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Navigation



You are here: [Home](#) > How to build a Solaris Branded Zone

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by [Pellet Hopper](#) on [February 17, 2013](#) in [Technology](#)

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How to build a Solaris Branded Zone



How to build a [Solaris Branded Zone](#)? This is a standard question for Solaris administrators who unfortunately have requirements for an older Solaris 9 kernel for a legacy application of some kind. Legacy requirements are often the biggest reason for building different branded zones with legacy kernels from older operating system versions. Although Sun has preached binary compatibility for years, some

developers bypassed the published API's and applications won't work in a Solaris 10 or 11 environment. So this article shows how to create a [Solaris 9](#) branded zone which we will limit to 2 CPUs and 4GB of memory which is the same as the old physical server. The branded zone OS will be installed using a flar from an existing system as part of a virtualization project. The zone

itself will be stored on a [ZFS file system](#) that is required to have a legacy mount point.

Solaris Branded Zone Requirements

To build a branded zone for Solaris 8 and 9, the right-to-use patch which is available from Oracle's e-cloud delivery server must be downloaded and run. You need to look for "[Oracle Solaris Legacy Containers Media Pack for Oracle Solaris on SPARC](#)". Whenever I see legacy for use on modern hardware, the hair goes up on the back of my neck. But alas, sometimes you just have to do it. You will need to install the correct packages for the branded zone you are using. In this case we are using Solaris 9 branded zones so we have to install SUNWs9brandk product.

Create two ZFS File Systems

This server will be hosting several branded zones. [Each branded zone with get their own SAN LUN](#) to host the system disk and a separate ZFS scratch disk. Each branded zone will be stored under the following directory structure "[/branded/<hostname>](#)". For branded zone the ZFS file system must mount in legacy mode. Below are the commands needed to create the ZFS file system for a host called oldserver1. The scratch disk is used as an example to show how to add file systems to branded zones.

```
# mkdir /branded
# zpool create oldserver1 c4t60060480000190102857933030302233d0
# zfs set mountpoint=/branded/oldserver1 oldserver1
# zfs set mountpoint=legacy oldserver1
### create scratch disk pool
# zpool create scratch c4t70060480000180102843533030305387d0
# zfs create scratch/oldserver1
# zfs set quota=20G scratch/oldserver1
```

Install Branded Zone Right-To-Use Package

To be able to use branded zones you have to install the right-to-use package which is tied to your support contract. If you do not have the right support contract then you can not use this software. Assuming you have the correct support contract you can download the software from Oracle e-cloud delivery server. You need to look for "[Oracle Solaris Legacy Containers Media Pack for Oracle Solaris on SPARC](#)". Install the correct packages for the branded zone you are going to use. In this case we are using Solaris 9 branded zones so we have to install SUNWs9brandk product. Install the correct version of the package for the host OS you are using. In our case we need version 1.0.1. Check the readme for more details. Below is the output of the software installation.

```
# pkgadd -d ./ SUNWs9brandk
```

```
Processing package instance <SUNWs9brandk> from </root/solarislegacycontainers/1.0.1/Product>
Solaris 9 Containers: solaris9 brand support RTU(sparc) 11.10.0,REV=2008.09.20.18.50
Copyright 2008 Sun Microsystems, Inc. All rights reserved.
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Using </> as the package base directory.
## Processing package information.
## Processing system information.
8 package pathnames are already properly installed.
## Verifying package dependencies.
## Verifying disk space requirements.
## Checking for conflicts with packages already installed.

## Checking for setuid/setgid programs.
Installing Solaris 9 Containers: solaris9 brand support RTU as <SUNWs9brandk>
## Installing part 1 of 1.
/usr/lib/brand/solaris9/files/patches/112963-32.zip
/usr/lib/brand/solaris9/files/patches/115986-03.zip
/usr/lib/brand/solaris9/files/patches/order
/usr/share/man/man5/solaris9.5
[ verifying class <none> ]
Installation of <SUNWs9brandk> was successful.
```

How to build a Solaris 9 Branded Zone

We will create a branded zone to match the physical server that we are virtualizing. In this case the old server had 2 CPUs and 4 GB of RAM. To maintain compatibility with installed software the hostid and machine type are maintained. We are also going to add a ZFS file system for data.

```
# zonecfg -z oldserver1z
```

```
oldserver1z: No such zone configured
```

