

Alaris30 3-D Printer

Installation Guide

DOC-04006
September 2008



Objet Geometries Ltd.

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Using this Guide

This installation guide provides instructions for the proper installation, placement and testing of the Alaris30 3-D printing system upon arrival at the customer site.

Terms Used in This Guide

Alaris30 printer	The Alaris30 3-D printers referred to in this guide.
model material	Material used for building models.
support material	Material used for supporting the structure of models during production.
Alaris30 computer	The computer built into the Alaris30 printer.
Alaris30 software	Software running on the computer inside the Alaris30 printer, which controls all printer operations.
Alaris30 printer interface	The GUI (graphical user interface) used for controlling the Alaris30 printer.
build tray	In the Alaris30 printer: The surface upon which models are produced.

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1 Installation Checklist

- Inspect the printer shipping carton to ensure that it is undamaged (page 8).
- Open the carton and ensure that the printer and its cover are not damaged (page 10).
- Place the printer on the work surface (page 11). Ensure that there is sufficient space around the printer (as specified in the Site Preparation Guide).
- Release the axis lock (page 12).
- Remove the protective covers from the print heads (page 13).
- Connect the KVM switch (page 14).
- Connect the server workstation computer to the printer (page 17).
- Configure a point-to-point connection from the Server workstation to the printer (page 19).
- Install Objet Studio with Job Manager on the Server workstation (page 42).
- Backup the Alaris30 folder (page 42).
- Install the model, support, and waste cartridges in the materials drawer (page 43).
- Perform all of the calibration procedures (page 43).
- Send a model file (can be a customer model) to the printer and perform a test printing (page 43).
- Explain contents of Startup Kit to customer.
- Install the water jet cleaning unit.
- Fill out the Completion of Installation (COI) form.
- Fill out the Installation Report form.
- Fill out the Field Service Report (FSR) form.

2 Unpacking

2.1 Required Tools and Parts

The following tools are required for this chapter:

- Cutting pliers
- Pliers
- Hand pallet truck

2.2 External Inspection

Before removing the cover of the package, do the following:

- Inspect the outside of the shipped package for damage.
- Note the status of the tilt and shock detectors.



Figure 2–1 Tilt and Shock Detection

If the outside of the package is damaged or the tilt and shock detectors have turned red, then the package was not handled properly during shipment. In this case do the following:

- Photograph the damage and the status of the tilt and shock detectors.
- Contact the shippers of the package.
- Email your regional office with details of the damage and sticker status.

Only proceed with the unpacking and installation of the printer, if the shipper and your regional office advises you to proceed.

2.3 Unpacking Procedure

1. Ensure that the printer is unpacked on a level surface.
2. Cut the bands around the package (with cutting pliers).
3. Open the top cover of the package.

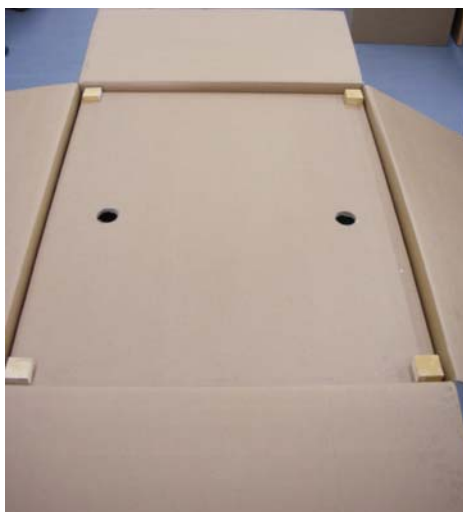


Figure 2-2 Top Cover Open

4. Remove the wooden corner supports.
5. Lift up and remove the cover inside the package.
6. Check the status of the shock detector on the top of the Alaris30 printer.

If the shock detector has turned red, then the package was not handled properly during shipment. In this case do the following:

- Photograph any damage and the status of the shock detectors.
- Contact the shippers of the package.
- Email your regional office with details of any damage and sticker status.

Only proceed with the unpacking and installation of the printer, if the shipper and your regional office advises you to proceed.



The shock detector on the top of the Alaris30 printer acts as a second check on the handling of the package.

7. Remove the staples (use pliers) connecting the outside packaging to the pallet. Lift up the outside packaging straight off the Alaris30 printer.
8. Remove the packing material around the Alaris30 printer.



Figure 2–3 Alaris30 Printer Packing Material

9. Once the packing material is removed, examine the Alaris30 printer for damage. Give special attention to loose parts or cables, to the UV protection glass, and to the printing heads.

If the printer is damaged, do the following:

- Photograph the damage.
- Email your regional office with details of the damage.

If the damage to the printer would stop the printer from working safely or efficiently, stop the installation and await further instructions from the regional office.

10. Carefully lift the Alaris30 printer off the pallet using a hand pallet truck and move the printer to its final location.



Objet recommends that the customer keep and store the pallet, the outside packaging and the packing material for possible future use.

3 Axis Locks and Print-Head Cover



Caution: Perform these sections with the printer off.

The following tool is required for this chapter:

- Cutting pliers.

3.1 Release X-axis

Cut and remove the cable ties attached to the X-axis belt and print head.

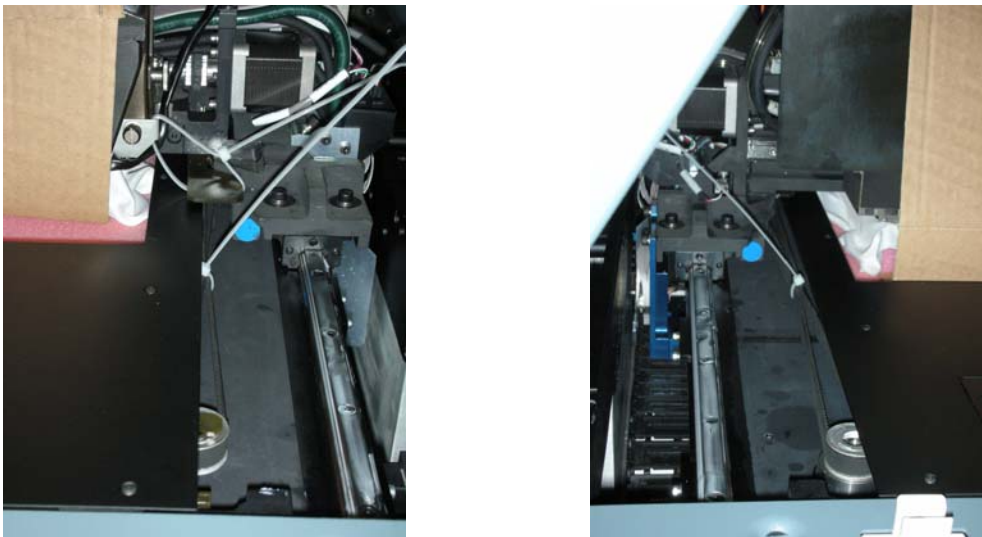


Figure 3–1 X-axis Cable Ties

3.2 Remove Print-Head Cover

Once all the cable ties are cut, remove the heads-protecting cover (shown in Figure 3–2) by doing the following:

- Open the heads-protecting cover.
- Pull the cover from the bottom sideways off the print head.

