



Wacs Installation Guide

Fourth Edition

for WACS 0.8.4

B "Beaky" King

Published 7th December 2009

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Abstract

WACS is a tool for building Adult Web Sites; it is equally suitable for managing a private collection or building a commercial web site. It has many best of breed features including dynamic filtering, model catalogs, automatic download and powerful search engine. It comes with a powerful API (application programming interface) implemented in both Perl and PHP5 languages to allow web developers to leverage it's facilities from their own programs.

This book describes the actions required to install the WACS System onto a suitable host system (typically a server). The intended audience is system administrators and prospective WACS site managers wishing to install WACS on a machine.

The WACS source code and other documentation and support tools can all be found at the WACS website at Sourceforge [<http://wacsip.sourceforge.net/>] and at the Wacs page on launchpad.net [<https://launchpad.net/wacs>]. A demonstration site built using the WACS tools can be found at PinkMetallic.com [<http://www.pinkmetallic.com/>] - *CAUTION: contains adult material*. Commercial add-ons and support options can be purchased from Bevttec Communications Ltd, see their website at Bevttec Communications [<http://www.bevteccom.co.uk/>].

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Chapter 1. Introduction to WACS Installation

WACS Overview

Welcome to WACS, Web-based Adult Content Server, a free software package for the management of material of an "Adult Nature" (or basically whatever euphemism for porn you prefer). It is web-based and can be used for the management of an existing collection, as a download manager, or as a back-end system for running a commercial adult web site. It is dramatically different from most other image gallery systems in that it understands photo sets and video clips as basic concepts, instead of single photographs. It also includes far more specialised tagging, source, relationship and attribute marking concepts than other more generalised systems.

WACS is extremely configurable, making extensive use of configuration files written in eXtensible Markup Language (XML). This book is one of a collection of manuals we have created to help you through the various aspects of using a system as complex as WACS. This guide is solely targeted to installation - additional guides exist for Users, Configuration, Administration and Programming.

About This Book

This book is an installation guide for WACS site managers or system administrators seeking to install the WACS environment on their systems. It does assume a certain amount of familiarity with the normal processes of installing software packages on your systems; the sections on manual installation in particular also assume a basic knowledge of using the Unix operating system (or any other future supported OS platform). It also provides an overview to installing the WACS environment on a web hosting site using an environment like cPanel.

To get the best from this book, you should ideally be familiar with the basic user interface of the WACS applications themselves - the WACS User Guide would be an ideal primer for this and should introduce you to many of the concepts and tools being used here. There is also no substitute for using a real WACS site to get a general feel for how things work and are laid out. Our demonstration site is available at PinkMetallic.com [<http://www.pinkmetallic.com/>] and provides an opportunity to try WACS hands-on.

Goals

The task of installing WACS onto a new server system consists of a number of distinct steps; these are:

- Preparing the host system
- Installing the pre-requisite software
- Installing the WACS applications and modules
- Getting a working configuration
- Installing some initial data

Some of these topics will be mentioned briefly here and will be covered in more depth in other guides in the WACS documentation set.

About The Examples

For copyright/licensing reasons, the example images feature sets from photoshoots by the main developer of WACS (Beaky) and a friend of his. These sets are available at our demonstration site, PinkMetallic.com [<http://www.pinkmetallic.com/>] where you can experience WACS in action. Currently access to PinkMetallic.com [<http://www.pinkmetallic.com/>] is free, but we may at some point in the future make a small charge for access if it doesn't receive the revenue we hope for from referrals.

Chapter 2. Preparation For Installation

Preparation Tasks

Before we even start to install the WACS package, it is very important that we make sure the host candidate system is prepared for the task in hand. To do this, we need to ensure a number of things have been prepared beforehand:

- ensure adequate system resources
- assign and configure for static host name
- review security and access policies

The first of these steps, ensuring adequate system resources, basically involves looking at the sort of material you're intending to store in the WACS system and approximately what the storage requirements will be. If you are looking at holding sets for maybe fifty models who come from a site that specialises in high-resolution images and HD video clips, you may find that an average image set is upwards of 100MB, and an average video clip maybe 500-600MB. If each model has an average of four video clips and 10 sets, then you're looking at probably 3GB per model, and would need to allocate around 150GB of storage, which with margins for future expansions means about 200-250GB to start off with.

Do remember that on most Linux systems you can use tools like the Logical Volume Manager (LVM) to ease the process of disc space allocation and in particular future expansion when live data is present. It is also perfectly possible to use Network Attached Storage (NAS) devices as the primary storage location for WACS collections.

You also need to make sure you assign a static IP address and hostname to the server system; more details on this and the use of NAS servers is given in the configuration guide. There are also a number of resources on the net to help you through this process; one that appears fairly complete is this one at [howtoforge.com](http://www.howtoforge.com/perfect-server-fedora9) [<http://www.howtoforge.com/perfect-server-fedora9>].



Warning

WACS is not currently compatible with the SELinux enhanced security system - this needs to be reduced to either **permissive** or switched off entirely (**disabled**) for WACS to work. This will affect Fedora and other RedHat-based distributions. It is our intention to resolve this issue by the 0.9.x release series of WACS.

If you're running Fedora (or any other distribution) with SELinux enabled, you will run into problems. WACS does not currently work well with SELinux and you have a choice of either setting it to permissive mode (where it logs problems but does not block things from working) or disabling it entirely. If you disable it entirely, it is much harder to go back to running it later as software updates and the like tend to get their SELinux attributes updated. On the other hand, permissive mode will fill up your log file areas and may slow down system operation somewhat.

Linux Operating Systems

If you are using either the RPM/DEB packages of the WACS applications, or the easyinstall script, and are using the default applications (MySQL in particular), the prerequisite applications will be automatically installed if they are not already present. If not, or you are using a different database (Oracle, or another

like PostGres SQL), you will need to install these applications first as detailed in the table below and then follow the manual install steps:

Table 2.1. Software Pre-Requisites For WACS On Linux

Service	Application	Version	Description
Web Server	Apache	> 2.0	main route of access
Database	MySQL	> 5.0	backend database engine
	Oracle	> 10g	alternative database engine
Perl	Language	> 5.8.0	Language interpreter (required)
Php	Language	> 5	Language interpreter (optional)
Perl::DBI	Library	any recent	Database interface library
Perl::DBD	Driver	for Database	Database driver routine for MySQL or Oracle
XML::Simple	Library	any recent	Parsers for eXtensible Markup Language (XML) files
Data::Dumper	Library	any recent	Essential debugging tool
File::Basename	Library	any recent	Filename manipulation routines
MIME::Base64	Library	any recent	Binary data encoder used with XML files

Chapter 3. Prerequisites

Web Server

WACS is primarily designed to work with the Apache 2 web server as this is the industry leading web server for Linux and Unix platforms. It's also available for the Mac OSX platform from various sources, and even for Microsoft Windows under the name WAMP Server. While other web servers may work fine, we would not recommend using them at this time and stage of WACS development. The RPM/DEB packages automatically drop in configuration file snippets to ensure correct operation of apache 2 on Linux releases with supported packages.

If you are using a web site hosting provider, most will be using Linux for their standard service and will be using a suitable version of Apache. Most will confirm this in their detailed features card before sign-up - if not, you can always ask their pre-sales support contacts.

Relational Database

You do need to be aware that the MySQL network layer appears to be extremely sensitive to what the host is called. It needs to have a permanent, static name which is correctly mapped in the hosts or DNS so that *hostname* maps to *ip address* and the *ip address* maps back to THE SAME *hostname*. If this isn't the case, the final part of the installation - creating the database schemas and populating them - may well not work.

On a web site hosting provider, you will need to work through whatever access configuration facilities they provide. The common **cpanel** administrative interface used by many provides a way to configure remote MySQL access although if you have SSH access, this may not be strictly necessary.

Other database engines may not be so sensitive to the IP address issues - Oracle 10 and 11 versions are not (by default anyway).

Content Storage

The normal location for content storage is the home directory of the WACS user account which is created when you do either a package or an easyinstall. Obviously putting a large amount of multi-media material into the home directory area of the server may not be desirable so you may wish to consider where it should be placed. As mentioned elsewhere this could be a separate volume or group of volumes on an LVM partition, an external disc drive or even another remote server or NAS server supporting NFS protocols.

The important things are to ensure that the location of the storage is specified in the Wacs configuration file (usually `/etc/wacs.d/wacs.cfg` ahead of adding the first content and that it remains accessible at the same file system location throughout. This means either arranging for it to be mounted, etc as necessary at boot time or deploying an automounter such as **autofs** or **am-utils** to do that for you.

In the case of a WACS system on a web hosting provider, you are unlikely to be able to access the filespace via local network style file sharing mechanisms such as NFS and CIFS. You will have to upload content instead using **ftp**, **sftp** or web browser uploads and import it using WACS's extensive XML import facilities or the collection management tools.

Chapter 4. Linux: Options

Methods Available

With the Linux Operating System, there are three basic options available to you for installing WACS onto your system:

- Linux Package Installation
- Linux easyinstall script
- Linux Manual Installation

Each option above is progressively more complex than the previous one, but in the process affords more flexibility and configurability. The choice is yours.... On other platforms, you probably want to follow either the manual install procedure or play with the easyinstall script (but expect to have to change at least package names and installer names in the script).

If you are using a web hosting provider, unless they're offering pre-installed WACS, you will need to follow the manual installation steps. In order to do so, you will need to have SSH access to the server hosting your site, which may have an additional charge and setup delay associated with it. We've added additional commentary in the manual install section of the installation procedure covering the steps you need to take when working on a web hosting provider.

Linux Package Install



Note

This feature was new in Wacs 0.8.1 and is currently available for Fedora 10 and 11 based systems using the RPM package manager and for Ubuntu 8.10 LTS and 9.04 systems using the DEB packaging system. It is our hope to extend the packaged software approach to include other platforms in a future release. While we do not prepare packaged versions for older releases of Fedora and Ubuntu, we do not remove support from them from the packaging build files (`.spec` for Fedora, `debian/` for Ubuntu), so you should be able to recreate packages suitable for use with earlier releases using the package build tools for your platform.

Where available for a given distribution and release, there are a number of WACS RPM or `.deb` packages you can make use of to install the WACS system. If you are using one of the more sophisticated package managers (`yum`, etc), you need only ask it to install the main `wacs` package and that tells the package manager what other components it needs to complete the install. This will bring in both the system packages needed - web server, database, perl libraries, etc - and the other parts of the WACS system needed for a working installation. If you are using one of the simpler package managers (`rpm` etc), it will complain about absence of the required packages until all the dependencies have been installed manually.

Since `sourceforge.net` doesn't yet seem to support YUM or debian repos properly you will have to download the requisite WACS packages manually in order for the install to proceed.



Warning

In order to conform to the the Fedora packaging guidelines, quite a few of the file locations are different on the packaged version of WACS, from that created by the `easyinstall` script or

manual process. It shouldn't cause problems, but you do need to be aware of it, particularly if moving a configuration file between releases.

Linux **easyinstall**

The **easyinstall** script was our pre-packaging approach to installing WACS and can still be used on Fedora and Ubuntu distributions although now it is mostly useful for installing on older versions of Linux that are not supported directly by the packages we create. At present **easyinstall** is a more tested and complete solution and the resulting WACS installation is more likely to run "out of the box" with less configuration work still to do. However, it will prove harder to upgrade than the packaged solutions. With Wacs 0.8.4, the packaged versions of WACS do include the new **wacssetup** configuration tool to provide a web interface to what **easyinstall** does but it is very new and relatively untested, so **easyinstall** may still be a good option.

Linux Manual Install

This is the only option available for any kind of unsupported operating system platform and on a web site hosting provider where you have no *root* system administrator access and no control over the filesystem layout. The instructions later in this guide take you through all of the tasks needed step by step. This does assume some basic familiarity with command line operation of the Linux/Unix environment and a reasonable knowledge of the software installation policies of the operating system in question. In the case of a web hosting provider, you will need some familiarity with their setup tools and utilities.

Chapter 5. Installing WACS Using Packages

Package List

In order to install WACS using the packages, you need to download a number of separate packages from sourceforge and have them available for your chosen package manager to find. Make sure you pick the right one for your Linux distribution. The list below details what these packages are:

Table 5.1. List of Packages

Name	Req'd	Description
wacs	Yes	The "Master" package which includes the others
wacs-core	Yes	The core files and user interface apps
wacs-tools	Yes	The collection management tools
wacs-download	Opt	The tools used for automatic download from subscription sites - optional
wacs-hostauth	Yes	Tool used to authenticate users (will not be needed if you have the commercial CRM package)
wacs-samples	Yes	Some sample data files in XML format and perl API programming examples
wacs-doc-pdf	No	Documentation in PDF format
wacs-doc-html	No	Documentation in HTML format (both single and multi page)

As you can see from the above list, you might wish to download the core packages, plus the download tools, plus whichever format of documentation you prefer to use. Unless you're already familiar with WACS, we'd strongly recommend using the master wrapper package (`wacs`) for the installation as it does a number of configuration steps for you. For the examples ahead, we'll assume PDF is the preferred format - your mileage may vary.

RPM Installation Steps



Note

For Ubuntu/Debian DEB package installs, please see the section called "DEB Installation Steps" instead.



