadsheet that is the start of this log. We should be trying to get better copies of any textbooks that are sub-standard quality. [Eventually, we want "selectable" copies, not just "scanned image" copies of everything so we can do things like select words and look them up in a dictionary or pronounce them.]

If we get a better copy, here is how to load it:

Change the name of the textbook it is replacing to something like "Math-OLD.pdf", but leave it there. Then copy in the new version, being careful to change its name to exactly "Math.pdf" or whatever.

We must keep track of these copies and keep David's spreadsheet and copies of the books on Dropbox up-to-date. If we lose track of what is on each Looma, it's a nightmare.

Activities:

Adding new files intended to be Activities in the Home/Class/Subject listings, require changes to the HTML code, not just placing the files in proper folder locations. Also, adding new E-Paath activities requires changes to the code. [This hardwired design is not at all flexible, and we hope to change it in the next version. The code should find any files we put in a designated class-subject activities folder and display them, but it doesn't now.]

So, adding any Activities requires changes to the code.

Please remember that files that are put in the right folders can be accessed from the "Documents" page (see above instructions), just not from the Class/Subject/Unit# lists on the "Home" pages.

Summary of what is "hardwired":

Textbook names and their folder locations

The existence, or not, of Math-Nepali.pdf for a Class, and of English-Reader.pdf for a Class. In other words, if you find a Nepali Math or an English Reader, putting it in the right folder wont help until the code is changed.

Page numbers of "Units". This means if you replace a current textbook with another one, and if (Class2 and Class5 currently) the textbook is accessed by "Units", the page numbers may be wrong. Pagenumbers are embedded in the code, and if the new texts have have chapters starting on different pages, they wont open on the right page. I expect that new texts we get will be exactly the same versions as what we have, so this probably wont be a problem.

Activities – see above discussion.

Installing on SD card

Install Ubuntu on SD card for use with Looma hardware

Running on a Ubuntu computer:

1. Plug in SD Card
   Note: as of December 2012, only 8GB SD cards work in Looma.
   Note: SD memory speed can noticeably affect the performance of Looma. As of December 2012, it is recommended to use SanDisk Extreme Pro SD cards or an equivalent high-speed product.

2. Use Ubuntu Disk Utility to Format the SD card (select Master Boot Record). Note: sometimes Ubuntu does not recognize an SD card that is inserted; it may be necessary to reboot Ubuntu to see the card.

3. Download the appropriate Looma Install package from Dropbox -> Looma Software
   The install package is called "LoomaInstallx.y" where "x.y" is the version number (x) and release number (y)

4. In Terminal: cd to the "LoomaInstallx.y/Ubuntu Install" directory
   The directory must contain
   > "**UbuntuInstall.sh**", the script that writes Ubuntu to the SD card, and
   > "**ubuntu-11.10-preinstalled-desktop-armel+omap4.img.gz**", the image of Ubuntu 11.10 for ARM

   > Note: the ubnutu image can be found at
   > http://mirror.anl.gov/pub/ubuntu-iso/DVDs/ubuntu/11.10/release/

5. In Terminal: **sudo sh UbuntuInstall.sh {name of drive (ex. sdb)} {first partition name (ex. sdb1)} {second partition name (ex. sdb2)} {# cylinders (see note below)}**

   > **Example: sudo sh UbuntuInstall.sh sdb sdb1 sdb2 980**

Note: you will need the admin password for the Ubuntu computer you are using
Note: use the Ubuntu Disk Utility to determine the drive name of the SD card (typically /dev/sdb, or /dev/sdc…)
Note: for "# cylinders" use the following values:
   8GB   = 980
   [16GB = 1961   Note: 16GB not supported as of December 2012]
   [32GB = 3946   Note: 32GB not supported as of December 2012]

Note: UbuntuInstall.sh calls fdisk to format and partition the SD card, then calls mkfs to create a filesystem, then copies Ununtu onto the card. Ubuntu will run its configuration process when it is first booted (see next step).

Note: this step may take 2-5 minutes on high-speed SD cards.

Configure Ubuntu on the SD card

Running on Looma:

1. Plug the SD card into Looma PandaBoard

2. Power on the Looma
3. Let Looma boot up...
4. Ubuntu will perform its configuration process
    Note: this step may take 10-15 minutes
5. During the Ubuntu config, you will be asked to do some setup steps, including creating an admin account:

Setup responses:
    Set language and timezone

    User name: **looma**
    Computer's name: **looma**
    Choose a password: **999olive**
    Confirm your password: **999olive**
    Check -> "**Log in automatically**"

Ignore all requests to apply updates to Ubuntu

6. Sometimes, the system may reboot and bring you back to the setup screen a second time.
In that case, when you get to the setup screen again,

    Press <ctrl><alt><F1>   (which will start a terminal session), and
    Login with username ("looma") and password ("999olive").

