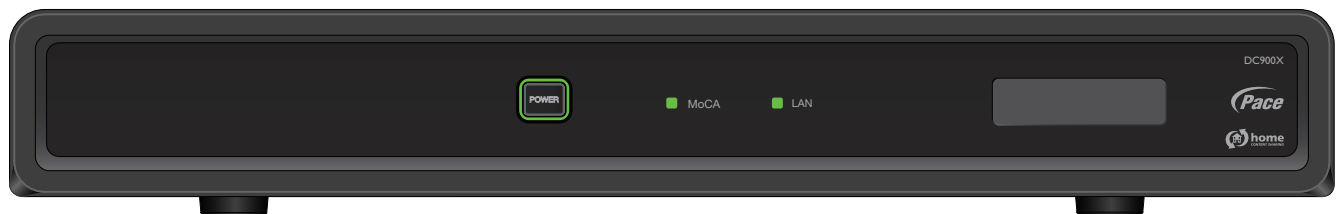




INSTALLATION GUIDE

Pace DC900X for Home Content Sharing



BRINGING TECHNOLOGY HOME
www.pace.com

RELEASE 30th Oct. 2009

CONTENTS

SAFETY INFORMATION.....	3
IMPORTANT SAFETY INSTRUCTIONS.....	3
OVERVIEW.....	6
Front panel.....	6
Rear panel.....	6
BACKGROUND TO HOME CONTENT SHARING™.....	7
Network-Attached Storage.....	7
MoCA networks.....	7
MoCA-Ethernet hybrid network.....	7
Ethernet-only network.....	9
CONNECTING THE EQUIPMENT.....	10
In-home connection scenario for MoCA-Ethernet hybrid network.....	10
Using existing cabling.....	11
Deciding on the location for the NAS.....	11
Connecting an additional coax splitter.....	11
Connecting up the NAS.....	11
Connecting a low-pass filter at client set-top 3.....	11
Connecting a low-pass filter at the POE.....	11
Connecting up client set-tops 1 and 2.....	11
POWERING UP THE NETWORK AND SWITCHING ON/OFF.....	12
Checking connections.....	12
Powering up the equipment in the correct order.....	12
Switching off the NAS.....	12
PREPARING FOR HOME CONTENT SHARING AT CLIENT SET-TOPS.....	13
Enabling Home Content Sharing at client set-tops.....	13
Programming the remote control for Home Content Sharing.....	13
USING DIAGNOSTICS SCREENS TO CHECK THE NETWORK.....	14
Noting the appropriate MAC addresses.....	14
Displaying the Diagnostics Information screens.....	14
Using the Diagnostics Information screens:.....	15
Relevant information on the DIAGNOSTICS DASHBOARD.....	15
Using the MoCA Diagnostics screens.....	15
Using NAS Diagnostics.....	18
Displaying the NAS Diagnostics screens.....	18
OTHER RELEVANT DIAGNOSTICS SCREENS.....	21
Using the HDD STATUS menu.....	21
Using the DVR Status screen.....	21
USING My Network TO CHECK THE INSTALLATION.....	22
How My Network differs from My DVR.....	22
Recording some sample content.....	22
Displaying the My Network screen.....	22

This manual describes some on-screen displays such as menus. These may change in the future, if the software in the DC900X NAS or in the client set-tops is updated over the cable. However, the way that you use the menus will remain similar to the way described in this manual.

SAFETY INFORMATION

This Home Content Sharing™ (HCS) server, often known as Network Attached Storage (NAS), has been manufactured and tested with your safety in mind. However, improper use can result in potential electric shock or fire hazards. To avoid defeating the safeguards that have been built into the NAS, please observe the precautions discussed in this document.

Warnings

To reduce the risk of electric shock, do not remove the cover of the NAS. There are no user-serviceable parts inside it.

Do not perform any servicing unless you are qualified to do so. Refer all servicing to qualified service personnel. Servicing the NAS yourself will invalidate the warranty.

To reduce the risk of fire or electric shock, do not expose this NAS to rain or moisture.

On the rear panel of the NAS there is a tamper-evident label that states 'Warranty void if broken or removed'.

To avoid possible damage to the internal hard disk, do not pick up or move the NAS while it is powered up. If you want to move the NAS, first stop any recording, then turn off the NAS and wait 60 seconds before disconnecting it from its power supply unit. You should handle the NAS carefully, as any damage you cause to the internal hard disk (or any other component) will invalidate the warranty.

Installation

The installation of the NAS should be carried out by a qualified installer and should conform to local codes.

Note to the installer

This reminder is provided to call the attention of the cable-TV-system installer to Section 820 of the National Electrical Code (USA), which provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as is practical.

Service address:
Pace Americas Inc.
3701 FAU Boulevard, Suite 200, Boca Raton, Florida 33431 U.S.A.

IMPORTANT SAFETY INSTRUCTIONS

Before you install or use the apparatus, you must read and understand these Important Safety Instructions.

At all times when using the apparatus you must follow these Important Safety Instructions to reduce the risk of fire, electrical shock and injury to persons.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into the outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.



13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

SAFETY INFORMATION (cont.)

In addition to the Important Safety Instructions, please read the Safety Information below.

Power sources

The model number, serial number, and electrical rating of this NAS are on a label on its base.

You must operate the NAS only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your dealer or local power company. If you move the NAS between locations at different temperatures, allow it to reach room temperature before you apply power to it.

Overloading

Do not overload wall AC outlets, extension cords or other power outlets as this can result in a risk of fire or electric shock.

Lightning

For added protection for the NAS during a lightning storm, or when it is left unattended and unused for long periods of time, disconnect the cable system from the NAS. See also item 13 in the Important Safety Instructions.

Ambient temperature

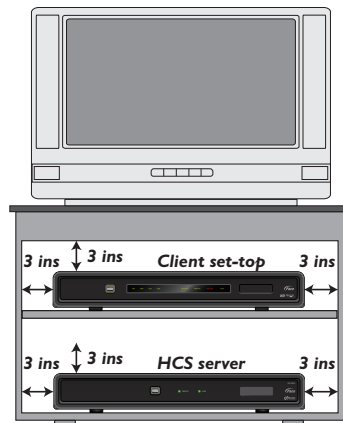
The operating temperature range of the NAS is 32-104°F. If the ambient temperature around the NAS falls outside this range, you must correct this in order for the NAS to work correctly and safely. For example, if the temperature is too high, make sure there is sufficient ventilation (see below) and that the NAS is not directly on top of or underneath other equipment.

Ventilation

Slots and openings in the casing of the NAS are provided for ventilation, to ensure reliable operation of the NAS and to protect it from overheating.

- Never block the ventilation openings by placing the NAS on a bed, sofa, rug, or other similar surface. Place it on a hard, flat surface.
- Never cover the ventilation openings with items such as newspapers, table-cloths, or curtains.
- You can place the NAS near other consumer electronics devices, such as stereo amplifiers or televisions, but you must not place it directly on top or underneath them.
- Do not place the NAS in a built-in installation such as a bookcase or rack unless proper ventilation is provided and you have adhered to the manufacturer's instructions.
- **Maintain a minimum distance of three inches around the NAS and client set-tops for sufficient ventilation.**

See also item 7 in the Important Safety Instructions.



Water and moisture

Do not expose the NAS to rain or moisture, dripping or splashing, and ensure that no objects filled with liquids, such as vases, are placed on the NAS. See also item 5 in the Important Safety Instructions.

Entry of objects and liquids

Never push objects of any kind into the NAS through openings as they may touch dangerous voltage points or short-out parts that could result in fire or electric shock. Never spill liquid of any kind on the NAS.

Transporting

Move the combination of NAS and cart with care. Quick stops, excessive force and uneven surfaces may cause the combination of NAS and cart to overturn. See also item 12 in the Important Safety Instructions.

Placement and mounting

Do not place the NAS on an unstable or uneven surface. The NAS may fall, causing serious injury to a child or adult and serious damage to the NAS. If you mount the NAS, for example to a wall or ceiling, follow the manufacturer's instructions and use a mounting accessory recommended by the manufacturer. See also item 12 in the Important Safety Instructions.

Risk of fire or scorching

Never place naked flame sources, such as lighted candles, on or adjacent to the NAS.

Replacement parts

When replacement parts are required, be sure that the service technician has used replacement parts specified by the manufacturer or that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards. See also item 14 in the Important Safety Instructions.

Safety check

Upon completion of any servicing or repairs to the NAS, ask the service technician to perform safety checks to determine that the NAS is in its proper operating condition. See also item 14 in the Important Safety Instructions.

