ALEPH OBJECTS®
INCORPORATED

OPERATIONS MANUAL

Aleph Objects Operations Manual

by Aleph Objects, Inc.

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Introduction

Welcome Aboard

Open Source Hardware, Free Software

Aleph Objects, Inc. is a Loveland, Colorado, USA company that manufactures Open Source Hardware using Free Software.

This book is about the operation of the company, not about the company's products.

For more info, visit http://www.alephobjects.com.

Information Technology Downtime is Intolerable

1.1 Network

The Aleph Objects network is comprised of workstations, phones and servers at Aleph Mountain and our upstream providers. See figure 1.1 for an overview of Aleph Objects' network, figure 1.2 for a detailed network diagram, and figure 1.3 for an older network diagram.

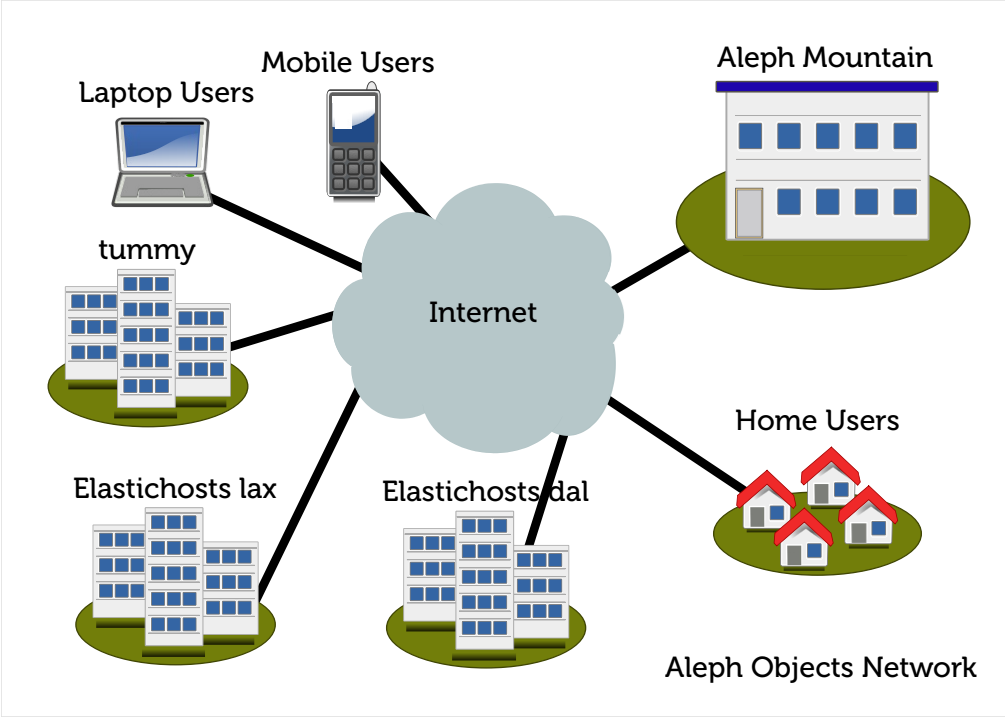


Figure 1.1: Aleph Objects Network Overview, May, 2015

1.2 Servers

In general, the servers are all running the latest stable release of Debian, Jessie, version 8, on the amd64 architecture. Some are running Wheezy because the daemon they hosts prefers it. There is some Debian Squeeze, which is being migrated. The firewalls are OpenBSD. There is one CentOS

and one Fedora machine.

All machines are backed up at least daily. Updates are run at least weekly, sooner depending on the nature of the update.

Aleph Mountain Servers

This is a list of servers and nodes that are in the Aleph Mountain building.

- `abejas.alephobjects.com` — Apache, OpenERP.
- `amfw1.alephobjects.com` — OpenBSD, PF, authpf.
- `amfw2.alephobjects.com` — OpenBSD, PF.
- `aobuild1.alephobjects.com` — Compile/build server.
- `aocluster1.alephobjects.com` — 3D Printer cluster Botqueue server.
- `aodb.alephobjects.com` — Postgres.
- `aogfs1.alephobjects.com` — Test, potential fileserver.
- `aomds1.alephobjects.com` — Test, potential db server.
- `cam.alephobjects.com` — Motion, Motioneye video camera server.
- `jebstation.alephobjects.com` — sshfs file server.
- `tunk.alephobjects.com` — apt-cacher, OpenVPN server, dnsmasq (dhcp, dns cache, tftp), MySQL, OpenLDAP.

Virtual Servers Elastichosts Los Angeles

These are machines "in the cloud".

- `aomail.alephobjects.com` — Apache, Roundcube.
- `analytics.alephobjects.com` — Apache, Piwik, MySQL.
- `cal.alephobjects.com` — Calendarserver.

- `develdrupal.lulzbot.com` — Test server. Apache, Drupal, Ubercart, MySQL.
- `develerp.alephobjects.com` — Test server. OpenERP, Postgres.
- `dodev.alephobjects.com` — Test server. Odoo, Postgres.
- `drupalsql.lulzbot.com` — MySQL.
- `drupalsqlslave.lulzbot.com` — MySQL, Offline.
- `forum.lulzbot.com` — Apache, phpBB, MySQL.
- `jabber.alephobjects.com` — ejabberd.
- `ldap.alephobjects.com` — OpenLDAP.
- `ohai-kit.alephobjects.com` — Apache, OHAI-Kit, MySQL.
- `ops.alephobjects.com` — Apache, Opsview.
- `phplist.alephobjects.com` — Apache, phplist.
- `projects.alephobjects.com` — Apache, OpenProjects, MySQL.
- `survey.alephobjects.com` — Apache, LimeSurvey.
- `thinkup.alephobjects.com` — Apache, ThinkUp, MySQL, Offline.
- `www.lulzbot.com` — Apache, Drupal, Ubercart.
- `www.alephobjects.com` — Apache, HTML. :)

Virtual Servers Elastichosts Dallas

These are machines “in the cloud”.

- `download.alephobjects.com` — Apache, vsftpd, rsyncd.
- `fone.alephobjects.com` — Asterisk.
- `mail.alephobjects.com` — Postfix, dovecot, spamassassin, MySQL.
- `wiki.alephobjects.com` — Test server. Apache, Mediawiki, MySQL.

Tummy Servers

The CentOS server at Tummy.

- `belly1.alephobjects.com` — Tummy Backup server.

1.3 Public Services

Public URLs

- https://www.alephobjects.com — Main Aleph Objects website.
- https://www.lulzbot.com — Main LulzBot website.
- https://devel.alephobjects.com — Public development files for Aleph Objects.
- https://devel.lulzbot.com — Public development files for LulzBot.
- https://download.alephobjects.com — Aleph Objects downloads.
- https://download.lulzbot.com — Final release source code for LulzBot products.
- https://forum.lulzbot.com — User discussion forum for LulzBot.
- https://ohai-kit.alephobjects.com — Visual work instructions for assembling products and user support.
- https://phplist.alephobjects.com — Newletter mailing list.
- https://survey.alephobjects.com — Surveys.
- rsync://rsync.alephobjects.com — Rsync file server of download and development archives.

1.4 Employee Services

Employee URLs

These are URLs that are for Aleph Objects employees.

- https://analytics.alephobjects.com — Website analytics.
- https://aomail.alephobjects.com — Webmail server.
- https://belly1.alephobjects.com — Backup server.
- https://erp.alephobjects.com — ERP server.
- https://ops.alephobjects.com — Network monitoring.
- https://projects.alephobjects.com — Project tracking.
- https://wiki.alephobjects.com — Development wiki.

1.5 Server Daemons

These are the server daemons used to drive the enterprise.

ACPID

Monitors ACPI events. Runs on nearly all servers and workstations.

Apache

Web daemon, used on many servers.

Asterisk

Telephone server. DIDs (incoming), termination (outgoing), forwarding of calls, conferencing, voicemail, XMPP.

Backups

tummy-backup backup server.

BIND

Nameserver used for caching.

botqueue

Print queue manager.

buildd

Build service for compiling Debian packages.

Calendar Server

Calendar (CalDAV) and contacts (CardDAV) server. CalDAV is used with mobile phones and icedove. No group calendars. CardDav is unused. Uses python-twisted.

Needs to be connected to or replaced by LDAP.

cron

Scheduled triggering of applications (cf. at).

DHCP

dnsmasq DHCP for 350+ hosts.

DNS

dnsmasq DNS caching.

Dovecot

IMAP mail services. Employees check their mail via the IMAP server, typically using icedove or aomail (roundcube using IMAP).

Drupal

Main LulzBot site.

Used with UberCart. Migrating to Drupal Commerce.

exim

SMTP outgoing mail server, used by default in Debian. Used by some servers.

Firewalls

OpenBSD's PF, authpf, Linux's iptables.

DHCP

dnsmasq DHCP for 350+ hosts.

Dovecot

Employee IMAP incoming mail server.

fail2ban

Block out scripts, bots, crackers, and network noise on servers.

Init

Init, woo!

md RAID

Linux RAID, md, mdadm.

Mediawiki

Test/development server for customer support.

memcached

Used to speed up websites, such as Drupal.

Motion

Motion detection for video camera system. Cameras are aggregated using motionEye.

Munin

Network graphing.

MySQL

Used on many servers for a database.

NTP

Syncs time on every server and workstation.

Odoo

Development ERP server, next generation of OpenERP.

OpenERP

ERP server.

OpenLDAP

LDAP server. Running, but not actively used. Daemon is slapd.

OpenSSH

Used to control every server, create encrypted tunnels (autossh), mount filesystems (sshfs), and remote file transfer (sftp).

OpenVPN

Connects external resources, such as employee mobiles and laptops, to the internal network.

Opsview

Network monitoring (cf. nagios).

Pentaho

Report server, connects to ERP.

Piwik

Application to analyze web site traffic.
Webalizer is used occassionally.

phpBB

User discussion forum.

Postfix

Main SMTP outgoing mail server.

Postgres

Database server.

rsync

File server.

rsyslog

Logging on every server and workstation.

sendmail

SMTP outgoing mail server, used by default in OpenBSD.

spamassassin

Spam filtering of email.

sshfs

Main internal fileserver.

systemd

System bootup and process manager.

TFTP

Network install server.

vsftpd

vsftpd FTP server for public facing download and devel servers.

xinetd

xinetd on Debian systems. inetd on OpenBSD. Misc network utils.

XMPP/jabber

ejabberd, Erlang XMPP (jabber) server.

1.6 3D Printer Cluster

There are 144 printers in the 3D printing cluster. One hundred thirty five are in the main cluster room, nine in the adjoining sample room. The cluster is a mix of LulzBot TAZ and LulzBot Minis.

Each printer has a Beaglebone Black (BBB) connected to it via USB. The BBB is running Debian (armhf port) and Botqueue. There is a separate Botqueue server, also running Debian, that the BBBs connect to, to get print jobs.

The printers are organized in sets, or "pods", typically of nine. Each cabinet holds nine machines, three wide by three high. Each pod is assigned a letter. In the main cluster room, this is A through O. In the sample room, it is pods Y and Z which have five and four machines, respectively. Machines are named of the format: bbb-a1, bbb-a2, through to bbb-a9 for the first pod. Then the next pod starts bbb-b1, through to the end: bbb-z4.

List of printers:

- `bbb-a1.alephobjects.com` through `bbb-o9.alephobjects.com` — LulzBot TAZ.
- `bbb-y1.alephobjects.com` through `bbb-z4.alephobjects.com` — LulzBot Mini.

Links to upstream:

- BeagleBone Black
- BotQueue
- Debian armhf

1.7 Workstation Software

All workstations run Debian stable, version 8, codename Jessie.

Graphical User Interface (GUI) Applications

arandr

ARandR is a visual front end for XRandR 1.2/1.3 (per display options), which provides full control over positioning, saving and loading to/from shell scripts and easy integration with other applications.

arduino

Arduino is an open-source electronics prototyping platform based on flexible, easy-to-use hardware and software. It's intended for artists, designers, hobbyists, and anyone interested in creating interactive objects or environments.

This package will install the integrated development environment that allows for program writing, code verfication, compiling, and uploading to the Arduino development board. Libraries and example code will also be installed.

audacity

Audacity is a multi-track audio editor for Linux/Unix, MacOS and Windows. It is designed for easy recording, playing and editing of digital audio. Audacity features digital effects and spectrum analysis tools. Editing is very fast and provides unlimited undo/redo.