Important

Before you start on an installation, please make sure that you have a statically allocated IP address, sensible hostname with a fully qualified domain name and that the machine is fully aware of these settings. For more information on these aspects, please consult the configuration guide. There is also a good guide to doing this at <http://www.howtoforge.com/perfect-server-fedora9> [<http://www.howtoforge.com/perfect-server-fedora9>]

Downloading The RPMs

The first step obviously is to download the appropriate packages for the operating system release, version and processor platform that you intend to run it on. Where a package contains *noarch* that means that it is suitable for any processor architecture running that distribution of Linux. Currently RPM packaged versions are available for Fedora 10 (labeled fc10), and Fedora 11 (labeled fc11) and DEB packaged versions for Ubuntu 8.10 and 9.04. For more information on using the Ubuntu DEB packaged versions, please see the section called “DEB Installation Steps”

For an initial WACS installation (in this example for release 0.8.4 on an x86_64 machine running Fedora 10), you will probably want the following packages:

- **wacs-0.8.4-1.noarch.fc10.rpm**
- **wacs-core-0.8.4-1.noarch.fc10.rpm**
- **wacs-tools-0.8.4-1.noarch.fc10.rpm**
- **wacs-samples-0.8.4-1.noarch.fc10.rpm**
- **wacs-hostauth-0.8.4-1.x86_64.fc10.rpm**

If you plan on making use of the download toolset to connect to subscription sites for automatic downloads (although do be aware that only a very few sites are supported so far), you will also want to get the package called **wacs-download-0.8.4-1.noarch.fc10.rpm**. You may also wish to download one of the two versions of the documentation package: **wacs-doc-pdf-0.8.4-1.noarch.fc10.rpm** or **wacs-doc-html-0.8.4-1.noarch.fc10.rpm** - you can always access the same documentation direct from our sourceforge web site.

RPM Installation

Once you've downloaded the right packages, you need to gain the appropriate privileges and install the packages. There are any number of ways to do this, and you can pretty much use any of them; the example below uses the command-line based yum package manager:

```
# yum install --nogpgcheck wacs*.rpm
[...]
```

It is also possible to do this with the file manager, right clicking on each package file and choosing **Install Package**. The order on this is a bit tricky, but if you start with **wacs-core** and **wacs-hostauth**, then do the other packages and finally do the main wacs package, this should work out OK.

Other System Issues

Once the packages, and their dependencies, have been installed please confirm that both the Apache 2 Web Server (httpd) and the MySQL Database Server (mysqld) are enabled and running. In the GNOME desktop, the System -> Administration -> Services menu will take you to the Service Configuration screen where you need to both enable and start httpd and mysqld if these are not shown as currently running. If you prefer using the command line, the following steps will do the same task:

```
# /sbin/service httpd start
Starting httpd: [ OK ]
# /sbin/service mysqld start
Starting MySQL: [ OK ]
# /sbin/chkconfig --levels 345 httpd on
# /sbin/chkconfig --levels 345 mysqld on
#
```

The final system configuration step before starting work on getting WACS configured is to ensure that SELinux is running in a reduced mode that will not block the WACS components from working. This is only an issue on Fedora and other Red Hat based releases at present. We hope to have this resolved by the next release of WACS. You can determine the current mode of SELinux using the `sestatus` command:

```
% /usr/sbin/sestatus
SELinux status: disabled
%
```

To change the normal operational mode, you need to edit the file called `/etc/sysconfig/selinux` and change the line which reads `SELINUX=enabled` to either `SELINUX=permissive` (generates big log files and slows machine but allows for SELinux to be turned back on later more easily) or `SELINUX=disabled` (which disables it completely but can cause problems in the future if you want to switch it back on). You will also probably want to disable it immediately rather than doing a reboot before you can continue working on WACS - to do this, become root and run the following:

```
# /usr/sbin/setenforce 0
setenforce: SELinux is disabled
#
```

You can check this change has taken effect by using the `sestatus` command again.

DEB Installation Steps



Note

For Fedora/CentOS RPM package installs, please see the section called “RPM Installation Steps” instead.



Important

Before you start on an installation, please make sure that you have a statically allocated IP address, sensible hostname with a fully qualified domain name and that the machine is fully aware of these settings. For more information on these aspects, please consult the configuration guide.

Downloading The DEBs

The first step obviously is to download the appropriate packages for the operating system release, version and processor platform that you intend to run it on. Where a package contains *all* that means that it

is suitable for any processor architecture running that distribution of Linux. Currently DEB packaged versions are available for Ubuntu 8.10 and 9.04, while RPM packaged versions are available for Fedora 10 and 11. For more information on using the Fedora RPM packaged versions, please see the section called “RPM Installation Steps”

For an initial WACS installation (in this example for release 0.8.4 on an x86_64 machine running Ubuntu 9.04), you will probably want the following packages:

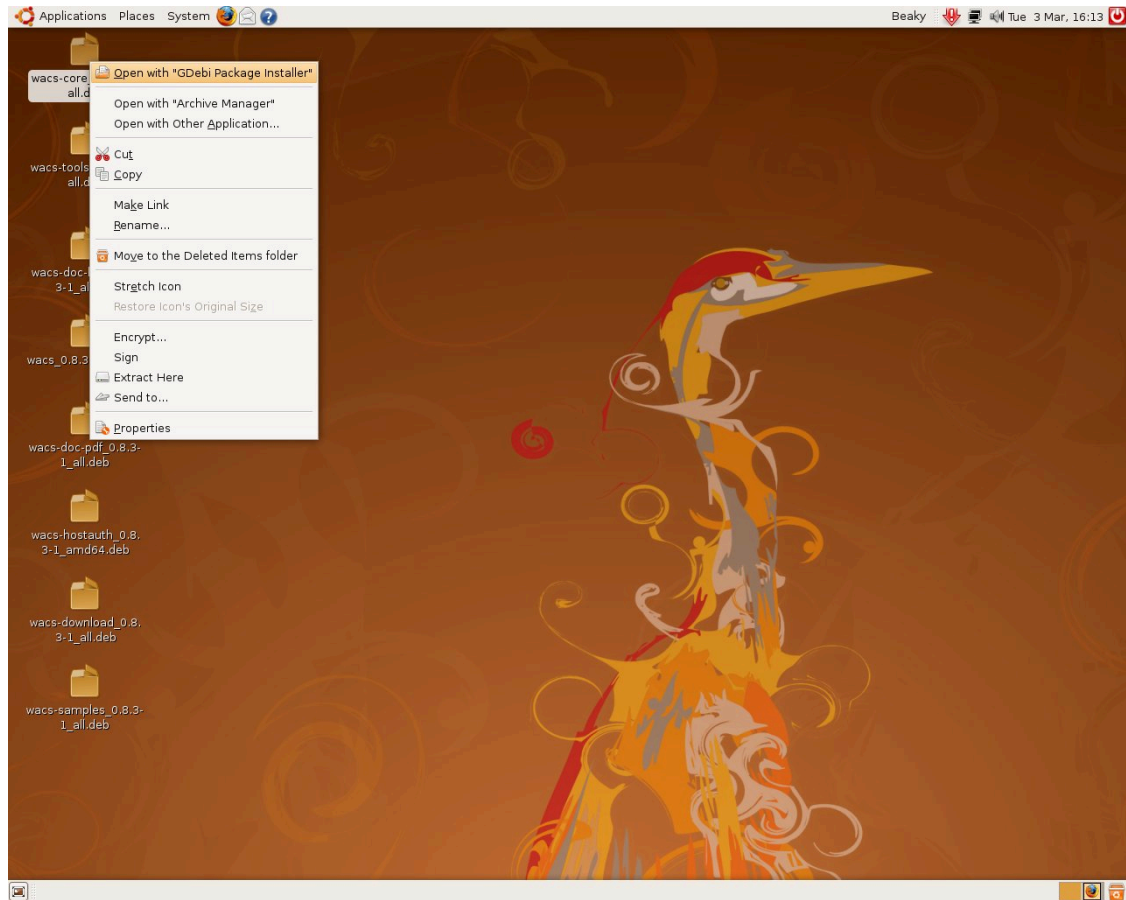
- **wacs_0.8.4-1.all.deb**
- **wacs-core_0.8.4-1.all.deb**
- **wacs-tools_0.8.4-1.all.deb**
- **wacs-samples_0.8.4-1.all.deb**
- **wacs-hostauth_0.8.4-1.amd64.deb**

If you plan on making use of the download toolset to connect to subscription sites for automatic downloads (although do be aware that only a very few sites are supported so far), you will also want to get the package called **wacs-download_0.8.4-1.all.deb**. You may also wish to download one of the two versions of the documentation package: **wacs-doc-pdf_0.8.4-1.all.deb** or **wacs-doc-html_0.8.4-1.all.deb** - you can always access the same documentation direct from our sourceforge web site.

DEB Installation

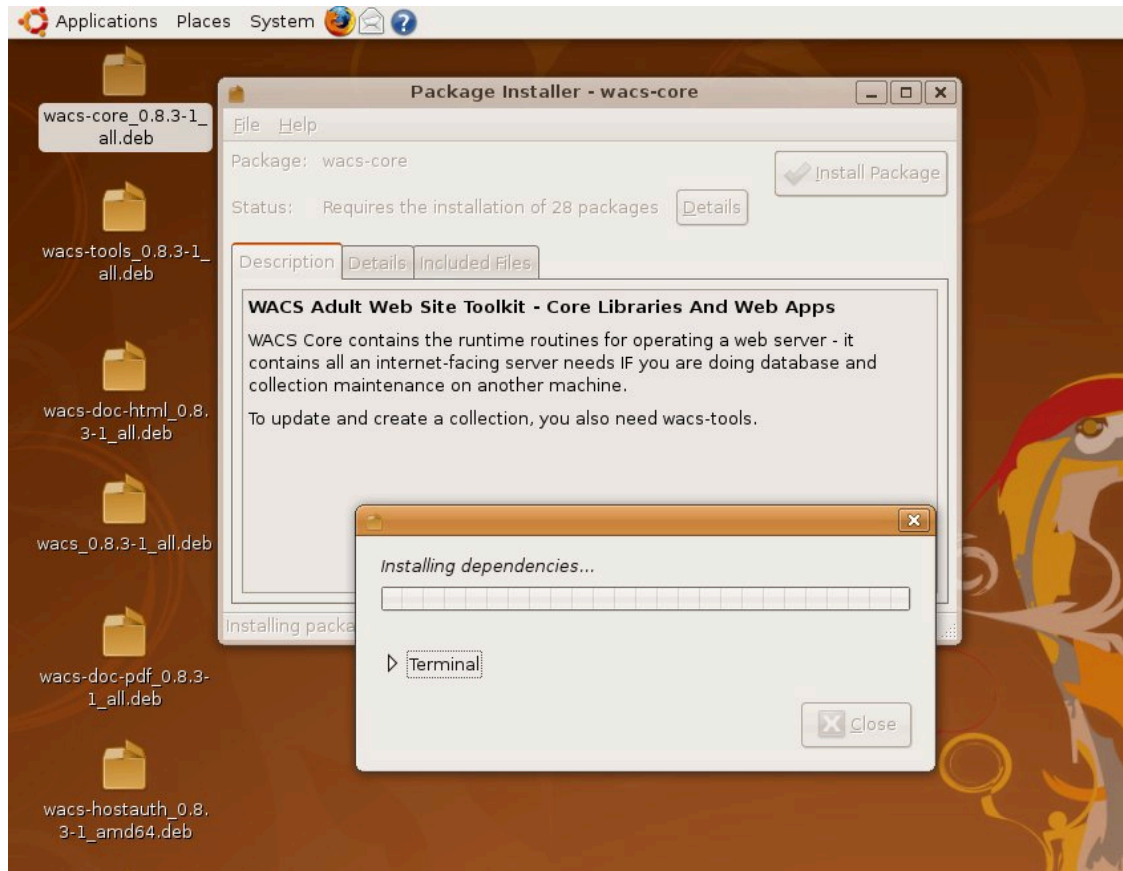
Once you've downloaded the right packages, you need to gain the appropriate privileges and then install the packages. There are any number of ways to do this, and you can pretty much use any of them; the examples given below use the desktop file manager and the **gdebi** installer. We have not used the synaptic package manager in the illustrations because that only really copes with software provided by the main Debian repositories. Unfortunately sourceforge.net does not, as we are writing this manual, support the creation of package repositories.

As it is the **GDebi** is configured to be the first action listed on the actions menu in the GNOME file manager as installed on Ubuntu. You get to this by right-clicking on the downloaded packages and choosing **Install With GDebi** . The order on this is a bit tricky, but if you start with **wacs-core** and **wacs-hostauth**, then do the other packages and finally do the main wacs package, this should work out OK.



Here we have all of the Wacs packages for Ubuntu/Debian downloaded onto our desktop and we start work with `wacs-core_0.8.4-1_all.deb`. We right-click on its icon and choose **Open with "GDebi Package Installer"**. Once selected we're told we're looking at Package: **wacs-core** and that it "Requires the installation of 28 packages".

While this 28 packages figure may sound high, it's what is actually needed for all the Wacs packages and these packages will be requested by whichever Wacs package is installed first. Similarly, if you've already installed any of these prerequisite packages on behalf of another application, the number needing to be installed now will be greatly reduced. What we are installing here are things like the **apache 2** web server, the **php5** programming language, the **MySQL 5** database and so on. This also attempts to install all the various Perl and PHP modules we use for database access and the like. Currently it will install **MySQL 5 server** as a dependency although you can still use Oracle as an alternative back end.



We click on the **Install Package** button and an additional pop-up box appears saying *Installing dependencies...*. . . This part of the installation procedure can actually take quite a while because on a normal Debian desktop install many of the requested packages will not be available locally. It will therefore make a connection to the internet software repositories and download the likes of **MySQL 5**, **apache 2**, **Php 5** and the perl modules required.