SAVE THIS INFORMATION FOR FUTURE REFERENCE

SAFETY INFORMATION (cont.)

Safety aspects of connections

Full details of the rear panel are on page 6.

Connecting

Do not connect the NAS (or any other equipment such as client set-tops) to the power supply until you have properly connected all the other cables.

The NAS is designed for use only with the supplied power supply unit.

On the power supply unit there is a label that specifies the correct power supply input for it. Do not connect the power supply unit to any supply other than this.

Always connect the 12 volt DC cord from the power supply unit to the NAS before you connect the power supply unit to the wall AC outlet.

Disconnecting

NOTE: Whenever possible, do not disconnect the NAS without first switching it off (see page 12).

To disconnect power from the NAS, always remove its power supply unit from the wall AC outlet (rather than disconnect the 12 volt cord from the NAS).

Therefore, you must install the NAS near to the wall AC outlet, which should be easily accessible.

If you are in any doubt about the power supply cord, its plug, or its connection, consult a qualified electrician.

Regulatory information

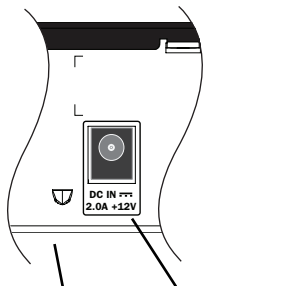
CAUTION: Do not attempt to modify the NAS without written authorization from the manufacturer. Unauthorized modification could void your authority to operate the NAS.

NOTE

The NAS has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. The NAS generates, uses and can radiate radio-frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

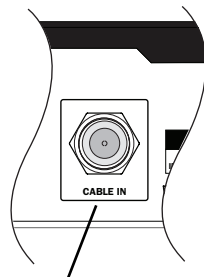
However, there is no guarantee that interference will not occur in a particular installation. If the NAS does cause harmful interference to radio or television reception, which can be determined by turning the NAS off and on, you are encouraged to try to correct the interference by one or more of the following measures.

- Reorient or relocate the receiving antenna.
- Increase the separation between the NAS and the receiver.
- Connect the NAS to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.



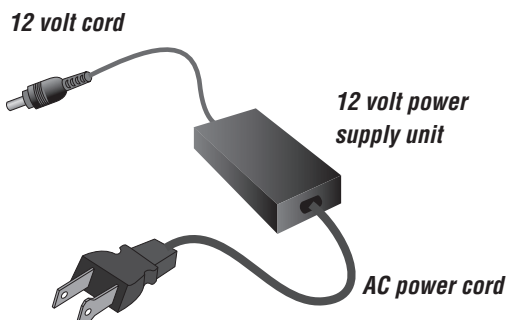
DC POWER INPUT

The model number, serial number, and electrical rating of this NAS are on a label on its base.



The **CABLE IN** connector is designed for connection to a cable network only.

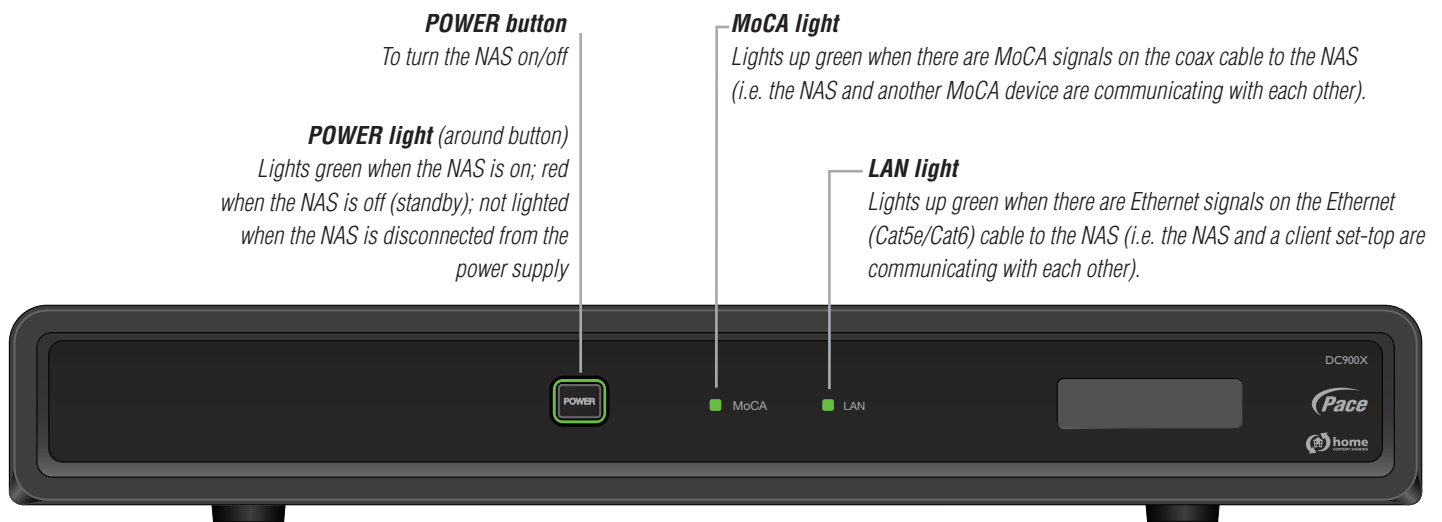
You must not connect any other equipment, such as a VCR, to this input.



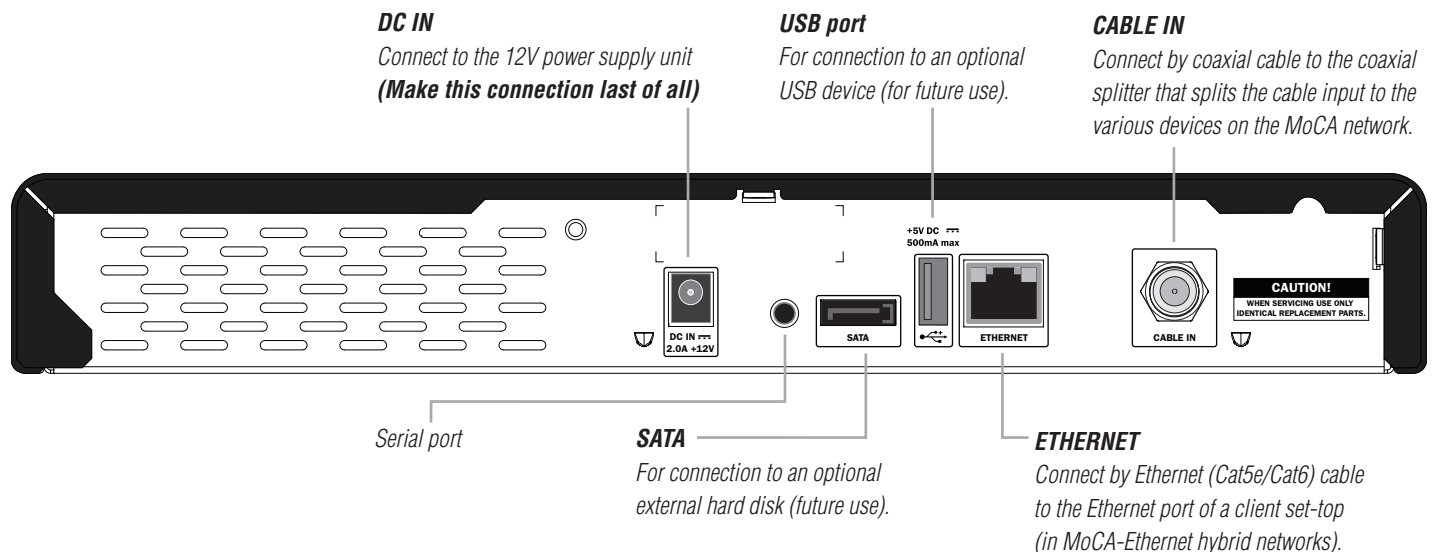
OVERVIEW

- Read all the safety information on pages 3 through 5.
- Familiarize yourself with the front and rear panels of the NAS (see below).
- Decide how you want to connect the NAS (and to which equipment) – see pages 7 through 10 for some examples and explanations.
- Connect the equipment together according to your chosen setup, but do not yet connect the power cords (see page 11).
- Connect the power cords and turn on the equipment in the correct order (see page 12).
- Use client set-tops to turn on Home Content Sharing and program short-cut buttons on the client set-tops' remote controls (see page 13).
- View diagnostics screens to check the installation (see pages 14 through 21).
- Use My Network to check the installation (see pages 22 and 23).

