5 Managing InfoServer Device Services

This chapter explains how to prepare an InfoServer system for client access and how to make InfoServer virtual device services available to users on DIGITAL UNIX client systems. Topics include the following:

- Preparing an InfoServer system for client access
- Enabling your system as an InfoServer client for DMS
- Making InfoServer services available to users
- Displaying InfoServer services
- Temporarily disabling your system as an InfoServer client
- Deinstalling the InfoServer client

5.1 Preparing an InfoServer System for Client Access

To ensure that clients can access InfoServer systems after installing DIGITAL InfoServer Client for DIGITAL UNIX software, you must verify the following:

- The InfoServer work group matches the client group code.
- One or more services in the DIGITAL UNIX service class are available on the InfoServer system.

Section 5.1.1 and Section 5.1.2 discuss these requirements.

5.1.1 Verifying InfoServer Work Group and Client Group Code

Because both the InfoServer work group and the client group code are set to 0 by default, you normally need take no action. You can use the InfoServer command SHOW SERVER to show the InfoServer work group. If the work group is not 0, you can specify a matching client group code when you enable your system as an InfoServer client (see Example 5-5).

Alternatively, you can change the InfoServer work group to 0 using the InfoServer command SET WORK GROUP (see the *InfoServer System Operations Guide*).

5.1.2 Creating InfoServer Services for DIGITAL UNIX Clients

DIGITAL UNIX clients can access InfoServer device services in DIGITAL UNIX and (if you have configured CDFS into the kernel) ISO _9660 service classes. You must specify one of these service classes when you create names for services, and before you bind and mount the devices on DIGITAL UNIX clients, as described in Section 5.3.

To determine whether DIGITAL UNIX or ISO_9660 class services are available, log in to the InfoServer system and enter the following command: .

```
InfoServer> SHOW SERVICES

Service Name        Service Class       Disk:Partition
------------        -------------       ---------------

PROGLIB             [V2.0]              DK3:[  2 connections]
CONDIST1            [ODS_2]             DK9:[ 12 connections]
```

In this example, the PROGLIB service in the V2.0 service class is available to DOS clients, and the CONDIST1 service in the ODS_2 service class is available to Alpha clients, but no DIGITAL UNIX or ISO 9660 services are available.

There are two methods used to create a service accessible by the DIGITAL Infoserver Client for DIGITAL UNIX:

- The first method to create a service is to simply insert a DIGITAL UNIX or ISO 9660 disk into one of the CD-ROM drives attached to the InfoServer. The InfoServer system software automatically determines the type of file system and creates a service using the label on disk. If the disk has no label, then the InfoServer creates a service using a combination of the InfoServer system name, the word UNIX, and the device name. For example, if the DIGITAL UNIX V4.0b documentation disk was inserted into device DK5:, the services would look like the following:

```
InfoServer> SHOW SERVICES

Service Name        Service Class       Disk:Partition
------------        -------------       ---------------
INFOSERVER_UNIX_DK5 [UNIX]              DK5:
PROGLIB             [V2.0]              DK3:[  2 connections]
CONDIST1            [ODS_2]             DK9:[ 12 connections]
```

- The second method to create a service is to create the service manually using the InfoServer console command CREATE SERVICE. This command is necessary when creating services for hard drive partitions or to provide a more meaningful service name to the disk in the CD-ROM drive.

  When creating a service for a removable device such as a compact disk, make sure the disk is inserted in the drive before you enter the CREATE SERVICE command. For example, you can insert the DIGITAL UNIX Online Documentation Library Disk into drive DK5 and then enter commands like the following:

```
InfoServer> CREATE SERVICE UNIXBOOK FOR DK5 WRITERS 0 CLASS UNIX [1]
%ESS-I-CREATED, Create service UNIXBOOK [UNIX].
%ESS-I-CREATED, Create service completed successfully.
InfoServer> SHOW SERVICES

Service Name       Service Class      Disk:Partition
------------       -------------      ---------------
UNIXBOOK           [UNIX]             DK5:
INFOSERVER_UNIX_DK5 [UNIX]            DK5:
PROGLIB            [V2.0]             DK3:[  2 connections]
CONDIST1           [ODS_2]            DK9:[ 12 connections]

InfoServer> SAVE
```

Be sure to enter the SAVE command if you want to maintain services across InfoServer reboots.