Be careful and use extra caution to make sure that the printing heads and the roller are not damaged while removing the cover.

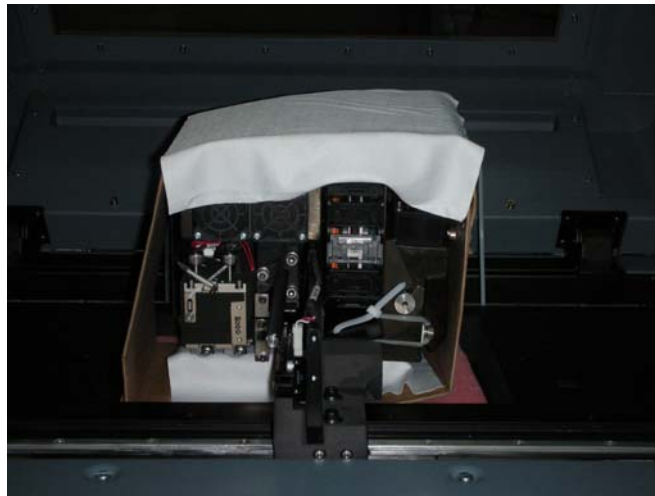


Figure 3–2 Head Protection Cover

4 Connect Cables and Test Voltage

4.1 Install the KVM Switchbox

The installation kit includes a KVM Switch unit. The KVM Switch allows you to control the two computers (the Alaris30 computer and the Server workstation) with one keyboard, monitor and mouse. The KVM Switch supports USB input devices (keyboard and mouse), VGA and SVGA video; and computers with USB ports.

Important The mouse and keyboard **must** be USB devices. PS2-to-USB conversion plugs are **not** supported.



A 101/102-key USB keyboard or similar is recommended.

The KVM switch comes with cables for connecting computers to the switch. One end of the cable, which is connected to the KVM switch, consists of a D-type connector and an audio connector. The other end of the cable has a monitor connector, a USB connector and audio connectors.



During the installation of the KVM switch, the audio connectors are not used.

Avoid having cables near air-conditioning equipment, or machines that create electrical noise.



To ensure proper operation of the KVM switch, the Server workstation and the Alaris30 printer must be properly grounded.

Simple keyboard commands (known as Hotkeys) control which computer is currently connected to the keyboard and mouse and has its output displayed on the monitor.

4.1.1 Connect Cables

1. Ensure that the power is off to the Server workstation and to the Alaris30 printer.



If the Server workstation has the “Keyboard Power On” function, unplug the Server workstation’s power cord.

2. Plug the keyboard, monitor and mouse cables into their respective ports on the KVM Switch (see Figure 4–1). The keyboard and mouse ports are labeled with icons to indicate which port is which.

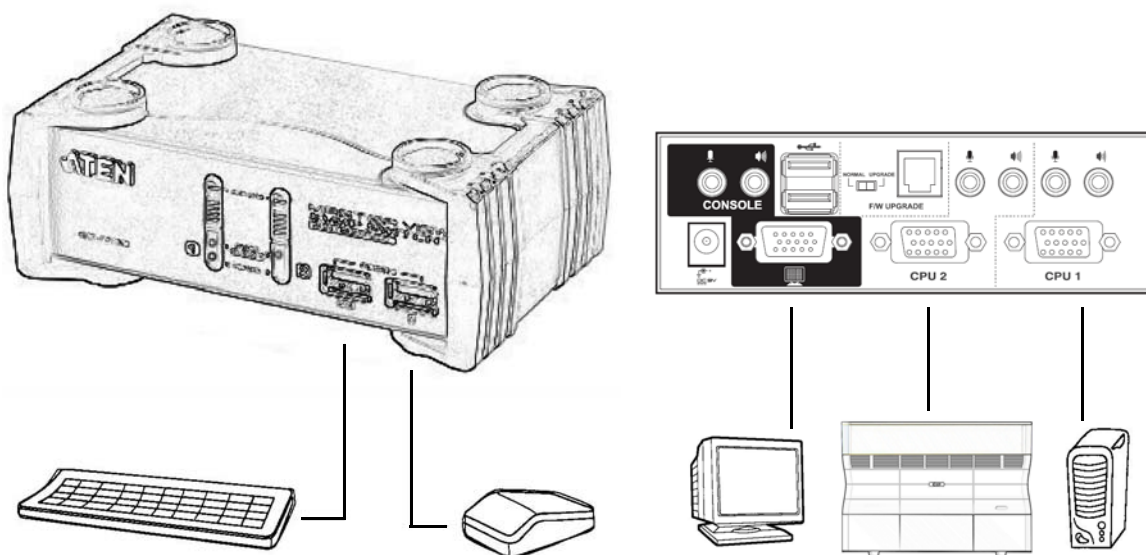


Figure 4–1 KVM Switch Connections Overview

3. Connect the cable between the KVM Switch and the Server workstation. That is, connect the cable’s KVM Switch D-type connector to the D-type socket on the switch and connect the cable’s monitor and USB connectors to the relevant sockets on the Server workstation (see Figure 4–2).

