

[How to set up a controller to load NCR terminals that use a PXE boot ROM](#)

Introduction

This document was created to aid in the installation and configuration of NCR's DHCP/BINL request handler on a native 4690 controller loading NCR Terminal model 7452-3500 or 7452-4000. This document supports the loading of NCR terminal models that are configured to use the Intel PXE boot rom. Here are the rules to determine if the Intel PXE boot rom is the appropriate one to set up:

The model 4000 series of terminals will always remotely load using the Intel PXE boot rom whether loading QCONNECT for DOS or QCONNECT for Windows CE.

If the Model 3500 series terminal is loading QCONNECT for Windows CE, it must use the Intel PXE boot rom. If QCONNECT for DOS is to be loaded, another loading protocol is used.

Terminal Prerequisites

The terminal must be properly configured to load using the PXE boot rom.

Controller Prerequisites

The Master Controller and Alternate Master Controller must be configured to run TCP/IP protocol. This feature is automatically installed when Version 2 of 4690 OS is used. It must also be configured to run on each of the controllers in the store. TCP/IP protocol requires that each controller have a TCP/IP address assigned by your store host support group. In addition, you will need to have available an adequate range of TCP/IP addresses for terminals to be loaded in each store. You must also know the SUBNET MASK value to be used. Again, this should be available from your host support group. Refer to the IBM document, 4690 OS Communications Programming Reference for details on how to set up a 4690 controller to run TCP/IP. This document is currently available at web site:

<http://www2.clearlake.ibm.com/store/support/html/pubs.html>

Required Installation Files

qvstftp.286 (TFTP module)

qncrdhcp.286 (NCR DHCP server)

qbinl.286 (NCR Binl Requests Handler)

qcdifile.xxx (DHCP/BINL Example configuration file)

msg.inp (System message input file)

readme.txt (Installation & configuration instructions)

Additional QCONNECT DOS Installation Files

7452load.bsd (Boot loader program for Qconnect for DOS Only)

7452Load.bid (Qconnect DOS Image file)

keymap.xxx (key configuration file(s) provided by NCR support)
dynakey.xxx (dynakey configuration file(s) provided by NCR support)
qcdifile.xxx (hardware configuration file(s) provided by NCR support)

Additional QCONNECT CE Installation Files

Qxxxxxxx.sys (Boot loader program for Qconnect for Windows CE Only)
Qxxxxxxx.bce (Qconnect/CE Image file)
qlogsvr.286 (background application to handle Qconnect/CE diagnostics)
keymap.xxx (key configuration file(s) provided by NCR support)
dynakey.xxx (dynakey configuration file(s) provided by NCR support)
qcdifile.xxx (hardware configuration file(s) provided by NCR support)
xxxxxxx.htm (Web pages for display on VGA Screens)
xxxxxxx.bmp (Bitmapped files called by the xxxxxxxx.htm files)

How to install the DHCP loader and terminal image files

Insert the DHCP installation diskette into drive A: on the 4960 Master Controller

Type `chkdsk a: -f` to assure that file attributes have been set correctly.

Type `a:install`. This will copy all installation files to the correct directory, update the system message file, and set the file distribution attributes.

If you are installing QCONNECT for DOS, copy the files, 7452load.bsd and 7452load.bid to the ADX_UDT1 directory. If you are installing QCONNECT for Windows CE, copy the files, Qxxxxxxx.sys and Qxxxxxxx.bce (the actual file names depend on terminal type and IO configuration) to the ADX_UDT1 directory. These files must be distributed as COMPOUND files.

If you already have a file, `adx_udt1:qcdifile.000`, located in this directory you will need use an editor to copy all the entries in the sample file, `adx_udt1:qcdifile.xxx`, to `adx_udt1:qcdifile.000`. If there is not a `qcdifile.000` you will need to rename `qcdifile.xxx` to `adx_udt1:qcdifile.dhp` (distribution characteristics will not be changed).

Edit either `qcdifile.dhp` or `qcdifile.000` as appropriate:

In the Section [NCRLOAD] there are 5 fields that need to be configured. The StartIp and EndIp NOTE*** Either `qcdifile.000` or `qcdifile.dhp` is a distributed file. Both the master and backup controllers will read from it. The program, `qncrdhcp` running on the configured backup controller will only load terminals that have been previously loaded by the master. What this means is if the master goes down no new terminals will be able to come online until the master is back up.

