



"Solaris SIG"



Solaris 11: Automated Installer Walkthrough

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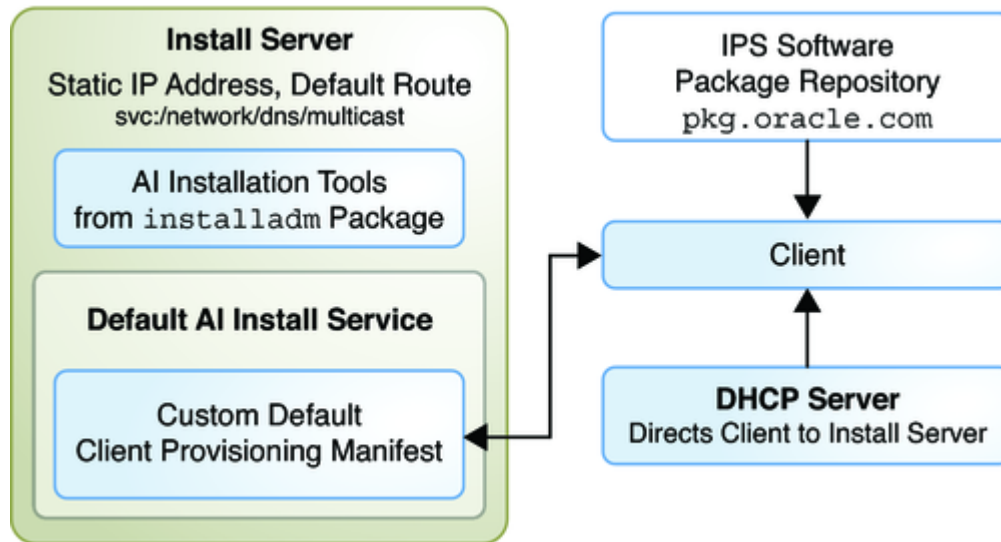
February 15th, 2012



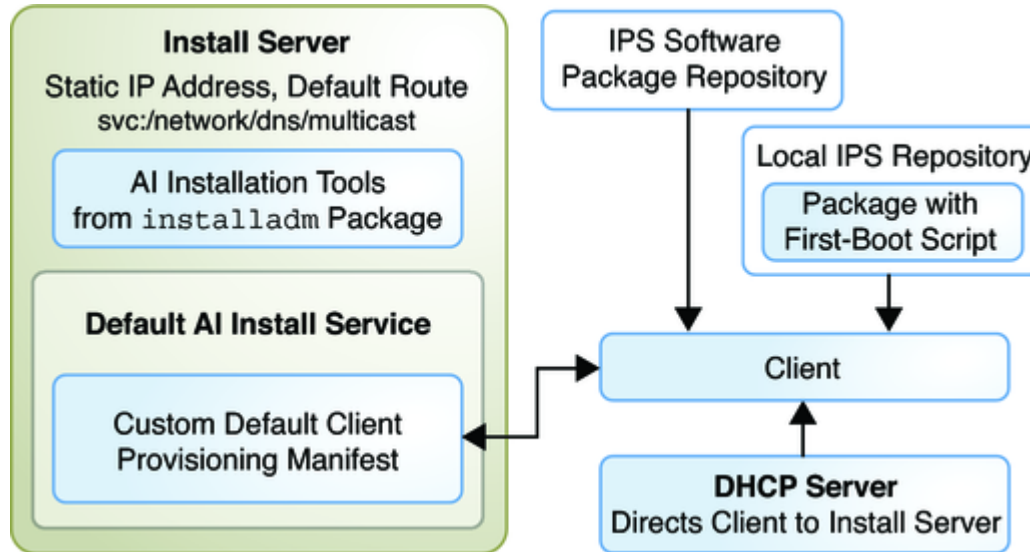
Automated Installer (2009.06)

- Automatic installation of OpenSolaris on x86
- Requires a AI server and DHCP server
- Requires access to IPS repository
- Network boot or modified GRUP menu
- AI manifest file
 - ✓ disk target
 - ✓ ips repository location
 - ✓ packages
- System Configuration manifest
 - ✓ hostname, timezone, root password
- Criteria manifest, install only on given clients
 - ✓ network, MAC address
 - ✓ disk and memory size

