Multiuser Mode Guests [8]

This chapter describes procedures for bringing up a guest in multiuser mode.

8.1 Considerations

Before bringing up a guest to multiuser mode, consider the following:

- Tapes

  Your guest's tape configuration must **exactly** match that of the host. New tape devices that are supported by the guest's system level, but not by the host, cannot be included. Tape devices are reserved in the host by device ordinal; consequently, they **must** be in the same order in the configuration. ER90 devices, though not supported on guests, should be included as ordinal place holders in the guest configuration.

- TCP/IP connection/network node name

  If you want to access your guest through a TCP/IP connection, you must have a distinct network node name and address. The next example host (sn1703) has a connection through an NSC A130 network adapter. The example guest uses an NSC N130 network adapter. The N130 can be shared by using a different logical path (for example, logical path 7 instead of the traditional path 5) on the guest. If you choose to use an alternate path on your existing NSC N130, be sure to have your network administrator or NSC representative update the NSC startup file. You will also need to update the hycf to add the adapter address for the guest. For example, with the host (sn1703) on logical path 5 and the guest (sn1703a) on logical path 7, the following lines are needed (assuming an adapter address of 0x86):

  ```
  direct   sn1703     8605   ff00   0   16432
  direct   sn1703a    8607   ff00   0   16432
  ```

  Note that a single HIPPI or FCA-1 (FDDI) cannot be shared between host and guest for simultaneous TCP/IP connections.

  Although it is not necessary that your kernel's uts node name match the name by which it is known on the network, it may make it easier for a root to be used as either a host or a guest. To make a root more flexible in this sense, remove any existing /etc/config/hostname.txt file, and let the network's start-up scripts default to the output of the /etc/config/makehostname name.

8.2 Examples of configuration links

As previously mentioned, guest and host versions of selected configuration files are not necessary. However, they do facilitate the use of a single root as either a host or a guest root. With that in mind, the following examples make use of the `Guest File Link Configuration` option to prepare a root for use as either a host or a guest. You must determine which files are used at system boot time.

To create configuration links, use the following steps:

1. In the UNICOS Installation/Configuration Menu System, on the guest `root`, make the following menu selection:

   ```
   UNICOS 10.0 Installation / Configuration Menu System
   .   Configure System
   .   .   UNICOS under UNICOS (guest) Configuration
   .   .   .   Guest File Link Configuration
   ```

   For this example, the following file names are entered:

   ```
      Guest File Link Configuration

        Guest/Host Configuration Files
        ------------------------------
   E->  /etc/config/daemons
        /etc/config/interfaces
        /etc/config/ldchlist
        /etc/config/param
        /etc/config/rcoptions
        /etc/exports
        /etc/fstab
        /etc/gated.conf
        /etc/config/param
   ```

   All selected files must reside on the root file system (that is, be available in single-user mode).

2. Select and execute `Create Guest and Host versions of files`. This creates the `.host` and `.guest` files for all of the files listed in `/etc/config/guest_config`and sets links to the host version.

3. Go back to the `Activation Utility` menu, select `Activation Options`, and select `Activate host or guest versions`. Then toggle the selection to `guest` as shown in the following example:

   ```
   .   Utilities
   .   .   Activation Utility
   .   .   .   Activation Options

        Activation root mount point
        Stop activation on error?                          YES
   S->  Activate host or guest versions                    guest
        Activate host or guest versions.
   ```

4. Go back to the `Import Utility` menu, select `Import Options`, and select `Import host or guest versions`. Then toggle the selection to `guest` as shown in the following example:

   ```
   .   Utilities
   .   .   Import Utility
   .   .   .   Import Options

        Import root mount point                            /
        Stop import on error?                              NO?
   S-> Import host or guest versions?                     guest
        Reload default import table ...
        Activate host or guest versions.
   ```

5. To import your configuration using the installation tool, enter the following update screen (this example is for the `fstab` file `)`:

   ```
   .   Configure System
   .   .   File System (fstab) Configuration
   ```

   You are now ready to edit the guest `fstab` information.

6. Remove references to the file systems not needed on the guest system, and activate the `fstab` configuration (this example is for the `fstab` file).

   With the `guest` attribute set in the activation utility, files listed in `/etc/config/guest_config` are linked to their `.guest` counterparts before the activation. Do not be alarmed if the activation says that it is activating to `/etc/fstab` if your intent is to update `/etc/fstab.guest`.

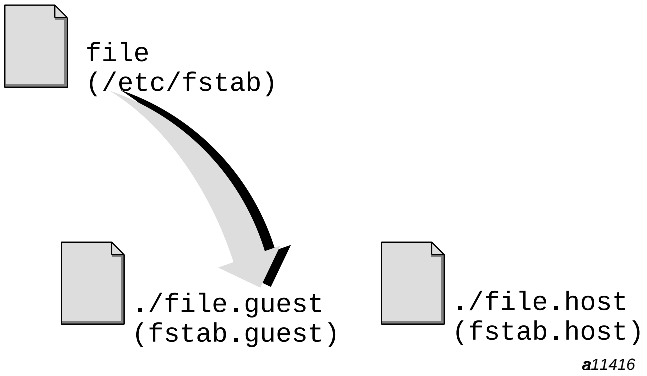

Figure 4. Example link for a system running as a guest

When a system is booted on this root, `/etc/brc.guest` determines the system type (host or guest) and appropriately sets the soft file links for all files listed in `/etc/config/guest_config`. Be sure to run `/etc/brc.guest` before you run `mfsck`(8).

Repeat step 6 for remaining files listed in `/etc/config/guest_config`.