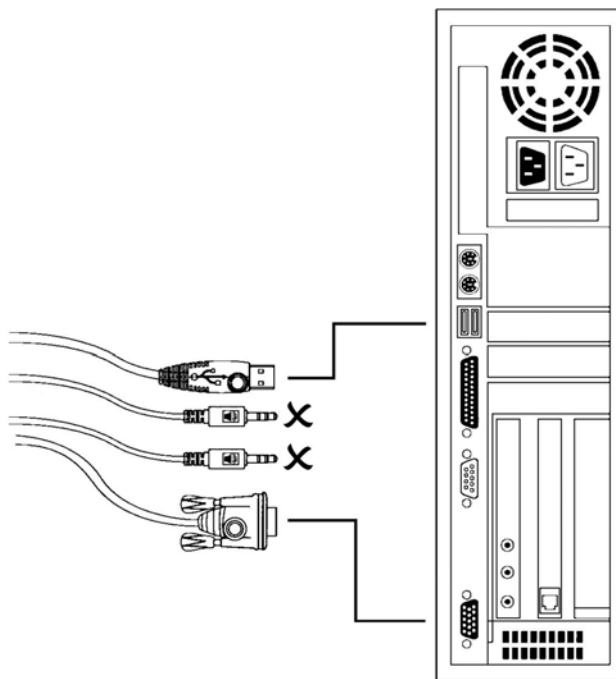


Figure 4–2 Connecting KVM Switch Cables to Server Workstation

4. Connect the cable between the KVM Switch and the Alaris30 printer. That is, connect the cable's KVM Switch D-type connector to the D-type socket on the switch, and connect the cable's monitor and the USB connectors to the relevant sockets at the back of the printer.

4.1.2 Switching between Computers

The switches on the front of the KVM can be used to switch control between the Server workstation and the Alaris30 computer.

In addition hotkeys exist for doing the switching from the keyboard. The default hotkey for switching between the computers is the Scroll Lock key (on the keyboard). Push the Scroll Lock key twice and then the Enter key to change the controlling computer.

If the Scroll Lock key is for some reason not available, use the following procedure to change the hotkey to the Ctrl key (that is, to pushing the Ctrl key twice and then the Enter key):

1. Press and hold the Num Lock key.
2. While the Num Lock key is down, press and release the minus key.



The minus key must be released within half a second, otherwise the procedure must be started again.

3. Release the Num Lock key. If the procedure was performed correctly, up to this step, the Caps Lock and the Scroll Lock LEDs should flash alternatively.



At this point, ordinary keyboard and mouse functions are suspended. They are restored after the next step.

4. Press and release the T key.



This procedure acts as a toggle between the two switching methods. To revert to the Scroll Lock method, perform this procedure again.

4.2 Connect Communication Cable



Chapter 5, Setup Server Workstation & Alaris30 Computer contains the procedure to set up the point-to-point communication between the Alaris30 computer and the Server workstation. To avoid difficulties with this procedure, Objet recommends that the customer connect the Server workstation to the customer's LAN before the Objet point-to-point cable is installed.

Connect the point-to-point Network Cross cable from the back of the printer to a vacant network port on the Server workstation.

4.3 Prepare Power Cable

Attach (or have the customer's electrical personnel attach) the appropriate power plug to the power cable from the back of the printer.

4.4 Visual Check of Cables and Cards

Open the printer and visually check that all the cards and cables are seated properly.

5 Setup Server Workstation & Alaris30 Computer

This chapter contains procedures for the following:

- Setting up and checking point-to-point communication between the Server workstation and the Alaris30 computer (see page 20)
- Disabling software and Windows options on the Server workstation:
 - Automatic updates (see page 34)
 - Power Saver (see page 35)
 - Antivirus (see page 38)
 - Firewall (see page 30)
- Setting up sharing between the Server workstation and the Alaris30 computer (see page 38)
- Preparing for the installation of the Objet Studio software (see page 42)
- Backing up the Alaris30 folder on the Server workstation (see page 42)

5.1 Turn Power On

Turn on the power to the Server workstation and the Alaris30 printer.
The following instructions are for the *first* logon to the Alaris30 printer.

1. Press (at the same time) Alt-Ctrl-Delete twice.
2. Login to the Alaris30 printer as “administrator”.



No password is required for the Alaris30 printer.

5.2 Setup Point-to-Point Communication

5.2.1 Information from Server Workstation

1. Open the Start menu on the Server workstation, right-click on My Computer and select **Properties** from the drop-down menu. The System Properties window opens.

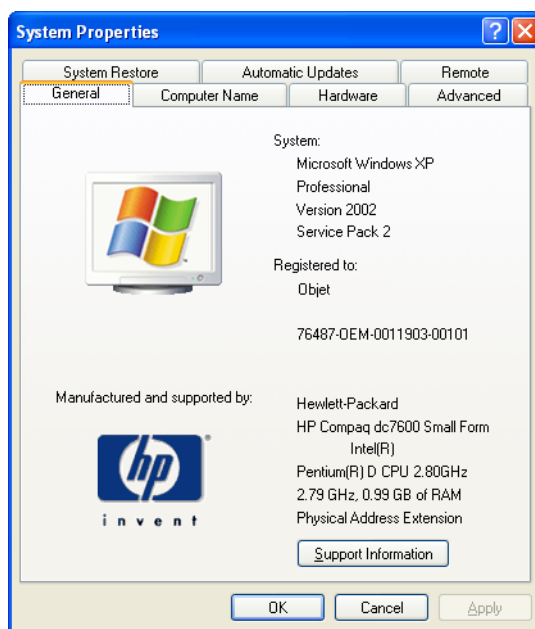


Figure 5–1 System Properties Window

2. Select the **Computer Name** tab.

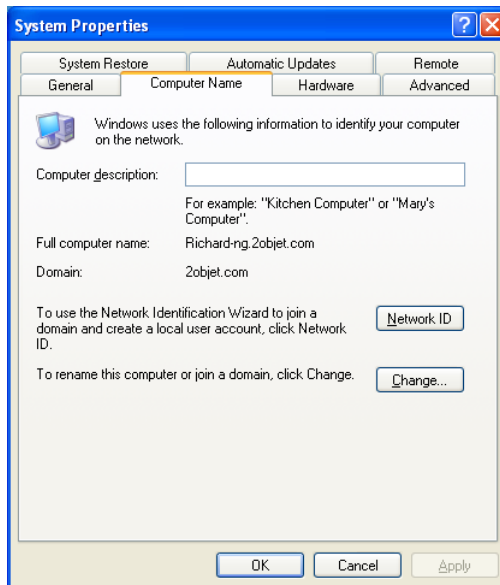


Figure 5–2 System Properties Window—Computer Name Tab

3. Click **Change**. The Computer Name Changes window opens.

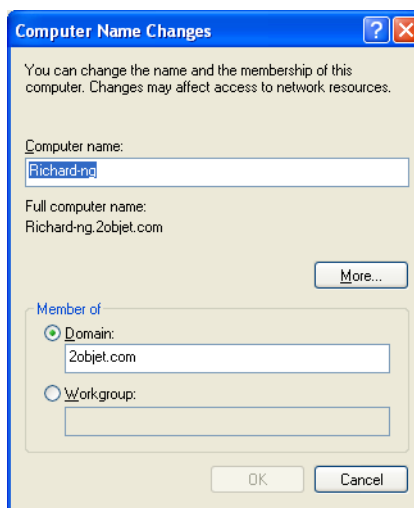


Figure 5–3 Computer Name Change Window (Example)

4. Write down the name of the computer and the domain name.
5. Click **Cancel**.
6. Click **Cancel** (in the System Properties window).