Front panel



Rear panel



BACKGROUND TO HOME CONTENT SHARING™

Network-Attached Storage

The DC900X Home Content Sharing (HCS) server is connected into a home network. It serves as a single network-attached storage (NAS) device for shows (content) that can be recorded by up to three “client” set-tops at different locations in the home. These set-tops do not have their own DVR capability – instead they all share the hard disk in the NAS.

MoCA networks

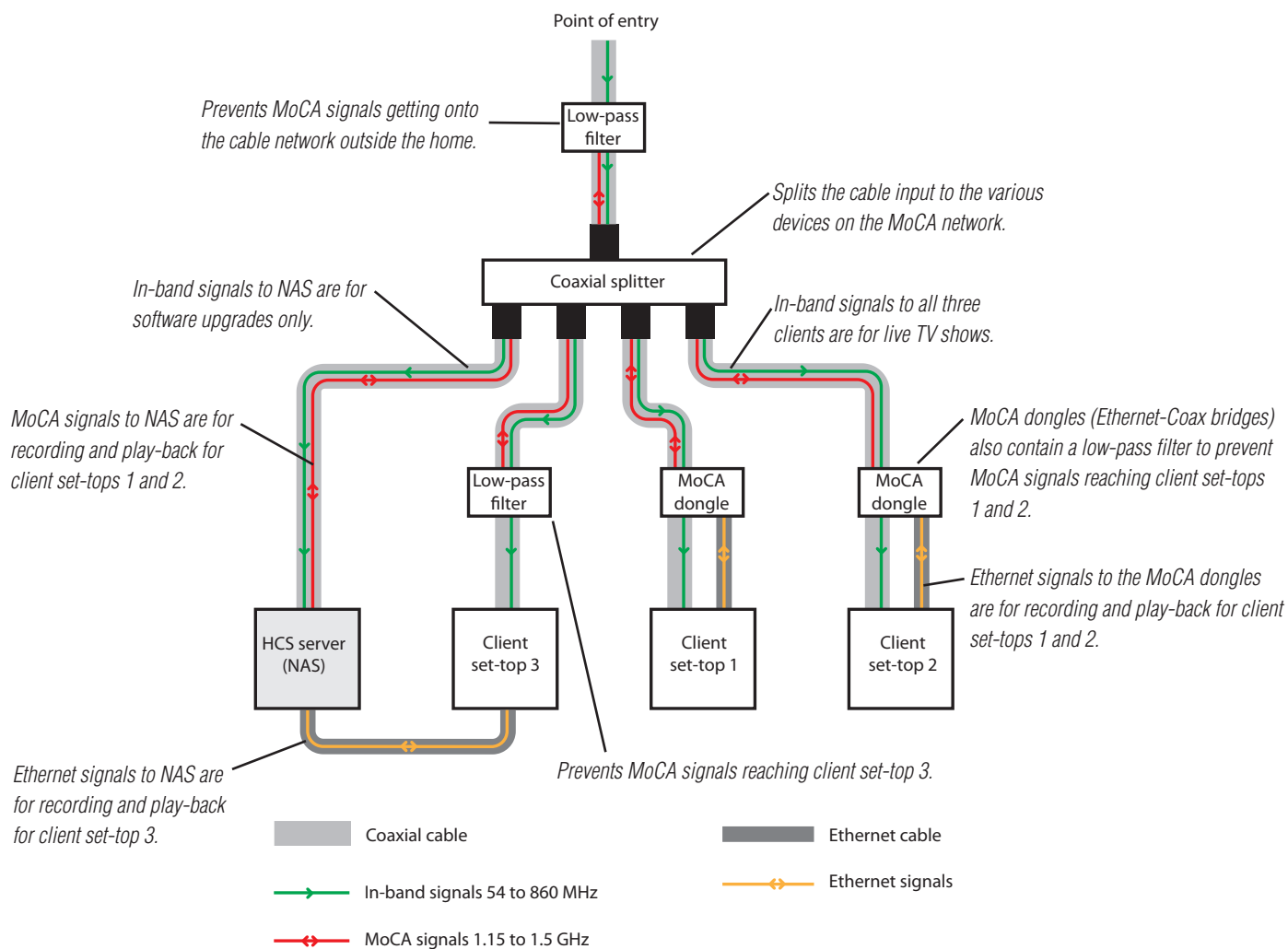
MoCA (Multimedia over Coaxial Alliance) is a method of sending extra signals over the existing coaxial cables in a home. Whereas the normal in-band signals for TV shows use frequencies in the range 54 MHz to 860 MHz on the coaxial cable, the MoCA signals use the range 1.15 GHz to 1.5 GHz on the same cable. The signals do not interfere with each other because of the different frequency ranges. Low-pass filters are used to prevent the MoCA signals from getting to places where they would cause problems (for example on the main cable network outside the home). Other RF equipment connected to the coaxial network should be immune to MoCA signals, but, if there are problems, use a low-pass filter between the equipment and splitter.

In the near future, client set-tops will have MoCA capability built into them. Until then, regular non-DVR set-tops, such as the DC700X, can be used as clients, in conjunction with MoCA dongles (also known as Ethernet-Coax bridges or ECBs). The client set-tops are connected to the MoCA dongles by Ethernet (Cat5e/Cat6) cables. See the diagrams below and on page 8.

MoCA-Ethernet hybrid network

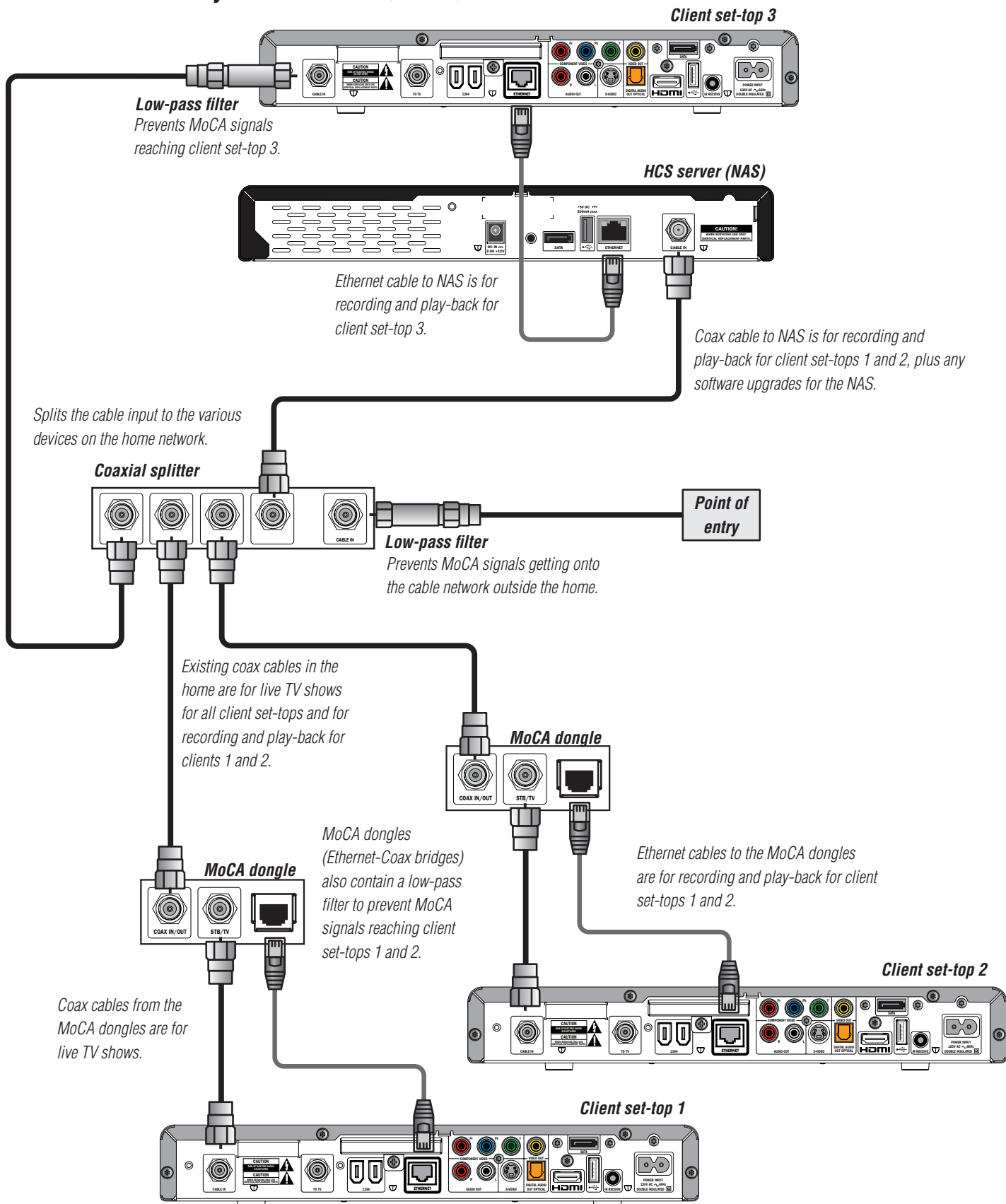
The diagram below shows the signals in a MoCA-Ethernet hybrid network. One client is connected to the NAS directly by Ethernet cable. Therefore recordings and play-back to client set-top 3 are done only via the Ethernet cable. Recordings and playback to client set-tops 1 and 2 are done via the Ethernet cables and the MoCA network on the coaxial cables. The diagram on page 8 is the same network but with typical equipment and cables. The diagram on page 10 shows a typical in-house scenario.