See an example of the `qcdifile.xxx` below.

AutoDetect = "1" This will detect if there is another DHCP running and set the configuration appropriately. Setting this will only look for other DHCP servers. It will not affect the qncrdhcp running on the backup controller. A value of "1" is recommended.

SubMask="" Place your subnet mask in this field.

StartIP="" In order for this DHCP Server to work you need to reserve a block of IP address's greater than or equal to the number of terminals you plan on loading.

These IP's must be in sequential order starting with the StartIP and end with EndIP. See the example qcdifile.xxx below. All the IP addresses between StartIP and EndIP need to be available. If you will be loading 20 terminals the master should have an absolute minimum of 20 IP addresses. It is recommended you set the EndIP to exceed the maximum number of terminals you expect to eventually load. This will allow for new terminals to be added without changing the qcdifile.xxx each time.

EndIP="" See the rules for StartIP.

In the Section [BINL] there is only one field you will need to edit, DefaultImage="". The file name will be different, depending on whether you are loading a DOS QCONNECT terminal or a Windows CE terminal. This should be the full path name of the PXE Boot loader.

If you are loading a terminal running DOS QCONNECT, the file will have a file type: BSD. See the example below:

```
DefaultImage="c:\adx_udt1\7452load.bsd"
```

If you are loading a terminal running Windows CE, the file will have a file type: SYS. See the example below:

```
DefaultImage="c:\adx_udt1\Qxxxxxxx.sys"
```

NOTE** The boot loader and the boot image must have the same file name. And be located in the same directory. If you are loading a Windows CE terminal, the file type for the loader and the image, respectively, are: .sys and .bce. If you are loading a DOS QCONNECT terminal, the file type for the load and image, respectively, are .bsd and .bid. In the example below (for a Windows CE terminal) the boot loader(.sys) will load an image name Q4012dd.bce. The loader will only look for an image with the same file name as the loader.

*****Example of CDIFILE.XXX*****

```
[NCRLOAD]
```

```
AutoDetect="1"
```

```
SubMask="255.255.0.0"
```

```
StartIP="9.31.7.105"
```

```
EndIP="9.31.7.125"
```

[BINL]

DefaultImage="c:\adx_udt1\Q4012dd.sys"

*****END*****

Check all the background tasks for both the Master Controller and the Alternate Master Controller to see if an IBM TFTP background task is defined. Look for a program name: adxhsitl.286. If this task is defined, it means that your system is currently configured to use TFTP. To search for this background task by pressing Alt-SysRq then select background tasks (b). Page Down until you find a program defined using the name adxhsitl.286. If this task is defined, you must delete it. To delete this task, execute the following steps:

From the System Main Menu

Select Installation and Update Aids

Select Change Configuration

Select Controller configuration

** Follow the on screen prompts**

Configure the master controller first for both background applications.

You can use the TAB key to move down or SHIFT TAB to move up.

Select the Master Controller, then hit Enter. You will see a list of configuration areas. Place an X by "Background application" and hit Enter

Select Delete a background application

Specify the correct task to delete.

Repeat these steps to delete this task on the backup controller.

Repeat the above steps to delete this task on the Alternate Master Controller if you have one and if this task is defined for this controller.

Execute the following steps to configure the master controller for the following background tasks:

From the System Main Menu

Select Installation and Update Aids

Select Change Configuration

Select Controller configuration

** Follow the on screen prompts**

Configure the master controller first for both background applications.

Then repeat the process for the backup controller. Be sure to use the backup controller steps. You can use the TAB key to move down or SHIFT TAB to move up.

Be sure to select the correct controller you want to configure. Example: CC or DD. Place an X by Background application

Select Define a background application

**** Follow the on screen prompts****

Define the DHCP server:

Initial Message = NCR DHCP SERVER

Program name = c:\adx_upgm\qncrdhcp.286

Parameter List =

Priority = 5

Page Down to the next screen

Make the following entries:

Start when master Y

Stop when master N

Start when not master Y

Stop when master N

Page Down to the next screen

Start when file server Y

Stop when not file server N

Start when not file server Y

Stop when file server N

Press Enter}

Add a second background task

Initial Message = TFTP Module

Program name = c:\adx_upgm\qvstftp.286

Parameter List = -d0 -m -s4

Note: In the parameter, -d0, use zero, not O

Priority = 5

Page Down to the next screen

Make the following entries:

Start when master Y

Stop when master N

Start when not master Y

Stop when master N

Page Down to the next screen

Start when file server Y

Stop when not file server N

Start when not file server Y

Stop when file server N

Press Enter}

Execute this step ONLY if you are installing Qconnect/CE.