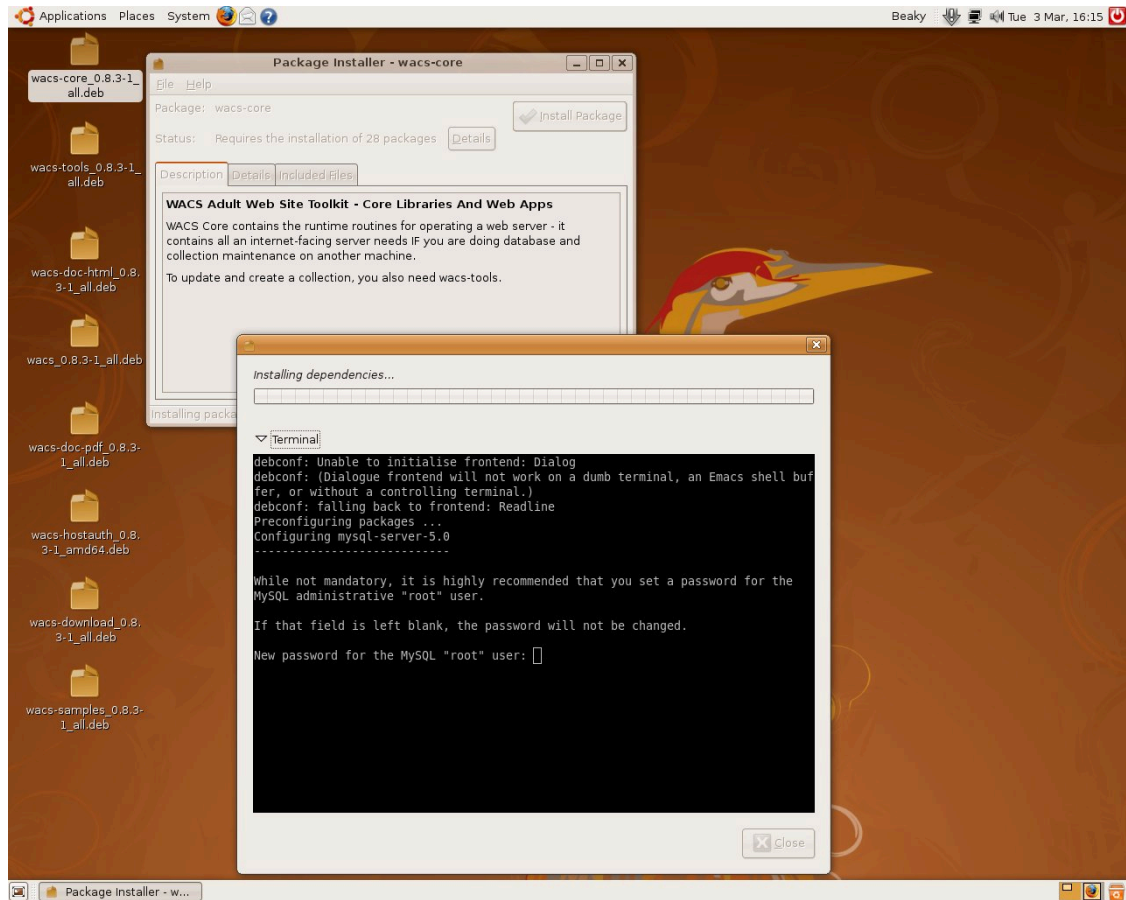


Tip

If you're on a dial-up internet connection, or have a seriously bandwidth limited broadband connection, you might wish to insert an appropriate DVD-ROM of Debian packages and configure the repositories used to include the local DVD-ROM as well. Of course this may or may not work depending on whether any upstream updates to those packages have been issued. An alternative would be to manually install the **MySQL 5 server**, **Apache 2** web server and the **PHP 5** language packages first from the DVD-ROM. This would then just leave the small Perl and PHP module packages still to be installed.

However, you'll notice that confusingly it doesn't show any progress which is unfortunately due to the fact that the pre-requisite MySQL package has actually prompted for some user input. If we click on the arrow to expand the Terminal window, we see the actual problem:

Installing WACS Using Packages



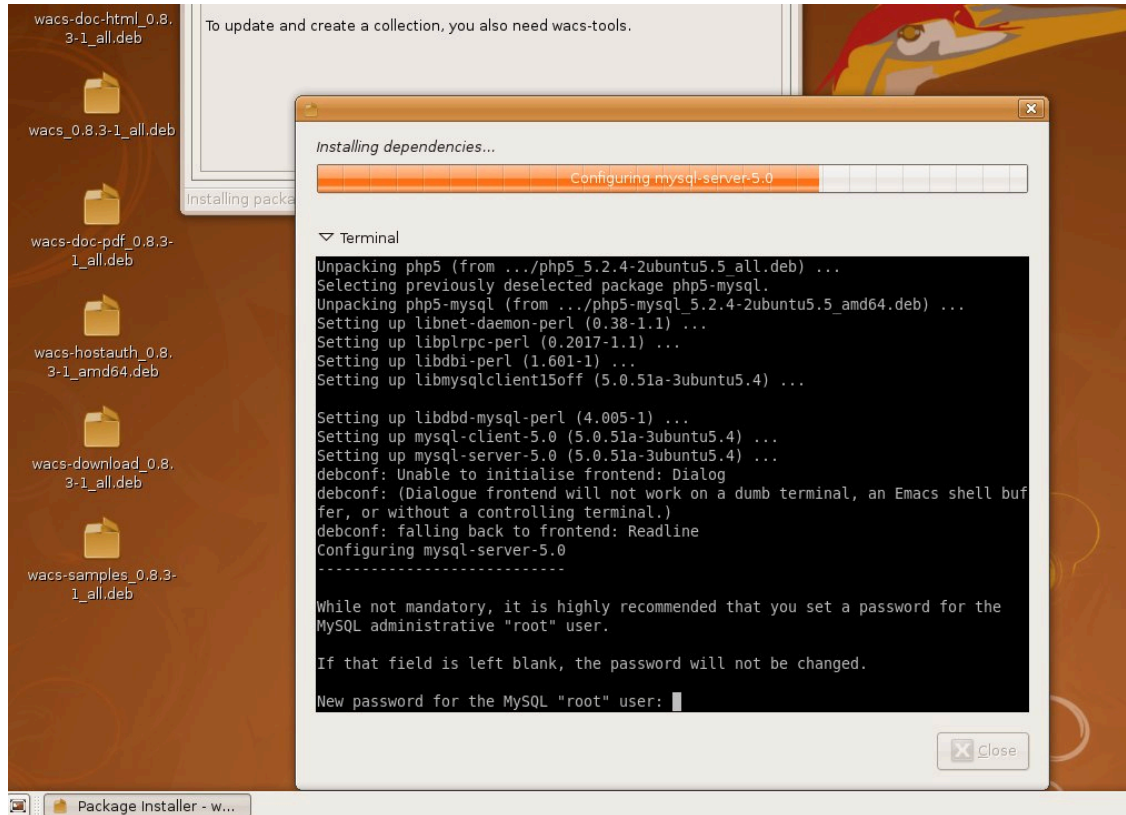
As you can see, it's actually prompting for a new password for the MySQL root user, which we can either enter or just press return to ignore. Generally setting a root password on the MySQL root user is an extremely good idea... With this message acknowledged, the install should actually start making some progress.



Note

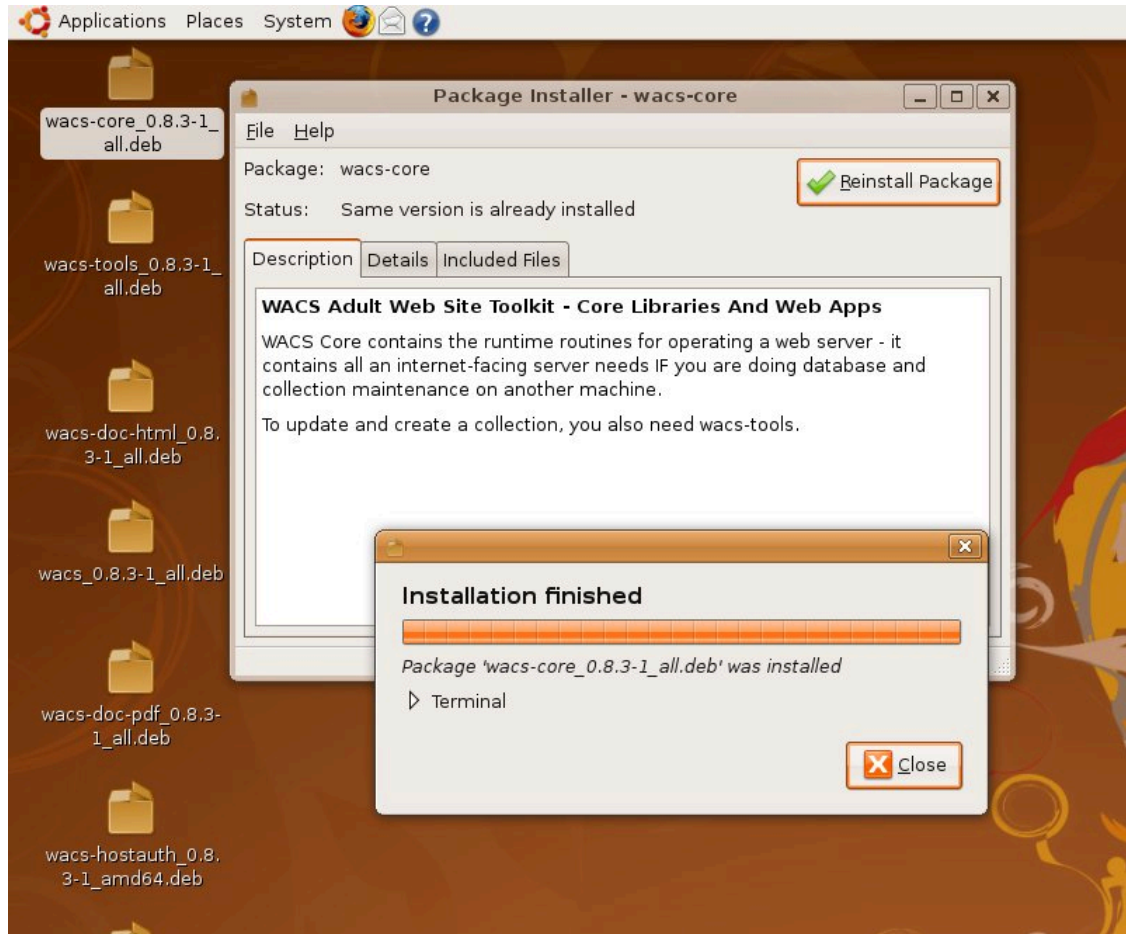
If you already had the **MySQL 5** server installed, and the MySQL root user password was set, the installation may well have proceeded automatically with no intervention required at all.

Installing WACS Using Packages

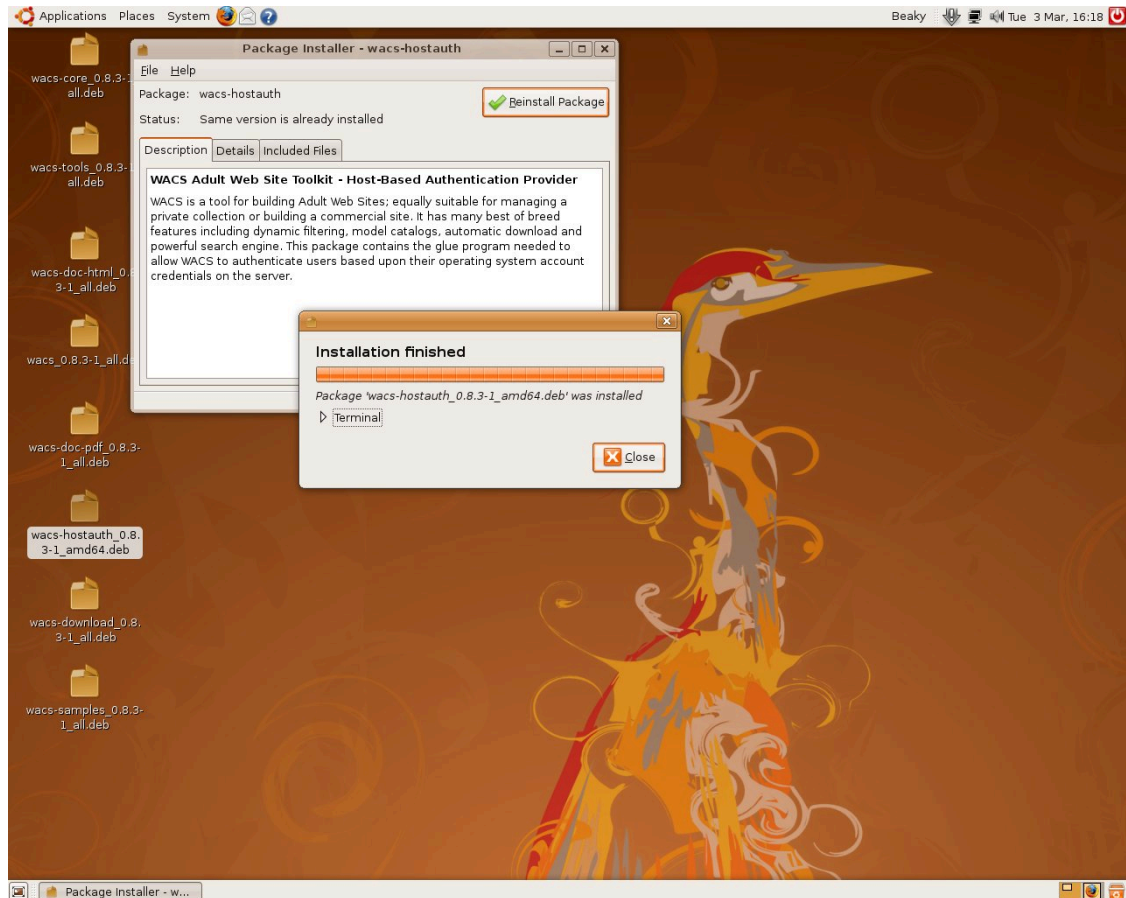


If you didn't choose to set a password, it'll prompt you for it again. If you did, it may well prompt you to enter that password to enable what you're working on. Once the dependencies have all be installed, the **wacs-core** package itself will be installed last. Finally we should see the message *Installation finished* but of course this is merely for **wacs-core** - the installation of the Wacs environment as a whole is not yet complete.