Supported file formats include Ogg Vorbis, MP2, MP3, WAV, AIFF, and AU.

blender

Blender is an integrated 3d suite for modelling, animation, rendering, post-production, interactive creation and playback (games). Blender has its own particular user interface, which is implemented entirely in OpenGL and designed with speed in mind. Python bindings are available for scripting; import/export features for popular file formats like 3D Studio and Wavefront Obj are implemented as scripts by the community. Stills, animations, models for games or other third party engines and interactive content in the form of a standalone binary are common products of Blender use.

chromium

Web browser that aims to build a safer, faster, and more stable internet browsing experience.

This package contains the web browser component.

cura

aimed at Open Hardware 3D Printers. Cura is free software paid for and maintained by Ultimaker. Cura LulzBot Edition been modified and maintained by Aleph Objects, Inc. for use with LulzBot 3D printers.

darktable

Darktable manages your digital negatives in a database and lets you view them through a zoomable lighttable. it also enables you to develop raw images and enhance them.

It tries to fill the gap between the many excellent existing free raw converters and image management tools (such as ufraw or f-spot). The user interface is built around efficient caching of image metadata and mipmaps, all stored in a database. the user will always be able to interact, even if the full resolution image is not yet loaded.

All editing is fully non-destructive and only operates on cached image buffers for display. the full image is only converted during export. The frontend is written in gtk+/cairo, the database uses sqlite3, raw image loading is done using libraw, high-dynamic range, and standard image formats such as jpeg are also supported. The core operates completely on floating point values, so darktable can not only be used for photography but also for scientifically acquired images or output of renderers (high dynamic range).

dia

Dia is an editor for diagrams, graphs, charts etc. There is support for UML static structure diagrams (class diagrams), Entity-Relationship diagrams, network diagrams and much more. Diagrams can be exported to postscript and many other formats.

epiphany-browser

Epiphany is a simple yet powerful GNOME web browser targeted at non-technical users. Its principles are simplicity and standards compliance.

Simplicity is achieved by a well designed user interface and reliance on external applications for performing external tasks (such as reading email).

Simplicity does not mean less features; Epiphany has everything a modern web browser is expected to have.

Standards compliance is achieved on the HTML side by using the WebKitGTK+ rendering engine (which is based on the engine used by Apple Safari and Google Chrome); and on the user interface side by closely following the GNOME Human Interface Guidelines (HIG) and by close integration with the GNOME desktop.

evince

Evince is a simple multi-page document viewer. It can display and print PostScript (PS), Encapsulated PostScript (EPS), DjVu, DVI, Portable Document Format (PDF) and XML Paper Specification (XPS) files. When supported by the document, it also allows searching for text, copying text to the clipboard, hypertext navigation, and table-of-contents bookmarks.

file-roller

File-roller is an archive manager for the GNOME environment. It allows you to:

* Create and modify archives. * View the content of an archive. * View a file contained in an archive. * Extract files from the archive.

File-roller supports the following formats: * Tar (.tar) archives, including those compressed with gzip (.tar.gz, tgz), bzip (.tar.bz, tbz), bzip2 (.tar.bz2, tbz2), compress (.tar.Z, taz), lzip (.tar.lz, tlz), lzop (.tar.lzo, tzo), lzma (.tar.lzma) and xz (.tar.xz) * Zip archives (.zip) * Jar archives (.jar, ear, war) * 7z archives (.7z) * iso9660 CD images (.iso) * Lha archives (.lzh) * Archiver archives (.ar) * Comic book archives (.cbz) * Single files compressed with gzip (.gz), bzip (.bz), bzip2 (.bz2), compress (.Z), lzip (.lz), lzop (.lzo), lzma (.lzma) and xz (.xz)

File-roller can extract following formats: * Cabinet archives (.cab) * Debian binary packages (.deb) * Xar archives (.xar)

File-roller doesn't perform archive operations by itself, but relies on standard tools for this.

freecad

FreeCAD is an Open Source CAx RAD based on OpenCasCade, Qt and Python. It features some key concepts like macro recording, workbenches, ability to run as a server and dynamically loadable application extensions and it is designed to be platform independent.

Currently, FreeCAD can import and display CAD models in IGES, STEP, and BRep formats and meshes in STL, BMS, AST and Wavefront OBJ formats. Editing and modeling features are currently somewhat limited.

galculator

galculator is a scientific calculator. It supports different number bases (DEC/HEX/OCT/BIN) and angles bases (DEG/RAD/GRAD) and features a wide range of mathematical (basic arithmetic operations, trigonometric functions, etc) and other useful functions (memory, etc) at the moment. galculator can be used in algebraic mode as well as in Reverse Polish Notation (RPN).

gedit

gedit is a text editor which supports most standard editor features, extending this basic functionality with other features not usually found in simple text editors. gedit is a graphical application which supports editing multiple text files in one window (known sometimes as tabs or MDI).

gedit fully supports international text through its use of the Unicode UTF-8 encoding in edited files. Its core feature set includes syntax highlighting of source code, auto indentation and printing and print preview support.

gedit is also extensible through its plugin system, which currently includes support for spell checking, comparing files, viewing CVS ChangeLogs, and adjusting indentation levels.

geeqie

Geeqie is a browser for graphics files offering single click viewing of your graphics files. It includes thumbnail view, zoom, filtering features and

external editor support.

gimp

GIMP is an advanced picture editor. You can use it to edit, enhance, and retouch photos and scans, create drawings, and make your own images. It has a large collection of professional-level editing tools and filters, similar to the ones you might find in Photoshop. Numerous fine-control settings and features like layers, paths, masks, and scripting give you total control over your images.

Many image file formats are supported, including JPEG, Photoshop (.psd), and Paint Shop Pro (.psp) files. It can also be used to scan and print photos.

To open files remotely (like over HTTP), install the gvfs-backends package.

To use a MIDI device (like a musical keyboard) as an input controller in GIMP, install libasound2 and read the how-to at /usr/share/doc/gimp/README.MIDI

glabels

gLabels is a lightweight program for creating labels, barcodes, business cards and media covers for the GNOME desktop environment. It is designed to work with various laser/ink-jet peel-off label and business card sheets that you'll find at most office supply stores.

gLabels also supports mail merge from sources such as CSV files, vCards and Evolution data servers.

gnome-color-manager

GNOME Color Manager is a set of graphical utilities for color management to be used in the GNOME desktop. With the help of ArgyllCMS, it can create and apply display ICC color profiles.

gnome-terminal

GNOME Terminal is a terminal emulation application that you can use to perform the following actions: - Access a UNIX shell in the GNOME

environment. - Run any application that is designed to run on VT102, VT220, and xterm terminals.

GNOME Terminal features the ability to use multiple terminals in a single window (tabs) and profiles support.

gscan2pdf

Only five clicks are required to scan several pages and then save all or a selection as a PDF or DjVu file, including metadata if required.

gscan2pdf can control regular or sheet-fed (ADF) scanners with SANE via libsane-perl, scanimage or scanadf, and can scan multiple pages at once. It presents a thumbnail view of scanned pages, and permits simple operations such as cropping, rotating and deleting pages.

OCR can be used to recognise text in the scans, and the output embedded in the PDF or DjVu.

PDF conversion is done by PDF::API2.

The resulting document may be saved as a PDF, DjVu, multipage TIFF file, or single page image file.

icedove

Icedove is an unbranded Thunderbird mail client suitable for free distribution. It supports different mail accounts (POP, IMAP, Gmail), has an integrated learning Spam filter, and offers easy organization of mails with tagging and virtual folders. Also, more features can be added by installing extensions.

The goal of Icedove is to produce a cross platform standalone mail application using the XUL user interface language.

iceweasel

Iceweasel is Firefox, rebranded. It is a powerful, extensible web browser with support for modern web application technologies.

inkscape

Inkscape is an illustration editor which has everything needed to create professional-quality computer art. You can use it to make diagrams and

illustrations, technical drawings, web graphics, clip art, icons and logos. A collection of hands-on tutorials show you how to combine lines, shapes and text of different types and styles to build up a picture.

A selection of powerful vector graphics editing tools comes as standard. There is excellent support for paths, gradients, layers, alpha transparency and text flow control. An extensive library of filters allow you to apply realistic effects and extensions allow you to work with bitmaps, barcodes and printing marks, amongst other things.

Most of the common vector formats are supported, including PDF, Adobe Illustrator and AutoCAD files, and it has unrivalled support for the SVG web graphics standard.

istanbul

Istanbul is a desktop session recorder for the Free Desktop. It records your session into an Ogg Theora video file. To start the recording, you click on its icon in the notification area. To stop you click its icon again. It can make a screencast of the full screen or just of an area of the screen. It is even capable of recording audio from the default input channel.

It works on GNOME, KDE, Xfce and others.

k3b

K3b provides a comfortable user interface to perform most CD/DVD burning tasks. While the experienced user can take influence in all steps of the burning process the beginner may find comfort in the automatic settings and the reasonable k3b defaults which allow a quick start.

kdenlive

Kdenlive is a non-linear video editing suite, which supports DV, HDV and much more formats. Its main features are: * Guides and marker for organizing timelines * Copy and paste support for clips, effects and transitions * Real time changes * FireWire and Video4Linux capture * Screen grabbing * Exporting to any by FFmpeg supported format

kicad

Kicad is a suite of programs for the creation of printed circuit boards. It includes a schematic editor, a PCB layout tool, support tools and a 3D viewer to display a finished and fully populated PCB.

Kicad is made up of 5 main components:

* kicad - project manager * eeschema - schematic editor * pcbnew - PCB editor * gerbview - GERBER viewer * cvpcb - footprint selector for components

Libraries: * Both eeschema and pcbnew have library managers and editors for their components and footprints * You can easily create, edit, delete and exchange library items * Documentation files can be associated with components, footprints and key words, allowing a fast search by function * Very large libraries are available for schematic components and footprints * Most components have corresponding 3D models

klavaro

Klavaro is a simple tutor to teach correct typing, almost independently of language and very flexible regarding to new or unknown keyboard layouts.

Its key features are: * Internationalization * Ready to use keyboard layouts * Keyboard layout editor * Basic course * Adaptability, velocity and fluidness exercises * Progress charts.

libreoffice

LibreOffice is a full-featured office productivity suite that provides a near drop-in replacement for Microsoft(R) Office.

This metapackage installs all components of libreoffice: * libreoffice-writer: Word processor * libreoffice-calc: Spreadsheet * libreoffice-impress: Presentation * libreoffice-draw: Drawing * libreoffice-base: Database * libreoffice-math: Equation editor

You can extend the functionality of LibreOffice by installing these packages: * hunspell-*/myspell-*: Hunspell/Myspell dictionaries for use with LibreOffice * libreoffice-l10n-*: UI interface translation * libreoffice-help-*: User help * mythes-*: Thesauri for the use with LibreOffice * hyphen-*: Hyphenation patterns for LibreOffice * libreoffice-gtk: Gtk UI Plugin, GNOME File Picker support, QuickStarter for GNOMEs notification are *

libreoffice-gnome: GIO, GConf backend * libreoffice-kde: KDE UI Plugin and KDE File Picker support * unixodbc: ODBC database support * cups-bsd: Allows LibreOffice to detect your CUPS printer queues automatically * libsane: Use your sane-supported scanner with LibreOffice * libxrender1: Speed up display by using Xrender library * libgl1: OpenGL support * openclipart-libreoffice: Open Clip Art Gallery with LibreOffice index files * iceweasel | firefox | icedove | thunderbird | iceape-browser | mozilla-browser: Mozilla profile with Certificates needed for XML Security... * openjdk-6-jre | gcj-jre | java5-runtime: Java Runtime Environment for use with LibreOffice * pstoedit / imagemagick: helper tools for EPS thumbnails * gstreamer0.10-plugins-*: GStreamer plugins for use with LibreOffices media backend * libpaper-utils: papersize detection support via paperconf * bluez: Bluetooth support for Impress (slideshow remote control

meshlab

MeshLab is an open source, portable, and extendible system for the processing and editing of unstructured 3D triangular meshes. The system is aimed to help the processing of the typical not-so-small unstructured models arising in 3D scanning, providing a set of tools for editing, cleaning, healing, inspecting, rendering and converting this kind of meshes.

Meshlab can read files in these formats: PLY, STL, OFF, OBJ, 3DS, COLLADA and PTX. It can write PLY, STL, OFF, OBJ, 3DS, COLLADA, VRML, and DXF.

nautilus

Nautilus is the official file manager for the GNOME desktop. It allows to browse directories, preview files and launch applications associated with them. It is also responsible for handling the icons on the GNOME desktop. It works on local and remote filesystems.