7. Return to host import/activate mode by repeating steps 3 and 4. Choose `host` instead of `guest`.

In the example, the following changes were made in each file:

```
/etc/config/daemons.host:
    USCP  uscp            YES     /usr/lib/uscpterm /usr/lib/uscpd -d

/etc/config/daemons.guest:
    USCP  uscp            NO      /usr/lib/uscpterm /usr/lib/uscpd -d

/etc/config/interfaces.host:
    np0   /etc/hycf.ows   inet    sn1703-030       netmask 0xffffff00
    np3   /etc/hycf.hyp   inet    sn1703           netmask 0xffffff00

/etc/config/interfaces.guest:

    np1   /etc/hycf.hyp   inet    sn1703a         netmask 0xffffff00

/etc/config/ldchlist.host:
    /dev/dsk/root.a      SSD   200        48
    /dev/dsk/usr.a       SSD   175        48
    /dev/dsk/usr_spool   MEM   20         48
```

/etc/config/ldchlist.guest:

```
    /dev/dsk/root.a      SSD   200        48
    /dev/dsk/usr.a       SSD   175        48
```

/etc/config/rcoptions.host:

```
    TMPDEV='ssd_blk3'
    SDSDEV='ssd_blk0'
```

/etc/config/rcoptions.guest:

```
    TMPDEV='tmp_guest'
    SDSDEV='ssd_blk1'
```

/etc/exports.host:

```
    /sn1703
    /tmp
    /ptmp
```

/etc/exports.guest:(empty)

/etc/fstab.host:

```
/dev/dsk/root.a      /                    NC1FS  rw,CRI_RC="NO"  1      1
/dev/dsk/usr.a       /usr                 NC1FS  rw,CRI_RC="NO"  1      2
/dev/dsk/src_guest90 /usr/src             NC1FS  rw,CRI_RC="YES" 1      2
/dev/dsk/usr_guest   /usr/guest           NC1FS  rw,CRI_RC="YES" 1      2
/dev/dsk/root.b      /gstbld              NC1FS  rw,CRI_RC="YES" 1      2
/dev/dsk/usr.b       /gstbld/usr          NC1FS  rw,CRI_RC="YES" 1      2
/dev/dsk/src_guest   /gstbld/usr/src      NC1FS  rw,CRI_RC="YES" 1      2
/dev/dsk/admin       /admin               NC1FS  rw,CRI_RC="YES" 1      2
/dev/dsk/usr_adm     /usr/adm             NC1FS  rw,CRI_RC="YES" 1      2
/dev/dsk/90_spool    /usr/spool           NC1FS  rw,CRI_RC="YES" 1      2
/dev/dsk/users       /sn1703              NC1FS  rw,CRI_RC="YES" 1      2
/dev/dsk/core        /core                NC1FS  rw,CRI_RC="YES" 1      2
/dev/dsk/ptmp        /ptmp                NC1FS  rw,CRI_RC="YES" 1      2
/dev/dsk/root.c      /90                  NC1FS  rw,CRI_RC="YES" 1      2
/dev/dsk/usr.c       /90/usr              NC1FS  rw,CRI_RC="YES" 1      2
/dev/dsk/src_90      /90/usr/src          NC1FS  rw,CRI_RC="YES" 1      2
/dev/dsk/root.f      /90                  NC1FS  rw,CRI_RC="YES" 1      2
/dev/dsk/usr.f       /90/usr              NC1FS  rw,CRI_RC="YES" 1      2
/dev/dsk/src_90      /90/usr/src          NC1FS  rw,CRI_RC="YES" 1      2
/dev/dsk/root.e      /10                  NC1FS  rw,CRI_RC="NO"  1      2
/dev/dsk/usr.e       /10/usr              NC1FS  rw,CRI_RC="NO"  1      2
/dev/dsk/src_10      /10/usr/src          NC1FS  rw,CRI_RC="NO"  1      2 /proc                 /pr
```

/etc/fstab.guest(complete - removed all but root, usr, src, and proc):

```
/dev/dsk/root.a     /                 NC1F   rw,CRI_RC="NO" 1     1
```

```
/dev/dsk/usr.a      /usr              NC1FS  rw,CRI_RC="NO" 1     2
/dev/dsk/src_guest90/usr/src          NC1FS  rw,CRI_RC="YES"1     2
/proc               /proc             PROC
```

/etc/gated.conf.host:

```
     0.0.0.0 gateway zunee preference 50 hopcount 1 ;
```

/etc/gated.conf.guest:

```
     default gateway sn1703-ip preference 50 hopcount 1 ;
     cray-fddi gateway sn1703-ip preference 50 hopcount 1 ;
```

8.3 Moving to multiuser mode

After you have set up a root file system with the appropriate `.host` and `.guest` configuration links, you are now ready to boot (on that root) a multiuser mode guest. Moving to multiuser mode in a UNICOS guest system is no different than for a stand-alone UNICOS system, except for the changes that will take effect because of your configuration links.

Before booting your guest, you can run the `/mnt/etc/install/instartup.guest` script. It performs essentially the same functions as the `/etc/install/instartup` script, but can be run in multiuser mode to perform the following tasks:

- Copy the current user database (UDB) to the guest root (`/mnt/etc/udb`)
- Install the secure commands on the guest root (`/mnt`)

No options are required to copy the current UDB. To get a short help message listing the available options, enter the following command:

```
/mnt/etc/install/instartup.guest -h
```

See the steps in Chapter 7, page 23 to boot the system to single-user mode. In the guest console's window on the OWS or SWS, enter the following command:

```
/etc/init 2
```

Then proceed as you would during normal system startup.