We then need to repeat this installation process with each of the other packages from the wacs suite, with **wacs-hostauth** next and the package called just **wacs** with it's version number last. The reason for this is that the **wacs** package is the “glue” that holds all the parts of Wacs together. In due course we'd hope you could merely install the **wacs** package itself and have all the pre-requisites automatically installed. Unfortunately the current package managers that do the dependency resolution all steadfastly refuse to include other manually downloaded packages in that dependency resolution process, and so it fails. As soon as sourceforge.net starts offering the ability to create package repositories, or we can get Wacs accepted into the repositories of the major distributions, these problems should all disappear.



As each package is installed, you should see this kind of message. Once they're all done, you should be ready to proceed to the next step, which is to get various pieces of infrastructure to start automatically when the system boots and the initial database prepared.



RPM/DEB Initial Setup

Unfortunately it's not easy to have the RPM/DEB packages complete the installation as there are questions that need to be answered as part of the process (like the root password for the database) and that's a serious non-sequitor for an RPM or DEB package. We therefore have had to separate the initial database creation process from the software installation and the next chapter, Chapter 6, *Creating The Initial WACS Databases*, covers the web-based and manual options for doing this. In addition to appearing there, the manual initial database creation process documentation can be found in the text file `README.database` in the WACS installation tree. This installation tree is usually `/usr/share/wacs`.

However, before we proceed to the initialisation step, it is important to ensure that your own user account has the requisite access rights to make use of the WACS software installation itself. You do not need to do this if you plan on accessing the software solely via the web interfaces. As a user that's probably OK, as an administrator less so as there are some tasks that still need to be carried out via a command prompt.

Permissions Issues

The normal action of the RPM/DEB packages is to create a user account to hold all the datafiles, typically called simply `wacs`. Unless you choose to do otherwise, the images and video clips loaded into the WACS system are normally stored in the home directory of this account. For obvious reasons, the security on all the Wacs directories are locked down pretty hard, so you will need to pay attention to it. A new group also called `wacs` is created and initially the `wacs` and web server owner account are added to this. If you wish

to read the documentation, samples and configuration files without always having to become the superuser first, you can simply add your own username to the wacs group.

There are a number of ways to do this including using the **System->Administration->Users and Groups** option or you can do it in the shell as root with the `usermod` command. Since the interface on Users and Groups GUI is very different between different distributions and versions, we're going to stick with the command line method as that is portable. To do this you use the `usermod` command if you're using a superuser shell, substituting the `your_name` with your user name:

```
# usermod -a -G wacs your_name
#
```

If you're using Ubuntu you can also do it directly using the `sudo` command:

```
# sudo usermod -a -G wacs your_name
[sudo] password for your_name:
#
```



Warning

After you've added yourself to the wacs group, the change will almost certainly not take place within the current session. You will have to log out and log back in again for your membership to be recognised. The `groups` command lists the groups you are currently in; when this list includes wacs, things should be working - when it does not, they won't be!

Chapter 6. Creating The Initial WACS Databases

Overview: WACS Database Creation

Once you've installed the WACS packages on your computer, the next step is to actually get WACS itself up and running. Since WACS is expected to have a huge number of images and video clips to look after and a whole lot more information about how they relate to one another and what they contain, it uses a database to store all the information it needs. WACS can in fact use pretty much any relational database package for that although we currently support just two options: MySQL 5.x and Oracle 10/11. However before WACS can use that relational database, it needs to have it's own database account, workspace area, data structures and configuration data created. This can be fairly complex task unless you're an experienced DBA (DataBase Administrator) and this chapter will guide you through this process.

When it comes to creating the initial databases needed by WACS in order to function, you have up to three possible options:

- Use the web application **wacssetup** (see the section called “Creating Initial Databases With wacssetup”) *New in WACS 0.8.4*
- Do the necessary steps manually (see the section called “Manual Database Creation Steps”)
- Do the entire installation and configuration using **easyinstall** (see Chapter 7, *Installing With EasyInstall*)



Tip

If you have installed WACS using either the Ubuntu `.deb` or Fedora `.rpm` packages, you'll almost certainly find that using the new **wacssetup** web application will be the easiest option.



Note

If you are doing the installation with **easyinstall** the necessary steps are taken as part of that process and you don't need to replicate them.

Creating Initial Databases With wacssetup



Warning

wacssetup is a completely new application for Wacs 0.8.4 and as such may well have serious bugs as shipped. Please proceed with caution if you decide to use it. It will tell you which step it is doing and if it fails, you should be able to continue from that step in the manual creation procedures (see the section called “Manual Database Creation Steps”).

If you've just installed WACS using the packaged version, then you will need to open up a web browser and point it at:

```
http://localhost/cgi-bin/wacs/wacssetup
```

You can also run the installer remotely if you either don't have a graphics console on the server, or it's at a remote location. So long as you have administrator rights and the server has been correctly configured,

it should all work just fine. In this case you just substitute `localhost` for the fully qualified internet domain name of the server.

Alternatively you can just bring up the normal Wacs introduction web page, all of the wacs applications will fail with an error message if you try to use them. Either on this introduction page, or on the connection failed error message screen, you'll find a link to *New Installation? click here to perform initial setup (Administrators Only)*. Click on this link and you'll be sent to the **wacssetup**.

wacssetup itself

WACS WacsSetup Progress: 0%

Welcome to WacsSetup!

WacsSetup is a web application designed to be run only once to set up a new **WACS** instance after you've installed it. WacsSetup will create the necessary database accounts, schemas and preload some of the database tables for you. You can follow along with the steps its taking in the [WACS Installation Guide](#) if you like....

If you do encounter problems **PLEASE LET US KNOW!** - there are many ways to contact the Wacs developers on our [sourceforge](#) and [launchpad.net](#) web sites. These options include an email address where all messages will be treated with the utmost descretion and confidentiality.

In order to prove you have the appropriate rights to install software on this system, please provide the system's superuser user name and password. These will be verified prior to proceeding with the WACS setup process. If this is an Ubuntu system, you should enter your own username and password and these will be checked for having full sysadmin priviledge.

System Administrator Account Name:

Password:

The first step of the process is where **wacssetup** makes sure you actually have the rights to do the things you're asking it to do. So it asks you for the root password to the system. If you're on an Ubuntu box and haven't set a root password, you can use your own account name and password providing you have sudo privilege to manage the system.

WACS WacsSetup Progress: 20%

Success You have successfully authenticated as a system administrator

Database Settings	
Database Engine:	MySQL 5.x <small>Currently only MySQL 5 is supported by wacssetup; other databases can be used but you will need to set them up manually - see the Configuration guide.</small>
Database Root Account:	root <small>This is root for MySQL.It is called other things on other databases (Oracle calls it system for instance.)</small>
Database Root Password:	●●●● <small>This is empty by default, but the various start-up scripts try hard to encourage you to set one. If you HAVE ALREADY set one, enter it here.</small>
Wacs Database Name:	wacs <small>This is the name of the database. This will normally be wacs unless you know that the database server you're planning to use already has another database of that name already installed.</small>
Wacs Database Account Name:	wacs <small>This is the database account name you want WACS to use for all it's database work. It has nothing to do with the operating system account name which is totally different but may share the name wacs.</small>
Wacs Account Password:	wacs <small>This is the password to the WACS database account - you could leave it set as the default of wacs but that would be extra vulnerable to hacking.</small>

The second screen asks you to confirm the details of the database wacs is going to use. In almost all cases, apart from giving the database root password (if set), you should probably just accept the defaults. The choices are here primarily to highlight to you what is actually going to be used.



Note

Merely changing the password here from the default will not prove completely successful (yet), as the configuration file `wacs.cfg` has to be updated to match it. If you do change it here, you should log in on a terminal window *before progressing to the next screen* and change the entries in the database section of the `wacs.cfg` config file as well. Choosing a new password in **wacssetup** will ensure the database is setup with the new password from the start, but the last step of **wacssetup** will fail if the password **wacsetup** is using differs from that given in `wacs.cfg` (which is usually to be found in `/etc/wacs.d/wacs.cfg`).

Preparing The Database Area
 This step creates the wacs database area (which you've chosen to call wacs) and creates the owner user account of wacs for you.

NB: Note that we add access rights for wacs from localhost and from willow.bevteccom.co.uk ONLY. If you try to access from anywhere else, MySQL will reject the connection. To enable access from additional hosts or other MySQL user accounts, you will need to add the authorisation for those manually and probably enable TCP mode connections to MySQL (depends on the default for your linux distribution or whether you've already changed it for something else). How to do this is detailed in the installation guide.

Progress Report:	
Authenticating	Connected to MySQL 5.x
Creating Database wacs	Database wacs created successfully.
Creating User Accounts	User wacs created successfully.
Grant Access Rights	Necessary rights granted to wacs.
Commit Changes	Committed and Flushed Privileges
Disconnecting	Done

Next Step:

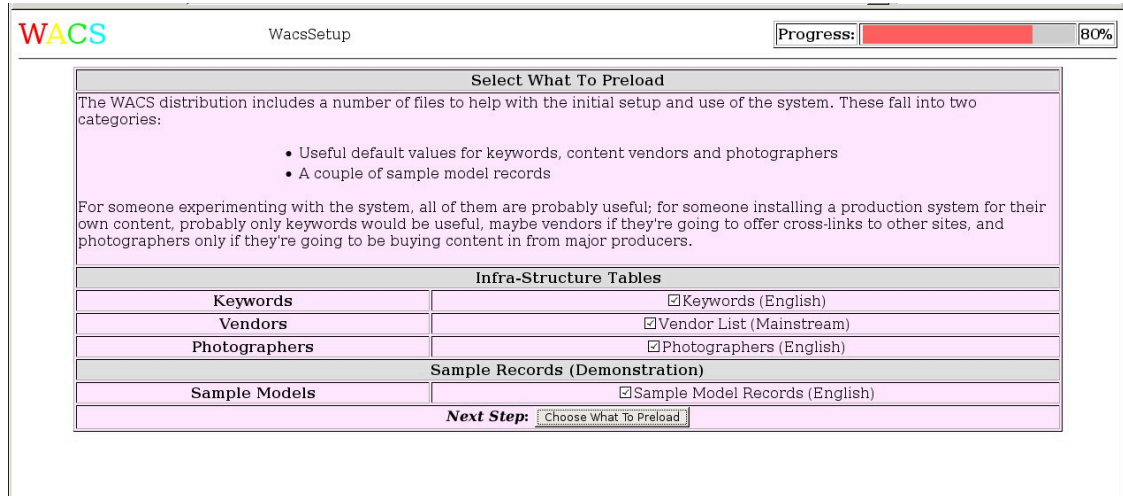
This step creates the basic database structures and user account. There's not really much to say about this apart from a mention that if this *fails* for any reason, take a look at the section called "Installation Troubleshooting" and Chapter 10, *Troubleshooting* for help and guidance on what to do next.

Creating Database Tables
 This step creates the database schemas for WACS - these are the structures in which each respective type of data will be stored.

Progress Report:	
Connecting...	Success
" 1. Photographer"	Success
" 2. Vendor"	Success
" 3. Sets"	Success
" 4. Models"	Success
" 5. Assoc"	Success
" 6. Idmap"	Success
" 7. Download"	Success
" 8. Tag"	Success
" 9. Conn"	Success
" 10. Keyword"	Success
"Completed."	

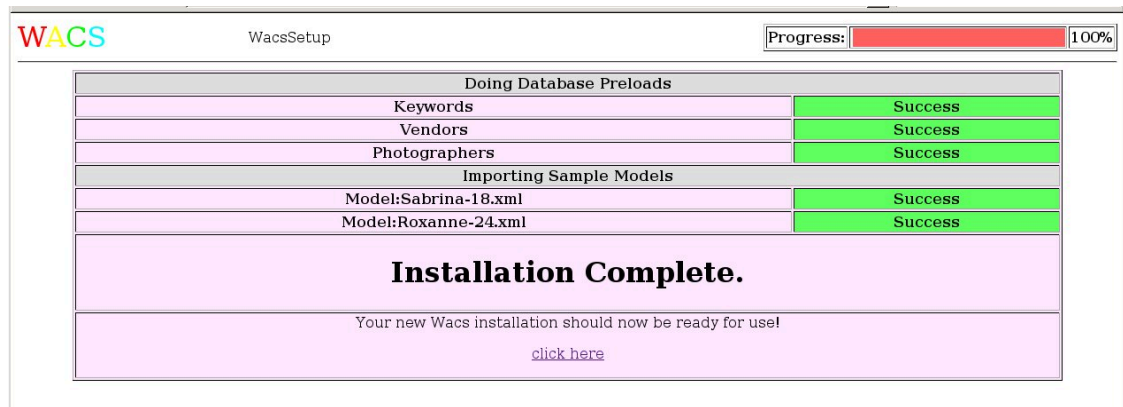
Next Step:

This step creates the WACS specific database structures, known as *schemas* for each of the things it mentions. At this level, even if you're not planning on using facilities like vendors and photographers, at least the data structures need to be present, even if there's no data in them.



At this step you have to decide what sample data you want pre-loaded into the Wacs system. Our advice would be that unless you have an alternative set of keywords that you've developed yourself, you're almost certain to want to preload the Keywords schema under almost all circumstances. The vendors list is definitely useful for private collectors and is probably also of some use to website operators who might wish to earn additional revenue through cross-referral commissions. It also offers some examples of how to configure the download system. The photographers database is probably of the least use unless you're either a collector using sources that provide that information, or a website owner planning to offer that search feature at some point. That said it's small and relatively harmless, so including it isn't a big problem.

The sample model records are a rather different issue as these really are *NOT* suitable for inclusion on any kind of publicly accessible system. The sets and videos mentioned may be licensable for commercial use - contact Wacs developer Beaky for more information. These are however very useful introductions to how model records work and will significantly aid you in getting used to using and managing the Wacs system. We hope to shortly be able to provide some of the sets mentioned for download so you can set up a server with an initial data set.



... and that basically is it. Wacs is installed and the initial system up and running. Although we've covered it else where (most notably in the User Guide, the next section will cover what happens when you click on the *click here* link that first time.