Several icon themes and components for viewing different kinds of files are available in separate packages.

openscad

OpenSCAD is a software for creating solid 3D CAD objects. It focuses on CAD aspects rather than artistic ones.

OpenSCAD is not an interactive modeller. Instead it is something like a 3D-compiler that reads in a script file that describes the object and renders the 3D model from this script. This gives the designer full control over the modelling process and enables him to easily change any step in the modelling process or make designes that are defined by configurable parameters.

openshot

OpenShot Video Editor is a free, open-source, non-linear video editor. It can create and edit videos and movies using many popular video, audio, and image formats. Create videos for YouTube, Flickr, Vimeo, Metacafe, iPod, Xbox, and many more common formats!

Features include: * Multiple tracks (layers) * Compositing, image overlays, and watermarks * Support for image sequences (rotoscoping) * Key-frame animation * Video and audio effects (chroma-key) * Transitions (lumas and masks) * 3D animation (titles and physics simulations) * Chroma key (green screen and blue screen) * Transcode (convert video encodings) * Upload videos (YouTube and Vimeo supported)

pavucontrol

PulseAudio Volume Control (pavucontrol) is a simple GTK+ based volume control tool (mixer) for the PulseAudio sound server. In contrast to classic mixer tools this one allows you to control both the volume of hardware devices and of each playback stream separately. It also allows you to redirect a playback stream to another output device without interrupting playback.

pcmanfm

PCMan File Manager is a GTK+ based file manager, featuring:

* Extremly fast and lightweight * Can be started in one second on normal machine * Tabbed browsing (similar to Firefox) * Drag and Drop support * Files can be dragged among tabs * Load large directories in reasonable time * File association support (Default application) * Basic thumbnail support * Bookmarks support * Handles non-UTF-8 encoded filenames correctly * Provide icon view and detailed list view * Standard

compliant (Follows FreeDesktop.org) * Clean and user-friendly interface (GTK+ 2) * Support GVFS for auto-mount handling on removable devices

pidgin

Pidgin is a graphical, modular instant messaging client capable of using multiple networks at once. Currently supported are: AIM/ICQ, Yahoo!, MSN, IRC, Jabber/XMPP/Google Talk, Napster, Zephyr, Gadu-Gadu, Bonjour, Groupwise, Sametime, SIMPLE, MySpaceIM, and MXit.

Some extra packages are suggested to use increased functionality: * libsqlite3-0: - To use Contact Availability Prediction plugin

rxvt-unicode

rxvt-unicode is a modern, Unicode-aware color xterm replacement that uses significantly less memory than a conventional xterm and many other Unicode supporting terminal emulators.

It supports using multiple fonts at the same time, including Xft fonts, and client-server technology to reduce memory consumption when using multiple windows.

scribus

Scribus is an open source desktop page layout program with the aim of producing commercial grade output in PDF and Postscript, primarily, though not exclusively for Linux.

Scribus can be used for many tasks; from brochure design to newspapers, magazines, newsletters and posters to technical documentation. It has sophisticated page layout features like precision placing and rotating of text and/or images on a page, manual kerning of type, bezier curves polygons, precision placement of objects, layering with RGB and CMYK custom colors. The Scribus document file format is XML-based. Unlike proprietary binary file formats, even damaged documents, can be recovered with a simple text editor.

Scribus supports professional DTP features, such as CMYK color and a color management system to soft proof images for high quality color printing, flexible PDF creation options, Encapsulated PostScript import/export and creation of 4 color separations, import of EPS/PS and SVG as native

vector graphics, Unicode text including right to left scripts such as Arabic and Hebrew via freetype. Graphic formats which can be placed in Scribus as images include PDF, Encapsulated Post Script (eps), TIFF, JPEG, PNG and XPixMap(xpm), and any bitmap type supported by QT4.

Printing, PDF and SVG creation are done via custom driver libraries and plug-ins, giving Scribus inventive features: the abilities to include presentation effects with PDF output, fully scriptable interactive PDF forms, SVG vector file output. The internal printer drivers fully support Level 2 and Level 3/PDF 1.4 postscript features including transparency and font embedding.

When run from KDE, Drag and Drop, for example from desktop to the canvas, is enabled. There is easy to use drag and drop scrapbook for frequently used items such as text blocks, pictures and custom shaped frames.

If you need to use the render frame install the texlive-latex-recommended (suggested).

simple-scan

Simple Scan is an easy-to-use application, designed to let users connect their scanner and quickly have the image/document in an appropriate format.

Simple Scan is basically a frontend for SANE - which is the same backend as XSANE uses. This means that all existing scanners will work and the interface is well tested.

slic3r

Slic3r converts digital 3D models into printing instructions (G-code) for your 3D printer. It cuts the model into horizontal slices (layers), generates toolpaths to fill them and calculates the amount of material to be extruded.

Slic3r supports input in the STL, AMF and OBJ formats, and can output G-code for several series of 3D printers, including RepRap, Ultimaker, Makerbot, as well as SVG files for DLP printers.

It can be used with a graphical interface, or in batch mode via the command-line.

system-config-printer

System-config-printer is a GUI written in Python using GTK+ to configure a CUPS server. Its primary use is to configure the printing system on the local host, but can also be used to setup a remote printer.

In terms of features, it aims to be as complete as the CUPS web administration tool, while being integrated to the desktop.

texmaker

Texmaker is a clean, highly configurable LaTeX editor with good hot key support and extensive LaTeX documentation. Texmaker integrates many tools needed to develop documents with LaTeX, in just one application. It has some nice features such as syntax highlighting, insertion of 370 mathematical symbols with only one click, and "structure view" of the document for easier navigation.

texstudio

TeXstudio is a program based on Texmaker, which integrates many tools needed to develop documents with LaTeX in just one application. Using its editor you can write your documents with the help of interactive spell checking, syntax highlighting, code completion and more...

texworks

An environment for authoring TeX (LaTeX, ConTeXt, etc) documents, with a Unicode-based, TeX-aware editor, integrated PDF viewer, and a clean, simple interface accessible to casual and non-technical users.

TeXworks is inspired by Dick Koch's award-winning TeXShop program for Mac OS X, which has made quality typesetting through TeX accessible to a wider community of users, without a technical or intimidating face. The goal of TeXworks is to deliver a similarly integrated, easy-to-use environment for users on other platforms, especially GNU/Linux and Windows.

thunar

Thunar is the file manager designed to be the default file manager for the Xfce desktop environment. It has been designed to be fast and easy to use.

Also included is an Xfce panel plugin which can manage the desktop trash.

vlc

VLC is the VideoLAN project's media player. It plays MPEG, MPEG-2, MPEG-4, DivX, MOV, WMV, QuickTime, WebM, FLAC, MP3, Ogg/Vorbis files, DVDs, VCDs, podcasts, and multimedia streams from various network sources.

VLC can also be used as a streaming server that duplicates the stream it reads and multicasts them through the network to other clients, or serves them through HTTP.

VLC has support for on-the-fly transcoding of audio and video formats, either for broadcasting purposes or for movie format transformations. Support for most output methods is provided by this package, but features can be added by installing additional audio plugins (vlc-plugin-sdl) or video plugins (vlc-plugin-sdl).

x11vnc

x11vnc allows one to view remotely and interact with real X displays (i.e. a display corresponding to a physical monitor, keyboard, and mouse) with any VNC viewer. It has built-in SSL encryption and authentication, UNIX account and password support, server-side scaling, single port HTTPS and VNC, mDNS service advertising, and TightVNC and UltraVNC file-transfer.

xfce4-appfinder

This is an application finder for the Xfce4 Desktop Environment. It will search for installed applications on your system.

xfce4-mixer

This is the frontend for mixer settings delivered together with the Xfce4 desktop environment. It does the same jobs other mixer frontends do but is integrated into the Xfce4 desktop as a plugin for the Xfce4 main panel.

It uses GStreamer as a backend.

xfce4-screenshooter

Screenshooter is an utility for the Xfce Desktop Environment. It can take desktop, rectangles or selected window screenshots, and you can bind it to your "Print Screen" key. A panel plugin is provided too.

xfce4-settings

xfce4-settings is the Xfce settings manager front-end. It comes with several different components for configuring application-independent settings inside xfconf. It contains multiple tools: - xfce4-settings-manager (which replaces the old mcs settings manager), which executes the various (provided) settings dialogs - xfce4-settings-editor, a tool for editing ALL settings within xfconf, the graphical counterpart of xfconf-query. - xfsettingsd, a daemon for exporting XSettings to applications, and providing special features like keyboard shortcuts, AccessX notification and update of keyboard and mouse-pointer data.

xfdesktop4

xfdesktop4 sets the background image, provides a right-click menu to launch applications and can optionally show files (including application launchers) or iconified windows. It includes gradient support for background color, saturation support for background image, real multiscreen and xinerama support.

xournal

Xournal is a GTK+ application for notetaking, sketching and keeping a journal using a stylus. It can also be used to add annotations to PDF files.

xscreensaver

XScreenSaver is a modular screen saver and locker for X11, containing more than 200 screen savers.

This package includes the bare minimum needed to blank and lock your screen. Install this package if you prefer xscreensaver to gnome-screensaver. If you prefer gnome-screensaver, you don't need to install this package.

The graphical display modes are in the xscreensaver-data, xscreensaver-data-extra, xscreensaver-gl and xscreensaver-gl-extra packages.

xterm

xterm is a terminal emulator for the X Window System. It provides DEC VT102 and Tektronix 4014 compatible terminals for programs that cannot use the window system directly. This version implements ISO/ANSI colors and most of the control sequences used by DEC VT220 terminals.

This package provides four commands: xterm, which is the traditional terminal emulator; uxterm, which is a wrapper around xterm that is intelligent about locale settings (especially those which use the UTF-8 character encoding), but which requires the luit program from the x11-utils package; koi8rxterm, a wrapper similar to uxterm for locales that use the KOI8-R character set; and lxterm, a simple wrapper that chooses which of the previous commands to execute based on the user's locale settings.

A complete list of control sequences supported by the X terminal emulator is provided in /usr/share/doc/xterm.

The xterm program uses bitmap images provided by the xbitmaps package.

Those interested in using koi8rxterm will likely want to install the xfonts-cyrillic package as well.

yelp

Yelp is the help browser for the GNOME desktop. Yelp provides a simple graphical interface for viewing DocBook, Mallard, HTML, man, and info formatted documentation.

Workstation Daemons

- cron
- cups
- dhcp client
- gdm
- ntp

1.8 Telephones

Hard Phones

- Grandstream GXV3140
- Grandstream GXV3175
- Grandstream GXV3275
- Nexus 5

Cell Phones

- Browser
- Calendar
- Camera
- ChatSecure
- ConnectBot
- Document Viewer
- Email
- F-Droid
- File Manager

- Firefox
- Gallery
- K-9 Mail
- Messaging
- Movie Studio
- OpenVPN for Android
- OmniROM
- People
- Phone
- Settings
- Terminal Emulator
- VI IMproved Touch
- VLC

1.9 Network Diagrams

See figure 1.1 for an overview of Aleph Objects' network from May, 2015. See figure 1.2 for a detailed Aleph Objects network diagram from 2015-05. See figure 1.3 for an older Aleph Objects network diagram from February, 2014.

