ADempiere Community Document

Virtual Appliance 3.5.3a

INFORMATION IS FREE - U have to Know
PEOPLE ARE NOT - U have to Pay
CONTRIBUTORS ARE PRICELESS - U have to Be

NICKEL NETWORKS

Title: **Adempiere AVA 3.5.3a**
Author: **Paul A. Aviles**
Company: **Nickel Networks, Inc.**
Initial Release: **August 1, 2009**
Last Update: **October 29, 2009**

Table of Contents

Introduction

A virtual appliance is a pre-installed, pre-configured operating system and software solution delivered and packaged inside a virtual machine.

The ADempiere Virtual Appliance (AVA) is a turnkey solution that allows you to run Adempiere as a virtual server without the complexities of Java, Linux or Postgresql in a self contained appliance that is compatible with ESX/ESXi 3.5 and 4.0, vCenter

> Historically, 60$-70% of support calls relate to the initial installation and configuration of software applications.

2.5 and 4.0, Server 1.0.6 and 2.0, Workstation 6.5.1, Player 2.0.4 and 2.5 and using the OVF (Open Virtualization Format) with other virtualization environments like VirtualBox.

As a pre-installed and pre-configured solution you can now immediately deploy ADempiere and focus your effort on the functional implementation instead of worrying about configuration or technical issues associated with the installation and ongoing support of the underlying operation system and environment.

This document describes the content of the AVA. It also covers high level details of the building process, the design principles, and the ongoing use and maintenance of the appliance.

Objectives

Our first mission for the creation of the AVA was to make it easy to use and adopt for everyone:

- Easy to use and deploy
- Deliver a ready to use solution
- Portability
- Small footprint
- Sales demo events
- Package the software with an operating system
  configured only to provide the functionality required by ADempiere

> The ADempiere Virtual Appliance represents an evolutionary step in the way we deliver and deploy ADempiere to customers by enabling instant deployment capabilities.

- Decrease the time required for installation and configuration
- Allow any hardware to be used
- Leverage VMware Infrastructure solutions. (As a VMware Partner, we strongly use and support their products and solutions.) The Virtual Appliance is however compatible with other virtualization vendors thanks to the Open Virtualization Format (OVF)
- Web Management Interface (WMI)

Design Principles

Using the latest Vmware tools, the Adempiere AVA is created by first setting up a regular Linux server installation with a minimal set of packages in order to reduce the virtual appliance footprint.

After the drive is partitioned and formatted we install CentOS and execute the Application Post-Install Script.

The following tasks are created with the Application Post-Install Script:

- Removes unwanted CentOS RPMS
- Creates /home/apps. This directory will hold the initial packages to be installed.
- Downloads Postgresql 8.4.0 rpms to /home/apps and install them.
- Downloads Sun Java JDK 1.6.0-14 to /home/apps and install it.
    - Configures /etc/ld.so.conf with JDK settings.
- Downloads Apache Portable Runtime rpm to /home/apps and install it.
- Downloads and installs the adempiere init scripts into /etc/rc.d/init.d.
- Downloads Adempiere_353a.tar.gz to /home/apps from the Automatic Trunk Builder.
- Downloads trunk_rev to /home/apps from the Automatic Trunk Builder. This file is used by the ava_agent to keep track at what release level the AVA is.
- Downloads pg_migration.tar.gz to /home/apps from the Automatic Trunk Builder.
- Downloads pg_migration_rev to /home/apps from the Automatic Trunk Builder. This file is used by the ava_agent to keep track at what release level the AVA is.
- Configures .bash_profile for user adempiere.
- Configures .bash_profile for user root.
- Creates Adempiere.properties for the AVA under /root/.adempiere.
- Modifies /etc/bashrc.

Next, using VMware tools we create the OVF and ZIP files containing the ADempiere Virtual Appliance. The L7 compressed file is created manually extracting the ZIP file and using IZARC from http://www.izarc.org.

The rest of the process gets initiated automatically by the AVA on first boot.

Encapsulation

The AVA contains all the components required to run ADempiere on top of a virtualization layer. Since virtual appliances are designed to run a specific solution, customer should now be

able to focus on the functional implementation instead of worrying about conflicting packages, libraries, Java version, database configuration or upgrades.

This is the second AVA release for Trunk 3.5.3a code named "Andeya" and includes the following configuration:

Host Name	adempierehost.com
OS	CentOS 5.3
Kernel	2.6.18-128.el5
Disk	20 GB
Memory	1 GB
Network Configuration	1 NIC (DHCP or Static)
Postgresql Version	8.4.0
Java Version	Sun JDK 1.6.0-14

While traditional appliances run in a self-contained form and lock users out of the operating system and console, we do provide the information for you to manage the AVA in the best way possible. You are encouraged to create your own facilities for exports, backups, purge log files and database tables to ensure the AVA does not fill up its virtual disk.