After wacssetup

So... you've installed the packages, you've setup the database and your Wacs server is ready for use. But what exactly should you expect?... this section just guides you through what that first connection to your newly install system should look like.

WACS

Access to this WACS server is restricted. In order to be able to access it, you will need appropriate authentication credentials from the web manager of this installation. If you know these and received this message due to expiry of a lease or by coming from a new location, you can [login here](#).

Additional Information:
Authentication Required

At this point you're probably thinking *Hey, I thought you said the server was ready? Why's it asking me more questions?*. Well, remember Wacs is a sophisticated system that tries very hard to be as secure as possible because of the nature of the material it's designed to hold. Although you may not be familiar with it yet, this is actually the start of just about each and every new session with Wacs. This message is intentionally cryptic so that it does not immediately indicate what the system is. You just need to click on the [login here](#) link to proceed.

WACS

Username:

Password:

Here it's asking for your username and password - normally these are the same ones as you'd use when connecting to the server itself - nothing special.

WACS

Welcome To Wacs

Please indicate your consent:

I am over 18 and wish to view adult material

Preferences (Exclusions):

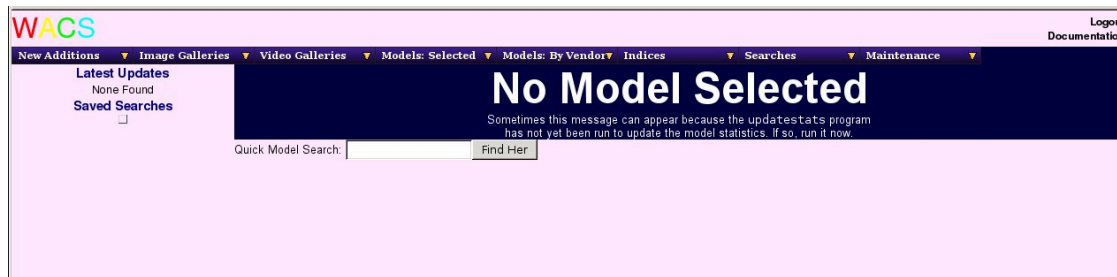
Please select the types of sets you **DO NOT** wish to see:

Straight Solo Toys Backstage Masturbation Duplicate Clothed Interview Group Orgy Lesbian

Messages And Alerts:

None At Present

At this screen all you really need to worry about is ticking the box consenting to viewing adult material (although there probably isn't any actually there yet). Then just click *Complete Sign-On* and you're there!



Yes, this is actually a perfectly working Wacs system! It just looks very spartan without any actual data to present. If you look through the model indexes, you should find empty pages for both Roxanne and Sabrina if you installed the sample model records.

If you run into problems during the installation, there's a whole chapter (Chapter 10, *Troubleshooting*) which takes you through many of the common pitfalls and problems. This covers both installation issues (the section called “Installation Troubleshooting”) and general issues (the section called “General Troubleshooting Tips”).

The next step is to add some data but that is such a big topic that there's a whole separate guide about that! Go take a look at the Administration Guide....

Manual Database Creation Steps

1. Create the WACS database account (MySQL)

Connect to the database as the root user, giving the password as appropriate; if you've not set one the default is blank so just press return when prompted. You then create the database and the user account (once for each place you might be coming from), give access to that user account to the database, flush the contents and then quit. Here's a sample conversation - you obviously need to replace the 'myserver.example.com' with whatever your real fully qualified domain name is. You might also wish to choose a more secure password, but do remember you need to change it in /etc/wacs.d/wacs.cfg (dbpass and phpdbconnect variables) as well or it just won't work.

Here goes:

```
# mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 80
Server version: 5.0.45 Source distribution

Type 'help;' or \h for help. Type '\c' to clear the buffer.

mysql> CREATE DATABASE wacs;
Query OK, 1 row affected (0.03 sec)

mysql> CREATE USER 'wacs'@'myserver.example.com'
-> IDENTIFIED BY 'wacs';
Query OK, 0 rows affected (0.08 sec)

mysql> CREATE USER 'wacs'@'myserver'
```

```

-> IDENTIFIED BY 'wacs';
Query OK, 0 rows affected (0.00 sec)

mysql> CREATE USER 'wacs'@'localhost'
-> IDENTIFIED BY 'wacs';
Query OK, 0 rows affected (0.00 sec)

mysql> GRANT ALL ON wacs.* TO wacs;
Query OK, 0 rows affected (0.00 sec)

mysql> COMMIT;
Query OK, 0 rows affected (0.00 sec)

mysql> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.00 sec)

mysql> QUIT;
Bye
#

```

2. Create the necessary database schemas

The next step is to log in as the wacs user account you just created and run the SQL scripts that create the various database tables. There are scripts provided for both MySQL 5 and Oracle 10, but this example is based upon using the MySQL 5 version. These should be found in /usr/share/wacs/creation/MySQL5.

```

# cd /usr/share/wacs/creation/MySQL5
# mysql -u wacs -p wacs
Enter password:
Welcome to the MySQL monitor.  Commands end withh ; or \g.
Your MySQL connection id is 82
Server version: 5.0.45 Source distribution

Type 'help;' or '\h' for help. Type '\c' to clear the buffer.

mysql> source create_mysql.sql
WACS Database Table Creation Script for MySQL
Commencing Table Creation:
  1. Photographer
Query OK, 0 rows affected (0.23 sec)

  2. Vendor
Query OK, 0 rows affected (0.01 sec)

  3. Sets
Query OK, 0 rows affected (0.01 sec)

  4. Models
Query OK, 0 rows affected (0.02 sec)

  5. Assoc
Query OK, 0 rows affected (0.01 sec)

```

```

6. Idmap
Query OK, 0 rows affected (0.01 sec)

7. Download
Query OK, 0 rows affected (0.00 sec)

8. Tag
Query OK, 0 rows affected (0.01 sec)

9. Conn
Query OK, 0 rows affected (0.02 sec)

10. Keyword
Query OK, 0 rows affected (0.01 sec)

Tables Created - Committing Changes
Query OK, 0 rows affected (0.00 sec)

Completed.
mysql> commit;
Query OK, 0 rows affected (0.00 sec)

mysql> quit;
Bye
#
    
```

3. Create default database contents (optional)



Note

this step is *RECOMMENDED* unless you know precisely what you are doing. Some commercial sites may not wish to preload this data, but should substitute their own alternatives if they want certain features to work.



Warning

If you changed the password in step 1. above from the default value, you *NEED* to have made the matching change to the configuration file before doing this step.

There are three database tables that contain standard values, plus whatever you add to them over time; these are called keywords, photographers and vendors. In this step you will be loading some initial values into these database tables. To do this you need to go to `/usr/share/wacs/samples/database` and run the three populate commands in the `utils` directory on the XML data files there.

```

# cd /usr/share/wacs/samples/database
# /usr/share/wacs/utils/keywordpop keywords.xml
Inserting Entry For Keyword: seethru
Inserting Entry For Keyword: nopanties
Inserting Entry For Keyword: teen
[...]
Inserting Entry For Keyword: cyc
Inserting Entry For Keyword: country
    
```

```

Inserting Entry For Keyword: alley
# /usr/share/wacs/utils/photpop photographers.xml
Inserting Entries For Photographer: DFR
Inserting Entries For Photographer: SWE
Inserting Entries For Photographer: MAX
[...]
Inserting Entries For Photographer: JAN
Inserting Entries For Photographer: TOB
Inserting Entries For Photographer: HBM
# /usr/share/wacs/utils/vendpop vendors.xml
Inserting Entries For Site: SE
Inserting Entries For Site: WACSD
Inserting Entries For Site: FJ
[...]
Inserting Entries For Site: AMK
Inserting Entries For Site: KPC
Inserting Entries For Site: KHA
#
    
```

4. Import sample model records (optional)



Note

This is a very optional step but will help you if you're setting up a WACS web site for the first time.

This step loads two sample model records into the database to provide an example of how a typical model record might look. There are two such files provided in `/usr/share/wacs/samples/models` containing details of two models: Sabrina and Roxanne.

```

# cd /usr/share/wacs/samples/models
# wacsimport Sabrina-18.xml
Keyless ID map for JAFN
# wacsimport Roxanne-24.xml
#
    
```

5. Import sample set records (optional)



Note

For some sample sets for your new WACS web site, we invite you to visit our demonstration site at PinkMetallic.com [<http://www.pinkmetallic.com/>] - *[CAUTION - contains adult material]*. Access to this site is currently free but there may be a small charge at some point in the future if referral revenues don't cover costs.

You will first need to download the sets that appeal to you, so if you select set number 14 for instance, you will need the `set14.zip` file and the `set14.xml` file. These can be found via the link titled *WACS Resources* from the main menu on PinkMetallic.com [<http://www.pinkmetallic.com/>]. Once you have these downloaded, place them both in the same directory and run the **wacsxmlin** program to load the data from the XML file. The **wacsxmlin** program requires the name of the `.xml` file it is to read as an argument, eg `wacsxmlin set4.xml`. The zip file will be automatically unpacked and its contents placed in the images area. In this example, we're going to use the default layout, which if you haven't edited

the configuration file will be gallery style (please see the discussion on Site Layout in the administration guide for more details).

```
# cd ~/Download
# wacsxmlin --default set14.xml
Unpacking archive:
  Roxanne07001.jpg
  Roxanne07002.jpg
  Roxanne07003.jpg
[... ]
#
```

Chapter 7. Installing With EasyInstall

Easyinstall: Download

WACS is obtainable from sourceforge where it is known as WACSip because of a name clash with a different package. The sourceforge site contains the latest code, documentation, news articles, mailing list details and even some screenshots. The URL is <http://wacsip.sourceforge.net> [<http://wacsip.sourceforge.net/>]. You can obtain WACS either by downloading one of the official releases or by pulling the very latest "bleeding edge" version from the Subversion repository. We do not use the older CVS version control system at all; WACS is a new project so it was started fresh under Subversion (svn). The official releases are also mirrored at <http://launchpad.net/wacs> [<http://launchpad.net/wacs/>].

To get the latest official release, go to the sourceforge project page [<http://sourceforge.net/projects/wacsip/>] and click on download. If the latest release is 0.8.1, then download `wacs-0.8.1.tar.gz`. Once downloaded, save it somewhere appropriate for unpacking - the installation will work without the archive, although there are sample configs and documentation files which are not installed anywhere. If for instance you've decided to keep `wacs` in an `"src/wacs"` directory of your home directory and your web browser has placed the downloaded file on your Desktop, do:

```
% cd
% mkdir -p src/wacs
% cd src/wacs
% tar -xzvf ~/Desktop/wacs-0.8.1.tar.gz
x wacs-0.8.1/README
[ ... ]
% cd wacs-0.8.1
```

Alternatively to get the very latest version from the sourceforge subversion repository, do the following:

```
% cd
% mkdir -p src/wacs
% cd src
% svn co https://wacsip.svn.sourceforge.net/svnroot/wacsip/trunk wacs
[ ... ]
% cd wacs
```

Easyinstall: Running

EasyInstall should be just that, but probably won't be. An installer is a complex thing and depends heavily on the environment around it. If you're running Fedora Core 6, Fedora 7, Fedora 8, Fedora 9 or Ubuntu 7.04 (Feisty Fawn) or 8.04 LTS and accept all the defaults, there is a reasonable chance it'll work. If you're running an older release with either MySQL < 5.0 or Apache < 2.2, you may well have problems... On other RPM-based distributions with the yum updater (SuSE, CENTOS, RHEL) you're in with a chance of it working, or at the very least installing most of the necessary infrastructure for you. Other non-RPM based distributions will almost certainly fail (apart from Ubuntu which should work), but if you feed back the error messages, we'll have a go at fixing it. If using an apt-get based distribution, modifying the places where it checks for "Ubuntu" to whatever your distribution returns when you do an `lsb_release -sir` may well help.

To run `easyinstall`, become the super user (root) and issue the following commands:

```
# cd unpack_location/install
# ./easyinstall
```

and follow the onscreen prompts. Packages invoked by this script will include your package manager (yum, apt-get, etc) and the perl CPAN installer. At the end of the package configuration questions, you will be shown your answers and asked for confirmation; if you answer n for no, you'll be asked the questions again. After that, once the installation phase starts, if you make a mistake in answering a question press <CTRL>-C to abort and start again. Between all the package managers and installers, you may well have to answer a couple of dozen questions in all.

The final system configuration step before starting using WACS is only applicable if you're using a version of Linux which includes the security hardening extension, SELinux. This currently is limited to the Red Hat based distributions like Fedora, Red Hat Enterprise Linux and CENTOS. Rumour has it OpenSuSE will shortly be including SELinux as an option. Unfortunately this release of WACS is not compatible with SELinux and so it'll have to be configured so as to ensure that SELinux is running in a reduced mode that will not block the WACS components from working. We hope to have this resolved by the next release of WACS. You can determine the current mode of SELinux using the `sestatus` command:

```
% /usr/sbin/sestatus
SELinux status:                disabled
%
```

To change the normal operational mode, you need to edit the file called `/etc/sysconfig/selinux` and change the line which reads `SELINUX=enabled` to either `SELINUX=permissive` (generates big log files and slows machine but allows for SELinux to be turned back on later more easily) or `SELINUX=disabled` (which disables it completely but can cause problems in the future if you want to switch it back on). You will also probably want to disable it immediately rather than doing a reboot before you can continue working on WACS - to do this, become root and run the following:

```
# /usr/sbin/setenforce 0
setenforce: SELinux is disabled
#
```

You can check this change has taken effect by using the `sestatus` command again.

At that point the installation should be complete and you'll need to look at the getting started document for how to set up a WACS collection.

Chapter 8. Manual Installation

Caution

This is a complex task and some level of familiarity with the Unix/Linux command line will probably be needed to be successful. If you are using these instructions to install WACS onto a web site hosting provider's systems, you may wish to take some time to familiarise yourself with the tools available at their control panel before starting on this process. Please make sure that all of the packages/services described in the prerequisites chapter (Chapter 3, *Prerequisites*) have been installed and are running correctly.