You cannot use more than three client set-tops in the MoCA-Ethernet hybrid network. If each of the two dual-tuner clients that are using MoCA is making two recordings at the same time, and, at that same time, a recording is being played back to each set-top, then 95% of the MoCA bandwidth will be used.



BACKGROUND TO HOME CONTENT SHARING (cont.)

MoCA-Ethernet hybrid network (cont.)



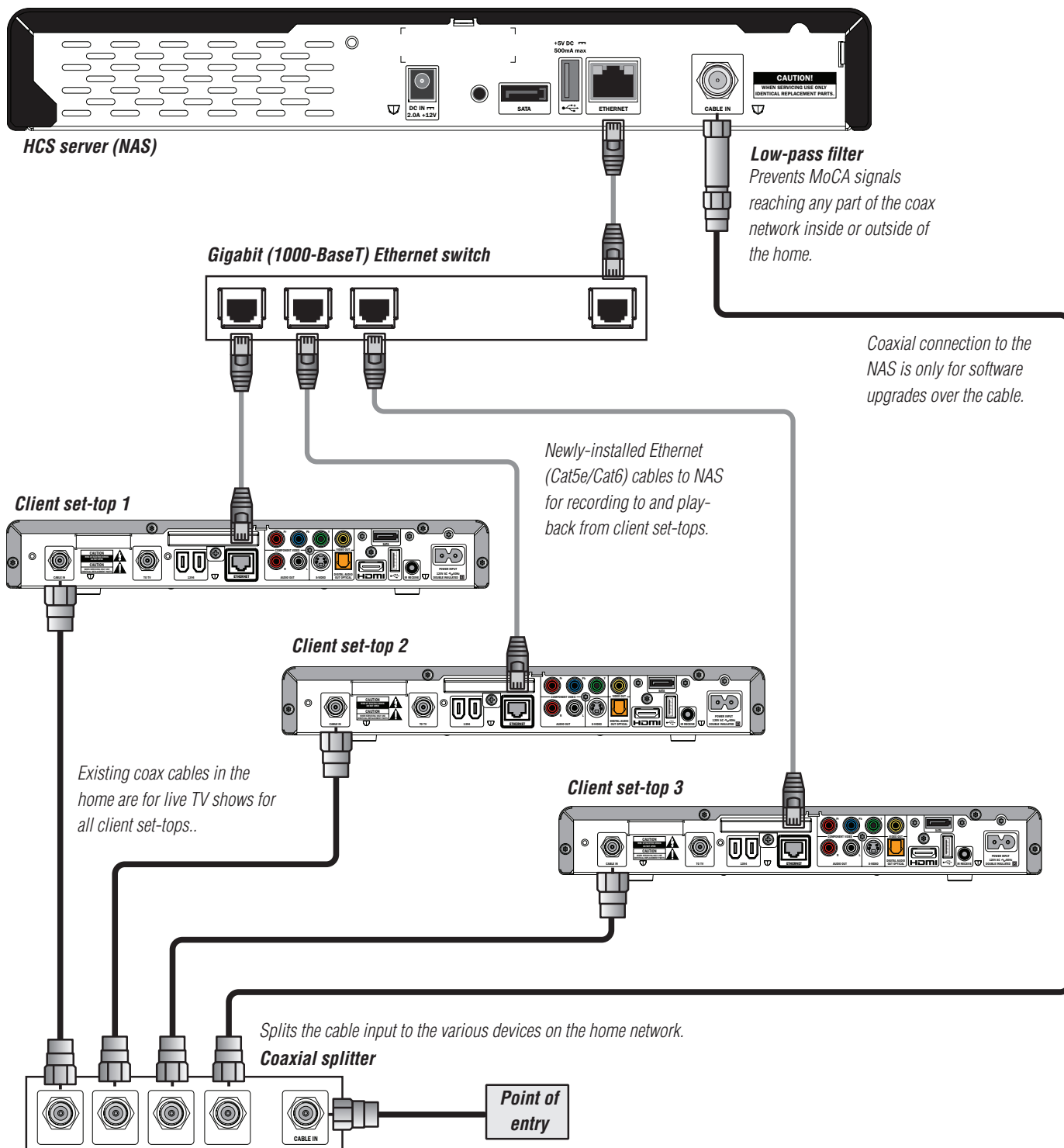
BACKGROUND TO HOME CONTENT SHARING (cont.)

Ethernet-only network

This installation manual gives further details (on following pages) of the recommended installation: a MoCA-Ethernet hybrid network that uses existing coaxial cabling within the home.

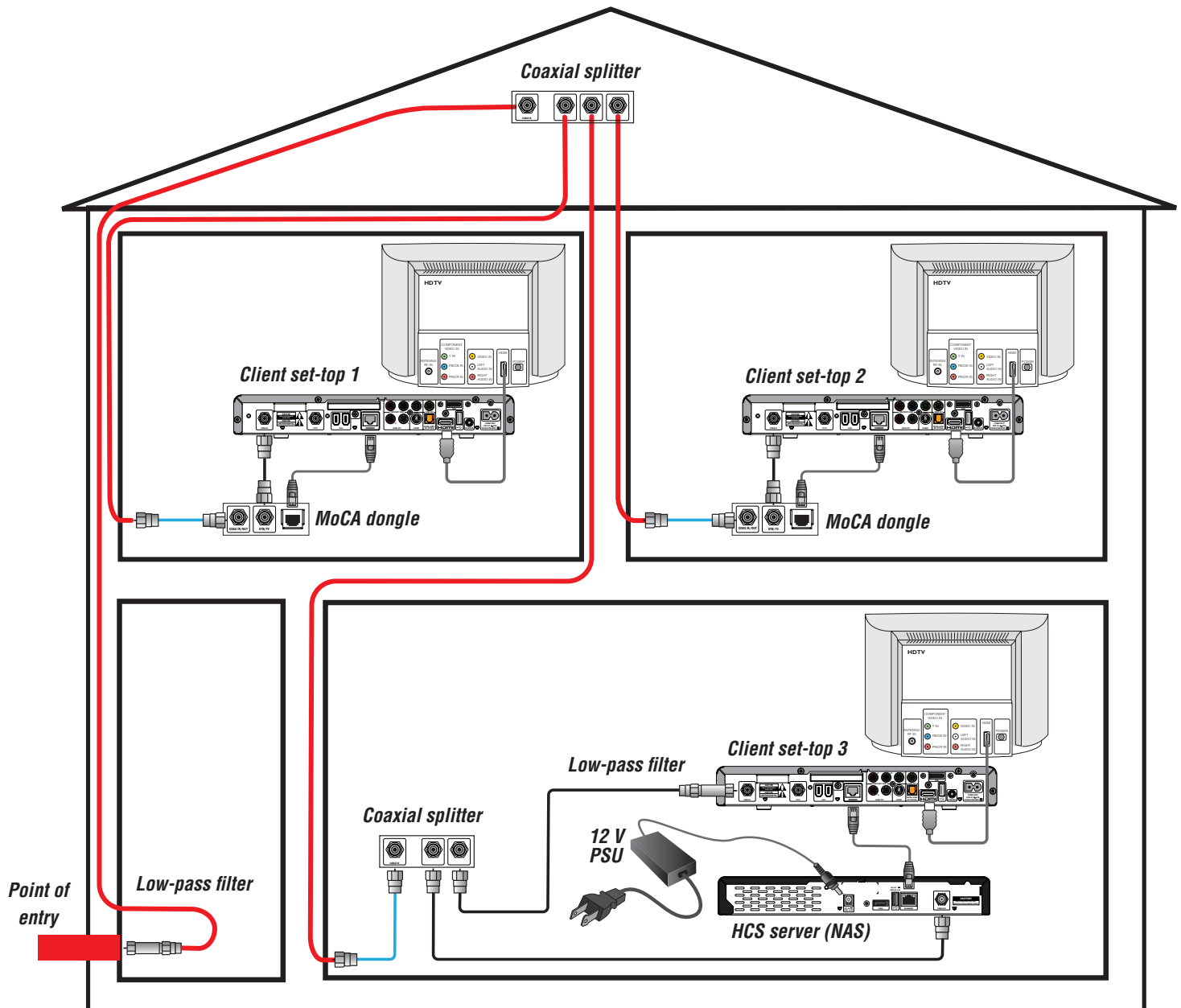
An Ethernet-only connection scenario is also possible, as shown below, but this requires a lot of additional Ethernet cabling through the house. If this is the only possible solution, however, you must remember the following:

- the Ethernet switches must be Gigabit Ethernet (1000-BaseT);
- the NAS must still be connected (via a low-pass filter) to the cable network to allow its software to be upgraded over the cable.



CONNECTING THE EQUIPMENT

In-home connection scenario for MoCA-Ethernet hybrid network



WARNINGS

Do not connect the NAS (or any other equipment such as a client set-top or TV) to the power supply until you have properly connected all the other cables.

Disconnect the NAS's power supply unit from the AC power supply before you disconnect any other equipment from the NAS's rear panel.

The only way to disconnect the NAS from the AC power supply is to remove the power supply unit from the wall AC outlet (or switch the wall AC outlet switch, if present, to its OFF position). The NAS must therefore be installed near to the wall AC outlet, which should be easily accessible.

The cable input on the NAS is designed for connection to a cable network only. You must not connect any other equipment at the CABLE IN connector.

CONNECTING THE EQUIPMENT (cont.)

Using existing cabling

In the diagram of a typical home network shown on page 10:

- Existing coaxial cables, which run around the home behind walls, above ceilings etc, are shown in red.
- The cable from the point of entry (POE) to the house is split using a coaxial splitter, which is typically in the attic, but could be elsewhere in the home. This splitter should be rated up to 1.5 GHz.
- Existing “visible” coaxial cables in each room, which were used to connect set-top to the coaxial wall output in each room, are shown in blue.

You can use all of these existing cables, but ensure, wherever possible, that they are not damaged. We also recommend that you use crimped (not screw-on) F-type connectors.

Remember to disconnect the existing set-tops from the power supply before disconnecting/connecting any other cables to their rear panels. See page 12 for details on powering up all the equipment after installation.

Deciding on the location for the NAS

Choose a position for the NAS near one of the existing set-tops. This set-top will become “Client set-top 3” in the MoCA-Ethernet hybrid network. Typically you would place the NAS below the set-top, allowing three inches of ventilation space between them.

Connecting an additional coax splitter

Both the NAS and client set-top 3 need to be connected to the coaxial cable network in the home. If there is only one coaxial wall output in the room where they are both located, you must connect a coaxial splitter (rated up to 1.5 GHz) at the coaxial wall output in that room, as shown in the diagram on page 10.

Connecting up the NAS

Connect a new coaxial cable between the NAS’s CABLE IN connector and the coaxial wall output (or the additional coax splitter, if you have had to install one – see above).

Connect an Ethernet (Cat5e/Cat6) cable between the Ethernet connectors on the NAS and client set-top 3.

Connect the 12 V power supply unit to the DC IN connector on the NAS, but do not yet apply power to the NAS (you must do this after the whole network is connected up).

Connecting a low-pass filter at client set-top 3

Disconnect the existing coaxial cable from the CABLE IN connector on client set-top 3.

Connect a low-pass filter at the CABLE IN connector on client set-top 3.

Connect the existing coaxial cable to the low-pass filter.

Connecting a low-pass filter at the POE

Connect one low-pass filter into the main coaxial cable at the POE to the home.

If it is not convenient to connect it at the POE, you could connect it at another convenient point in this main coaxial cable that runs between the POE and the first coaxial splitter in its path. This could even be at the input to the coaxial splitter in the attic.

Connecting up client set-tops 1 and 2

Disconnect the existing coaxial cable from the CABLE IN connector on client set-top 1.

Connect this existing cable to one of the coax connectors on a MoCA dongle (Ethernet-Coax Bridge).

Connect a new coaxial cable between the second coax connector on the MoCA dongle and the CABLE IN connector on client set-top 1.

Connect an Ethernet (Cat5e/Cat6) cable between the Ethernet connectors on the MoCA dongle and client set-top 1.

If the MoCA dongle has a MoCA/CONFIG switch, set it to the MoCA position.

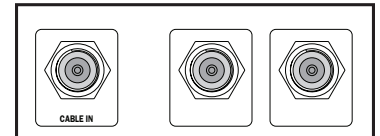
Do not yet apply power to the MoCA dongle (you must do this after the whole network is connected up).

Repeat the above steps for client set-top 2.

NOTE

The numbers for the client set-tops (1, 2 and 3), as seen on the Diagnostics screens (see page 16) are assigned by the network when it is up and running. They may not correspond to the numbers in these connection diagrams. You can use the eSTB MAC addresses on the base of the clients to cross-reference the actual clients with the on-screen client names/numbers.

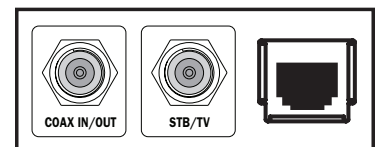
See also the notes on page 16.



Coaxial splitter
(rated up to 1.5 GHz)



Low-pass filter



MoCA dongle

POWERING UP THE NETWORK AND SWITCHING ON/OFF

Checking connections

Make sure you have connected everything correctly and securely in the MoCA-Ethernet hybrid network (see pages 9 and 11) but have not yet powered up any of the equipment (including NAS, MoCA dongles, client set-tops, and any other equipment connected to these clients, such as TVs).

Powering up the equipment in the correct order

It's important to power up the equipment in the correct order, as given below.

Powering up the NAS

First, power up the NAS by connecting its attached power supply unit to a wall AC outlet (and switching it on there if that wall AC outlet has a switch).

Then press the POWER button on the front panel of the NAS to bring it out of standby (the light around the POWER button changes from red to green).

Wait for two minutes to allow the NAS to establish the MoCA network on the coax cables in the home.

Powering up the MoCA dongles

Wait for two minutes after powering up the NAS, then power up the two MoCA dongles.

Wait for 30 seconds for the MoCA dongles to log onto the MoCA network.

Check that the MoCA light on the NAS's front panel has lighted up green and that any "COAX" light on each MoCA dongle has lighted up correctly.

Powering up the client set-tops

Wait for 30 seconds after powering up the MoCA dongles, then power up the three client set-tops and their attached TVs. Turn on each client set-top so that its POWER light is green.

Wait for the whole system to get established and running. This should happen within six minutes.

When the client set-tops are communicating correctly over Ethernet with the NAS or MoCA dongles, the LAN light on the NAS's front panel will light up green.

Check also that any "LAN" light on each MoCA dongle has lighted up correctly.

Switching off the NAS

The NAS contains a hard-disk drive and data can be lost if electrical power is removed suddenly, although the Home Content Sharing system will attempt to minimize any data loss.

Therefore, whenever possible, switch off the NAS before removing electrical power.

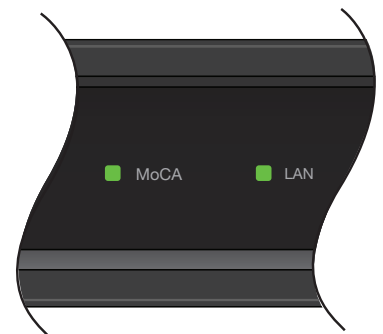
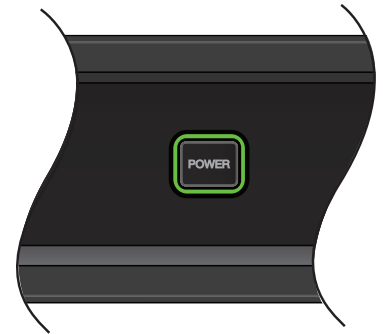
To switch off the NAS, press and hold the POWER button on its front panel until the light around the button turns red. The NAS is then in standby and can be safely disconnected from its power supply unit.