Optimized Virtual disk and OS

The basic design principles used in the creation of the AVA are similar to those used in building a physical ADempiere server. The major difference between physical servers and virtual appliances is that a virtual appliance is not delivered inside a piece of hardware. As such, we took all the proper steps to optimize the entire stack so that it only contains the absolute minimum footprint required to deliver the desired server functionality to run ADempiere.

The effort required to optimize the footprint has additional benefits. Shipping less code inside an appliance typically means faster performance, better security, less possible bugs and vulnerabilities. Since the AVA does not contain all the generic applications that are usually found on a typical Linux distribution it will be less susceptible and will require less patches than a traditional physical server (no need to apply an OS patch to cover for Apache or a Web Browser) as we don't include those applications.

By providing a "just enough OS" JeOS (pronounced "juice") we focus only on those services and ports required by ADempiere thus also eliminating potential attacks to other application stacks like ftp, telnet, etc.

Initial Configuration

Using the AVA you can have a fully functional ADempiere solution in less than 10 minutes. During the initial boot we initialize and configure Postgresql to be used in ADempiere. We also set a "relaxed" security model for Postgresql by allowing anyone to connect to the database from any network. You should revise and adjust the Postgresql security according to your company or personal security standards.

The Postgresql configuration file is located under /var/lib/pgsql/data/pg_hba.conf and uses "trust" to allow any to any connectivity. Again, you should properly secure your appliance according to your particular needs.
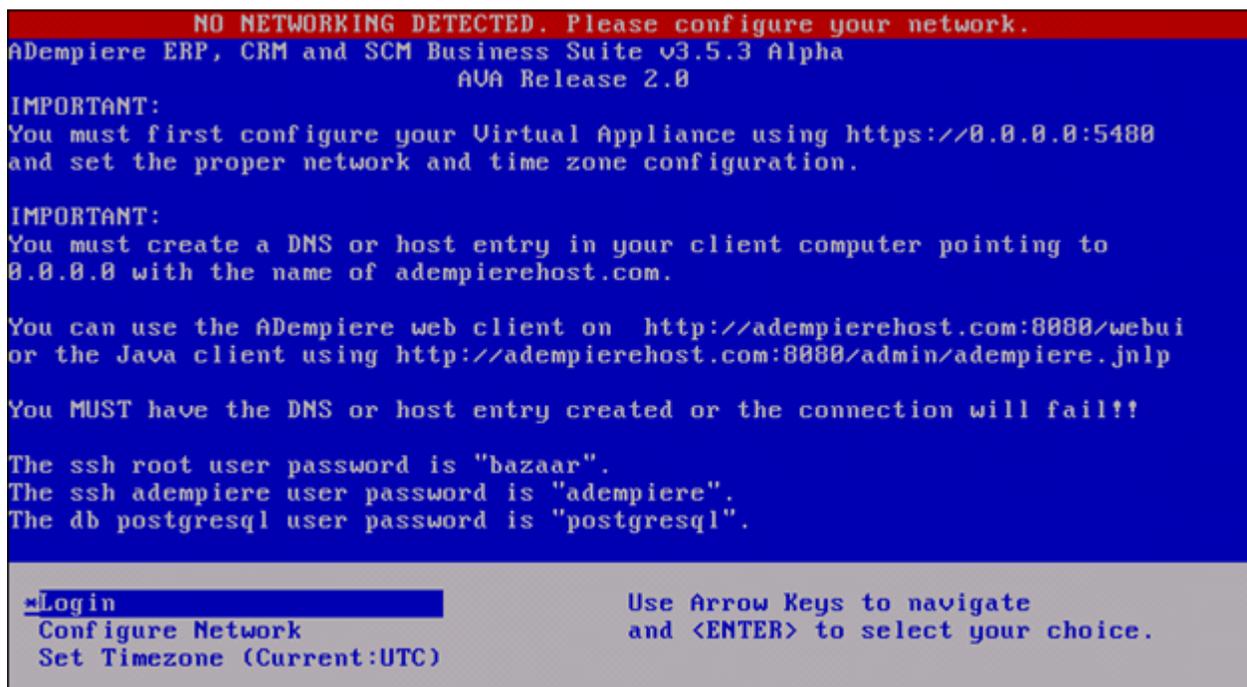
```
# TYPE  DATABASE    USER      CIDR-ADDRESS        METHOD


# "local" is for Unix domain socket connections only
local   all      all                      trust              # IPv4 local connections:
host    all      all     0.0.0.0/0       trust               # IPv6 local connections:
host    all      all      ::1/128         trust
```