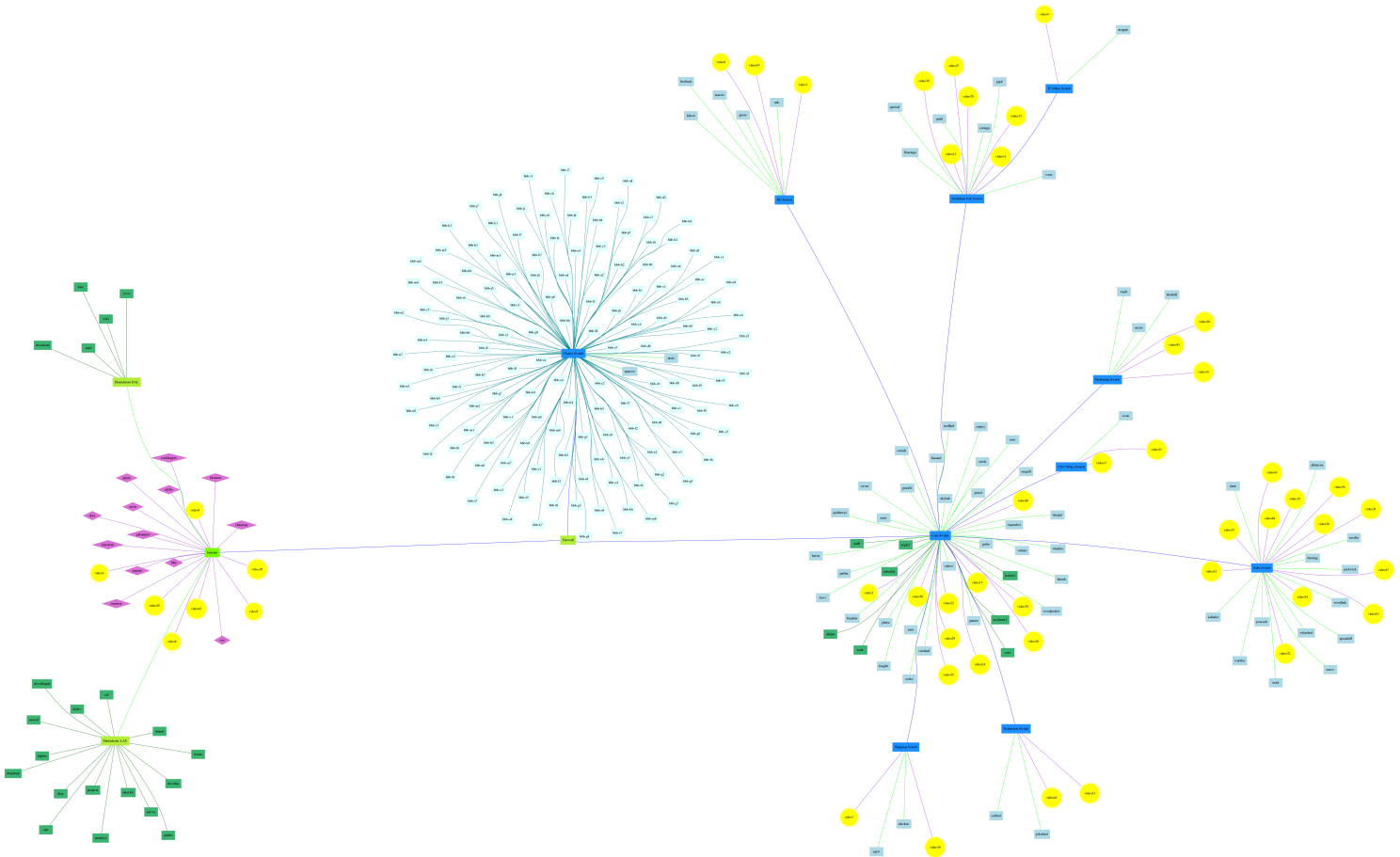


Figure 1.2: Aleph Objects Network Detail, May 2015

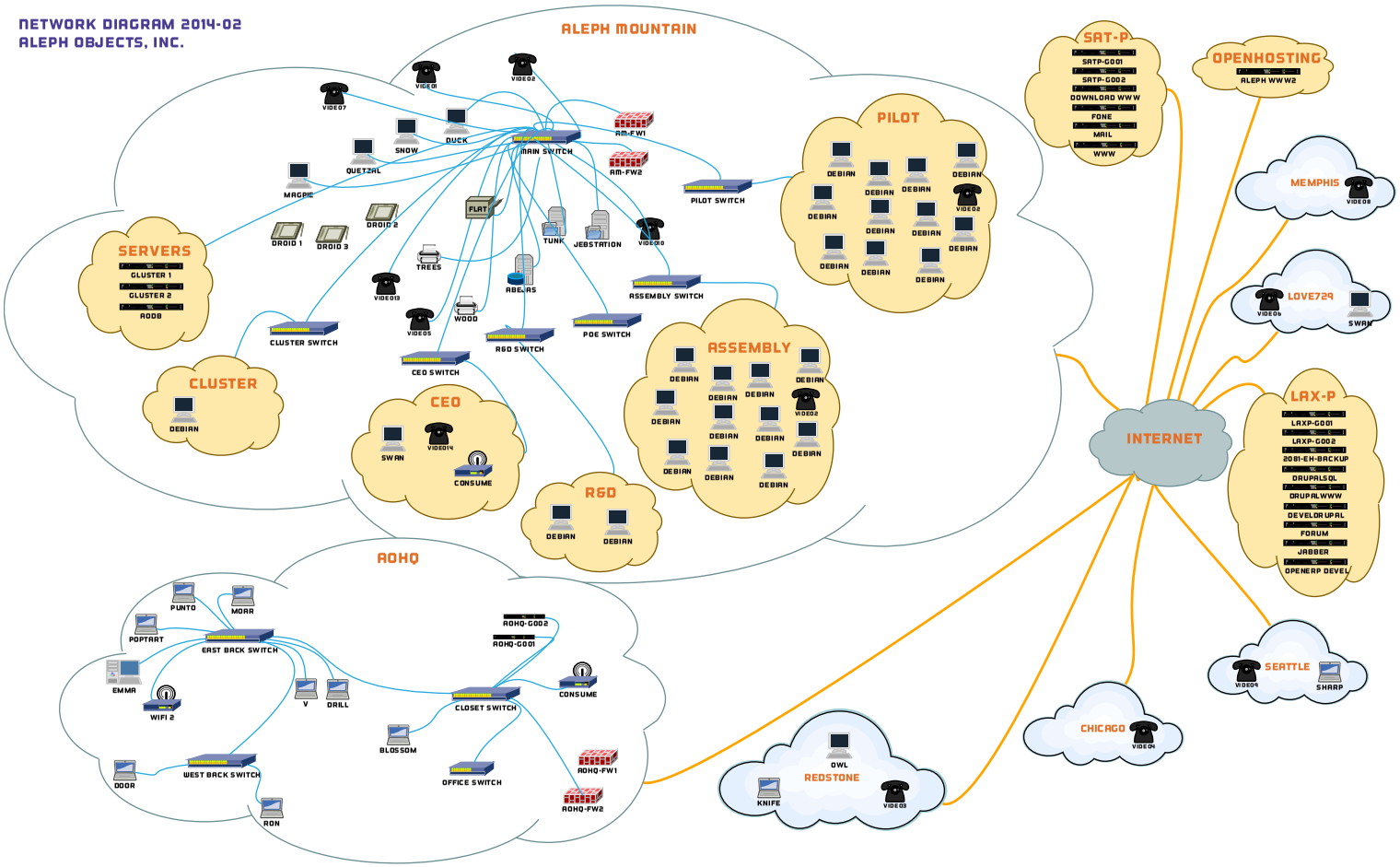


Figure 1.3: Aleph Objects Network Diagram, February 2014

Customer Relations Management

Phone, Email, Forum, Chat

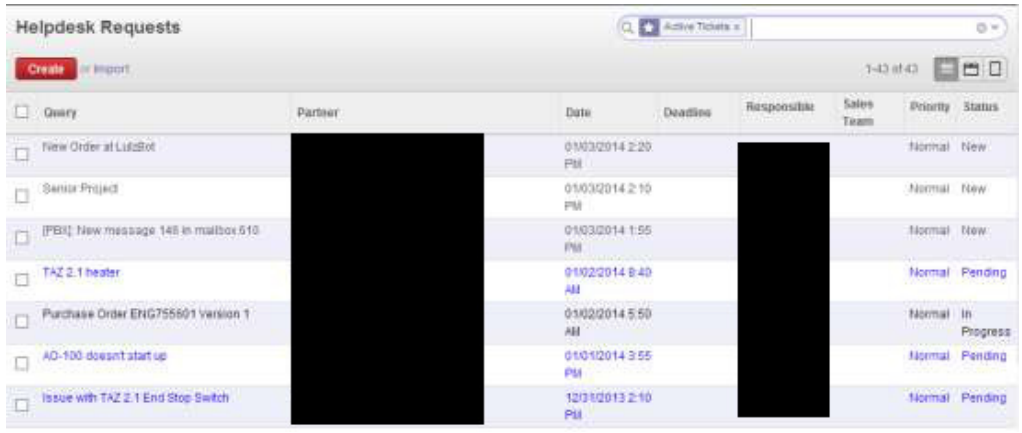
2.1 Helpdesk

- Customer Support Representative (CSR): The front-line person who deals with the customer calls or emails.

Requests Through Support Email

Emails to support@alephobjects.com are directly registered in OpenERP as Helpdesk request. The process to handle these is as follows:

1. Customer support person logs into OpenERP and opens the Helpdesk requests list by going to Sales/After-Sale Services/Helpdesk and Support.
2. By default, only the active items (new, pending, in progress) are shown in the list.



3. Additional filters can be applied using the search / filter feature in OpenERP.
4. Open the Helpdesk request (or ticket hereafter).
5. Review the request and take appropriate action
    a) If the request is for information or a simple issue that can be resolved by the customer support person, do so.
        i. Assign self as “Responsible” person on the ticket.
        ii. Record the resolution in the “send a message”

iii. Email with the resolution will be sent to the requester
iv. Set Reference field to "Product" and select a product (typically a printer – e.g. TAZ Printer 2.0)
v. Click on "Open" to set the state to "In Progress" and save the ticket.

b) If the request needs to be worked upon before resolution, assign the request to appropriate person for resolution.
i. Assign the person
ii. Set category of the problem
iii. Set priority for the problem resolution
iv. Set Reference field to "Product" and select a product (typically a printer – e.g. TAZ Printer 2.0)
v. Click on "Open" to set the state to "In Progress" and save the ticket.
vi. If required, send an email to the reporter by using "Send a message" from the chatter area (the area below the Helpdesk request form).
vii. Use "Log a note" if you wish to record your observations / queries to the responsible person working on the ticket. This information will be retained internally and will not be emailed to the reporter. Note: If the request is based on an order (sale order, delivery order), then use the Reference2 field to pick the sale order / delivery order and select the sale order for the customer reporting the problem.

6. Reviewing In-Progress/Pending items: Periodically review these tickets and provide updates to the customer by using "Send a message."

7. Closing tickets: Once the resolution is accepted by the customer (you may not hear the success of the resolution from the customer always – so closing resolved cases after a gestation period is OK). If the customer responds to a resolution on a closed ticket, the ticket will be reopened for your review automatically allowing the ticket to be reopened or closed/cancelled.

8. Cancelling tickets: If the ticket is a spam or made for testing purposes, it can be cancelled by clicking on the Cancel Case button.

Requests through Phone / Direct Email

The only difference in this is that the Helpdesk request (ticket) does not exist in the system and so it must be created.

1. On receiving a phone call from a customer, customer support person logs into OpenERP and opens the Helpdesk requests list by going to Sales/After-Sale Services/Helpdesk and Support.

2. Click on Create button to create a new request.

3. Select the partner from the list of available partners. If the call is from a person not registered as a customer with Aleph Objects, record the information in the notes section – name, phone number, address and other pertinent details of the customer.

4. Record the email address of the caller.

5. Write a brief summary header in the "Query" field.

6. Based on your assessment of the call, set the priority of the call and the category.

7. Continue processing the ticket following the procedure outlined for the automated email (to support@alephobjects.com) ticket. Note: Process Helpdesk requests in personal emails in the same manner as a call.

2.2 Using the Phones

See: `shared-j/Documents/phone_directory.txt` for the most current company phone directory.

Transfer call

1. Ask the caller if you can transfer them.

2. Put the call on hold: *2

3. Dial internal extension number you want to transfer to.

4. Explain transfer when internal callee answers.
5. Hang up, and the call will automatically transfer.

2.3 Forum

Answer questions and contribute information at our LulzBot forum: `http://forum.lulzbot.com/`

2.4 RMA

Return Merchanise Authorization. Through OpenERP.

2.5 Chat

Chat server at `jabber.alephobjects.com`

Human Resources

Us

3.1 Professional Employment Organizations (PEO)

Insperity.

3.2 Employee Benefits

See employee handbook at `http://esc.insperitiy.com`

3.3 Logging hours in OpenERP

For hourly Insperity employees:

OpenERP —> Human Resources —> Attendences —> Attendences

For hourly Kelly employees, track your hours on Kelly's website.

3.4 Requesting time off in OpenERP

OpenERP —> Human Resources —> Leaves —> Leave Requests

3.5 Recruitment / Interviewing

Kelly, Insperity, JobZology.

3.6 Performance

Insperity.

3.7 Training

Certifications.