Note

> The InfoServer system reads volume labels on ODS-2, ISO 9660, and High Sierra media and automatically serves the media using the volume label as the service name. However, because DIGITAL UNIX media do not have volume labels, client systems running InfoServer software through Version 2.0 do not serve these media automatically.

[1] If your version of the InfoServer hardware does not understand the parameter UNIX, then use the ULTRIX parameter instead. The ULTRIX parameter works for either ULTRIX or DIGITAL UNIX.

You can also create read/write services for your users . For example, to create a service named UNIX_RW for an RZ57 hard disk in drive DK11, you would enter commands like the following:

```
InfoServer> CREATE SERVICE UNIX_RW FOR DK11 CLASS UNIX
%ESS-I-CREATED, Create service completed successfully.
InfoServer> SAVE
```

Note that before users working on DIGITAL UNIX client systems can access an InfoServer read/write device, the device must be formatted using the DIGITAL UNIX `disklabel` and `newfs` utilities (see Section 5.3.2).

Refer to the *InfoServer System Operations Guide* for complete information on InfoServer commands. Refer to the DIGITAL UNIX documentation set for detailed information on formatting read/write devices.

5.2 Enabling Your System as an InfoServer Client for DMS

For local or RIS installations, your system is automatically enabled during the installation. For DMS client installations, the system is enabled automatically, but some manual setup is required to permit `bind` and `mount` operations.

A DIGITAL UNIX client requires two device special files for each InfoServer device service. One file is used for block access to a service (for instance, to a device for reading files and directories). The other file, which has an `r` prefix, is used for raw access (for instance, to mount a device for formatting with the `newfs` utility).

Using unit numbers 0 through 7, the DIGITAL InfoServer Client for DIGITAL UNIX installation procedure automatically creates eight pairs of these device special files, so that the client can bind to as many as eight InfoServer services for either block or raw access.

For example, the client would use the file `/dev/ladc/unit0c` for block access to the first service and `/dev/ladc/runit0c` for raw access. Similarly, the client would use `/dev/ladc/unit1c` for block access to the second service and `/dev/ladc/runit1c` for raw access.

The device special files are not created for DMS installations. The user must manually create the device special files using the `MAKELADCDEV` script shown in Example 5-1.

Example 5-1 Creating Device Special Files Manually

```
# mkdir /dev/ladc
# cd /dev/ladc
# /usr/opt/LADBASE100/MAKELPACDEV.sh unit0 0
```

The MAKELADCDEV script can determine the block major number and character major number automatically once the system has been enabled as an InfoServer Client. MAKELADCDEV uses the `sysconfig` program to do this as shown in Example 5-2.

Example 5-2 Using sysconfig to Find Major Numbers

```
# sysconfig -q ladc bmajor cmajor
bmajor = 52
cmajor = 64
```

5.3 Making InfoServer Services Available to Users

Once your system is enabled as an InfoServer Client, you can enter the `showladservice` command (see Section 6.2) to display available services. For example:

```
% showladservice

Interrogating network, please wait...
Services offered by node LIBRARY_ESS (LAD V3.0, Address: 08-00-2B-39-21-AB)

Service       Drive (Device)      Rating Users     Mode
-------       --------------      ------ -----     ----
UNIXBOOK      DK2   (RRD42)       65535          0        RO
CONDIST1      DK9   (RRD42)       64002          6        RO
UNIX_RW       DK11  (RZ57)        65007          1        RW
.
.
.
Services offered by node PROGRAMMER (LAD V3.0, Address: 08-00-2B-22-49-BB)

Service       Drive (Device)      Rating Users     Mode
-------       --------------      ------ -----     ----
FORTRAN_ENV   DK2   (RRD42)       65231          1        RO
COBOL_ENV     DK7   (RRD42)       65007          6        RO
```