    Enter "**sudo oem-config-remove && sudo reboot**",
    Enter the password ("999olive") when prompted(

    The system will do a cleanup procedure for 10-12 minutes, and reboot to a usable system.

Install and Configure Looma software on the SD card

Still running on Looma:

When the Ubuntu config process completes:

1. connect to internet

2. browse to Dropbox -> Looma software

3. Using the browser, download the LoomaInstallx.y folder from Dropbox to ~/Downloads on the Looma
    The directory must contain
        "**LoomaInstall.sh**", the script that writes Looma to the SD card, and
        "**Back_End**" folder, which contains the Looma system code, and
        "**Front_End**" folder" which contains the Looma UI and content, and
        "**LoomaStartup.sh**" which is used to start Looma, and
        "**LoomaLogoWhite.png**", and
        "**VERSION X**", which labels the install package as version "X".

4. In Terminal: **cd ~/Downloads/LoomaInstallx.y**

5. In Terminal: **sudo sh LoomaInstall.sh**

    enter password "999olive" if required

Note: this step will take 10-20 minutes or more and will restart the Looma
Note: make sure you have an internet connection.
Note: also, after 1-2 minutes, enter "y" to the prompt "to continue (y/n)"
Note: LoomaInstall.sh calls apt-get to install various python system modules, copies "45.-my-devices for the Wand USB cable, sets up the scrollbar, then copies various Looma files and set permissions

6. Need to add the keyboard stuff in here (Ankit)

7. Check configuration settings (display resolution and wand presence):

    use TextEditor to edit ~/Documents/Looma/src/config.py
        under [SResolution]
            set x = 1280
            set y= 768
        under [FPGAoptions]
            if using the Wand hardware:
                set active = True   #this asks Looma code to look for an
                attached USB cable. which is required to use the Wand
            if not using the Wand hardware:
                set active = False

8. from System Settings -> Appearance use /home/looma/Pictures/LoomaLogoWhite.png to set screen background to Looma Logo (use the "scale" setting, and set the background color to dark blue)

9. You can now run Looma by double-clicking "Looma launch script.sh" on the Desktop and selecting "Run"

Updating to a new release of Looma

1. Boot into Looma on the SD card

2. Load the new version of Looma to the Downloads folder

    Note: the new version may come from Dropbox -> Looma software or USB stick

3. The Looma update is in a folder named "LoomaInstallx.y" (x.y is the version.release number)

    The directory must contain
        "**LoomaUpdate.sh**", the script that writes Looma to the SD card, and
        "**Back_End**" folder, which contains the Looma system code, and
        "**Front_End**" folder" which contains the Looma UI and content, and
        "**VERSION X**", which labels the install package as version "X".

4. In Terminal: **cd ~/Downloads/LoomaInstallx.y**

5. In Terminal: **sudo sh LoomaUpdate.sh**

    enter password "999olive" if required
    Note: this step will take 10-20 minutes or more
    Note: LoomaUpdate.sh copies new versions of Back_End and Front_End to the SD card

Installing on USB or Ubuntu computer

Install Ubuntu on bootable USB memory stick

In Ubuntu, you will need two USB sticks (at least 4 Gb; 16GB recommended). One, called USB1 in this memo, will contain a copy of Ubuntu which can be installed on other USB sticks. The second, called USB2 in this memo, is the target USB stick for booting the Looma demo on laptops.

Writing the Image onto USB1
(Only need to do this once)

Boot onto a Ubuntu computer

1. Make sure that both sticks are fully formatted as FAT32 (use Ubuntu Disk Utility)

2. In the browser, go to releases.ubuntu.com and download the appropriate Ubuntu image. Looma release 1 is only supported on Ubuntu 11.10. Choose "**ubuntu-11.10-desktop-i386.iso**". Download the Ubuntu image to your Downloads folder.