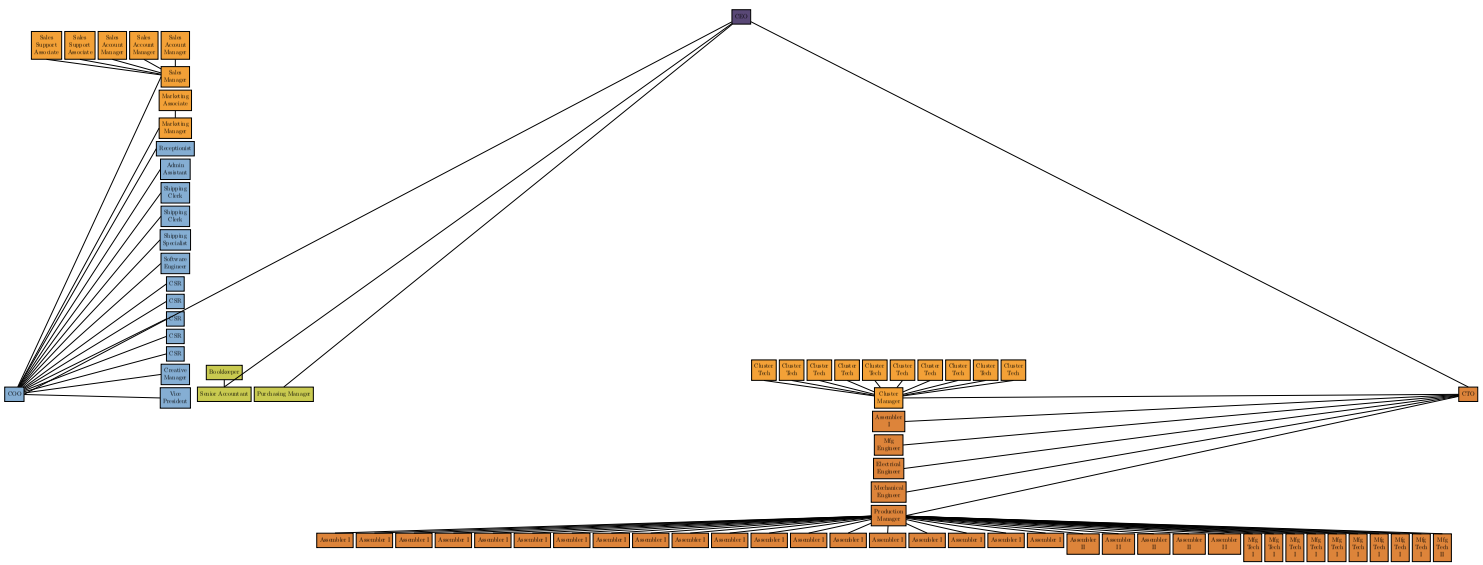


Figure 3.1: Organizational Chart

3.8 Organizational Chart

See figure 3.1 for Aleph Object's organizational chart.

See figure 3.2 for Aleph Object's organizational chart in dot.

3.9 Schedules

The following calendars list when there are recurring meetings.

See figure 3.3 for Aleph Object's weekly meeting schedule.

See figure 3.4 for Aleph Object's monthly company meeting schedule.

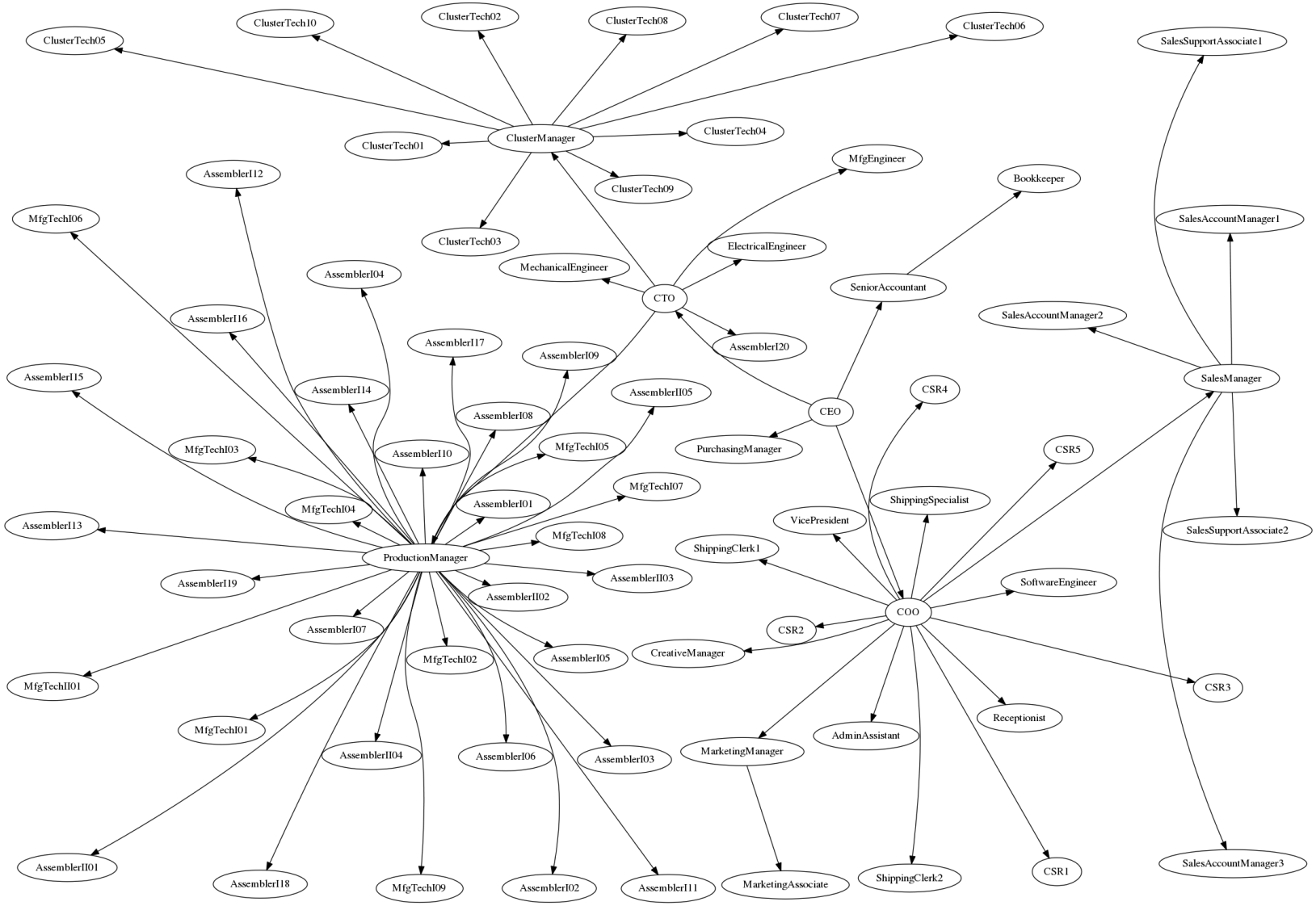


Figure 3.2: Aleph Objects Org Chart dot

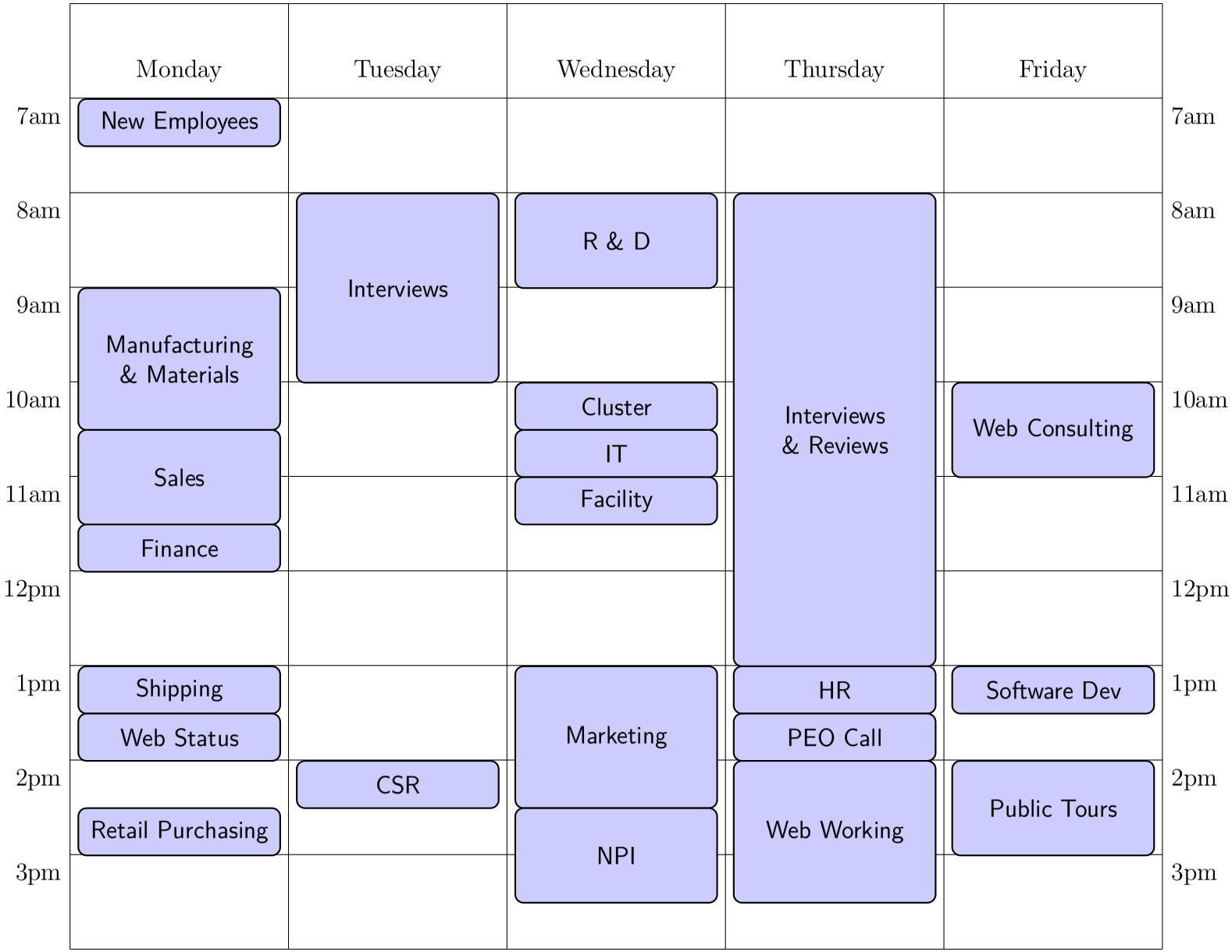


Figure 3.3: Weekly Company Meetings

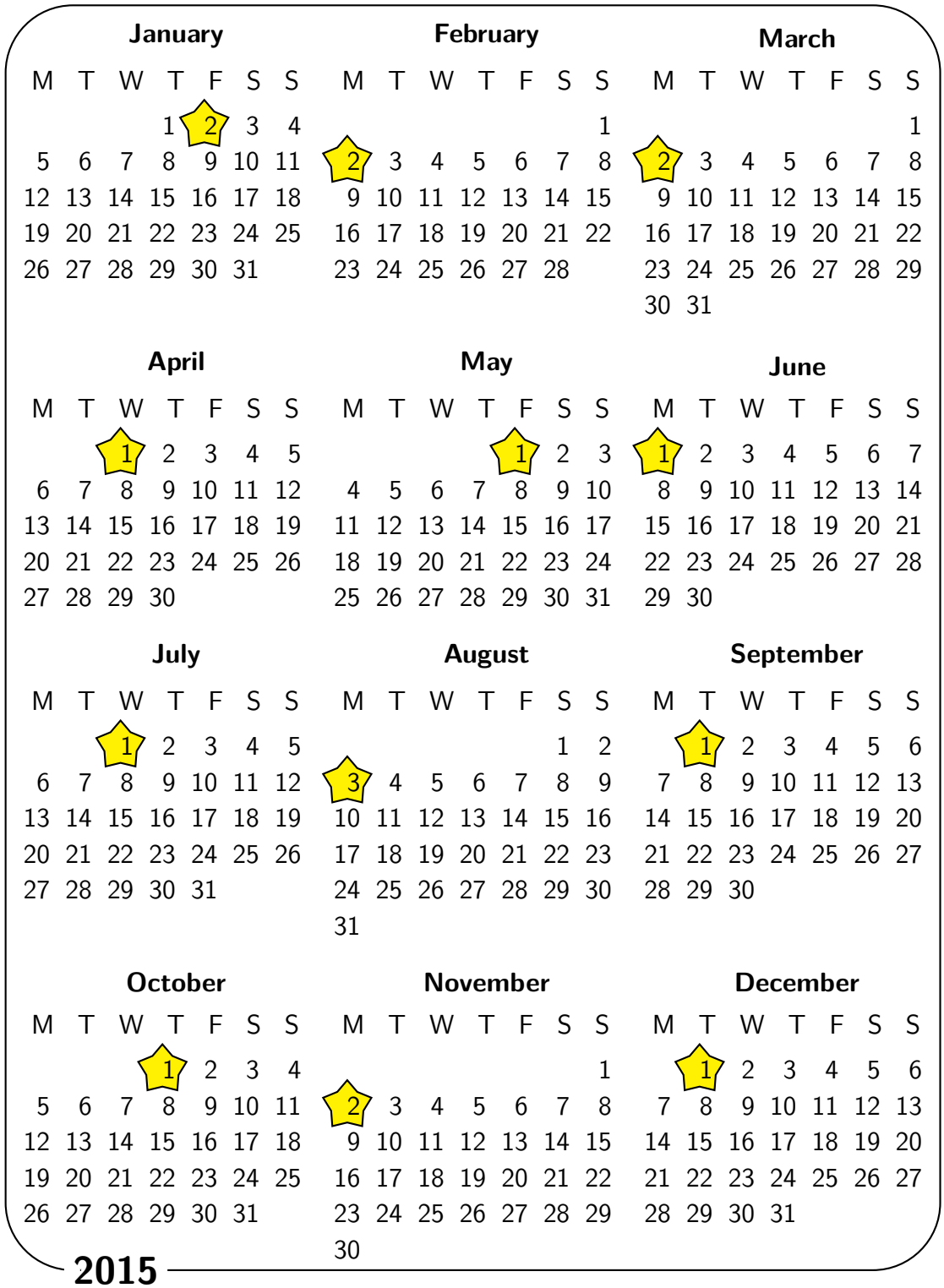


Figure 3.4: Monthly Company Meetings at 8:00AM

Purchasing

Buying and Receiving

4.1 Requester

1. Post the product request to the Product Requests Group.

   a) From messaging, pick Product Requests from My Groups.