Use 'create' to begin configuring a new zone.

```
# zonecfg -z oldserver1z
oldserver1z: No such zone configured
Use 'create' to begin configuring a new zone.
zonecfg:oldserver1z> create -t SUNWsolaris9
zonecfg:oldserver1z> set zonepath=/branded/oldserver1
zonecfg:oldserver1z> set autoboot=true
zonecfg:oldserver1z> add net
zonecfg:oldserver1z:net> set physical=aggr1
zonecfg:oldserver1z:net> set address=192.168.1.67
zonecfg:oldserver1z:net> end
```

```
zonecfg:oldserver1z> add fs
zonecfg:oldserver1z:fs> set type=zfs
zonecfg:oldserver1z:fs> set special=scratch/oldserver1
zonecfg:oldserver1z:fs> set dir=/test
zonecfg:oldserver1z:fs> end
zonecfg:oldserver1z> add attr
zonecfg:oldserver1z:attr> set name=hostid
zonecfg:oldserver1z:attr> set type=string
zonecfg:oldserver1z:attr> set value=6853d478
zonecfg:oldserver1z:attr> end
zonecfg:oldserver1z> add attr
zonecfg:oldserver1z:attr> set name=machine
zonecfg:oldserver1z:attr> set type=string
zonecfg:oldserver1z:attr> set value=sun4u
zonecfg:oldserver1z:attr> end
zonecfg:oldserver1z> add capped-cpu
zonecfg:oldserver1z:capped-cpu> set ncpus=2
zonecfg:oldserver1z:capped-cpu> end
zonecfg:oldserver1z> add capped-memory
zonecfg:oldserver1z:capped-memory> set physical=4096m
zonecfg:oldserver1z:capped-memory> set swap=1024m
zonecfg:oldserver1z:capped-memory> set locked=512m
zonecfg:oldserver1z:capped-memory> end
zonecfg:oldserver1z> verify
zonecfg:oldserver1z> info
zonename: mybox-a799187z
zonepath: /branded/mybox-a799187
brand: solaris9
autoboot: true
bootargs:
pool:
limitpriv:
scheduling-class:
ip-type: shared
hostid:
fs:
    dir: /test
    special: scratch/oldserver1
    raw not specified
    type: zfs
    options: []
net:
    address: 192.168.1.61/24
    physical: aggr1
    defrouter not specified
```

```
capped-cpu:
    [ncpus: 2.00]
capped-memory:
    physical: 4G
    [swap: 1G]
    [locked: 512M]
attr:
    name: hostid
    type: string
    value: 6853d478
attr:
    name: machine
    type: string
    value: sun4u
rctl:
    name: zone.cpu-cap
    value: (priv=privileged,limit=200,action=deny)
rctl:
    name: zone.max-swap
    value: (priv=privileged,limit=1073741824,action=deny)
rctl:
    name: zone.max-locked-memory
    value: (priv=privileged,limit=536870912,action=deny)
zonecfg:oldserver1z> commit
zonecfg:oldserver1z> exit
```

Install the OS from a flash archive (flar)

To use a flar to install the branded zone OS the permission on ZFS file system needs to be 700.

```
# chmod 700 /branded/oldserver1
# zoneadm -z oldserver1z install -p -a /flar/test/OLDSERVER1.flar
Log File: /var/tmp/oldserver1z.install.4788.log
Source: /flar/test/OLDSERVER1.flar
Installing: This may take several minutes...
Postprocessing: This may take several minutes...
Result: Installation completed successfully.
Log File: /branded/oldserver1/root/var/log/oldserver1z.install.4788.log
```

Log into the Zone to verify everything is OK

You will need to boot the zone and log into it to verify everything is OK.

```
# zoneadm list
global
# zoneadm -z oldserver1z boot
# zoneadm list -v
  ID NAME                STATUS    PATH
BRAND  IP
  0 global                running   /
native shared
  2 oldserver1z running   /branded/oldserver1  solaris9
shared

# zlogin -C oldserver1z
root@OLDSERVER1 # ifconfig -a
lo0:1: flags=2001000849<UP,LOOPBACK,RUNNING,MULTICAST,IPv4> mtu
8232 index 1
        inet 127.0.0.1 netmask ff000000
aggr1:1: flags=1000843<UP,BROADCAST,RUNNING,MULTICAST,IPv4> mtu
1500 index 2
        inet 192.168.1.67 netmask ffffffff00 broadcast 10.64.130.255
root@OLDSERVER1 # df -h
Filesystem                size  used  avail capacity  Mounted on
/                          93G   46G   47G    50%      /
/.SUNWnative/lib          93G   46G   47G    50%      /.SUNWnative
/lib
/.SUNWnative/platform
                          93G   46G   47G    50%      /.SUNWnative
/platform
/.SUNWnative/usr          93G   46G   47G    50%      /.SUNWnative
/usr
scratch/mat-otg-a799187
                          20G   31K   20G    1%       /test
/dev                       93G   46G   47G    50%      /dev
proc                       0K    0K    0K    0%       /proc
mnttab                     0K    0K    0K    0%       /etc/mnttab
swap                       3.5G   16K   3.5G    1%       /etc/svc
/volatile
/dev/ksyms                 93G   46G   47G    50%      /dev/ksyms
fd                          0K    0K    0K    0%       /dev/fd
swap                       3.5G   64K   3.5G    1%       /tmp
root@OLDSERVER1 #
```

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Solaris Branded Zone SUNWs9brandk media pack 

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- [May 2013](#) (31)
- [April 2013](#) (29)
- [March 2013](#) (48)
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