Lightning storms

Disconnect the NAS's power supply unit from the wall AC outlet during lightning storms.

A lightning storm may affect the NAS, if it is on during the storm. It may appear that it has stopped working, but you can easily restore its operation as follows:

Unplug the power cord on the NAS's power supply unit from the wall AC outlet. Then plug this power cord in again at the wall AC outlet (and, if there is a switch by this outlet, switch it to its ON position).



CAUTION

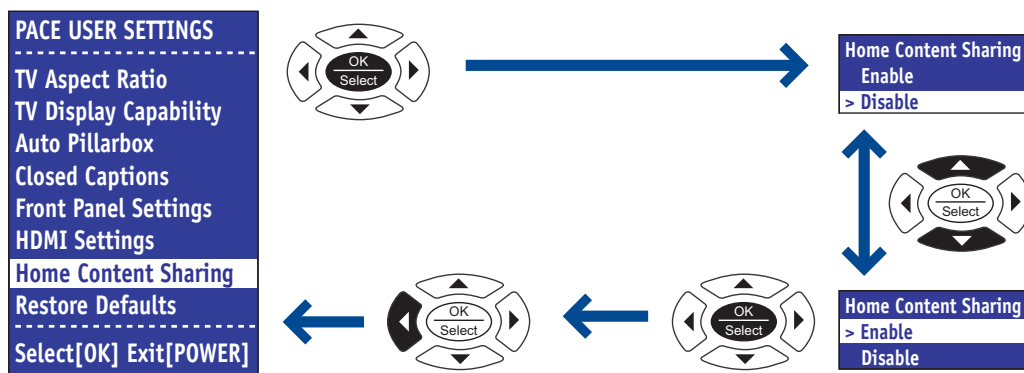
To avoid possible damage to the internal hard disk, do not pick up or move the NAS while it is powered up. If you want to move the NAS, first stop any recording, then turn off the NAS and wait 60 seconds before disconnecting it from its power supply unit.

PREPARING FOR HOME CONTENT SHARING AT CLIENT SET-TOPS

Enabling Home Content Sharing at client set-tops

You need to enable Home Content Sharing at each of the client set-tops. Instructions below relate to the UEI Universal remote control. The button names might be different on other types of remote control.

1. Ensure the NAS and client set-top 3 are switched on and there is a picture on the TV that is attached client set-top 3.
2. Press the **POWER** button on the set-top's remote control, then press the **Menu** button.
3. The PACE USER SETTINGS menu appears on the TV screen.
4. Press the **▲** or **▼** button to highlight **Home Content Sharing**, then press **OK/Select**.
5. Press the **▲** or **▼** button to highlight **Enable**, then press **OK/Select**.
6. Press the **◀** button to redisplay the PACE USER SETTINGS menu.
7. Press the **POWER** button to remove the menu from the screen.
8. Repeat the above seven steps for client set-tops 1 and 2.



Programming the remote control for Home Content Sharing

Program the remote control for each of the client set-tops to give one-touch access to HCS functions. Instructions below relate to the UEI Universal remote control.

Programming the B button - My Network

After you have programmed the **B** button, you can press it to display the **My Network** screen on the TV. This screen gives you access, from any location within the HCS system, to all of the recorded content.

1. Press the **CABLE** button on the remote, then press and hold the **SETUP** button until the **CABLE** button blinks twice.
2. Use the number buttons on the remote to enter the code **994**. The **CABLE** button blinks twice.
3. Press (do not hold) the **SETUP** button, then use the number buttons to enter the code **00237**.
4. Press the **B** button. The **CABLE** button blinks twice.

Programming the C button - Bulk Delete of titles within folders

After you have programmed the **C** button, you can use it, on the **My Network** screen, to delete several titles within a folder at the same time.

1. Press the **CABLE** button on the remote, then press and hold the **SETUP** button until the **CABLE** button blinks twice.
2. Use the number buttons on the remote to enter the code **994**. The **CABLE** button blinks twice.
3. Press (do not hold) the **SETUP** button, then use the number buttons to enter the code **00114**.
4. Press the **C** button. The **CABLE** button blinks twice.

USING DIAGNOSTICS SCREENS TO CHECK THE NETWORK

You need to check that the MoCA-Ethernet network is functioning correctly by making recordings to the NAS and checking play-back at each client set-top (see page 22).

However, first you use the various Diagnostic screens to make sure that the network and NAS are functioning well and that transmission rates are sufficiently high. You use a client set-top, its remote control and its attached TV to view these Diagnostics Screens. You can use any client set-top, but it is sensible to use the client that has the direct Ethernet connection to the NAS (it has been called Client 3 in this guide), as problems are more likely in the MoCA-connected clients.

Make sure the NAS and client set-tops are powered up and switched on (lights around the power buttons are green). Make sure the MoCA dongles are powered up and switched on. Make sure you have enabled HCS at the client set-tops (see page 13).

Noting the appropriate MAC addresses

MAC addresses should be on labels on the equipment. You will need these MAC addresses when you view the Diagnostics screens.

Note down the MoCA MAC addresses for the NAS and each MoCA dongle.

Note down the eSTB MAC addresses on each client set-top and cross-reference them to any attached MoCA dongle and to the room where they are.

Displaying the Diagnostics Information screens

At a client set-top, press and release the **POWER** button on the remote control, then (within 2 seconds) press and release the **OK/Select** button on the remote control. (It can be a little tricky to get the screen to appear; although you must press the buttons within 2 seconds, you need to make a short pause between button presses.)

The DIAGNOSTICS DASHBOARD will then be displayed on the TV.

DIAGNOSTICS DASHBOARD					
Connected	YES	DVR Status	GOOD		
OOB Tuner SNR	GOOD	HDD Health	GOOD		
IB1 Tuner SNR	GOOD	CARD Health	FAIR		
IB1 Tuner Errors	FAIR	IP Address	YES		
IB2 Tuner SNR	GOOD	IPPV Enabled	NO		
IB2 Tuner Errors	GOOD	PPV Purch Clear	YES		
Upstream Lvl	60 FAIR	Upstream Status	GOOD		
MoCA Network	GOOD	> HCS	GOOD		
Tuner	Chan	Encrypt	Auth	SigLvl	Freq(kHz)
OOB	---	---	---	0.8	104200
IB1	54	YES	NO	0.8	585000
IB2	102	YES	YES	9.6	567000
<- Diag Menu		SW Version: 01.01			

Note: The bottom line on the dashboard cycles between SW Version:, Unit Addr:, and Last Poll Ack:

At the DIAGNOSTICS DASHBOARD, press the ◀ button to display the DIAGNOSTICS MAIN MENU.

Use the ◀ button to toggle between the DIAGNOSTICS DASHBOARD and DIAGNOSTICS MAIN MENU.

DIAGNOSTICS MAIN MENU	
01 GENERAL STATUS	14 MAC FREQ TABLE
02 PURCHASE STATUS	15 MESSAGE TYPES
03 OOB STATUS	16 IN BAND PAT
04 IN BAND STATUS	17 IN BAND PNT
05 AV STATUS	18 TASK STATUS
06 UNIT ADDRESSING	19 IB MCA STATUS
07 SOFTWARE AND HW VER	20 FP/LED DIAG
08 CURR CHAN STATUS	21 INTERFACE STATUS
09 CABLE CARD	22 DVR STATUS
10 UPSTREAM MODEM	23 HDD STATUS
11 APP CODE MODULES	24 CONTENT LISTING
12 MEMORY CONFIG	25 SYSTEM INFO
13 INTERACTIVE INFO	> 26 HCS
<- Dashboard	

USING DIAGNOSTICS SCREENS TO CHECK THE NETWORK (cont.)

Using the Diagnostics Information screens:

In both screens, use the **▲** or **▼ arrow** button on the remote control to move the on-screen arrow (**>**) through the items, then press **OK/Select** or **▶** to view more information in sub-menus. To quickly highlight an item on the DIAGNOSTICS MAIN MENU, you can key in its 2-digit number. You need special combinations of button presses to see some of the information.

On all screens, the color green is used to indicate a satisfactory status and red is used for problems.

To remove a sub-menu and return to the preceding level, press the **◀** button on the remote control.

To remove the DIAGNOSTICS DASHBOARD (or DIAGNOSTICS MAIN MENU), and return to normal TV viewing, press the **POWER** button **twice**.