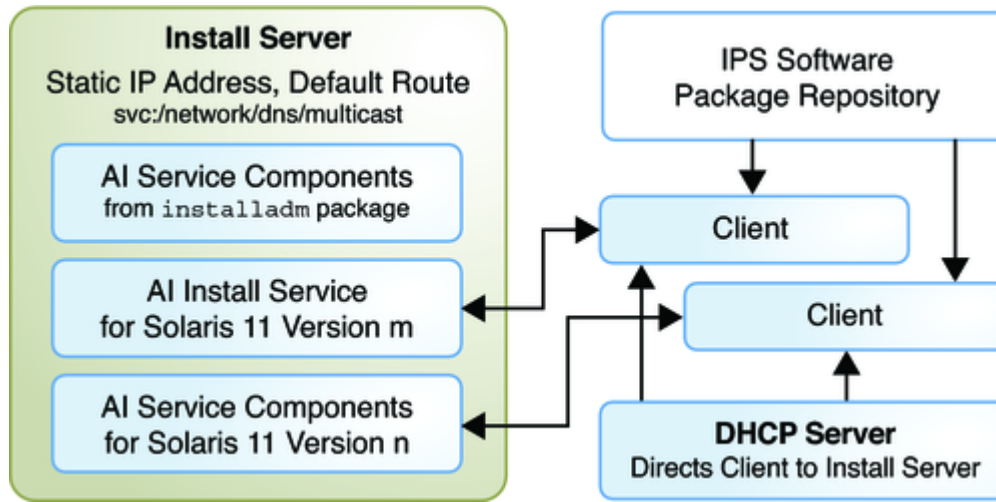
Automated Installer



Automated Installer



Automated Installer



Automated Installer

- ✓ **installadm ...**
- ✓ **installadm create-service / set-service / delete-service**
 - ✓ **sets up boot image**
- ✓ **installadm create-manifest / update-manifest / delete-manifest**
 - ✓ **install process for client**
- ✓ **installadm create-profile / delete-profile**
 - ✓ **system configuration profile**
- ✓ **installadm list**

installadm create-service

- ✓ Copies Solaris bootable image to the server
 - ✓ x86 and SPARC
 - ✓ any version
 - ✓ via "ai ISO" image or from IPS
 - ✓ starts tftp services pointing at /etc/netboot
 - ✓ starts DHCP (optional)
 - ✓ manually update your own DHCP server

installadm create-client

- ✓ Associate a specific client with a services
 - ✓ uses *mac-addr*
 - ✓ creates grub menu
 - ✓ creates boot image
 - ✓ client ready to boot (if DHCP updated)

installadm create-manifest

- ✓ **Controls the installation of the client**
 - ✓ disk layout / zpool control / iSCSI, etc..
 - ✓ IPS publisher,
 - ✓ software/packages
 - ✓ criteria based on mac-addr, platform, arch, cpu, network, memory, zonename
 - ✓ derived scripts
 - ✓ create manifest at install time
 - ✓ boot control (grub)
 - ✓ ai_manifest(4)



Derived Scripts (example)

✓ Environment variables

- ✓ /usr/share/auto_install/derived_manifest_test_env.sh
- ✓ i.e. SI_DISKNAME_n, SI_DISKSIZE_n, SI_NUMDISKS
- ✓ SI_MEMSIZE, etc...

```
# aimanifest get software/source/publisher/origin@name
http://pkg.oracle.com/solaris/release
# aimanifest set software/source/publisher/origin@name
      http://192.168.56.101:9000
# aimanifest get software/source/publisher/origin@name
http://192.168.56.101:9000
```

installadm create-profile

- ✓ **System Configuration of the client**
 - ✓ **hostname, timezone, keyboard, locale**
 - ✓ **Network (dhcp or static)**
 - ✓ **root and initial users, remove user**
 - ✓ **nameing service, nsswitch**
 - ✓ **criteria again is added**

sysconfig create-profile -o myconfig.xml

and NOT

sysconfig configure



JumpStart to AI

- ✓ Tool to help conversion of jumpstart rules & profiles
 - ✓ Install/js2ai
- ✓ Solaris 11 can Jumpstart Solaris 10