Some of the initial configurations you can do are:

- Change the networking configuration of the AVA
- Use the Web Management Interface (WMI)
- Establish a new root password
- Perform the initial ADempiere installation
- Upgrade ADempiere to the latest Trunk, Libero or migration scripts
- Reset ADempiere to a factory default 3.5.3a installation
- Start of stop any Linux service
- Change the system date and time or connect with an NTP server (not recommended if using VMware ESX or vSphere)

AVA Network Configuration

The AVA includes support for DHCP and static IP addresses. If no DHCP is available, the boot process will continue and you will be presented with the appliance console as shown in Fig 1.

Fig 1 - AVA Console

Use the **Configure Network** menu on the console to set and change the networking options for the appliance by selecting a DHCP or set a static IP address, DNS, Network Mask and Gateway. The hostname is hard coded as adempierehost.com in order to facilitate the deployment process.

IMPORTANT:
You must create a DNS or host entry in your client computer pointing to IP-ADDRESS-OF-AVA with the name of adempierehost.com.

If you are interested in changing the host name, please post a support request on SourceForge and will be more than happy to assist you.

Additionally, you should also set the proper Time Zone by using the **Set Timezone** menu option. It is important to have the proper Time Zone as this can affect the ADempiere background processes. The default Time zone is set to UTC.

Web Management Interface (WMI)

Once an IP address is assigned to the AVA, you can use the WMI using your favorite browser and typing https://IP-ADDRESS-OF-AVA:5480. Port 5480 is a reserved port for the VMware Web Management Interface. You should ignore the SSL Certificate warning and connect to the WMI as shown in Fig 2.

Fig 2 – AVA Web Management Interface

You can login as "root" with the password "bazzar" until you change the root password. This option will give you full access to the appliance so be careful on what you do.

Establish a new root password

It is recommended that you change the default root password to something else. From the management console type:

```
[root@adempierehost ~]# passwd
```

You must type the password twice before it can be changed.

ADempiere installation

The AVA includes all the code needed in order to run ADempiere. You must however perform the initial ADempiere installation using the ava_agent script. If you run ava_agent without any options or switches it will present you with the default usage screen as Fig 3 bellow.

```
[root@adempierehost ~]# ./ava_agent
Usage: ava_agent [OPTION]
Installs or upgrades ADempiere on the Virtual Appliance and the andeya script.
ava_agent update        Performs an update of the installation andeya script, requires internet
                        connectivity.
ava_agent install       Performs an initial ADempiere installation with local sources.
ava_agent upgrade       Performs an upgrade to an existing ADempiere installation, requires
                        internet connectivity.
ava_agent alert         Notifies adempiere@adempierehost.com for upgrades.
ava_agent help          Shows Help.


Exit status is 0 if OK, 1 if errors.


Report bugs to <support@nickelnetworks.com>
```

Fig 3 – ava_agent usage screen

If you login to the console you should now be inside the /root directory. Type "./ava_agent install" in order to install ADempiere.

```
[root@adempierehost ~]# ./ava_agent install
ADempiere AVA Agent install mode
- Do you want to install ADempiere?
  Please confirm (y or n):
```

Press "y" and the agent will install ADempiere using the source files located on /home/apps.

The installation process performs the following tasks automatically:

- Stops ADempiere (if running)
- Expands ADempiere from /home/apps to /home/adempiere/Adempiere
- Creates the Libero directory under /home/adempiere/Adempiere/packages/libero/lib
- Resets the postgres password
- Drops the ADempiere database
- Drops the ADempiere role
- Creates the ADempiere database
- Creates the ADempiere role
- Imports the ADempiere database
- Creates the Java KeyStore
- Compiles ADempiere
- Creates /root/.adempiere/trunk_rev
- Creates /root/.adempiere/libero_rev
- Sets the permissions in /home/adempiere/Adempiere
- Process the initial Migration scripts.
- Creates /root/.adempiere/pg_migration_rev

At the end of the process you should be able presented with the following message:

Please check /home/adempiere/Adempiere/migration.log for errors.
You could now start the ADempiere server
by typing "service adempiere start" from the command line.

NOTE:

You can run the install process again at any time, but keep in mind that you will lose all changes done to the database.

ADempiere Upgrades

Over time there will be trunk code changes, changes to the Libero branch code, and SQL scripts updates that are necessary in order to keep the ADempiere Trunk release up to date. Using ava_agent ADempiere upgrades are incrementally installed on your existing database. This means that you should not lose any data when performing upgrades. It is still however recommended to perform backups before any upgrades.