Relevant information on the DIAGNOSTICS DASHBOARD

Check the following items on the DIAGNOSTICS DASHBOARD for a green GOOD status:

- MoCA Network
- DVR Status
- HDD Health
- HCS

Using the MoCA Diagnostics screens

Even if the MoCA Network status is GOOD on the DIAGNOSTICS DASHBOARD, you should also check the MoCA Diagnostics screens.

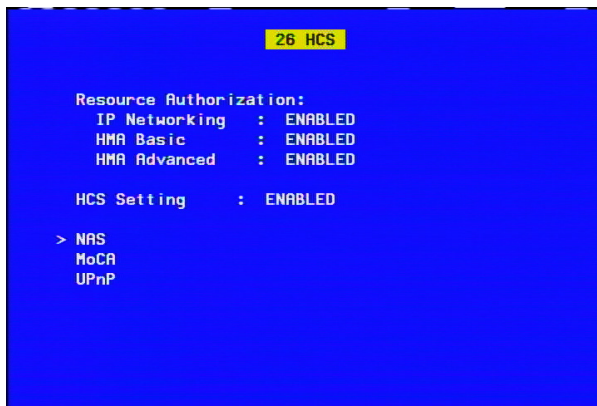
Displaying the Pace MoCA Diagnostic screen

There are two ways to do this. You can either:

At the DIAGNOSTICS DASHBOARD, highlight (**>**) **MoCA Network**, then press **OK/Select**.

Or:

At the DIAGNOSTICS MAIN MENU, highlight **26 HCS**, then press **OK/Select** or **▶**.



If you choose this second method, the HCS (Home Content Sharing) sub-menu is displayed.

If the cable operators (MSO) uses resource authorization, this page will show if HCS is authorized for the correct resources.

Use the **▲** or **▼** button to highlight (**>**) **MoCA**, then press **OK/Select**.

The Pace MoCA Diagnostic screen will then be displayed on the TV (see the next page).

USING DIAGNOSTICS SCREENS TO CHECK THE NETWORK (cont.)

```

Pace MoCA Diagnostic

RF Frequency: 1150.000000 MHz

Moca Client Table
MAC ADDRESS      IP ADDRESS      NAME      I/O
00:1C:C3:76:11:C5  192.168.144.2  Client 1  N/A
00:1C:C3:5B:8B:7A  192.168.144.3  Client 2  N/A

D-LINK (00:22:B0:BB:57:15)
PACE DC900X (00:1C:C3:89:55:52)
D-LINK (00:22:B0:BB:57:18)
NOT ACTIVE
    
```

This screen lists the client set-tops that are attached to MoCA dongles. The *MAC addresses listed are the ones given as eSTB MAC addresses on the base of the clients, plus 6 (in Hex).

The client numbers** given in the NAME column will not necessarily match the ones you may have already assigned to the clients, but by checking the eSTB MAC addresses on the clients, you can match them up.

Below the clients table is a list of the MoCA devices (nodes) in the network, including the NAS (DC900X) and the two MoCA dongles***, listed as D-LINK and identified by their MoCA MAC addresses.

Four nodes are listed, even though only three (the NAS plus two MoCA dongles) are recommended in the MoCA-Ethernet network, due to bandwidth availability. (Four allow for possible future network expansion.)

To see the Pace Network Node Status for a node, use the ▲ or ▼ button to highlight the node you are interested in, then press **OK/Select**.

```

Pace Network Node Status

NodeID           D-LINK
NodeState        1
CM NodeID / Backup CM NodeID  0 / 1
MyNode Link Status  1
RxPkts           4033068
Short term RxPktErr  0
Long term RxPktErr  0
TxBitRate        249388050
RxBitRate        252876192
GCDTxBitRate     245727600
GCDRxBitRate     248592300
MAC Address      00:22:B0:BB:57:15
Previous Node
Next Node
Display Spectrum Data
MoCA Diag Home
    
```

The Bit Rate figures show the quality of the connection between the NAS and the current node. They should all be green and greater than 200 Mbit/s (greater than 200000000). If they are in the range 150-200 Mbit/s they will be shown in yellow and could mean that the picture on the TV will show macro-blocking or there will be other undesirable effects, such as break-up during playback.

If the figures are yellow it could be due to:

- old or damaged coaxial cables (check the cabling);
- loose or damaged F-type connectors (use crimped connectors, rather than screw-on type);
- coax splitters that are not rated up to 1.5 GHz (make sure that they are).

Try to improve the bit-rates to over 200 Mbit/s by carrying out the suggestions listed above.

To see the Node Status screen for the next node in the list, use the ▲ or ▼ button to highlight **Next Node**, then press **OK/Select**.

To see the Node Status screen for the preceding node in the list, use the ▲ or ▼ button to highlight **Previous Node**, then press **OK/Select**.

NOTES

*The client set-tops are assigned several MAC addresses during manufacture, but not all of these numbers are printed on their base labels. The MAC address visible to the NAS via the MoCA dongle is equal to the eSTB MAC address on the printed label, plus 6 in Hex. (MAC addresses are always printed in hexadecimal notation.)

**The numbers for the client set-tops (1, 2 and 3), as seen on the Diagnostics screens, are assigned by the network when it is up and running. They may not correspond to the numbers in the connection diagram (see page 10). You can use the eSTB MAC addresses on the base of the clients to cross-reference the actual clients with the on-screen client names/numbers. In future, it will be possible to use the Pace User Settings menu give suitable names ("Bedroom", "Family room" etc) to the clients.

***The diagnostics details are obtained from the NAS and not directly from the MoCA dongles (i.e. it is the NAS's view of the network, not a dongle's view). In over 99% of cases, the two views will be identical, but there could be a scenario where the details collected by the NAS are out-of date.

USING DIAGNOSTICS SCREENS TO CHECK THE NETWORK (cont.)

Using NAS Diagnostics

You can use the NAS Diagnostics menu to find out information about the NAS itself and the client set-top connected to it by a direct Ethernet connection.

Displaying the NAS Diagnostics menu

There are two ways to do this. You can either:

At the DIAGNOSTICS DASHBOARD, highlight (>) **HCS**, then press **OK/Select**.

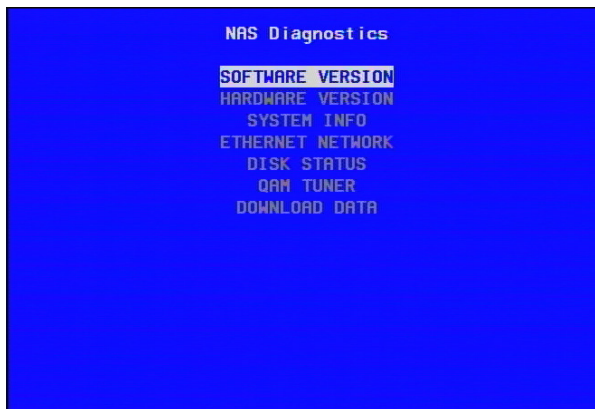
Or:

At the DIAGNOSTICS MAIN MENU, highlight **26 HCS**, then press **OK/Select** or **▶**.

If you choose this second method, the HCS (Home Content Sharing) sub-menu is displayed.

Use the **▲** or **▼** button to highlight (>) **NAS**, then press **OK/Select**.

The NAS Diagnostics screen will then be displayed on the TV.



Displaying the NAS Diagnostics screens

At the NAS Diagnostics menu, use the **▲** or **▼** button to highlight the screen's name, then press **OK/Select**.

All screens show information that may be useful.

When you have read the information, press **OK/Select** to redisplay the main NAS Diagnostics screen.

SOFTWARE VERSION screen



This screen shows the versions of code present in the NAS. If you encounter problems during an installation, you may need the information from this screen.

USING DIAGNOSTICS SCREENS TO CHECK THE NETWORK (cont.)

HARDWARE VERSION screen

```

                                HARDWARE VERSION

Serial number                    PAAU00000240
Ethernet MAC address             00:1C:C3:B9:55:51
MoCA MAC address                 00:1C:C3:B9:55:52
ROM ID                           0x516
CVT hardware ID                  0x00000100

Go back to main page.
```

This screen shows details about the NAS hardware. The serial number and two MAC addresses are also printed on a label on the base of the NAS.

SYSTEM INFO screen

```

                                SYSTEM INFO

System Uptime                    : 0 days 00:39:48

System free                       : N/A
Kernel and Apps Used              : N/A
Code page swaps                   : N/A

CPU Idle                          : 0 %
CPU System                         : 0 %
CPU App                           : 0 %

Go back to main page.
```

This screen shows details about the current state of the NAS system since it was powered up. This screen may have a different appearance and contain different data for future releases of the NAS software.