You make services available to users by performing the following operations:

- Binding device units on your system to InfoServer services
- Mounting remote InfoServer devices on your system

Section 5.3.1 and Section 5.3.2, respectively, describe these operations. Section 5.3.3 explains how to configure your system to access ISO 9660 compact discs on InfoServer systems. Section 5.3.4 describes procedures for unmounting and unbinding devices.

5.3.1 Binding to InfoServer Services

To bind a device unit on your system to an InfoServer service, enter the `bindladcunit` command. For instance, to `bind /dev/ladc/unit0c` to the service UNIXBOOK, you would enter the command shown in Example 5-3. After binding is completed, you can mount a remote InfoServer device on your system (see Section 5.3.2) and treat the device as a local device.

Example 5-3 Binding to an InfoServer Service

```
# bindladcunit 0 -serviceName UNIXBOOK

Unit 0 Bound                      Service UNIXBOOK
/dev/ladc/unit0c                  Server  DOCSERVER

Drive Name          DK2           Service Rating            65007 ❶
Device Class        CD-ROM        Max Read Session          1000
Device Type         RRD42         Max Write Session         0
Device Format       UNIX          Current Read Session      0
Device Size         892500 ❷      Current write session     0

Partition           Sectors       Offset
        a           0             0
        b           0             0
        c           4007800 ❸
        d           0             0
        e           0             0
        f           0             0
        g           0             0
        h           0             0
```

❶ See Table 6-12 for a description of the display fields.

❷ Must be a nonzero value. If the value is 0, check the following:

- You created a service (see Section 5.1.2) for a drive holding a removable device such as a compact disc, and the drive is now empty.
- You created a service for an empty drive.

In both cases, you must unbind the device unit using the `unbindladcunit` command and then bind it again, after you insert the device in the InfoServer drive.

❸ Partition `c` means the entire device.

The `bindladcunit` command invokes the LASTport/Disk client driver with the target device service information and solicits the service. When the first solicit response returns, the client driver binds the responding service to the client unit number you have specified. You can then enter the `showladcbind` command (see Section 6.2) to validate the binding information.

5.3.2 Mounting InfoServer Devices on a DIGITAL UNIX Client

Mounting InfoServer devices on your client system is equivalent to mounting local devices. However, if a remote device is a new read/write device, you must use the DIGITAL UNIX `disklabel` and `newfs` utilities to initialize the file system before mounting the device.

The `disklabel` utility writes a DIGITAL UNIX disk label onto the disk. For example, to label a disk bound to unit 1, enter a command in the following format:

```
# disklabel -wr /dev/ladc/runit1c LAD
```

The `newfs` utility formats a disk partition so that it can be mounted by DIGITAL UNIX. For example, to format a disk bound to unit 1, enter commands in the following format:

```
# newfs /dev/ladc/runitlc
```

To mount a read/write device, you enter a command in the following format:

```
# mount /dev/ladc/unit1c /yourdirectory1
```

To mount a read-only device, you enter a command in the following format: :

```
# mount -r /dev/ladc/unit0c /yourdirectory0
```

Caution

Be sure to specify the `-r` parameter when you mount a read-only device. Otherwise, users will be unable to access it.

Note that you must always mount to partition c of the block (not the raw) device special file; for instance, `/dev/ladc/unit0c, /dev/ladc/unit1c`, and so forth.

The `mount` command causes the LASTport/Disk client driver to send a Connect Request message over the network. When a positive Connect Response message returns, users can enter requests for services.