5.2.2 Alaris30 Computer Setup



Exit from any open applications.

1. Right-click on My Computer (on the Desktop) and select **Properties** from the drop-down menu. The System Properties window opens.
2. Select the **Computer Name** tab.

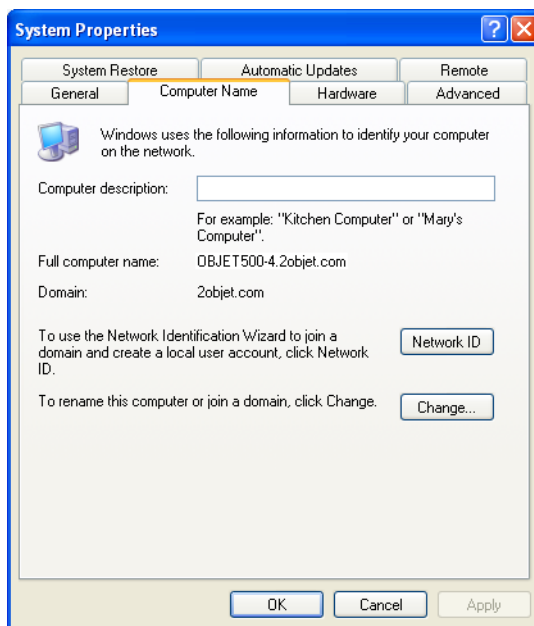


Figure 5–4 System Properties Window

3. Click **Change**. The window opens.

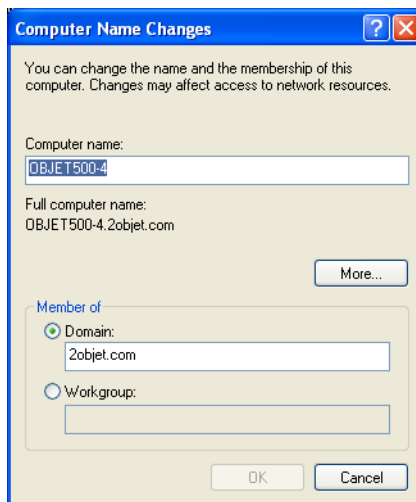


Figure 5–5 Computer Name Changes Window

4. Select **Workgroup**.
5. Type the Domain name of the Server workstation into the Workgroup field.
6. Write down the name of the Alaris30 computer.
7. Click **OK**. A Welcome message for the workgroup opens.

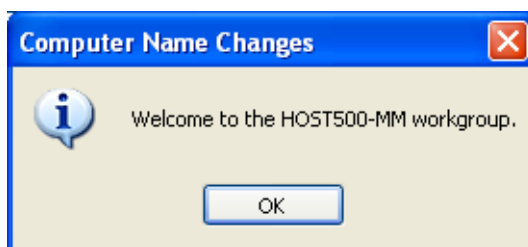


Figure 5–6 Welcome Message (Example)

8. Click **OK**. A Restart computer message opens.

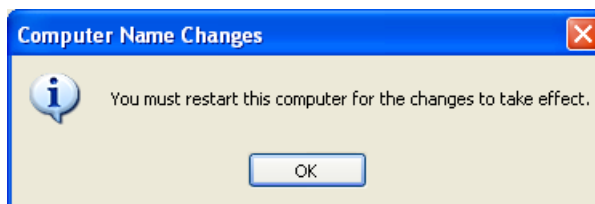


Figure 5–7 Restart Computer for Changes Message

9. Click **OK**.
10. Click **OK** (in the Computer Name Changes window). The System Settings Change dialog box opens.

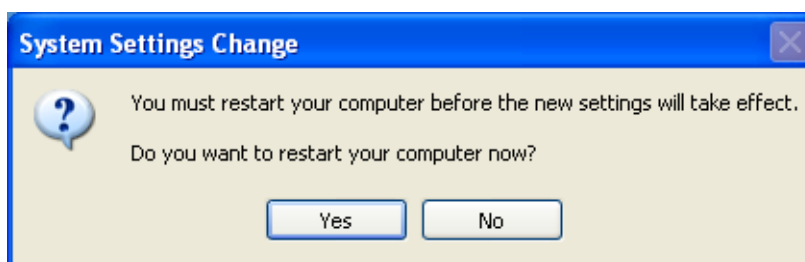


Figure 5–8 Restart Computer Message

11. Click **Yes**. The Alaris30 computer reboots.
12. Login as “administrator”.
13. Right-click on My Network Places (on the Desktop) and select **Properties** from the drop-down menu. The Network Connections window opens.

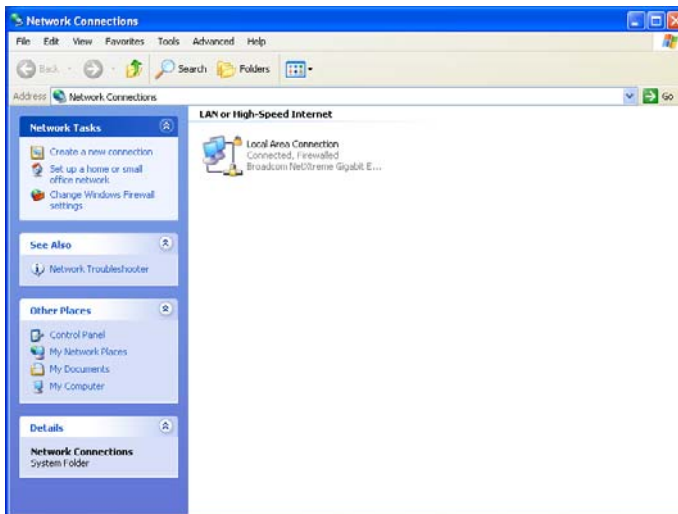


Figure 5–9 Network Connections Window

14. Right-click on Local Area Connection and select **Properties** from the drop-down menu. The Local Area Connection Properties window opens.