3. Plug in USB1

4. Find the utility application in Applications/Accessories called "Startup Disk Creator" and launch it

> For the "Source disc image", select the **ubuntu-11.10-desktop-i386.iso** file

> Select USB1 for the "**Disk to use**"

> Click on "**Erase Disk**"

> Leave the rest alone and click "**Make Startup Disk**"

Now to install Ubuntu on USB2
(Do this for every Ubuntu USB system you want)
----
1. Turn off computer

2. Plug in both USB1 and USB2

3. Turn on the computer but access the boot menu (usually by holding down F12)

4. Boot up to USB1

5. When the system loads, select "**Install Ubuntu**"
   a. No downloads,
   b. Don't install the 3rd party addons -> Continue
   c. Press "**Something Else**" -> Continue

6. Find USB2 in the selection panel and select the USB2's first partition (something like /dev/sdc1)

Press "**change**"

        Leave "partition size" as is
        Select "**ext4 Journaling File System**" in the "Use as" menu
        Check "**format**",
        Select "/" in the "Mount point" dropdown
        click OK

Then click on the **main drive** of USB2 (/dev/sdc)

        IMPORTANT

For the "**Device for boot loader installation**" make sure you have USB2 (e.g. **/dev/sdc**) (the drive itself, not it's partition) selected (otherwise your Ubuntu computer wont boot without the USB stick present).

Click "**Install now**"

Installation may take 15-20 minutes or faster on fast USB sticks.

Configure Ubuntu on USB stick

    1. During the Ubuntu config, you will be asked to do some setup steps, including creating an admin account:

Recommended settings:

        Name: **looma**
        Computer name: **LOOMA-USB**
        Username: **looma**
        Password: **999olive**
        Check -> "**Log in automatically**"

        Do not "import any accounts"

Install and Configure Looma software on USB stick

When the Ubuntu config process completes:

    1. Re-boot into the new USB stick (power-on, press F12. Select USB2)
    2. Using the browser connect to internet
    3. browse to Dropbox -> Looma software
    4. Download the LoomaInstallx.y folder from Dropbox to ~/Downloads on the Looma
        The directory must contain
            "**LoomaInstall.sh**", the script that writes Looma to the SD card, and
            "**Back_End**" folder, which contains the Looma system code, and
            "**Front_End**" folder" which contains the Looma UI and content
            "**LoomaStartup.sh**" which is used to start Looma, and
            "LoomaLogoWhite.png", and
            "**VERSION x.y**", which labels the install package as version "x.y".

    5. In Terminal: **cd ~/Downloads/LoomaInstallx.y**
    6. In Terminal: **sudo sh LoomaInstall.sh**

        enter password "**999olive**" if required

Note: this step will take 5-20 minutes depending on USB speed and internet speed and will restart the Looma,
Note: make sure you have an internet connection.
Note: also, there will be a prompt to continue "**y/n**" midway through
Note: LoomaInstall.sh calls apt-get to install various python system modules, copies "45.-my-devices for the Wand USB cable, sets up the scrollbar, then copies various Looma files and set permissions

7. Need to add the keyboard stuff in here (Ankit)

8. Check configuration settings (display resolution ad wand presence):

   Using Ubuntu System Settings, determine the DisplayWidth of the screen resolution of the computer you will use the USB stick on.

   use TextEditor to edit ~/Documents/Back_End/src/config.py
   under [SResolution]
   set x = 1300   Note: set this to DisplayWidth - 60
   set y= 768
   under [FPGAOptions]
   The Wand will not work on non-Looma hardware, so
   set active = False

9. from System Settings -> Appearance use /home/looma/Downloads/LoomaLogoWhite.png to set screen background to Looma Logo (use the "scale" setting, and set the background color to dark blue)

10. You can boot into the USB stick by inserting it in your computer, then powering on, then immediately pressing and holding the Boot Menu function key (usually F12, Option on MAC) and selecting the USB stick from the boot menu.

11. You can now run Looma by double-clicking "Looma launch script.sh" on the Desktop and selecting "Run"

Updating to a new release of Looma

1. Boot into the Looma USB

2. Load the new version of Looma to the Downloads folder

   Note: the new version may come from Dropbox -> Looma software or USB stick

3. The Looma update is in a folder named "LoomaInstallx.y" (x.y is the version.release number)
4.
   The directory must contain
   "**LoomaUpdate.sh**", the script that writes Looma to the SD card, and
   "**Back_End**" folder, which contains the Looma system code, and
   "**Front_End**" folder" which contains the Looma UI and content, and
   "**VERSION x.y**", which labels the install package as version "x.y".

5. In Terminal: **cd ~/Downloads/LoomaInstallx.y**

6. In Terminal: **sudo sh LoomaUpdate.sh**

       enter password "999olive" if required
       Note: this step will take 10-20 minutes or more
       Note: LoomaUpdate.sh copies new versions of Back_End and Front_End