ETHERNET NETWORK screen

```

                                ETHERNET NETWORK

Ethernet Client Table
MAC ADDRESS      IP ADDRESS      NAME      I/O
00:1C:C3:5B:8C:72  192.168.145.2  Client 3  N/A

Ethernet status      CONNECTED
Packets received     389722952
Packets transmitted  924053352

Go back to main page.
```

This screen lists the client set-top that is attached directly to the NAS by Ethernet cable. The MAC address is the one given as eSTB MAC address on the base of the client, plus 6 (in Hex).

The client number given in the NAME column will not necessarily match the one you may have already assigned to this client, but by checking the eSTB MAC addresses on the clients, you can match it up.

Check that the Ethernet status is CONNECTED, with packets being transmitted and received.

USING DIAGNOSTICS SCREENS TO CHECK THE NETWORK (cont.)

DISK STATUS screen

```
DISK STATUS

Disk serial number      5VM1H5EM
Disk size               480808960
Used                   25841664
Percent used           5 %
Free                   454967296
Percent free           94 %
Disk temperature       96.80 F / 36 C degrees

Go back to main page.
```

This screen shows details of the hard disk fitted within the NAS. As well as the usage statistics, it shows the NAS's current temperature. To protect the hard disk from excessively high temperatures, the NAS will shut the disk down if it reaches 156°F (69°C). The hard disk will be automatically powered on again when the temperature falls to 145°F (63°C). Check the ventilation requirements (see page 4) if the hard disk switches off.

QAM TUNER screen

```
QAM TUNER

Frequency              0.00 MHz
Modulation              UNKNOWN
Lock status            NOT LOCKED
Signal level           -127.50 dBmV
SNR                    0.00 dB

Go back to main page.
```

The NAS contains a QAM tuner to provide a path for future software upgrades via the coaxial cable network (which is why you always need to connect the NAS, via a low-pass filter, to the coax network). The NAS searches for software upgrades using this tuner and the screen shows the current status of the QAM tuner.

DOWNLOAD DATA screen

```
DOWNLOAD DATA

In Band downloads      0 (cumulative)
Time of last download  None
Unsuccessful downloads 0
Rejected downloads    0
CVTs received (current) 0
CVTs received (new)    0
Last CVT received     None
Relay downloads        0 (cumulative)
Time of last download  None
Unsuccessful download  0
Reject downloads      0
Identity supplied     1

Go back to main page.
```

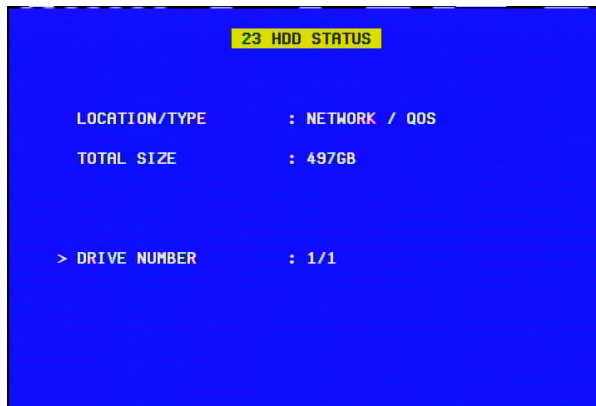
OTHER RELEVANT DIAGNOSTICS SCREENS

Using the HDD STATUS menu

Displaying the HDD STATUS menu

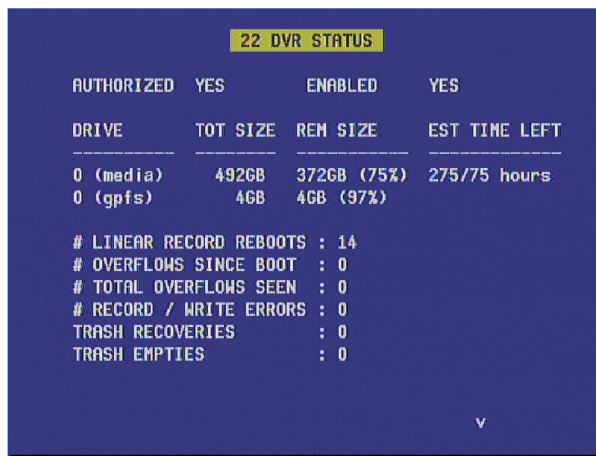
To display the HDD STATUS sub-menu, highlight (>) **HDD Health** on the DIAGNOSTICS DASHBOARD (or **23 HDD STATUS** on the DIAGNOSTICS MAIN MENU) and then press **OK/Select**.

The Hard Disk Drive (HDD) Status Menu is displayed on screen, with the DRIVE NUMBER field marked with >, as shown below.



Using the DVR Status screen

To display the DVR STATUS sub-menu, highlight (>) **DVR Status** on the DIAGNOSTICS DASHBOARD (or **22 DVR STATUS** on the DIAGNOSTICS MAIN MENU) and then press **OK/Select**.



This screen allows you to see statistics relating to the hard disk in the NAS.

USING My Network TO CHECK THE INSTALLATION

Note: The descriptions below refer to the on-screen guide “TV Guide”.

How My Network differs from My DVR

You use My Network to share recorded content around the home. At any of the client set-tops you can see a list of recordings made anywhere in the home. It has the title ‘mDVR’ at the top of the list.

The My DVR screen, displayed when you press the My DVR (or List) button on the remote, shows only recordings have made at the client set-top where you currently are. It has the title ‘DVR’ at the top of the list.


Recording some sample content

Use the on-screen guide to make a recording at each of the client set-tops.

Use the My DVR screen at each of the client set-tops to check that the recording has taken place.

Displaying the My Network screen

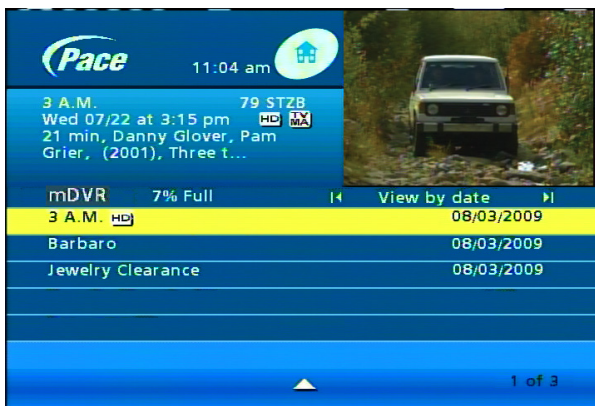
You must display the **My Network** screen at each of the client set-tops in turn to check that the whole MoCA-Ethernet network is working correctly. There are three ways to display the **My Network** screen:

- If you have programmed the remote for HCS (see page 13), you can simply press the **B** button.
- You can select the **My Network** option on the My DVR screen.
- You can press the **Menu** button on the remote control to display the on-screen guide’s Quick Menu, then press the **▶** button until you highlight , then press **OK/Select**.

Note: The  My Network shortcut may not be available on your on-screen guide.



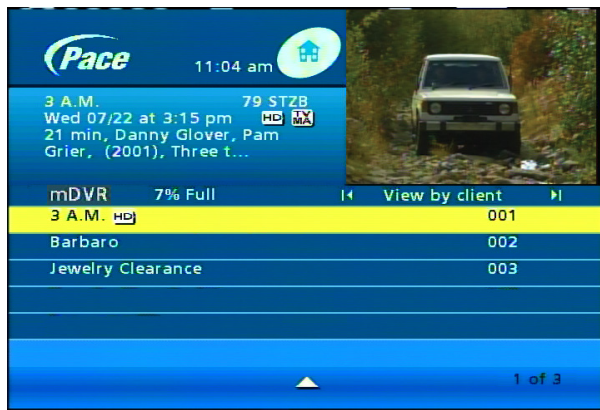
Use the **◀** or **▶** button to cycle through the four “view” options until “view by date” appears.



Check that you can see **all** of the three recordings that you have just made.

Use the **◀** or **▶** button to cycle through the four “view” options until “view by client” shows (see page 23).

USING My Network TO CHECK THE INSTALLATION (cont.)



Check that you can see **all** of the three recordings that you have just made.

Use the ▲ or ▼ button to highlight each recording in turn, then press **OK/Select**, to ensure that it plays back correctly.

To test the network thoroughly, set up each client set-top to simultaneously record two shows and play back one. This gives six recordings and three playbacks occurring at the same time. Check that the playback at each set-top looks and sounds good. Check that all the recordings made at this time are also all good.