Add a third background task

Initial Message = QCONNECT/CE Logging Module

Program name = c:\adx_upgm\qlogsrvr.286

Parameter List =

Priority = 5

Page Down to the next screen

Make the following entries:

Start when master Y

Stop when master N

Start when not master Y

Stop when master N

Page Down to the next screen

Start when file server Y
Stop when not file server N
Start when not file server Y
Stop when file server N

Press Enter}

Configure these same background tasks on the Alternate Master controller, if you have one. The configuration for the Alternate Master Controller must also be done on the Master Controller.

Activate controller configuration at the master controller.

When it is convenient to do so, reboot both controllers to cause the changes you have made to be started.

After you have rebooted, be sure that the new background tasks have been configured correctly and are running on each controller by pressing Alt-SysRq then select background tasks (b). Page Down until you find them. The Status should show Active. If not, double-check your configuration.

Copy and distribute other needed files

Contact NCR support personnel to obtain additional QCONNECT configuration files needed for proper operation depending on your terminal hardware configuration. Files having the following names should be copied to the adx_udt1: directory on the master controller and must be distributed as Compound Files:

QCONNECT DOS Installation Files

7452load.bsd (Boot loader program for Qconnect for DOS Only)
7452Load.bid (Qconnect DOS Image file)
keymap.xxx (key configuration file(s) provided by NCR support)
dynakey.xxx (dynakey configuration file(s) provided by NCR support)
cdifile.xxx (hardware configuration file(s) provided by NCR support)

QCONNECT CE Installation Files

7452load.sys (Boot loader program for Qconnect for Windows CE Only)
7452Load.bce (Qconnect CE Image file)
keymap.xxx (key configuration file(s) provided by NCR support)
dynakey.xxx (dynakey configuration file(s) provided by NCR support)
qcdifile.xxx (hardware configuration file(s) provided by NCR support)

xxxxxxx.htm (web pages specified by the webCacheDir parm in your QCDIFILE.xxx and by your Dynakey.xxx files)

xxxxxxx.bmp (bitmap files called by the xxxxxx.htm web pages)

You should now be configured to load your NCR 7452 terminals. Please test to verify proper loading.

Special Instructions for loading 7452-4000 terminals using QconnectCE

In order to assure proper initial loading of a QconnectCE terminal, the terminal address and store number normally contained in CMOS must be cleared. Locate a CMOS initialization disk for your particular terminal from NCR. Make sure CMOS is initialized. The terminal will initially boot with a "Z001" prompt, allowing for input of a 3-digit terminal number (preceded by a "1") followed by an S2 key. The terminal should reboot and load if the terminal ID has been properly configured on the 4690 Controller.

Refer to the Dynakey Sample file sent with your DHCP installation package for examples of how to display web pages on your VGA screen when the application enters a particular state.

Refer to appropriate documentation on how to construct a QCDIFILE and specify hardware connections for your terminals. Please note that there are no QCDIFILE.xxx files available for use. Only QCDIFILE.000 is available. In order to specify different configurations within a particular store, the #if, then, #else parms must be used to specify commands that are terminal ID or store ID-sensitive.

Troubleshooting

After adding a new terminal or replacing an existing one in my store, the new terminal will not load from the controller.

This problem could be caused by one of several things, but one thing to examine is whether you have defined enough IP addresses to account for all the terminals in your store. If a terminal is replaced, the Ethernet MAC address associated with a removed terminal still is assigned to one of the IP addresses in the sequence of IP addresses you have allocated. If this is the case, modify ADX_UDT1:QCDIFILE.000QCDIFILE.DHP (as appropriate) to add more addresses using the StartIP and EndIP parameters. If you have replaced a series of terminals in the store and really do have enough IP addresses for the number of terminals you now have, simply erase the file, adx_udt1:qcdi_ip.dat. This will cause the IP addresses to be re-allocated as each terminal is loaded.