   b) Click on the ”send a message to the group” box.

   c) Click on the icon on the top right corner of the message box with a hover info “Open the full mail composer”

   d) Pick the “Internal Product Request” in the use template pick (bottom right corner of the popup)

   e) Type the product request with the following information

      - Date Needed:
      - Name of Requester:
      - Internal Charge account code for PO:
      - Item description:
      - Quantity:
      - Estimated Cost:
      - Suggested supplier:
      - Supplier model/item number:
      - Purpose:

   f) Click on the send button

   Note: The product requests group by default includes all employees. The requester is any Aleph Objects employee. To make the request, the employee needs an OpenERP account.

2. If the materials planner or purchase approver requires additional information, they may reply to this message and it will show up in the requester’s Inbox.

4.2 Materials Planner

This role creates the Purchase Quotation. The following steps are to be followed to generate a purchase quotation.

1. Review the Purchase Requests message group for new product requests.
2. Note the details of the request and identify the product from the OpenERP product catalog – this is done by searching for the product from Purchases/Product/Product menu. This will only show products that have been marked "Can be purchased."
3. Create a new purchase quotation from Purchases/Purchase/Quotations.
4. Pick the supplier (this can be reviewed from the supplier list on the product identified in step 2)
5. Add supplier reference and source document.
6. Pick the product in the order lines and set the quantity and adjust unit price if it is different.
7. Add terms and conditions, payment terms, expected date to the RFQ.
8. Save RFQ.
9. Confirm the purchase order. If the order amount is less than 100, the order will be approved automatically. If not, the Purchase Order will wait for a second approval. Refer to Purchase Approver process before continuing with the next steps.
10. There are two types of purchase orders possible: The first is when the materials planner goes ahead and makes the purchase on his/her credit card and/or gets the material for immediate use. The second is when a formal order is placed with a supplier and the supplies / supplier invoice are awaited.
11. An incoming shipment document and a draft supplier invoice will be created on PO confirmation.
12. Option A: Purchase on Credit Card (Prepaid purchases)
    a) The materials planner goes ahead and makes the purchase of the required materials and makes a payment using the credit/debit card. [Going to the nearest store or placing an order on the supplier website]

b) If materials are purchased from a local store, the materials planner updates the receipt of goods in OpenERP. If purchase order is placed on the supplier website, the incoming shipment will be handled by the warehouse person on its arrival.
   i. Go to Warehouse/ Receive/Deliver by Orders /Incoming Shipments.
   ii. Select the incoming shipment document corresponding to the PO.
   iii. Mark the goods as received.
   iv. Create draft supplier invoice from incoming shipment / purchase order.

c) Turn in the details of the payment and the PO reference number to Accounting. Accounting Person continues with the workflow.

13. Option B: Placing purchase orders by email

a) The materials planner confirms the purchase order. He/she then emails/faxes the PO to the supplier.

b) The warehouse person processes material receipt
   i. Go to Warehouse/ Receive/Deliver by Orders /Incoming Shipments.
   ii. Select the incoming shipment document corresponding to the PO.
   iii. Mark the goods as received.
   iv. Create draft supplier invoice from incoming shipment / purchase order.

c) Accounting Person continues with the workflow.

4.3 Purchase Approver

This role approves the RFQ by confirming it to become a purchase order. The approval step may be carried out by the Materials Planner based on the purchase amount rule [amount > 100].

1. The approver lists all Purchase Orders that are in “Waiting Approval” state.

2. The details of the PO are reviewed.

3. The approver can then confirm the PO to approve or set it back to "draft" state" to reject.

4. The materials planner will be notified for the approval state.

4.4 Accounting

This role manages the supplier invoice and payments to suppliers.

1. The warehouse person on the materials planning person has already created a draft supplier invoice.

2. On receipt of the incoming shipment note (Option B)/payment made (Option A), the accountant/book keeper adjusts the draft invoice and confirms the invoice.

3. The invoice is now ready for payment. The payment can be processed in a few ways:

    a) Click on Register Payment in the supplier invoice screen. Follow through on the wizard that pops up and record the payment. This method requires the actual check/payment processing to happen outside of OpenERP. The payment made will be adjusted with the current invoice even if there are pending payments to the supplier.

    b) Click on Accounting/Supplier/Supplier Payment menu and create a new payment. Select the supplier. All pending payments will be listed and payment amount will be adjusted against the pending payments including the current one based on the amount and payment aging. This method is relevant and useful when payments to suppliers are batched.

    c) Payment through checks generated in OpenERP. This section will be elaborated after the installation and configuration of check writing module.

4.5 Notes

1. Record conversations with the supplier during the negotiation if any along with the purchase order using "Log a Note" feature. If the information needs to reach the supplier then the "Send Message" option should be used.

2. Once the purchase order is confirmed the only changes allowed are to the text fields. The supplier, pricing details, product details are frozen and cannot be changed. Please review all the options before confirming the PO.

4.6 Products

A Product in OpenERP language, is anything you buy or sell.
OpenERP —> Purchases —> Products —> Products

4.7 Suppliers

A supplier is a Partner that we buy Products from.
OpenERP —> Purchases —> Purchase —> Supplier

4.8 Inventory

Receiving

Keep track of what comes in, count it, track in OpenERP:
OpenERP —> Purchases —> Incoming Products —> Incoming Shipments
OpenERP —> Purchases —> Incoming Products —> Incoming Products

Moves

OpenERP —> Warehouse —> Traceability —> Stock Moves

Locations

We Are Here

5.1 Aleph Mountain

5.2 Fulfillment

Retail

- Loveland, Colorado, USA

Amazon

- USA

Shipwire

- Chicago, Illinois, USA
- Philadelphia, Pennsylvania, USA
- Los Angeles, California, USA
- Toronto, Canada
- London, United Kingdom

Resellers

- Builders
- Drop Ship

5.3 Contract Manufacturers

5.4 Customer

5.5 Employee

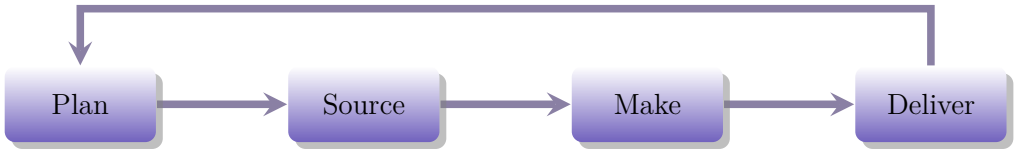
5.6 Historical

- 2011 Redstone Canyon, Colorado, USA

- 2011 Fort Collins, Colorado, USA
- 2011-2014 AOHQ, Loveland, Colorado, USA

Manufacturing
Open Source Hardware

6.1 Supply Chain



6.2 Configuration

The manufacturing process requires a few configuration steps before it can be modeled in OpenERP.

Product Definitions

Every product that is purchased, manufactured, sold, or valued as an assembly should be defined in OpenERP. The assets (computers, printers, furniture), consumables (stationery) may be defined in OpenERP but are not part of this document. Shipping and services need to be defined as well. The definition of a product should cover the following:

Product Definitions

Field
: Description

Product Name
: The descriptive name for the product. Keep as unique as possible.

Category
: Select from existing category list. Do not leave it as "All Products." See section below for creating new product categories

Can be sold
: Set on all finished products, parts/consumables, sub-assemblies that can be sold. Do not set on intermediate sub-assemblies that are not sold.

Can be purchased
: Set on all parts/consumables (category that includes filaments) that

are purchased. Do not set on intermediate sub-assemblies that are not sold.

Can be expensed
: Do not set on any of the products that have inventory valuation.

Information Tab

Product Type
: ”Stockable Product”. For shipping and service items, choose ”Service”

Unit of Measure
: Select the most appropriate unit. This is the sale unit of measure.

Sale Price
: This should be set for all items that are sold.

Is Shipwired
: Check this flag on all items that are stocked at shipwire location. Failure to do so will result in the goods at those warehouses not tracked.

Internal Reference
: Define the part number for the item. Set this for every item sold/purchased and intermediate sub-assembly items.

Schedule B#
: Set this on every item that is sold.

EAN
: Not required unless you have it for tracking

UPS
: Set for every item that is stocked on shipwire locations.

Description
: Detailed description of the product

Procurements Tab

Procurement Method
: Define as ”Make to Stock”

Supply Method
: Set it as ”Buy” for all ”can be purchased items.” Set it as ”Manufacture” for all assemblies and final products.

Purchase requisition
: Do not use

Cost Price
: Set the purchase price (only if you do not have supplier pricing defined.

Manufacturing Lead Time
: Set this for all items that have Supply Method as ”Manufacture.”

Active
: Uncheck this for items that are no longer required, that are duplicates.

Purchase Unit of Measure
: Set this to the unit of measure used in purchasing the item.

Manufacturer
: If manufacturer of the item is tracked, record this.

Manf. Product Name
: If manufacturer of the item is tracked, record this.

Suppliers Tab

Supplier
: Supplier name from the list of suppliers defined. Do not add suppliers from this form.

Supplier Product Name
: Name used by the supplier for the product/item

Supplier Product Code
: Code used by supplier for this product/item

Minimal quantity
: If the supplier enforces a minimum quantity for purchase, set it here.

Delivery lead time
: Set this value to get an accurate estimation of manufacturing/procurement/delivery schedules

Supplier Pricelist
: Set this to record quantity based pricing

Description for Suppliers
: Set this item to show on RFQ/POs

Inventory Tab

Rack
: Record location where the product is stored in the warehouse

Row
: Record location where the product is stored in the warehouse

Case
: Record location where the product is stored in the warehouse

Accounting Tab

Inventory Valuation
: Defaults to "Real Time (automated)." Do not change this.

Do not set any account related information here as they will be used from the Product Category definition.

Product Category

Product Category helps group products and define common information to be used on all the products. The following are the categories defined for Aleph Objects.

Category Name
: Description

Printers
: To group printers (finished products) that have Supply Method as "Manufacture."

Parts
: All other components that are bought and sold and goes into the manufacture of printers

Shipping
: Groups all shipping services

Service
: Groups all other services like consulting, labor

Consumables
: Filaments, tape and special category items. Do not record stationery, coffee cups and such in this category.

Each category must have the following fields set:

Field
: Description

Parent Category
: Choose "All Products"

Category Type
: Choose "Normal"

Income Account
: Each category is set to have its own income account. For new category, an income account must be created.

Expense Account
: Each category is set to have its own expense account. For new category, an expense account must be created.

Stock Input Account
: Set it to "14305 Goods Received"

Stock Output Account
: Set it to "14395 Goods Delivered"

Stock Valuation account
: Set it to ”14310 Products”

Stock Journal
: Choose ”Stock Journal (USD)”

Any new product category must be reviewed by Jeff and the financial consultants as many management budgets and reports are based on the standard five categories.