Manual Installation: Steps

Preparation - With Root Account

1. Create the wacs user account and group and place your own username in the group file (`/etc/group` or distributed name service equivalent). This is easily done with the `useradd` command on Redhat-based distributions:

```
# groupadd -r wacs
# useradd -m -g wacs -r -c "WACS Files Owner" \
  -s /bin/bash wacs
#
```

2. check the web server is working, install the barebones WACS index pages from the `htmlbones` directory of the distribution into your web tree and check you can see it. On a default Fedora Core 5 installation, this would be done with:

```
# cd unpack_location
# mkdir /var/www/html/wacs
# cp -rp htmlbones/* /var/www/html/wacs
#
```

3. For the perl modules, first check whether your operating system distribution includes them - Fedora Core 5 had packages called `perl-DBI` and `perl-DBD-MySQL` - so these could be simply installed with `yum install perl-DBI` and `yum install perl-DBD-MySQL`. The next easiest way to install the necessary perl modules, if they are not already present, is to use the `cpan` command. On some recent releases, the `cpan` command has become optional, you will have to do a `yum install cpan` first. Once you have `cpan`, the necessary perl module installs can typically be done with:

```
# cpan XML::Simple
# cpan Data::Dumper
# cpan File::Basename
# cpan MIME::Base64
#
```

Preparation - Web Hosting Site

The first step is to create a new folder under the web document tree (conventionally `public_html`) called `wacs`. Into this directory you need to copy all the components in the `unpack_location/htmlbones` directory and its sub-directories, retaining the directory structure as found below `htmlbones`. There are a number of ways in which to achieve this and they vary enormously depending on your hosting provider, level of access at your hosting provider and equipment available to you locally.

The second step is to check with the Perl Modules option in the control panel and make sure that DBI and DBD::MySQL modules are available. If not, you may need to either go through the process of importing them from CPAN or raise a support call with your hosting provider asking for them to be added.

Wacs Code - With Root Account

- install the `Wacs.pm`, `WacsUI.pm`, `WacsStd.pm` and `WacsId.pm` perl modules into the `site_perl` directory of your system - change the 5.8.8 to whatever your current version of perl is. [NB: note the change of case of the first letter of the perl module name from `wacs.pm` to `Wacs.pm`, and of `wacsid.pm` to `WacsId.pm`]:

```
# cd unpack_location
# cp modules/wacs.pm /usr/lib/perl5/site_perl/5.8.8/Wacs.pm
# cp modules/wacsui.pm /usr/lib/perl5/site_perl/5.8.8/WacsUI.pm
# cp modules/wacsstd.pm /usr/lib/perl5/site_perl/5.8.8/WacsStd.pm
# cp modules/wacsid.pm /usr/lib/perl5/site_perl/5.8.8/WacsId.pm
#
```

- install the `wacs` PAM (Pluggable Authentication Modules) configuration into the `/etc/pam.d` directory. You will also need to compile the `pam_auth` program using the provided make file and then install the binary created into wherever your `tooldirs` configuration variable is set to (a common value is `/usr/local/bin`). If this compilation fails, the most likely cause is that the `libpam` development package is not installed. Then you need to create the `/var/run/wacs` directory where the dynamic leases files are stored and change its ownership to `apache` (or whatever your web server user is).

```
# cp unpack_location/security/wacs.pam /etc/pam.d/wacs
# chown root.root /etc/pam.d/wacs
# chmod 644 /etc/pam.d/wacs
# cd unpack_location/security
# make -f Makefile all
Building pam_auth.x86_64-Fedora8 ...
cc -o pam_auth.`arch`-`lsb_release -si | sed 's/\ /_/g'`-`lsb_release -sr`
pam_auth.c -lpam
# ls pam_auth*
pam_auth  pam_auth.c  pam_auth.x86_64-Fedora8
# cp pam_auth.x86_64-Fedora8 /usr/local/bin/pam_auth
# chown root.wacs /usr/local/bin/pam_auth
# chmod u+s /usr/local/bin/pam_auth
# mkdir /var/run/wacs
# chown apache.apache /var/run/wacs
#
```



Note

if you run selinux (Security Enhanced Linux) on Fedora Core or Redhat (or another future distro that includes it), you will need to give apache privilege to read the /var/run/wacs directory - this can be done by changing the context of the directories and files. The commands to do this are:

```
# chcon system_u:object_r:httpd_sys_content_t /var/run/wacs
# chcon -R system_u:object_r:httpd_sys_content_t /var/run/wacs/*
#
```

If the leases file does not exist when you first do this and you encounter problems, try using the second of these two commands again.

- install the wacs application programs into the cgi-bin tree:

```
# cd unpack_location
# cp index/wacs* models/wacs* presentation/wacs* /var/www/cgi-bin/
# cp retrieval/wacs* search/wacs* tag/wacs* /var/www/cgi-bin/
# cp security/wacslogin /var/www/cgi-bin/
# cp security/wacslogout /var/www/cgi-bin/
# cp security/wacspref /var/www/cgi-bin/
# cp manage/wacs* /var/www/cgi-bin/
# chmod 755 /var/www/cgi-bin/wacs*
#
```

- install the wacs application programs into the cgi-bin tree:

```
# cd unpack_location
# cp index/wacs* models/wacs* presentation/wacs* /var/www/cgi-bin/
# cp retrieval/wacs* search/wacs* tag/wacs* /var/www/cgi-bin/
# cp security/wacs* manage/wacs* /var/www/cgi-bin/
# chmod 755 /var/www/cgi-bin/wacs*
#
```

- copy the applications that are just duplicate versions of existing commands and change the appropriate mode variables:

```
# cd /var/www/cgi-bin
# cp wacsmodelpage wacsmpthumbs
# editor wacsmpthumbs
# cp wacsmodelpage wacsmpmini
# editor wacsmpmini
# cp wacsimgcats wacsvidcats
# editor wacsvidcats
# cp wacsimgcats wacsphotcats
# editor wacsphotcats
# cp wacsimglist wacsvidlist
# editor wacsvidlist
# cp wacsnewssets wacsnewvideo
```

```
# editor wacsnewvideo
#
```

edit the file and change the mode variable (thumbsmode in this case). Repeat this process for wacsimgcats becomes wacsvidcats and wacsphotcats, and so on. At the end, make sure all of the copies are executable:

```
# cd /var/www/cgi-bin
# chmod 755 wacs*
```

Wacs Code - Web Hosting Site

Due to limitations on what you can install, the ability to authenticate user accounts using the operating system tools cannot be implemented when using a Web Hosting Site. You will therefore have to use one of the other authentication techniques - permanent access lists or enable all access at the WACS level and then use Apache's .htaccess files to demand a password before accessing those commands.



Note

We will be addressing these issues in a future release, hopefully the very next release, Wacs 0.8.5. Support for using Wacs on a web hosting site has been added right at the very end of development work on the Wacs 0.8.4 series as we've been creating our demonstration site, PinkMetallic.com [<http://www.pinkmetallic.com/>]

The first step is to copy the Wacs Perl Modules into an appropriate place - our web hosting provider had already created a perl subdirectory of our account's home directory, so we used that. That probably makes sense even if it hasn't already been done for you.

```
# cd unpack_location
# cp modules/wacs.pm ~/perl/Wacs.pm
# cp modules/wacsui.pm ~/perl/WacsUI.pm
# cp modules/wacsstd.pm ~/perl/WacsStd.pm
# cp modules/wacsid.pm ~/perl/WacsId.pm
#
```



Tip

Note the change of case of the names; most command line ftp/sftp tools will allow you to specify a second name on a put command for the name of the file at the destination. Thus you can do: `put wacs.pm Wacs.pm` to do the name change as part of the transfer itself.

You can skip all of the bits about security and the pam modules as we'll be unable to use those aspects of the Wacs system on a web hosting service. The next step is setting up the cgi-bin directory - the first thing to do is to find out where the hosting provider has put it. In the case of the provider we're using for PinkMetallic.com [<http://www.pinkmetallic.com/>] this is a sub-directory called `cgi-bin` under the `public_html` directory.

In common with the packaged versions of Wacs, we're going to recommend putting the wacs scripts into a sub-directory of the `cgi-bin` directory when using a web hosting service.

```
# cd unpack_location
# cp index/wacs* ~/public_html/cgi-bin/wacs/
```

```
# cp models/wacs* ~/public_html/cgi-bin/wacs/
# cp presentation/wacs* ~/public_html/cgi-bin/wacs/
# cp retrieval/wacs* ~/public_html/cgi-bin/wacs/
# cp search/wacs* ~/public_html/cgi-bin/wacs/
# cp tag/wacs* ~/public_html/cgi-bin/wacs/
# cp security/wacslogin ~/public_html/cgi-bin/wacs/
# cp security/wacslogout ~/public_html/cgi-bin/wacs/
# cp security/wacspref ~/public_html/cgi-bin/wacs/
# cp manage/wacs* ~/public_html/cgi-bin/wacs/
# chmod 755 ~/public_html/cgi-bin/wacs/wacs*
#
```

As described above, the next step is to make copies of those wacs applications that are merely versions of existing applications with alternative default values. In most cases, this will be changing variables called either *thumbsmode* or *vidmode* as appropriate.

```
# cd ~/public_html/cgi-bin/wacs
# cp wacsmodelpage wacsmpthumbs
# editor wacsmpthumbs
# cp wacsmodelpage wacsmpmini
# editor wacsmpmini
# cp wacsimgcats wacsvidcats
# editor wacsvidcats
# cp wacsimgcats wacsphotcats
# editor wacsphotcats
# cp wacsimglist wacsvidlist
# editor wacsvidlist
# cp wacsnewssets wacsnewvideo
# editor wacsnewvideo
#
```

One additional step we have to take within the web hosting environment is to add symbolic links within the `cgi-bin` directory back out to the `~/perl` directory in order that our web applications can pick up the Wacs perl modules. This is done as follows:

```
# cd /home/yoursite/public_html/cgi-bin/wacs
# ln -s /home/yoursite/perl/Wacs.pm
# ln -s /home/yoursite/perl/WacsUI.pm
# ln -s /home/yoursite/perl/WacsStd.pm
# ln -s /home/yoursite/perl/WacsId.pm
#
```

Configuration - With Root Account

9. install the configuration file, `wacs.cfg` into a suitable location such as `/etc/wacs.d` or `/usr/local/etc/wacs.d`. Edit this file and make sure the key settings are right for your server, specifically the location of the image files, the location of the video files and the server name in the URLs. You will also need settings for the database user name and password you intend to use, and the environment and path locations needed for the database system you are using. For more information, see the Configuration Guide.
10. create a suitable permanent access control list in the configuration directory chosen above, the supplied `wacs.acl` should provide a suitable template. This step can be skipped if you're only ever going to use

lease-based access with logins. For more information on the format of the access control lists, please see the section on security in the Configuration guide.

Configuration - Web Hosting Site

This is one area where the procedure for a Web Hosting Site is significantly more complex than that for a conventional Wacs install as practically all of the entries related to database and file system locations (`$fsloc`) will need tuning based upon actual layout of the account on the web hosting site.

The first step is to create a suitable sub-directory for the wacs configuration files, ideally in the top level of your file space. If at all possible *DO NOT* put it in the web space directory as it contains passwords and other configuration items which you do not want everyone to be able to access. Next you want to find out the full path name of your top level directory, for which you use the `pwd` to the Linux/Unix shell.

```
# pwd
/home/yoursite
#
```

Your wacs configuration files will therefore live in `/home/yoursite/wacs.d` instead of the normal location of `/etc/wacs.d`. To make this change we have to go into the `Wacs.pm` perl module in the `perl` sub-directory and make the appropriate change. We could avoid this *if* the web hosting provider would allow us to establish the `WACS_CONFIG` environment variable in the appropriate virtual server configuration section in the **apache** web server. Our hosting provider would not do this for us so we have to work around that by modifying the default value in the `Wacs.pm` perl module itself. This is a little unfortunate in that it'll mean we have to modify this module each and every time there is a Wacs code update that affects it.

Here's the appropriate change you need to make - what we've done here is copy the line setting the existing value called `default_location1` and commented out the original version with a hash (`#`) symbol at the start of the line. We've then edited the copy to have the new location on our web hosting provider's site there as the first default location:

```
# Assumptions
my $fssep = '/';

# Where to find the WACS configuration
#my $default_location1="/etc/wacs.d";
my $default_location1="/home/yoursite/wacs.d";
my $default_location2="/usr/local/etc/wacs.d";
my $default_location3="/opt/wacs/etc/wacs.d";
my $default_specifier="WACS_CONFIG";
```

The next step is to copy into this new `wacs.d` directory a sample `wacs.cfg` and `wacs.acl` file. We've provided a sample pair that will hopefully be a good starting point in the `conf/WebHost` sub-directory of the wacs source distribution. Please do make sure that you manually create at least each toplevel directory under your account's home area - ie `run`, `cache`, etc.

Database - With Root Account

11.create a suitable owner account for the wacs data tables in your database system. The instructions here cover doing this for both MySQL and Oracle 10g, in that order. With MySQL 5.x, this would be done with:

```
% mysql --user=root
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 17 to server version: 5.0.22

Type 'help;' or '\h' for help. Type '\c' to clear the buffer.

mysql> create database wacs;

mysql> create user 'wacs'@'myserver' identified by 'wacs';

mysql> create user 'wacs'@'localhost' identified by 'wacs';

mysql> grant all on wacs.* to wacs;

mysql> commit;

mysql> flush privileges;

mysql> quit
```

With Oracle 10g, this would be something like:

```
% sqlplus
SQL*Plus: Release 10.1.0.3.0 - Production on Fri Sep 29 14:53:56 2006
Copyright (c) 1982, 2004, Oracle.  All rights reserved.

Enter user-name: system
Password: *****

Connected to:
Oracle Database 10g Release 10.1.0.3.0 - 64bit Production

SQL> create user wacs identified by wacs;

User created.

SQL> grant connect, resource to wacs;

Grant succeeded.

SQL> alter user wacs default tablespace main
quota unlimited on main;

User altered.

SQL> commit;

Commit complete.

SQL> quit
Disconnected from Oracle Database 10g Release 10.1.0.3.0 - 64bit Production
```

Of course there is a huge amount of variance in how any given database is installed, so you will need some knowledge about your installation. For instance, your main tablespace may not be called "main" as it is in the example.