Automated Installer

✓ Installing and Configuring Zones

- ✓ after an AI install of the global zone, then on first boot non-global zone are installed

```
<configuration type="zone" name="zone"  
    source="http://server/config/zone.cfg"/>
```

✓ Custom Script During First Boot

- ✓ create an IPS package with SMF service

```
<create_default_instance enabled='true' />  
end of script disable service and uninstall
```

- ✓ add package to an IPS repository.
- ✓ install that package during the AI install



Zones installation

- ✓ Automated Installer does not do non-global zones
 - ✓ manifest and sysconfig files can be used

```
# zonecfg -z zone1 'create; set zonename=zone1; set  
zonepath=/zones/zone1'
```

```
# zoneadm -z zone1 install \  
    -m /fullpathof/zone1_manifest.xml \  
    -c /fullpathof/zone1_sysconfig.xml
```



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demo

- **The test environment (VirtualBox)**
- **AI Server Software**
- **Local copy of Solaris 11 packages**
- **Modified AI manifest**



Setup up VirtualBox

- Enable DHCP server on VirtualBox
- Disable Mac OS/Windows firewall
- Create Solaris Client (server)
 - Network 1 = Your normal internet (net0)
 - Network 2 = Host only Adaptor (net1)
 - # ipadm create-ip net1
 - # dladm create-addr -T dhcp net1/v4
 - ✓ should get (192.168.56.101)
- Create Solaris Client (client)
 - Boot off network
 - ✓ Network 1: NAT (mac address: 08:00:27:b6:20:72)
 - MacOS: # mkdir ~/Library/VirtualBox/TFTP
 - Solaris: # mkdir ~/VirtualBox/TFTP
 - Windows: C:> mkdir *YourProfile*/VirtualBox/TFTP
 - VBoxManage modifyvm "client" --nattftpserver1 192.168.56.101
 - VBoxManage modifyvm "client" --nattftpfile1 01080027B62072



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Setup up AI Server

```
# svcadm enable /network/dns/multicast
```

```
# pkg list install/installadm
```

```
NAME (PUBLISHER)                                VERSION
install/installadm                             0.5.11-0.175.0.0.0.2.1482
```

```
# installadm create-service -n sol175x86
```

```
-n Service Name , -s AI-image location or iso (default download it)
```

```
-d imagepath location (default /export/auto_install/ServiceName)
```

```
OK to use default image path: /export/auto_install/sol175x86? [y/N]: y
```

```
Download: install-image/solaris-auto-install ... Done
```

```
Creating service: sol175x86
```

```
Image path: /export/auto_install/sol175x86
```

```
Creating default-i386 alias.
```

```
No local DHCP configuration found. This service is the default
```

```
alias for all PXE clients. If not already in place, the following should be added to the DHCP configuration:
```

```
Boot server IP : 192.168.56.101
```

```
Boot file : default-i386/boot/grub/pxegrub
```

```
Please ensure the above 'Boot server IP' is correct.
```



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Setup up AI Server

```
STATE      STIME  FMRI
online     15:44:36 svc:/network/tftp/udp6:default
online     15:44:53 svc:/system/install/server:default
```

```
# installadm create-client -e 08:00:27:b6:20:72 -n sol175x86
```

No local DHCP configuration found. If not already configured, the following should be added to the DHCP configuration:

```
Boot server IP      : 192.168.56.101
Boot file           : 01080027B62072
```

Note: determined more than one IP address configured for use with AI.
Please ensure the above 'Boot server IP' is correct.

```
# ls -l /etc/netboot/
```

```
lrwxrwxrwx      .. 01080027B62072 -> ./sol175x86/boot/grub/pxegrub
drwxr-xr-x      .. default-i386
-rw-r--r--      .. menu.lst.01080027B62072
drwxr-xr-x      .. sol175x86
```



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Setup up AI Server

```
# /etc/netboot/menu.lst.01080027B62072
```

```
default=0
```

```
timeout=30
```

```
min_mem64=0
```

```
title Oracle Solaris 11 11/11 Text Installer and command line
```

```
kernel$ /sol175x86/platform/i86pc/kernel/$ISADIR/unix -B  
install_media=http://$serverIP:5555//export/auto_install/sol175x86,install_service=sol175x86,install_svc_address=$serverIP:5555
```

```
module$ /sol175x86/platform/i86pc/$ISADIR/boot_archive
```

```
title Oracle Solaris 11 11/11 Automated Install
```

```
kernel$ /sol175x86/platform/i86pc/kernel/$ISADIR/unix -B  
install=true,install_media=http://$serverIP:5555//export/auto_install/sol175x86,install_service=sol175x86,install_svc_address=$serverIP:5555,livemode=text
```

```
module$ /sol175x86/platform/i86pc/$ISADIR/boot_archive
```