Example 5-4 shows how you would mount `UNIXBOOK`, the DIGITAL UNIX Online Documentation Library Disc you inserted in InfoServer drive DK2. Once the disc is mounted on your system, users can access the online documents by selecting Bookreader from the Session Manager Applications menu or by entering the command `dxbook`.

Example 5-4 Mounting the DIGITAL UNIX Online Documentation Library Disc

```
# mount -r /dev/ladc/unit0c /usr/lib/dxbook ❶
# ls /usr/lib/dxbook ❷
aa-books-te.decw_book                   aa-ne23a-tk.decw_book
aa-hl84c-te.decw_book                   aa-ng85a-te.decw_book
  .
  .
  .
cdaconverter.decw_bookshelf             decwrite.decw_bookshelf
library.decw_bookshelf                  rsm.decw_bookshelf
  .
  .
  .
# df -k ❸
Filesystem          Total     kbytes    kbytes      %
node                kbytes    used      free        used   Mounted on
/dev/rz0a            15551     11593      2403      83%    /
/dev/rz0g           271847    214429     30234      88%    /usr
/dev/ladc/unit0c    186957     33324    134938      20%    /usr/lib/dxbook
```

❶ Mount the file system read only because the device is a compact disc.

❷ List the files. Note that `/usr/lib/dxbook` contains online documentation library files for various products.

❸ List the mounted file systems. (`-k` means show file sizes in kilobytes.)

5.3.3 Configuring Your System to Access ISO 9660 Compact Discs

To make an ISO 9660 compact disc available to users on your system, follow these steps:

1. Insert the compact disc in an InfoServer drive. The InfoServer system reads the disc's volume label and automatically creates a service in the ISO 9660 service class using the volume label as the service name. You can enter the InfoServer command SHOW SERVICES to verify the service name.
2. Bind to the service using the `bindladcunit` command. For example:

   ```
   # bindladcunit 3 -serviceClass iso_9660 -serviceName DEC_EXPLORER
   ```

3. Create a directory (for example, `/explorer`) to be the mount point for the compact disc.

4. To mount the disc, enter a command in the following format:

```
# mount -t cdfs -o noversion -r /dev/ladc/unit3c /explorer
```

Once the compact disc is mounted, users can access it as they would a locally attached device. For example, to list the device contents, users would enter the following command:

```
# ls /explorer
```

5.3.4 Unmounting File Systems and Unbinding Device Units

Before unbinding a device unit from an InfoServer service, you must unmount the associated file system using the `umount` command. You can then unbind the device unit from the service using the `unbindladcunit` command.

For example, to unmount the file system and unbind the device unit bound to the service UNIXBOOK, you would enter the following commands:

```
# umount /usr/lib/dxbook
# unbindladcunit 0
```

The `umount` command causes the LASTport/Disk client driver to send a Disconnect Request message to the target server and break the association. The `unbindladcunit` command breaks the binding between device unit `0` and `UNIXBOOK`. This command also causes the LASTport/Disk client driver to deallocate all service-related information. After you unbind a device unit from an InfoServer service, you can use the `bindladcunit` command to bind that unit to another service.

Note

If an InfoServer device is disabled for any reason (for example, a drive fails or is disconnected, a device is removed, or the InfoServer system is rebooted), you must unmount the associated file system and unbind the service. You can later rebind to the service and remount the file system.

5.3.5 Manually Enabling and Disabling the DIGITAL InfoServer Client for DIGITAL UNIX

The DIGITAL InfoServer Client for DIGITAL UNIX installation procedure automatically enables the system as an InfoServer Client regardless of the installation method (RIS, DMS, or local installation). For normal system operation, you should not enable or disable the InfoServer Client. However, there are times where you might want to perform these functions manually. One reason for performing these operations is to solicit on a different Ethernet adapter than that selected during the installation.