Database - With Web Hosting

This is an area within the process where unfortunately we can't give you much help as it will vary between the different web hosting providers. With our provider for the PinkMetallic.com [<http://www.pinkmetallic.com>] domain, there was a control panel for creating MySQL Databases which consisted of three steps: Create New Database, then MySQL Users: Add New User and finally Add User To Database. There was an additional option of Modify Databases which we had no cause to need at this point.

With these three done in that order, we got a MySQL database account we could log into using the following:

```
# mysql -u yoursite_wacs -p yoursite_wacs
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 206917
Server version: 5.0.81-community MySQL Community Edition (GPL)

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>
```

Database Schema Creation - Both Environments

12. login as the database user just created and run the table create SQL script from the creation directory of the wacs distribution. These scripts are called by a single creation script, the one for oracle is called `create_oracle.sql`, the one for MySQL is called `create_mysql.sql`. To run this on MySQL 5.1 using the account created in the step above, you would do the following (the only difference for a web hosting service is that you probably have a `yoursite_` prefix on the user and database names):

```
% cd unpack_location/creation
% mysql --user=wacs --password=wacs wacs < create_mysql
[...]
```

To run this on Oracle 10g using the account created in the step above, you would do the following:

```
% cd unpack_location/creation
% sqlplus wacs/wacs @create_oracle
SQL*Plus: Release 10.1.0.2.0 - Production on Fri Oct 6 19:11:41 2006
Copyright (c) 1982, 2004, Oracle. All rights reserved.

Connected to:
Oracle Database 10g Release 10.1.0.3.0 - 64bit Production

WACS Database Table Creation Script for Oracle
```

Commencing Table Creation:

1. Photographer

Table created.

2. Vendor

Table created.

3. Sets

Table created.

4. Models

Table created.

5. Assoc

Table created.

6. Idmap

Table created.

7. Download

Table created.

8. Tag

Table created.

9. Conn

Table created.

10. Keyword

Table created.

Tables Created - Committing Changes

```
Commit complete.
```

```
Completed.
```

```
Disconnected from Oracle Database 10g Release 10.1.0.3.0 - 64bit Production
%
```

Support Scripts - With Root Account

13. The penultimate major activity is to install the tools scripts, and if required the download and migrate tools, into a suitable directory, normally this would be `/usr/local/bin`, but it could be put within the wacs tree if desired. `/usr/local/bin` is usually in the default path for all the shells and thus available to user accounts without further work. To install, do:

```
# cd unpack_location
# cp -p tools/* /usr/local/bin
# cp -p download/chkmodel /usr/local/bin
# cp -p download/getarc /usr/local/bin
# cp -p download/refresh /usr/local/bin
# cp -p migrate/* /usr/local/bin
#
```

If you want to put it somewhere else, within the wacs home area would be fine, somewhere like `/home/wacs/bin`, but you will then need to add that directory to the path of your shell. For the C-shell, you would add `set path=(/home/wacs/bin $path)` into the `.cshrc` file in the home directory of your own account and those of other people who might be adding contents to the wacs server. For the Bourne style shells (sh,bash,etc), you would need to add `PATH=/home/wacs/bin:$PATH` and `export PATH` to the `.profile` or `.bashrc` files in the home directories. Once added, depending on the shell, you may need to type `rehash` to rescan the path for the new commands.

Support Scripts - With Web Hosting

The procedure here is almost exactly the same as above except of course that we cannot add things to `/usr/local/bin` and so we have to place them within our account's home directory.

```
# cd unpack_location
# cp -p tools/* ~/bin
# cp -p download/* ~/bin
# cp -p migrate/* ~/bin
#
```

Additionally you will need to ensure that the `PERL5LIB` environment variable is established within your shell environment in order to use the command line tools. This can be done initially with:

```
# PERL5LIB=/home/yoursite/perl
# export PERL5LIB
#
```

To add it to your shell configuration so it is always established, you'll need to edit your shell start-up file (usually `.bashrc` in your home directory) and add the following line at the bottom of it:

```
export PERL5LIB=/home/yoursite/perl
```

Populate The Initial Database - Both Environments



Note

From WACS 0.8.4 onwards we've suppressed the `Inserting Entries For...` messages as they were playing havoc with the formatting on `wacssetup`. If you want to see them, simply edit the `wacs.cfg` debug section and set it to 1 or higher.

14.The next step is to populate the vendor database with the sample records, which can be done with:

```
# cd unpack_location/populate
# ./vendpop vendors.xml
Inserting Entries For Site: ATKP
Inserting Entries For Site: AMK
Inserting Entries For Site: ATE
Inserting Entries For Site: SE
#
```

Please contribute back vendor descriptions you create to be included in the next release.

15.Next we need to preload the keywords database table so that the automatic tagging will occur correctly. We do this with:

```
# cd unpack_location/populate
# ./keywordpop keywords.xml
[ ... ]
#
```

16.Finally we need to load the photographers database with some initial example records, which can be done with:

```
# cd unpack_location/populate
# ./photpop photographers.xml
[ ... ]
#
```

Final Notes - With Web Hosting



Warning

The details for how to setup WACS for use in a Web Hosting Provider's environment are new in 0.8.4 and are based on our own experience setting up `PinkMetallic.com` [<http://www.pinkmetallic.com>] and may well be incomplete. Additionally some aspects of Wacs are not yet tailored to this kind of environment and are bound to cause issues. Please report any problems you find to us using the facilities on sourceforge or our email addresses.

There's a known issue with the security settings when you use the `wacsimport` and (probably) `wacsxmlin`. Once these have created the icons, they change the permissions of the owning directory to be accessible only by the user and group. This is not the correct strategy on a web hosting provider as their apache

web server is not a member of any unix group in common with the shell user account. The quick solution to this is to run the following on the web document tree (usually under `~/public_html/` after each importation has taken place:

```
# cd ~/public_html
# chmod -R o+rX bigicons cache icons images wacs
#
```

Unfortunately there can be further issues when trying to use the WACS system in that many web hosting providers do not install all of the infra-structure that it needs, including packages like the netpbm tools which provide the image scaling and thumbnailing facilities we use extensively within WACS. It is quite possible to copy both the binary programs and the necessary shared libraries from another Linux host of similar architecture onto your space on the web hosting provider. The alternative approach is to compile the netpbm suite from source code and then statically link the resulting binaries. This is what we had to do to make the PinkMetallic.com [<http://www.pinkmetallic.com/>] site work. The commands below show what we did - the first command being to determine the CPU/runtime architecture being used - in this case standard 64-bit AMD/Intel EMT architecture, and the second to determine the distribution being used:

```
# uname -p
x86_64
# uname -r
2.6.18-128.1.6.el5
# mkdir ~/lib
# export LD_LIBRARY_PATH=/home/yoursite/lib
#
```



Tip

We understand this step is non-trivial and confusing and there's very little we can do about this other than to invite you to post on the wacs-users mailing list for help and advice. Each web hosting provider probably has a different combination and there is little else we can do other than offer to help as best we can.

This tells us (from experience) that we're dealing with a RedHat Enterprise Linux distribution running on a 64-bit AMD-style architecture processor. For that **centos.org** is the best place to find suitable packages for download - we selected two RPMs from one of their mirror sites: `netpbm-10.35.58-8.el5.x86_64.rpm` for the libraries and `netpbm-progs-10.35.58-8.el5.x86_64.rpm` for the tool binaries. We then used the `rpm2cpio` command to convert these rpm archives into more standard archive formats and then the `cpio` command itself to unpack the result.

```
# wget http://www.mirrorservice.org/sites/mirror.centos.org/5.4/os/x86_64/CentOS/netpbm-10.35.58-8.el5.x86_64.rpm
[...]
# rpm2cpio netpbm-10.35.58-8.el5.x86_64.rpm > netpbm-10.35.cpio
# cpio -ivudB < netpbm-10.35.cpio
[...]
# wget http://www.mirrorservice.org/sites/mirror.centos.org/5.4/os/x86_64/CentOS/netpbm-progs-10.35.58-8.el5.x86_64.rpm
[...]
# rpm2cpio netpbm-progs-10.35.58-8.el5.x86_64.rpm > netpbm-progs-10.35.cpio
```

```
[...]
# cpio -iuvdB < netpbm-progs-10.35.cpio
[...]
```

Having done this we have the entire netpbm tree contained in a directory called `usr` under the current directory. The first command the wacs program we were trying to run (actually it was **generate**) complained about was **pnmscale** so we fetch the **pnmscale** binary from `usr/bin/pnmscale` and transfer that up to the web hosting provider and place it in our `~/bin` directory. Once we've done that we run the `ldd` command on it which says:

```
# cd ~/bin
# ldd pnmscale
libm.so.6 => /lib64/libm.so.6 (0x000000365ee00000)
libnetpbm.so.10 => not found
libc.so.6 => /lib64/libc.so.6 (0x000000365e200000)
/lib64/ld-linux-x86-64.so.2 (0x000000365de00000)
#
```

The pertinent thing here is that `libnetpbm.so.10` is the only library we need for **pnmscale** to work that isn't there. If we check back in our unpacked package, we should have that file as `usr/lib64/libnetpbm.so.10.35`. Since it's **libnetpbm.so.10** that it's asking for, we transfer our local `usr/lib64/libnetpbm.so.10.35` up to the hosting provider server as **libnetpbm.so.10** using the `ftp/` `sftp` `put` command as follows:

```
sftp> put usr/lib64/libnetpbm.so.10.35 libnetpbm.so.10
Uploading usr/lib64/libnetpbm.so.10.35 to /home/yoursite/lib/libnetpbm.so.10
usr/lib64/libnetpbm.so.10.35          100% 187KB 93.3KB/s 00:02
sftp>
```

If we now re-run the `ldd` command on **pnmscale**, we should now see that all the dependencies are resolved. The final test is to run the command itself, and in this case its default action is to complain that you didn't ask it to do anything. All that remains now is to do the same procedure of copying up the other files from `usr/bin` that Wacs is asking for. We found we needed the following: **pbmtext**, **pnmcat**, **pnmscale**, **pnmtjpeg**, **pnmtopng**, **pnmtogif**, **pngtopnm**, **giftopnm** and **jpegtopnm**.

The first of the two final things we have to do is to check that everything under the `~/public_html/cache` tree is publicly writeable (gulp!) because we share no groups in common with the web server. The second is to add the `LD_LIBRARY_PATH` variable to the environment used by the web server so that the netpbm commands actually work when invoked by the wacs commands themselves. Fortunately the `dbienvvar` and `dbienvvalue` variables originally added to enable Oracle to be supported can be used for this purpose. In the `wacs.cfg` file, set `dbienvvar` to `LD_LIBRARY_PATH` and `dbienvvalue` to the path to your library directory where you placed the `libnetpbm.so.10` file; it's probably something along the lines of `/home/yoursite/lib`. You will also need to add a suitable entry in your `.bashrc` or `.cshrc` to set `LD_LIBRARY_PATH` for your shell.

More On SELinux



Note

Although we have discussed the steps needed to get WACS working under SELinux, we've currently not managed to track down all of the dependencies and in the interests of

expediency we have gone ahead with code development without it. At this point we do not consider the WACS 0.8.4 release or any release prior to that to be SELinux compatible.

We therefore recommend that your operating system is configured so as to ensure that SELinux is running in a reduced mode that will not block the WACS components from working. This is only an issue on Fedora and other Red Hat based releases at present. We hope to have this resolved by the next release of WACS. You can determine the current mode of SELinux using the `sestatus` command:

```
% /usr/sbin/sestatus
SELinux status:                disabled
%
```

To change the normal operational mode, you need to edit the file called `/etc/sysconfig/selinux` and change the line which reads `SELINUX=enabled` to either `SELINUX=permissive` (generates big log files and slows machine but allows for SELinux to be turned back on later more easily) or `SELINUX=disabled` (which disables it completely but can cause problems in the future if you want to switch it back on). You will also probably want to disable it immediately rather than doing a reboot before you can continue working on WACS - to do this, become root and run the following:

```
# /usr/sbin/setenforce 0
setenforce: SELinux is disabled
#
```

You can check this change has taken effect by using the `sestatus` command again.

Chapter 9. Upgrading An Existing Installation

About Upgrading

If working on a script to make an installation as complex as WACS work right was tough, imagine how much harder it is to upgrade an existing installation where you have no idea what has been changed and what hasn't? Simply, it can't easily be automated, so upgrading is of necessity a two step process. Run a script for the easy bit, and manually fix up those things the script can't do automatically without danger of destroying data. To help you along, the script and this document give some guidance on the issues, but you do need to have some idea of what version you're coming from and going to in order for that to make sense. The version number of the current version is given on the HTML home page, [index.html](#).

The Upgrade Command

The easy bits are looked after by the upgrade command; to run this download and unpack the new distribution, and as the super user (root) run the following commands:

```
# cd unpack_location/install
# ./upgrade
WACS - Upgrade
-----
[... ]
Do you wish to continue? (y/n): y
[... ]
#
```

At the end of it's run, upgrade will print out some key notes about things that will require manual attention to get the new release working. The section below will give you some guidance on how these may be achieved.