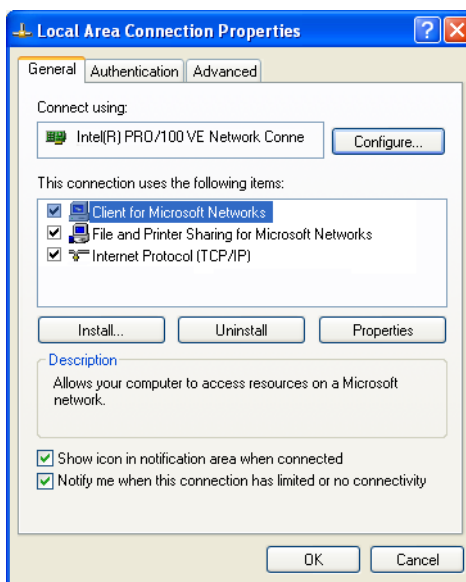


Figure 5–10 Local Area Connection Properties Window

15. Select **Internet Protocol (TCP/IP)** (from the “items” list) and click **Properties**. The Internet Protocol (TCP/IP) Properties window opens.

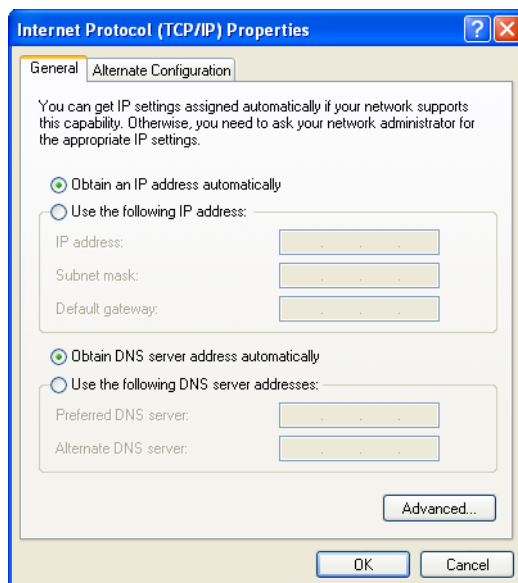


Figure 5–11 Internet Protocol (TCP/IP) Properties Window

16. Select **Use the following IP address**.
17. Set up the following values:
 - IP address: 10.10.20.2
 - Subnet mask: 255.255.255.0
 - Default gateway: 10.10.20.1

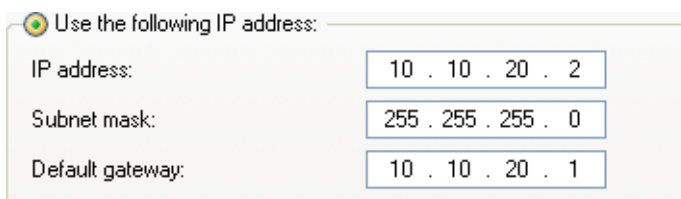


Figure 5–12 IP Address Data for Alaris30 Computer

18. Click **OK**.

19. Click **Close** (in the Local Area Connection Properties window).
20. Close the Network Connections window.
21. Open in Notepad the **hosts** file found in the C: \windows\system32\drivers\etc folder.
22. Add the line: 10.10.20.1<tab>Hostname where the <tab> represents pressing the Tab key and Hostname is the name of the Server workstation.
23. Save and close the **hosts** file.
24. Set the local time, date and time zone.
25. Reboot the Alaris30 computer.

5.2.3 Server Workstation Setup



If the Server workstation is not connected to the customer's LAN at this stage of the installation, it can be difficult to identify which Windows network connection icon corresponds to a specific hardware network port. Once the Server workstation is connected to the customer's LAN, one of the icons is labelled as "Connected."

1. Open the Start menu on the Server workstation, right-click on My Network Places and select **Properties** from the drop-down menu. The Network Connections window opens.

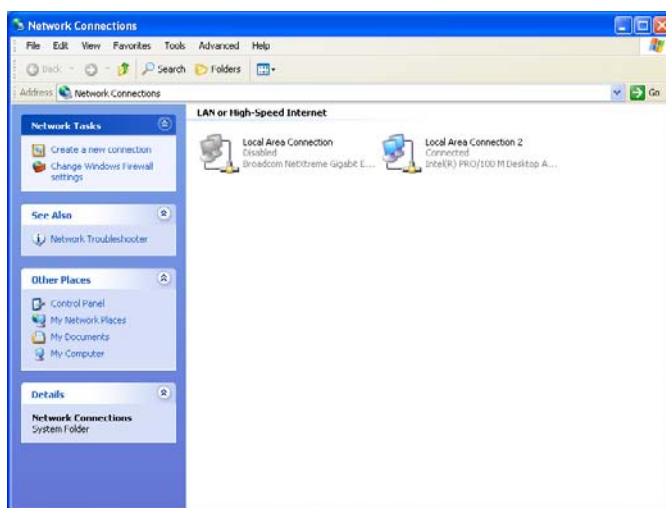


Figure 5–13 Network Connections Window (Example)

2. Right-click on the “unconnected” Local Area Connection icon and select **Properties** from the drop-down menu. The Local Area Connection Properties window opens.

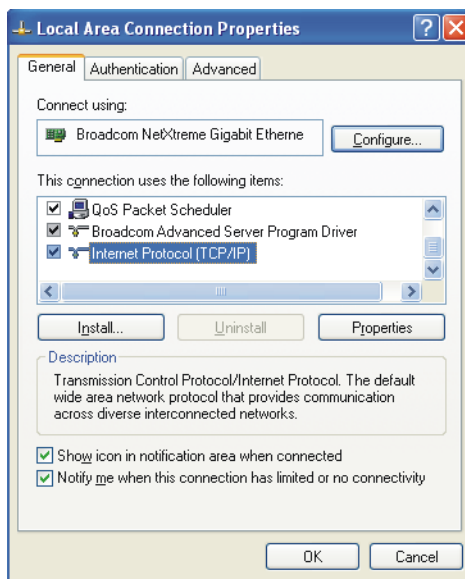


Figure 5–14 Local Area Connection Properties Window

3. Select **Internet Protocol (TCP/IP)** (from the “items” list) and click **Properties**. The Internet Protocol (TCP/IP) Properties window opens.