Warehouses and Locations

- Warehouses and Locations: The required warehouse and locations are already in place. However, if there is a need to create a new warehouse, first create the location and then the warehouse.
- Location: Physical locations are where Aleph Objects stores and owns goods - AM, HQ, Shipwire locations.
- Shipwire locations need to have the shipwire location field selected. If a new shipwire location is needed, it needs to be in the ursa shipwire module and the module needs to be upgraded.
- RPC, OTM are sub-contract manufacturing locations of type Production.
- The internal production locations (AM Cluster, AM Main Assembly, AM Pilot Assembly, AM Pre-Sub) are virtual production locations.
- These production locations need to have stock valuation account mapped to ”14350 Work In Progress.”

Routings and Work Centers

Routings

This is the flow of material/products in the assembly line. It consists of a number of steps (work center operations) in order to complete an assembly (a sub-assembly or a finished product). A routing requires a production location to be picked from the list of production locations (internal and sub-contracting) defined in the previous step.

Menu: Manufacturing/Products/Routings

1. Define a unique name for the routing. If a routing is defined for a specific product, use the name of the product in the routing name. This will add clarity.

2. Define a unique code for the routing.

3. Select production location (one of sub-contract or virtual production). Do not attempt to create a new location from this field. Always ensure that the location is defined before it is used.

4. Set the routing as active. [To make a routing redundant or not list, make active false]

5. Define Work center operations

    a) Define Work Centers (next section)

    b) Click on "Add an Item"

        i. Define a name for the operation. E.g. Push dowel in plate

        ii. Define a sequence. The sequence number sets the position of this operation in the routing.

        iii. Pick the work center associated with the operation.

        iv. Define number of cycles required for this operation in the routing. Typically, the number of cycles will be 1. In some cases, it is possible that the step be repeated.

        v. Define number of hours for the operation (for the work in progress material/assembly/product at this step)

        vi. Description: Provide information on the routing - instructions, specifications, etc. The notes tab may be used to capture more information if required.

Work Centers

Work centers are stations / tables / machines that are on the assembly line. It is also used to represent workers on the assembly line. For example, pressing a dowel in a plate is done at a press. So, the press is a work center. There is no need to identify the person on that work center - it will be done

through the assignment of hours on the work center. Another example is a QC inspection work center which may be defined as a human.

Menu: Manufacturing/Configuration/Work Center

1. Define a unique name for the work center to avoid incorrect association with a routing.
2. Define resource type - material for machines/tables and human for pure labor (QC type of work centers)
3. Define a unique code for the work center. E.g. <Location>-<WC>-<#>
4. Define Working time: Pick the Aleph Working Time defined. If additional working time (calendar) is required, they can be created from Manufacturing/Configuration/Resources/Working Time
5. Define capacity information
    a) Efficiency factor: A factor of 1.00 assumes 100% work center efficiency. This may be a good starting value if this information is not available.
    b) Capacity per cycle: This field captures the number of units of finished products that are produced in a single run (or cycle). For e.g. some of the printed parts were produced at the rate of 4 per cycle, some were 2 and some were 1.
    c) Time per cycle - Define how long it takes for one cycle to finish.
    d) Time before prod. - Setup time for the work station
    e) Time after prod. - Cleanup time for the work station
    f) Define costing information
    g) Work center product: Do not set. This allows the work centers to be generic (tables, machines, people) and be used in more than one product.
    h) Cost per hour: Define the labor cost per hour on this work center.
    i) Hour account: Set the analytic account (CHECK with financial consultant if this is required)

j) Cost per cycle: Define the overhead cost for use of the machine - manf.overhead or direct cost?

k) Cycle account: Set the analytic account (CHECK with financial consultant if this is required)

l) Analytic Journal: Skip the field.

m) General Account: Assign the expense account (Since this is direct labor costs, it should go into COGS group - CHECK with financial consultant on how to map this)

Bill of Materials

Bill of Materials: Bill of materials is used to define the components in a finished product/assembly. It will also be used to disassemble finished components / packages / kits. Bill of Materials is necessary (required) for every finished product, sub-assembly, manufactured part, disassembled kits, and sub-contracted assemblies.

Menu: Manufacturing/Bill of Materials or Product Screen: Click on Bill of Materials button

Pre-requisite: All the components required for the assembly or the by-products that would come out need to be defined before bill of materials is defined.

Manufacturing/Printing

1. Pick the product (finished product / sub-assembly / printed part / kit or package).
2. Define a unique name - It is typical to set the product name
3. Define quantity - Typically 1. But there may be instances when multiple units can be produced.
4. Reference - Set a unique reference
5. Pick the routing what will help manufacture the product.
6. Define list of components
   a) Click on add an item

   b) Select product component / raw material
   c) Set the quantity to be consumed
   d) Set the unit of measure for the component/raw material consumption
   e) Valid from and Valid until does not need to be set. Use this if a component is being replaced but you would like to keep it in the component list.

7. Define internal reference, valid from and valid until in the Properties tab if required.
8. Do not use the By Products tab.

Disassembly of Kits

1. Pick the product (A main product from the disassembly - e.g. Rambo board).
2. Define a unique name - It is typical to set the product name
3. Define quantity - Typically 1. But if the kit has multiple items of the product use that.
4. Reference - Set a unique reference
5. Pick the routing what will help manufacture the product.
6. Define list of components
   a) Click on add an item
   b) Select the kit (e.g Rambo Kit)
   c) Set the quantity to be consumed to 1
   d) Set the unit of measure for the component/raw material consumption
   e) Valid from and Valid until does not need to be set.
7. Define internal reference, valid from and valid until in the Properties tab if required.
8. In the By products tab, pick all the other products that come out of the kit disassembly. Leave the Quantity Type to be "Variable."

6.3 Manufacturing Process

Manufacturing in OpenERP allows tracking of goods and materials consumed in the process of production or assembly of finished products. The scheduler in OpenERP generates manufacturing orders for products that have supply method as "Manufacture" for the order level set for the product if the procurement method is "Make to Stock" and when a sale order is confirmed for products that are "Make to Order." At Aleph Objects, all the products have been set as "Make to Stock." This necessitates manual creation of manufacturing orders based on production planning (not yet available on OpenERP directly).

Creating Manufacturing Order

Guidelines for creating manufacturing orders:

1. Follow a quarterly or multi-month MO creation for printed parts, sub-assemblies, sub-contracted assemblies/parts. This allows for different planning approach for the final finished products such as printers.

2. Follow a monthly cycle for finished products such as printers.

3. The purchase delay, manufacturing delay fields defined with the product is important. The manufacturing dates will be computed based on these delay values.

4. In addition to the above, set the parameters in the company record (this may require admin/configuration access).

    a) Scheduler range days: It is now set to 80 days. This means that the scheduler will schedule procurement/manufacturing for the next 80 days. Change this if required. This will be based on visibility required into the manufacturing window (month/quarter/half-year, etc.)

    b) Purchase lead time: Additional lead time added to account for material receipt, inspection and use. This is the margin of error for supplier lead time. Default is 7 days.

    c) Manufacturing lead time: Margin of error for manufacturing lead time. Default is 7 days.

   d) Security Days: Additional margin on the date promised to the customer. Default is 2 days.

5. Ensure all locations (for subcontracting and internal production lines) are set.

6. Ensure all required routings are defined.

7. Since the routing captures the location (internal or sub-contract), a single manufacturing process will cover internal and sub-contract manufacturing. Additional details for sub-contract manufacturing are provided at the end of this section.

Processing Manufacturing Order

Process:

1. Creating an MO:

   a) Create a new manufacturing order from Manufacturing/Manufacturing/Manufacturing Orders

   b) Select the product to produce

   c) Select routing

   d) Set quantity of products to produce

   e) Define the person responsible for completion of the manufacturing order.

   f) Define source document (product planning reference if any)

   g) Raw materials location and finished products location should be "Physical Locations / Aleph Objects, Inc. / AM" for internal locations. For subcontract production, the appropriate location must be shown. This is automatically populated based on the routing.

   h) Set the priority in the "Extra Information" tab.

   i) Save the order

2. Confirm production: This step brings up the products to consume list as per the Bill of Material defined for the product being produced.

3. At this point, the details of the production can be viewed from work orders tab; details of products consumed from "Scheduled Products" tab and the finished product from "Finished Products" tab.

4. If all the components are available for production, the manufacturing order will have "Produce, Mark as Started, Cancel Production" buttons. The manufacturing order will be in "Ready to Produce" state.

5. If components are not available, procurement exception will be generated for the components. This will automatically resolve if there are reorder levels defined for the parts not in stock. If not, the Purchase order will have to be generated manually and the procurement exception cleared. Once the parts/materials are available, the MO will automatically proceed to the "Ready to Produce" state.

6. In case of a sub-contract, stock moves for the material will be created for delivering the parts/raw materials to the subcontractor. In a similar manner, moves will be created for receiving finished parts/products from subcontractor.

7. Send the material to sub-contractor as per the delivery order created.

8. Mark as started: The floor supervisor marks the order as started for internal production and the production controller / manufacturing head set it for the sub-contract orders.

9. For simple, single-step orders, the "Produce" button can be clicked. This will execute the work order (see work order tab in MO form) automatically.

10. For multi-step process, there are two options available to the production floor supervisor: Mark the entire MO as produced when the order is completed or manually process each of the work order. The work order can be processed from the Manufacturing order form/Work order tab or picking them from the Manufacturing/Manufacturing/Work Orders menu.

6.4 Safety

Keep everything clean. :)

6.5 Pre-sub Assembly

Soldering, PEMS, etc.

6.6 Pilot Line

The pilot line is the line currently building TAZ.

6.7 Main Line

The main line is the line being set up in the big room.

See figure 6.1 for Aleph Object's main floor line layout.

6.8 Quality Control

Link to docs here...

6.9 Packaging

Continually improve packaging. Lessen cost, very expensive at present. Send to FedEx for testing.

6.10 Lean

Get rid of everything unused.

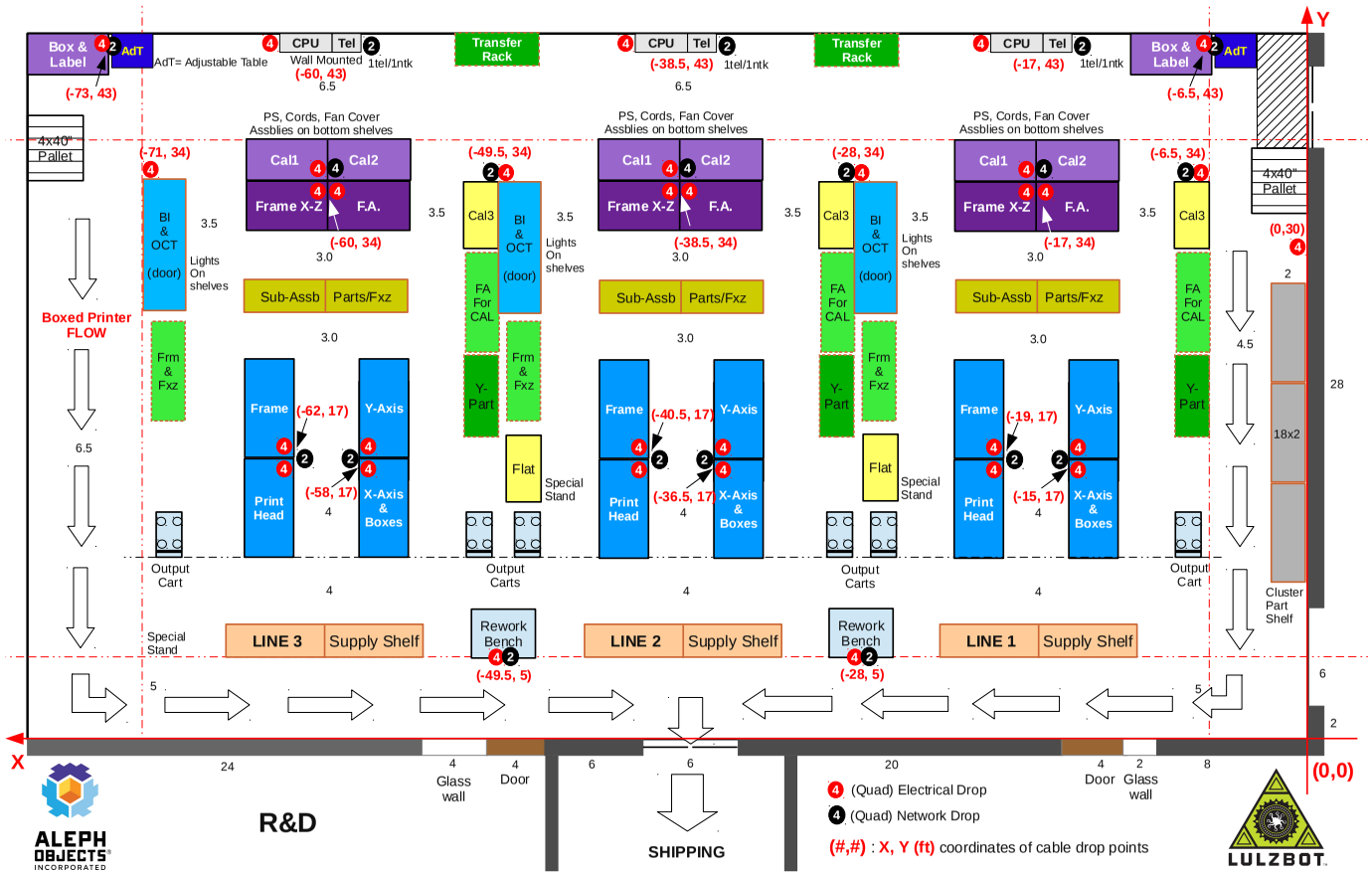


Figure 6.1: Main Line Layout

Marketing and Public Relations

New and Deprecated Media

Products

Buy and Sell

8.1 New Product Introduction

8.2 Part Numbers

Internal Part Numbers

Manufacturer Part Numbers

Supplier Part Numbers

8.3 Serial numbers

8.4 Inventory

Locations

FIFO

Receiving

Delivery

Moves

Sales

Moar

9.1 Quotes

Creating a new Quote

A quotation is a draft document that captures customer's interest in the company's products. In this state, the document may be changed any number of times and / or cancelled.