Additional Steps

The upgrade command will give you some information on what extra steps you may need to take to migrate to this release. For example, it may tell you that a new database field needs to be added to a particular model schema. In the transition from 0.5 to 0.6.x the `mrace` field was added, and upgrade will tell you about this. First step is to find the specification of the field from the appropriate SQL script in the creation directory, so for Oracle this will be `creation/ora_models.sql`. From this you will see that the field specification for Oracle is:

```
[... ]
  mrace          varchar2(15),
[... ]
```

You have three options for adding this to the database - you can choose to alter the existing schema (may leave fields in an odd order in describe); you can rename the existing table, create the new one, copy the data across and then repoint any relational constraints to the new table; or you can export your entire database,

create a fresh one and import the records back in (the tools do not cover connections, saved searches or customised infra-structure tables (keywords, vendors, photographers) at present but are otherwise quite usable). The former is quick and easy if the database supports it but leaves the field list in an odd order; the middle one is more work but produces a fully "normal" schema in the end but requires serious black magic if your database understands relational constraints. The final one is **VERY* experimental* at this point but will improve with time.

Here is a worked example that shows how to use the alter table syntax in Oracle's SQL*Plus command interpreter to add one field called `mrace`:

```
% sqlplus
[... ]
Username: wacs
Password: ****

sqlplus> alter table models
         > add ( mrace          varchar2(15) );

Table altered.
sqlplus> commit;

Commit complete.
sqlplus> desc models
[... ]
  MRACE                                VARCHAR2(15)
sqlplus> quit
%
```

Another issue you need to be aware of is that the upgrade script will not over-write any existing files in the `wacs` web document tree (by default this is `/var/www/html/wacs`) because you may well have tailored them and we wouldn't want to overwrite those. You may well therefore need to look at what is in the `htmlbones` directory and copy some of the new files across into your web tree, or merge the new html into your modified version of the pages.

Chapter 10. Troubleshooting

Introduction

We obviously hope the installation of Wacs will go smoothly but it is a pretty complex system that depends on a significant number of other packages working together with our code. This chapter aims to provide help and assistance if all doesn't go according to plan. There are two main sections - the first (the section called "Installation Troubleshooting") covers what to do if the installation procedure itself goes wrong; the second (the section called "General Troubleshooting Tips") covers more general issues where the system installs but then doesn't work or where it stops working for some reason.

Installation Troubleshooting

What to do if the installation goes wrong...



Tip

DON'T PANIC!

The first thing to do is to try and remember where it started to fail - the **Back** key on your web browser should be able to help here if you were using **wacssetup**. The following steps should help you find out what worked and what didn't...

Checking Database And Accounts

MySQL5

Open up a terminal window on the server and try the following (but using whatever username/password you actually gave **wacssetup**):

```
% mysql -u wacs -p wacs
```

and enter your password at the prompt. If it replies with:

```
ERROR 1044 (42000): Access denied for user 'wacs'@'localhost' to database 'wacs'
```

it is fairly safe to assume that the user account and database did not in fact get created.

Oracle 10 and Oracle 11

Open up a terminal window on the server and try the following (but using whatever username/password you actually gave **wacssetup**):

```
% sqlplus
```

```
SQL*Plus: Release 11.1.0.6.0 - Production on Wed Nov 18 14:58:32 2009
```

```
Copyright (c) 1982, 2007, Oracle. All rights reserved.
```

```
Enter user-name: wacs
Enter password:
ERROR:
ORA-01017: invalid username/password; logon denied
```

it is fairly safe to assume that the user account and database did not in fact get created.

Checking Structures

If the first group of actions that **wacssetup** takes seem to have gone OK, and then the next step where it creates the schema starts to show problems, then we need to check if anything got created. This particular step is where problems with the server IP address configuration often show themselves, particularly when using MySQL as it is the first time that we try to use our Wacs system credentials in earnest. Please see the section called “Preparation Tasks” for more information on this. A sure sign of this failure will be an error message something like this:

```
DBI connect('wacs:www.example.com','wacs',...) failed: Access denied for
  user 'wacs'@'myserver.example.com' (using password: YES) at wacssetup
  vendpop line xxx
Can't connect to database
Reason given was Access denied for user 'wacs'@'myserver.example.com'
  (using password: YES)
```

Verifying Schema

Anyway, if you're seeing this kind of message, you need to verify if the database schemas did indeed get created or not. To do this, we log into SQL with the Wacs user account details as follows (change account names and passwords as appropriate):

```
% mysql -u wacs -p wacs
Enter password:
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 316
Server version: 5.0.84 Source distribution

Type 'help;' or '\h' for help. Type '\c' to clear the current
input statement.
```

```
mysql> describe conn;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| centryno   | int(9)    | NO   | PRI | NULL    |       |
| cgroup     | int(6)    | YES  |     | NULL    |       |
| corder     | int(3)    | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
```



```
mysql> drop user 'wacs'@'myserver.example.com';
Query OK, 0 rows affected (0.01 sec)

mysql> drop database wacs;
Query OK, 10 rows affected (0.01 sec)

mysql> commit;
Query OK, 0 rows affected (0.00 sec)

mysql> flush privileges;
Query OK, 0 rows affected (0.00 sec)

mysql> quit
Bye
%
```

You should then be able to re-run the **wacssetup** web application (once of course you've worked on the root cause of the failure - most likely the IP address/DNS name issues).

Beyond That

Once you've got beyond the user account, database area and database schema creation steps, there is really only the initial data population left to be done. For this it's simplest to just follow the last steps of the the section called “Manual Database Creation Steps” process from the step the section called “3. Create default database contents (optional)”.

wacssetup completes but you can't login

If the **wacssetup** completes normally but you fail to login when you're sure you're using the right username and password, there's a couple of things to try. run `/usr/bin/pam_auth` (packaged installations) or `/usr/local/bin/pam_auth` (easyinstall/manual installations) - give it your username and password, separated by a space, and then press <ENTER>. If it replies with OK all is well; if it replies with ERR or some other error message (and you know you typed your password right of course) then there's a problem.

Most likely it's in `/etc/pam.d` and to do with the file called `wacs` there. Compare it to other files in the same directory like `sshd` and `squid` (if present) for the correct dialect for this platform. The security sub-directory of the Wacs source tarball contains various versions written over the years, one of which may be in the correct PAM dialect.

If All Else Fails

The next step is probably to follow the manual creation instructions at this point and see how they progress. If those fail, please visit our web sites - sourceforge site [<http://wacsip.sourceforge.net/>] or launchpad site [<https://launchpad.net/wacs/>] or use our mailing lists or email address to get help.



Tip

Do take a look through the checklist below the section called “General Troubleshooting Tips” as there may be tips there that help and at the very least having gone through these will help us get to the root cause of your problem quicker.

General Troubleshooting Tips

Obviously we hope the installation script will create a running installation for you, but there will no doubt be occasions when it does not. Before seeking help via the mailing lists and other resources on the sourceforge site [<http://wacsip.sourceforge.net/>], there are some things you should clarify. The first of these is to confirm what the status of the various subsystems are. Here's a quick check list:

Troubleshooting Checklist

- Is there an error being reported?
 1. If you get the error message `Can't find lsb_release in order to determine distribution` and you are on an older Fedora Core or CentOS version, try running: **yum install redhat-lsb** and then running the installer again. Upgrades often leave out this package although it should be part of the standard operating system.
 2. If you get the error message `DBI connect('wacs:myserver.myisp.com','wacs',...) failed: Can't connect to MySQL server on 'myserver.myisp.com' (110) at ./vendpop line 39` check that you can ping the hostname of your server locally. Often people don't have things set up so that a machine with an "internet name" can see itself by the same name on the local network. The above error is a symptom of this problem.
 3. Check the apache web server log file in `/var/log/httpd/myserver-errorlog`
 4. Check the system messages in `/var/log/messages`
 5. Check the output from the kernel by running **dmesg** (a common cause of trouble is the SELinux security mechanism, an `avc_denied` message in the output of `dmesg` is a solid clue to this - see comments below on SELinux)
- Is the web server running?
 1. If you point a web browser at the top level URL of your server, do you get a web page back, be it a distribution-supplied test page or previous pages you placed there?
 2. Can you get the wacs main page? (`http://myserver/wacs/`)
 3. Can you get any response from the WACS cgi-bin programs, even so much as a coloured background to a blank screen? (`http://myserver/cgi-bin/wacsnewmodels`)
 4. Is there an httpd process running? (**ps wax | grep httpd**)
 5. Is the HTTPD set to start automatically? (**chkconfig --list httpd**)
- Is the database server running?
 1. See if you can connect using the SQL command line application - called `mysql` for MySQL, `sqlplus` for Oracle 10g.
 2. Check for the database processes running - `mysqld` for MySQL, a whole cluster of `oracle*` and `ora_*` processes for Oracle 10g.
- Can you login in to Wacs?

1. Check you can actually log into the server with that username and password!
2. run `/usr/bin/pam_auth` (packaged installations) or `/usr/local/bin/pam_auth` (easyinstall/manual installations) - give it your username and password, separated by a space, and then press <ENTER>. If it replies with OK all is well; if it replies with ERR or some other error message (and you know you typed your password right of course) then there's a problem. Please see the section called "wacssetup completes but you can't login" for more information on this.

Special Notes About SELinux

SELinux is an enhancement to Linux that allows potentially vulnerable services (like an internet-exposed web server) to be operated on a basis where each action the program tries to take needs to be explicitly allowed, rather than the normal allowed unless denied approach of most Unix environments. As such SELinux presents a whole new group of challenges for getting WACS to work, because we have to extend the ruleset as to what is allowed and what is not. It can be done, but it will take work and some experimentation. Wherever we have not used the Operating System supplied packages (Web Server, Database, etc), we're going to have to add those rules. The first thing to check is whether SELinux is enabled - to do this, type:

```
% sestatus
SELinux status:                enabled
SELinuxfs mount:              /selinux
Current mode:                  permissive
Mode from config file:         permissive
Policy version:                20
Policy from config file:       targeted
%
```

If it's either disabled, or is enabled but with a current mode of permissive, it's not actually going to be causing us a problem right now. If it is enabled and enforcing, we've got to work on it. The web server process needs a security context of `httpd_sys_content_t` to be present on any directory it needs to access, so the first step is to add this context to each directory (outside of the normal ones) that it is likely to access. This is done with the **chcon** commands shown above in the manual install chapter - example:

```
# chcon system_u:object_r:httpd_sys_content_t /var/run/wacs
#
```

In addition to the directory gaining the `httpd_sys_content_t` security context, any pre-existing files will also need the same, so this can be done with:

```
# chcon -R system_u:object_r:httpd_sys_content_t /var/run/wacs/*
#
```

To inspect the security context of a file or directory, you use the `-Z` option to the `ls` command:

```
# ls -Z /var/run/wacs/
-rw-r--r--  apache apache system_u:object_r:httpd_var_run_t leases.acl
#
```

While the `easyinstall` script does try to set these for all the areas the web server might go (`/var/run/wacs`, `/etc/wacs.d` and the files area `/home/wacs/*`), any problems which are causing `avc_denied` messages in the `dmesg` output are most likely down to this issue.

Chapter 11. Using Other Databases

Position Overview

WACS currently works with two of the leading database backends - MySQL (version 5.x) and Oracle (versions 10g and 11i). That said, the usage of SQL by the WACS code is generally kept as generic as possible with, outside of the initial table creation steps, no code differences between what is used when talking to MySQL and when talking to Oracle. This should make the code sufficiently generic to work against just about any database that supports a full featured SQL interface via the DBI module for perl and the pearDB module for Php. Supporting a new database platform should be a simple matter of ensuring the appropriate DBI and pearDB modules for that database are available on the system and that the appropriate date types have been added to the conversion functions provided in the core WACS module.

The basic WACS package applications are designed to work with MySQL 5 and in fact in order to try to make WACS work “Out Of The Box”, they include dependencies on the MySQL 5 server code to ensure the necessary support is added. This does not mean that the packaged versions *have* to be used with MySQL only however; you can easily install an Oracle server as well and merely change a few entries in the `wacs.cfg` file and have it work just fine.

Oracle 10 and 11

Since Oracle is a proprietary package, most Linux distributions do not include the binary libraries needed to connect to it. Thus while you can use the package installer to install the necessary database agnostic generic drivers, you have to do additional work to get the actual database drivers to work. In this section, we will outline the steps needed to get the necessary parts installed for Oracle to work from both Perl and PHP5.

Oracle Perl Driver

The first step to getting WACS to work with Oracle is to download a suitable set of client side applications and libraries - these are typically provided by *Oracle 11i Instant Client* or a package of a similar name. Generally doing a full install of instant client will provide all the libraries you need. The next step is to establish the necessary `ORACLE_HOME` environment variables and check that the Oracle stack is running by connecting to the server using the **sqlplus** client provided as part of the instant client package.

It should then be a fairly simple matter of using `cpan DBD::Oracle` to download, compile and install the necessary database driver for Perl DBI. Once that's done, you just need to follow the installation instructions for Oracle in the appropriate chapters of this guide.

Oracle Php5 Driver

The conventional install of Php5's pear DB routines actually does include the first line of support for Oracle in the form of the **oci8.php** file in `/usr/share/pear/DB` but this itself needs **oci8.so** which normally lives in `/usr/lib64/php/modules`. To make this module, you will need the full set of SQL*Net libraries as provided by either a full database installation or Oracle's **instant client** product. You will also need the C compiler and the **php-devel** package (this contains the command **phpize** so if trying to invoke **phpize** gives `Command not found` you almost certainly don't have the necessary development package installed.

Since WACS currently uses the now-obsolete **Pear DB** module for database access, it appears to be a bit of a challenge to find the correct source code. While we were preparing this document (May 2009), the

source code for the OCI8 driver could be found at the PECL web site [<http://pecl.php.net/get/oci8>]. If you download this with something like `wget` and save it locally, running the following (assuming you have `ORACLE_HOME` set correctly) as root produced a successful install: `pecl install oci8`. All that then remains to be done is to configure the `phpdbconnect` string in the main `wacs` configuration file with the correct database specification and things should start to work.

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