Customizing an XML AI Manifest File

```
# installadm export -n sol175x86 -m orig_default -o client.xml
# cat client.xml
<!DOCTYPE auto_install SYSTEM "file:///usr/share/install/ai.dtd.1"> <auto_install>
<ai_instance name="client">
<target><logical>
    <zpool name="rpool" is_root="true"> <filesystem name="export"
mountpoint="/export"/>
    <filesystem name="export/home"/> <be name="solaris"/> </zpool>
</logical> </target>
    <software type="IPS"> <destination> <image>
    <facet set="false">facet.locale.*</facet> <facet
set="true">facet.locale.en</facet> </image> </destination>
    <source> <publisher name="solaris">
        <origin name="http://192.168.56.101:9000"/>
</publisher>
    </source>
<software_data action="install">
    <name>pkg:/entire@latest</name>
    <name>pkg:/group/system/solaris-small-server</name>
</software_data> </software> </ai_instance> </auto_install>
```



Customizing an XML AI Manifest File

```
# installadm create-manifest -n sol175x86 -f client.xml \  
    -m client -c mac="08:00:27:b6:20:72"  
    -c for critea or -p (default)
```

```
# installadm list
```

Service Name	Alias	Status	Arch	Image Path
default-i386	sol175x86		on	x86 /export/auto_install/sol175x86
sol175x86	-		on	x86 /export/auto_install/sol175x86

```
# installadm list -n sol175x86 -c
```

Service Name	Client Address	Arch	Image Path
sol175x86	08:00:27:B6:20:72	i386	/export/auto_install/sol175x86

```
# installadm list -n sol175x86 -m
```

Manifest	Status	Criteria
client		mac = 08:00:27:B6:20:72
orig_default	Default	None



System Configure

```
# sysconfig create-profile -o dhcp.xml
```

```
<service version="1" type="service" name="system/identity">
  <instance enabled="true" name="node">
    <property_group type="application" name="config">
      <propval type="astring" name="nodename" value="client"/>
    </property_group>
  </instance>
</service>

<property_group type="application" name="user_account">
  <propval type="astring" name="login" value="myroot"/>
  <propval type="astring" name="password" value="$....."/>
  <propval type="astring" name="type" value="normal"/>
  <propval type="astring" name="description" value="Root Person"/>
  <propval type="count" name="gid" value="10"/>
  <propval type="astring" name="shell" value="/usr/bin/bash"/>
  <propval type="astring" name="roles" value="root"/>
  <propval type="astring" name="profiles" value="System Administrator"/>
  <propval type="astring" name="sudoers" value="ALL=(ALL) ALL"/>
</property_group>...
```



System Configure

```
# installadm create-profile -n sol175x86 -f ./dhcp.xml -p clientall
```

```
# installadm list -n sol175x86 -p
```

Profile	Criteria
clientall	None

➤ Variable can be added in the above

```
<propval type="astring" name="nodename" value="client"/>
```

```
<propval type="astring" name="nodename" value="{{AI_HOSTNAME}}"/>
```

```
# export AI_HOSTNAME=client
```

```
# installadm create-profile -n sol175x86 -f ./dhcp.xml \  
-p client1 -c mac="08:00:27:B6:20:72"
```



Copying IPS Package Repositories

```
# mount -F hsfs /export/repoSolaris11/sol-11-1111-repo-full.iso /mnt

# rsync -aP /mnt/repo/ /export/repoSolaris11

# pkgrepo -s /export/repoSolaris11 refresh

# svccfg -s application/pkg/server setprop
  pkg/inst_root=/export/repoSolaris11

# svccfg -s application/pkg/server setprop pkg/readonly=true

# svccfg -s application/pkg/server setprop pkg/port=9000

# svcadm refresh application/pkg/server

# svcadm enable application/pkg/server
```