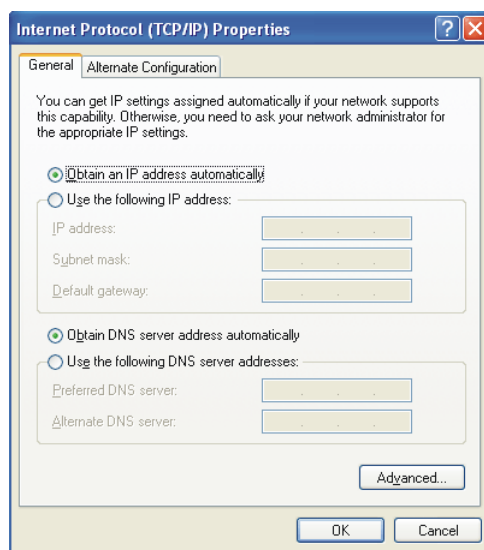


Figure 5–15 Internet Protocol (TCP/IP) Properties Window

4. Select **Use the following IP address**.
5. Set up the following values:
 - IP address: 10.10.20.1
 - Subnet mask: 255.255.255.0
 - Default gateway: 10.10.20.2

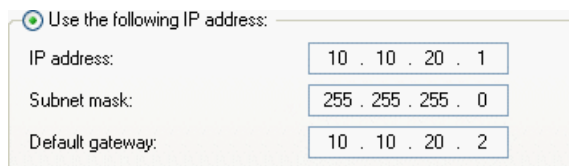


Figure 5–16 IP Address Data for Server Workstation



The “IP address” and “Default gateway” settings for the Server computer are the opposite of the Alaris30 computer settings.

6. Click **OK**.
7. Click **Close** (in the Local Area Connection Properties window).
8. Close the Network Connections window.
9. Open in Notepad the **hosts** file found in the C: \Windows\system32\drivers\etc folder.
10. Add the line: 10.10.20.2<tab>Alaris30_name where the <tab> represents pressing the Tab key and Alaris30_name is the name of the Alaris30 computer.
11. Save and close the **hosts** file.

5.2.4 Disable Firewall

If a firewall is running on the Server workstation, disable the firewall.

The following procedure is for disabling the Windows Firewall.

1. Select **Control Panel** from the Start menu. The Control Panel window opens.

2. Double-click Windows Firewall. The Windows Firewall window opens.

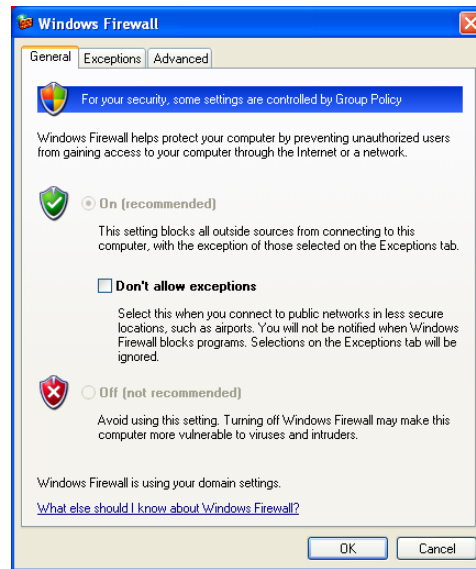


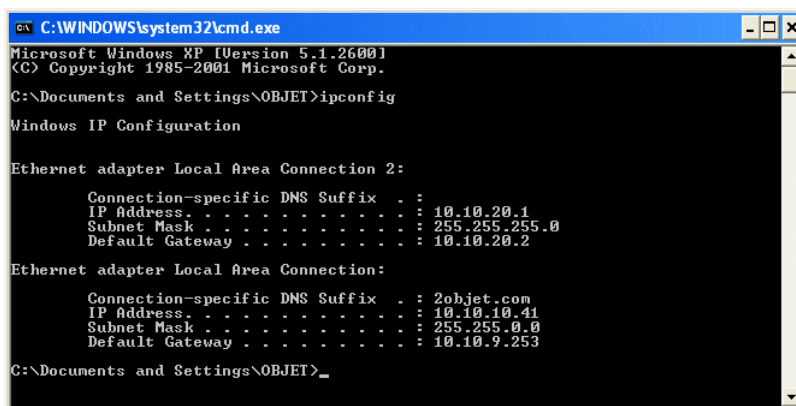
Figure 5–17 Windows Firewall Window

3. Select **Off**.
4. Click **OK**.
5. Close the Control Panel window.
6. Reboot the Server workstation.

5.2.5 Test Communication

On the Server workstation, do the following:

1. Select **Run** from the Start menu.
2. Type **cmd** in the Open field and click **OK**.
3. Type **ipconfig** and press Enter. The IP address information should be displayed.



```

C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\OBJET>ipconfig

Windows IP Configuration

Ethernet adapter Local Area Connection 2:

    Connection-specific DNS Suffix  . : 
    IP Address. . . . .                : 10.10.20.1
    Subnet Mask . . . . .              : 255.255.255.0
    Default Gateway . . . . .          : 10.10.20.2

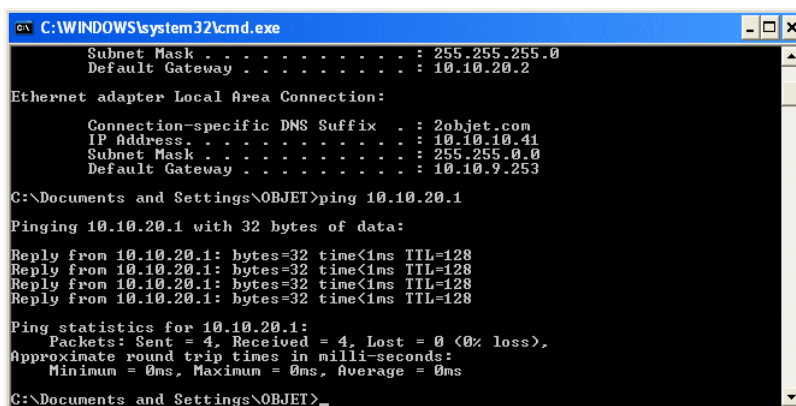
Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : 2objet.com
    IP Address. . . . .                : 10.10.10.41
    Subnet Mask . . . . .              : 255.255.0.0
    Default Gateway . . . . .          : 10.10.9.253

C:\Documents and Settings\OBJET>
    
```