1. From Sales/Sales/Quotations, create a new quotation.
    a) Alternately, the lead-opportunity process may have created a quotation already. In that scenario, open that quotation for the next step.
2. Select customer. If there are separate addresses for invoicing and delivery, choose them.
3. Provide customer reference (e.g. PO02533, phone reference, etc.).
4. For government or educational institutions, select "Govt/Educational Institutions (USD)" pricelist.
5. Define terms and conditions if any.
6. Select products for the Order lines tab. Define quantity, adjust unit price, set discount.
7. Switch to Other Information tab.
    a) Set Incoterm. Default is EX WORKS for orders transferred from ecommerce site (Ubercart). Change to "Delivered At Place" for orders that will be invoiced for billing. Change to "Delivered Duty Paid" for orders processed through Fedex IPD.
    b) Invoicing terms: Default is "On Delivery Order." Change this to "On Demand" for international orders. This change will allow generation of Proforma Invoice before delivery.
    c) Select payment term – relevant for non-web orders
    d) Select Fiscal Position – Tax terms as applicable [This will probably change with Avalara module]
8. Save the quotation

9. Print the quotation if required.

Confirming the Quote

This step confirms the customer's intent to buy. Confirmation generates a series of stock moves and other documents in OpenERP. The sale order (the quotation becomes a sale order on confirmation) cannot be cancelled without the associated delivery order and invoice (if any) cancelled. Changes are allowed only on the text fields – no quantity, price, customer, address, terms info may be changed after confirmation.

1. Identify the quotation from Sales/Sales/Quotations by searching on the customer name or by quotation number.

2. Verify the contents of the quotation and ensure its completeness (refer to Creating the Quote steps).

3. Press "Confirm Sale" button to confirm the quotation.

4. The sale order is created. From this time, this order will be seen under Sales/Sales/Sales Orders.

5. Print the sale order to send to customer / email the document directly – this step requires the customer's email in OpenERP. If not the user will be prompted to enter one.

6. If the order is international, press the create invoice button to create a draft invoice.

9.2 Orders

Delivering the Order

Once the sale order is confirmed, a delivery order is created. This lets the warehouse person know what to ship and where. Additionally, the warehouse person may generate the customer invoice depending on the invoice creation mode.

OpenERP Sales

1. The items pending delivery can be viewed from Warehouse/Receive/Deliver By Orders/Delivery Orders.
    a) The status of the delivery orders will be one of Ready, Waiting, Back Orders, and To Invoice.
        i. Ready: These are orders that can be fulfilled immediately.
        ii. Waiting: These orders are waiting for one or more items in the order.
        iii. Back Orders: These orders are partial delivery pending from a previous order. Note that the partial delivery is based on quantities not fulfilled when they could have been.
        iv. To Invoice: These orders are waiting for the warehouse person to generate invoice. This state will be shown on orders that originated from sale orders that have invoice method as "On Delivery Order."
    b) Additional search conditions may be defined based on delivery order number of source document number – which in this case is the sale order number.
2. Select the delivery order.
3. Record additional information in the internal notes section – tracking number, shipper notes, etc.
4. If the delivery is international, the proforma invoice needs to be printed before the delivery order can be processed.
    a) Go to the sale order associated with the delivery order. The invoice method on this sale order must be "On Demand."
    b) Generate the customer draft invoice if not generated already.
    c) Open the invoice by clicking on the "View invoice."
        i. Click on Proforma to set the invoice in the proforma state
        ii. Print the invoice and it will read "Proforma Invoice."
    d) Attach the proforma invoice to the delivery order and enclose a copy of it to the delivery package.
5. Click on deliver to complete the delivery order.

Web Sales

1. The invoice method should be set to On Demand in the sale order associated with these sales.
2. The warehouse person reviews the delivery order and confirms the delivery of goods for the order from Shipwire.
3. If not all items have been shipped from Shipwire, the delivery order will be kept pending until all items in the order are delivered.
4. If Shipwire has fulfilled the order, the delivery order can be updated to reflect this information (tracking number, etc.) and marked delivered by clicking on "Deliver" button. The source location in the delivery order line must be set to the appropriate location (Shipwire location or AM location).

Generating Customer Invoice

Web Sales

Web Sales: These are sales for which payments have been received through credit card on the shopping cart (Ubercart). Currently, these orders are being keyed in from Ubercart. Once the sale order is created in OpenERP (Invoice method = On Demand, Incoterms=EX Works), the invoice must be created and payment processed.

1. Confirm the sale order.
2. Create the draft invoice (Note: this method is used for all web sales and OpenERP sales that are international shipment)
3. Validate the invoice and get it ready for payment.

OpenERP Sales

OpenERP Sales: These are sales that are entered in OpenERP (phone sales, local sales, institutional sales, donations, etc.) The invoice method must be set to "On Delivery Order" and Incoterms must be set to "Delivered at Place" for non IPD shipments, and "Delivered Duty Paid" for IPD shipments. For sales that are paid through Credit Card or international shipments, set the invoice method to "On Demand."

1. Confirm the sale order.
2. If payment has been received through Paypal/Credit card or for international shipments, create draft invoice.
3. For international shipments, set invoice state to Proforma and print it out.
4. For institutional and other orders that will be invoiced on delivery, follow delivery process to create the invoice.
5. Validate the invoice and get it ready for payment

Note: Setting the correct invoice method is essential for a smooth workflow in the system and among the team.

9.3 Accepting Customer Payments

Record the customer payment when received. If invoice is in draft state, validate the invoice before proceeding with this. Invoices may be paid in two different ways.

1. Click on Pay in the invoice. This allows payment to be recorded against the invoice.
    a) Enter the payment amount and pick the correct journal to record.
    b) Complete payment.
    c) Note: The payment amount if not in full will result in the invoice not marked "Paid."
    d) The balance due from the customer will be tracked.
2. Use Customer Payments to record the payment. This method brings up all pending payments due from the customer for payment.
    a) Select the customer.
    b) All the payments due from and to customer are listed in the Credits/Debits section.
    c) Record the paid amount.

d) This amount will automatically be reconciled against pending payments and if completely adjusted, "Full Reconcile" flag will be checked against the credit records. If payment is not sufficient to fully reconcile against the dues, it will be adjusted against the first / latest due.

Notes

1. Record conversations with the customer during the negotiation if any along with the sales order using "Log a Note" feature. If the information needs to reach the customer then the "Send Message" option should be used.

2. Once the sales order is confirmed the only changes allowed are to the text fields. The customer, pricing details, product details are frozen and cannot be changed. Please review all the options before confirming the SO.

3. Make sure to set the right payment term for the customer (Immediate payment for web sales and NET30 or as the case may be for other orders) as this will be used for aging analysis.

9.4 Value Chain

Everything we do must create value for the customer.

9.5 Customers

OpenERP —> Sales —> Sales —> Customers

9.6 Export Compliance

Comply with export.gov. Contact Denver office with any questions we can't resolve.

9.7 Phones

Transfer call

1. Ask the caller if you can transfer them.
2. Put the call on hold: *2
3. Dial internal extension number you want to transfer to.
4. Explain transfer when internal callee answers.
5. Hang up, and the call will automatically transfer.

9.8 Incoming OpenERP Email

The email address `sales@alephobjects.com` and `sales@lulzbot.com` goes into the OpenERP Sales Leads.

OpenERP —> Sales —> Sales —> Leads

9.9 Products

OpenERP —> Sales —> Products —> Products

Shipping

Delivery and Receiving

10.1 Serial Numbers

Updating Serial Numbers in Delivery Order

Serial numbers can be entered only in a draft Delivery Order.

1. For each line in the delivery order, click on the "Split in Serial Number" button on the line.

2. Click on Add an Item in the popup that opens and key in the serial number.

   Enter serial number and quantity for each number. Typically, in Aleph Objects case, the quantity will be 1 for each serial number.

   In the above example, the quantity is defined at 2. So, enter two serial numbers on two separate lines.

3. When serial number is entered, choose the "Create and Edit" option after keying in the serial number. This will bring up a popup as shown below.

   Enter internal reference, prefix information if required. Do not enter revision number or stock moves in this popup. Save the serial number.

4. Repeat the process for each line in the delivery order with a product that requires serial number association.

10.2 Delivery

10.3 Inventory

OpenERP —> Warehouse

Receiving

OpenERP —> Warehouse —> Receive/Deliver By Orders —> Incoming Shipments

Moves

OpenERP —> Warehouse —> Receive/Deliver By Orders —> Internal Moves

10.4 Export Compliance

If you are unsure, don't ship. If we don't have the answer internally, contact Denver office of export.gov.

10.5 Products

OpenERP —> Warehouse —> Products —> Products

10.6 Harmonized codes

Every Product we sell must have a harmonized code listed. We are using the USA's Schedule B.

10.7 Country of origin

We need to know the country of origin of every product we sell.

10.8 NAFTA

We can get most of our Products into Canada and Mexico duty free under the North American Free Trade Agreement. Our printers and most of our parts qualify.

Warehouse

First In, First Out

11.1 Products

Serial Numbers

11.2 Inventory

Receiving

Delivery

Moves

11.3 FIFO

11.4 Locations

Accounting

Finance

12.1 Chart of Accounts

12.2 Periodic Processes

Monthly Processes

Monthly Bank Statement Reconciliation

Monthly Statements

Monthly Reports

Quarterly Processes

Quarterly Statements

Quartlery Reports

Quarterly Budget

Annual Processes

Yearly Bank Statement Reconciliation

Yearly Statements

Yearly Reports

Yearly Budget

12.3 Payables

OpenERP —> Accounting —> Suppliers —> Supplier Invoices

12.4 Receivables

OpenERP —> Accounting —> Customers —> Customer Invoices
OpenERP —> Accounting —> Customers —> Customer Payments

12.5 Taxes

Sales Tax Nexus

Colorado, USA

Colorado Secretary of State

Loveland, Colorado, USA City of Loveland

Larimer County, Colorado, USA Larimer County

Longmont, Colorado, USA City of Longmont

Pennsylvania, USA

Pennsylvania

Illinois, USA

Illinois, and maybe Chicago

UK, EU

We are registered as a UK business so we can collect VAT.

Canada Federal

We are registered with a Canadian Business Number, so we can collect and pay sales tax.

Canada Provinces

Canadian Provinces...

Payroll

We are doing payroll through two companies at present.

Insperity

Insperity is a Professional Employment Organization (PEO).

Kelly

Kelly is temp-to-hire and recruitment.

12.6 GAAP

Generally Accepted Accounting Principles

Research and Development
Free Software and Open Hardware

The license must be FSF approved or GTFO.

Contact

Phone, Email, Web, Location

14.1 Support

Email: `support@alephobjects.com`
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14.2 Sales

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14.3 Website

Aleph Objects, Inc.
`www.alephobjects.com`

Colophon

Created with 100% Free Software

GNU/Linux

LaTeX Memoir