You can check for upgrades by running "./ava_agent upgrade" form the command line. If this is the initial AVA installation you should be presented with a similar screen:

```
[root@adempierehost ~]# ./ava_agent upgrade
ADempiere AVA Agent upgrade mode
- Checking internet connectivity.
- Checking script updates
- You already have the latest andeya script.
- You have Migration script upgrades pending!
- You have ADempiere Trunk upgrades pending!
- You have Libero upgrades pending!
- WARNING - It is recommended that you first backup the database before upgrading!
- Proceed with the upgrade(s)?
  Please confirm (y or n):
```

The ava_agent first checks for internet connectivity. It then verifies you are using the latest andeya script. The andeya script works together with the ava_agent to perform the installation and upgrade logic for ADempiere by checking the latest Trunk revision, Libero branch revision and the proper migration scripts.

In the example above, we have the latest andeya script, but we are missing migration scripts, Trunk and Libero upgrades. Press "y" to upgrade ADempiere.

The ava_agent upgrade process performs the following tasks automatically:

- Downloads pending Migration script upgrades
- Migration script upgrades pending: 4

- Process Migration script upgrades.
  - Migrating 543_BF2833929_OrganizationType.sql
  - Migrating 544_FR1768749_ProductLocatedAt.sql
  - Migrating 545_FR2604515_UOMConversion.sql
  - Migrating 546_BF2846831_ActiveUOMConversions.sql
- Downloads ADempiere Trunk upgrades
- Downloads Libero jar upgrades
- Compiles ADempiere
- Updates trunk_rev
- Updates libero_rev
- Updates pg_migration_rev
- Sets permissions in /home/adempiere/Adempiere

At the end of the process you should be able presented with the following message:

Please check /home/adempiere/Adempiere/migration_upgrade.log for errors.
You could now start the ADempiere server
by typing "service adempiere start" from the command line.

Starting ADempiere service

After the initial installation and upgrades you are ready to start ADempiere as a service. From the AVA console or SSH connection type "service adempiere start"
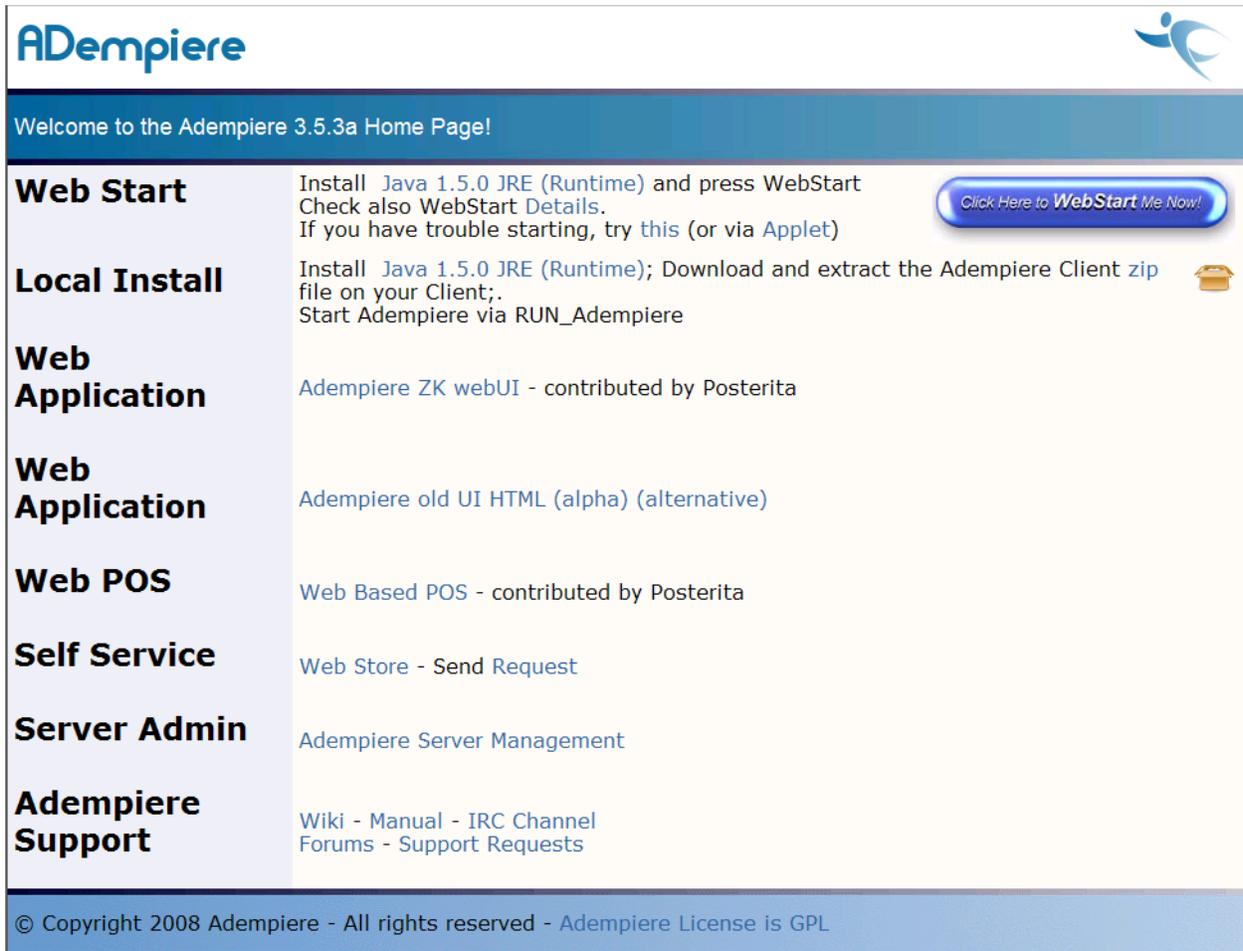
You will be presented with the following message:

[root@adempierehost ~]# service adempiere start
Starting ADempiere:
ADempiere Virtual Appliance 353a Trunk Release
Use '/root/ava_agent install' to install ADempiere
Use '/root/ava_agent upgrade' to upgrade your AVA
Please see http://www.nickelnetworks.com/AVATrunk/AVA.pdf for more information

To remove this notice, edit /root/.bashrc
....   [OK]

The AVA will start ADempiere automatically on every next boot.

Open a web browser and visit http://adempierehost.com:8080. You will be presented with the ADempiere Web Services page. See Fig 4.

Fig 4 – ADempiere Web Services

If you don't get the initial ADempiere Web Services screen, then you forgot to set the proper DNS setting or host entry in your client computer for adempierehost.com, or don't have the adempiere service running. Please read the AVA Network Configuration section above and ensure adempiere is running by typing "service adempiere status" from the AVA console or SSH connection.

ADempiere Upgrade Notifications

You can setup the AVA to email you when changes are pending to the appliance by using the "ava_agent alert" option. By default, andeya will email adempiere@adempierehost.com which is a user created on the AVA.

By creating a .forward in the /home/adempiere directory you can forward any email received by adempiere@adempierehost.com to any with a valid email address.

Additionally, you must create a cron entry to check for upgrades. If you want to be notified for daily changes at midnight for example, the contents of the /var/spool/cron/root file should read something like this:

```
59 23 * * * /root/ava_agent alert >/dev/null >/dev/null
```

Since the crond daemon monitors /var/spool/cron files, there is no need to restart the crond service. Changes to the /var/spool/cron files are executed automatically without a crond restart.

A good way to test for cron changes is by creating a dummy logger test every minute. You can use the following entry in /var/spool/cron/root to create messages in /var/log/messages.

```
*/1 * * * * logger "testing cron" 1 >/dev/null >/dev/null
```

Partition Information

A 20 GB drive /dev/sda is created in the AVA with the following partition structure:

Partition Name	Size
/boot	128 MB
/	4 GB
Swap	512 MB
/home	Rest of drive space

AVA Users

The following users exist on the AVA:

User Name	Password
Root	Bazaar
Adempiere	Adempiere
Postgres	Postgresql

Ongoing Maintenance

As with any server or appliance there are routine maintenance tasks required in order to ensure its performance and functionality. ADempiere as any modern ERP requires deep knowledge of it functions and processes, and the proper care and attention should be given to the AVA too.

Special attention is required for the ADempiere log files, Postgresql database, tables, indexes and log files and general /var/log files.

As always, participate in the ADempiere IRC. You can use any web browser and visit http://webchat.freenode.net/?channels=adempiere.

Credits and Acknowledgement

It is imperative to mention the people behind the AVA effort. First and foremost is Redhuan Daniel Oon. Redhuan came up with the AVA self update concept and without his input it would have never happen. I did the easy part and just wrote the code.

Bayu Cahya for creating the build.xml needed in order to compile and create the Libero packages.jar file automatically using the ADempiere Automatic Trunk Builder without using Eclipse or a GUI. Bayu, I owe you a beer!

Finally, to Victor Perez and Carlos Ruiz for helping me understand the logic behind the scenes for the upgrades.

Paul A. Aviles
www.nickelnetworks.com