Figure 5–18 Example Ipconfig Results

4. Type **ping 10.10.20.1** and press Enter. If you get a reply, the ping command has worked.



```

C:\WINDOWS\system32\cmd.exe

    Subnet Mask . . . . .              : 255.255.255.0
    Default Gateway . . . . .          : 10.10.20.2

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : 2objet.com
    IP Address. . . . .                : 10.10.10.41
    Subnet Mask . . . . .              : 255.255.0.0
    Default Gateway . . . . .          : 10.10.9.253

C:\Documents and Settings\OBJET>ping 10.10.20.1

Pinging 10.10.20.1 with 32 bytes of data:

Reply from 10.10.20.1: bytes=32 time<1ms TTL=128
Reply from 10.10.20.1: bytes=32 time<1ms TTL=128
Reply from 10.10.20.1: bytes=32 time<1ms TTL=128
Reply from 10.10.20.1: bytes=32 time<1ms TTL=128

Ping statistics for 10.10.20.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\Documents and Settings\OBJET>
    
```

Figure 5–19 Example Ping Results

5. Type **ping 10.10.20.2** and press Enter. If you get a reply, there is communication between the Server workstation and the Alaris30 printer.
6. Type **ping Alaris30_name** (where Alaris30_name is the name of the Alaris30 computer) and press Enter. If you get a reply, the name of the Alaris30 computer has been recognized by the ping command.

On the **Alaris30 computer**, do the following:

1. Select **Run** from the Start menu.
2. Type **cmd** in the Open field and click **OK**.
3. Type **ping Hostname** (where Hostname is the name of the Server workstation) and press Enter. If you get a reply, the name of the Server workstation has been recognized by the ping command.

5.3 Disable Automatic Updates for Windows

On the Server workstation, do the following:

1. Select **Control Panel** from the Start menu. The Control Panel window opens.
2. Double-click Automatic Updates. The Automatic Updates window opens.

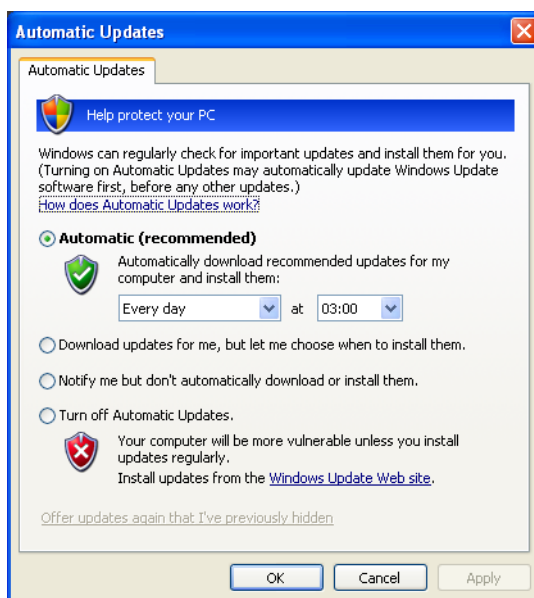


Figure 5–20 Automatic Updates Window

3. Select **Turn off Automatic Updates**.
4. Select **OK**.

5.4 Disable Power Saver

On the Server workstation, do the following:

1. Right-click on the Desktop and select **Properties** from the pop-up menu. The Display Properties window opens.

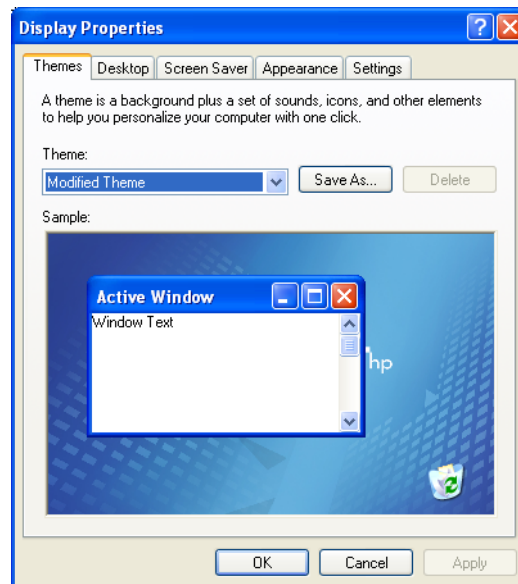


Figure 5–21 Display Properties Window

2. Select the **Screen Saver** tab.

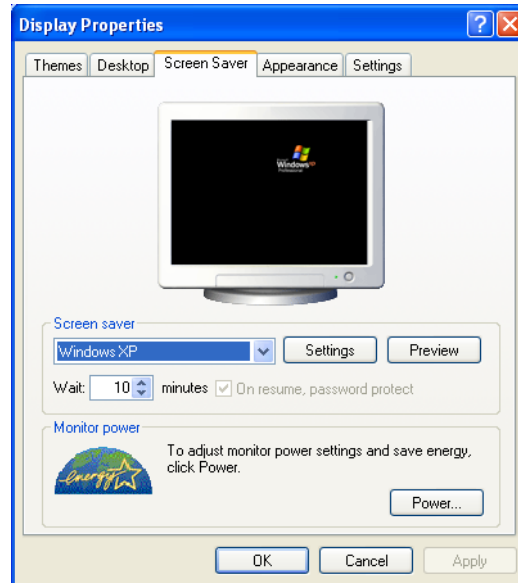


Figure 5–22 Screen Saver Tab

3. Select **Power** (in the “Monitor power” section). The Power Options Properties window opens.

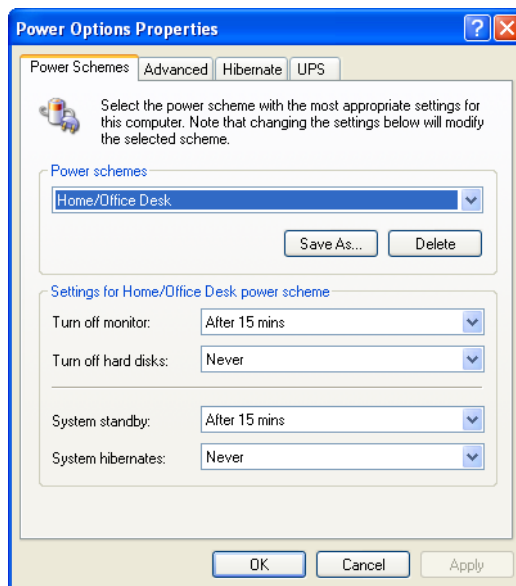


Figure 5–23 Power Options Properties Window

4. Select **Always On** from the Power schemes drop-down menu.



The Always On power scheme sets the following field values to Never:

- Turn off hard disks
- System standby
- System hibernates

5. Select **OK**.
6. Select **OK** (in the Display Properties window).

5.5 Disable Antivirus Software

If antivirus software is running on the Server workstation, disable the following:

- Periodic virus checking
- Auto-updates



Only check the Server workstation for viruses and update the antivirus software when models are **not** being printed.