To enable the system as an InfoServer Client:

1. Invoke the `sysconfig` utility to link the device driver into the running UNIX kernel.
2. Invoke the `loadlast` utility (see Section 6.1) to enable and configure the LASTport transport, specifying your client system and its Ethernet device. Typically this device is `ln0` or `tu0` for Alpha systems.
3. Invoke the `startlast` utility (see Section 6.1) to connect the LASTport transport to your system's Ethernet device. This utility also enables the client group code.
4. Invoke the loadladc utility (see Section 6.2) to enable LASTport/Disk services on your client system.

Example 5-5 shows the operations for Alpha system mynode.

Example 5-5 Manually Enabling the InfoServer Client

```
# sysconfig -c ladc❶
# loadlast mynode ln0❷

---------- LASTport Driver Loaded ----------
Node Name                 mynode
Node Id                   08-00-2b-10-5c-39
Ethernet device           ln0
# startlast ln0 ❸

---------- LASTport Protocol Started ----------
Ethernet device           ln0
Multicast for ln0         09-00-2b-04-00-00
Group code                0 ❹
# loadladc ❺
LASTport/Disk Driver Loaded.
```

❶ Invoke the `sysconfig` utility to link the device driver into the running UNIX kernel.

❷ Load the LASTport driver on node `mynode` and specify `ln0` as the Ethernet device.

❸ Start the LASTport protocol on device `ln0`.

❹ The client group code is set to 0 by default. If the work group on the InfoServer system you want to access is not 0, you can specify a matching client group code when you enter the `startlast` command. For example, if the InfoServer work group is 12, you would enter the following command:

```
# startlast ln0 -g 12
```

❺ Load the LASTport/Disk driver.[2]

Your system is normally enabled as an InfoServer Client across reboots by the `/sbin/init.d/ladc` script. If you want to disable this feature, you must rename this script as described in Section 5.4.

Your system is normally enabled as an InfoServer Client across reboots by the `/sbin/init.d/ladc` script. If you want to disable this feature, you must rename this script as described in Section 5.4.

[2] Link the LASTport/Disk driver into the running DIGITAL UNIX kernel.

To disable the InfoServer Client:

1. Invoke the stoplast utility (see Section 6.1) to remove LASTport from the active transport protocol list.
2. Invoke the unloadlast utility (see Section 6.1) to remove the association between the LASTport driver and the operating system.
3. Invoke the sysconfig utility to remove the device driver from the running UNIX kernel.

Example 5-6 shows the operations for Alpha system mynode.

Example 5-6 Manually Disabling the InfoServer Client

```
# stoplast ln0 ❶
# unloadlast ❷
# startlast ln0 ❸
```

❶ Remove the LASTport protocol from the transport list.

❷ Unload the LASTport driver.

❸ Remove the device driver from the running UNIX kernel.

5.4 Temporarily Disabling Your System as an InfoServer Client

In certain circumstances, you might want to temporarily disable your system as an InfoServer client. For example, you might want to reclaim system resources temporarily for other applications, or you might want to configure your system for standalone operations.

To temporarily disable your system as an InfoServer client, follow these steps:

1. # **cd /sbin/init.d**
2. # **mv ladc ladc.bak**
3. # **reboot**

To re-enable your system as an InfoServer client, rename `ladc.bak` to `ladc` and then reboot.

1. # **cd /sbin/init.d**
2. # **mv ladc.bak ladc**
3. # **reboot**

5.5 Deinstalling DIGITAL InfoServer Client for DIGITAL UNIX Software

To deinstall the DIGITAL InfoServer Client for DIGITAL UNIX software, you perform the following operations:

```
# setld -d LPABASE100 LPAMAN100
```

This command removes all DIGITAL InfoServer Client for DIGITAL UNIX files and directories.

Notes

- Make sure that all file systems being served by the InfoServer are unmounted and all logical units are unbound, before deinstalling the DIGITAL InfoServer Client for DIGITAL UNIX.
- You cannot delete subsets from a diskless environment. To remove DIGITAL InfoServer Client for DIGITAL UNIX software from a diskless environment, delete the environment.