5.6 Setup Sharing

5.6.1 Server Workstation Procedure

1. Create a new folder named Objet on the C: drive of the Server workstation.

2. Right-click on the Objet folder and select **Properties** from the pop-up menu. The Objet Properties window opens.

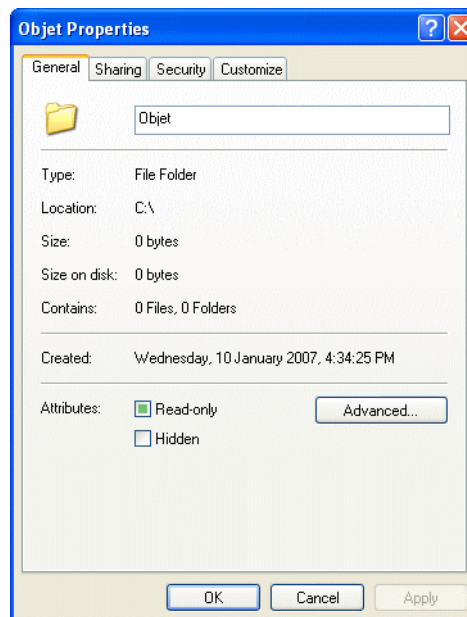


Figure 5–24 Objet Properties Window

3. Select the **Sharing** tab.

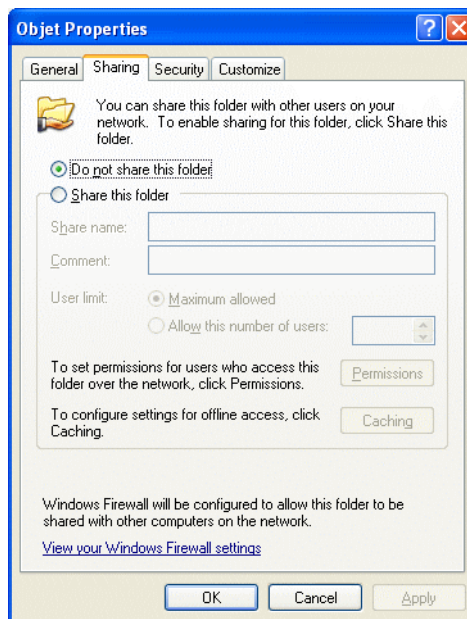


Figure 5–25 Object Properties Window—Sharing Tab

4. Select **Share this folder**.
5. Click **OK**.

5.6.2 Alaris30 Computer Procedure

1. Open the Start menu on the Alaris30 computer and select **My Computer**. The My Computer window opens.
2. Right-click on the C: drive and select **Properties** from the pop-up menu. The Local Disk (C:) Properties window opens.

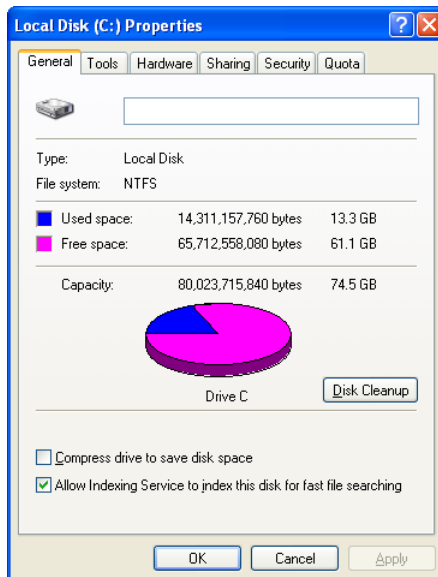


Figure 5–26 Local Disk Properties Window

3. Select the **Sharing** tab.

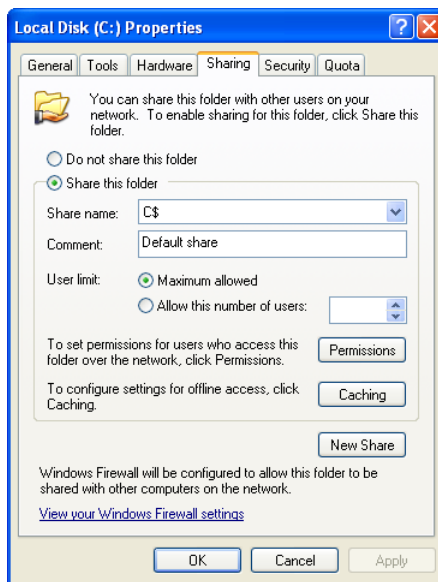


Figure 5–27 Local Disk Properties Window—Sharing Tab

4. Select **Share this folder**.
5. Click **OK**.

5.6.3 Verify Sharing Setup

1. Open the Start menu and select **My Network Places**. The My Network Places window opens.
2. Select **Entire Network** from the Other Places section of the window.
3. Double-click the Microsoft Windows Network icon.
4. Double-click the Workgroup containing the Alaris30 printer.
5. Make sure you can see the C: drive of the Desktop computer.

5.7 Install Objet Studio on Server Workstation

The User name used to login into the Server workstation for the Objet Studio installation must have **full Administrator rights**.

Refer to the User Guide for instructions on installing Objet Studio.

5.8 Back Up Alaris30 Folder

Perform the following procedure on the Server workstation.

1. Create a Backup_For_Alaris30_[Date] folder on the C: drive (where [Date] is the current date).
2. Alaris30Alaris30Copy the Alaris30 folder to the folder created in Step 1.



This procedure creates a back-up of the printer software, which can be used if there is a need to return to the original software state.

6 Material Installation & Calibration Tests

6.1 Install Model and Support Materials

Insert the Model and Support material bottles and the waste container into their container housings on the Alaris30 printer.



The operator of the printer can be involved in this step.

6.2 Calibration Tests

Important Do not calibrate the printer unless the tests show that the printer is out-of-spec.

1. Perform the calibration tests listed below, and verify that all the tests pass successfully:

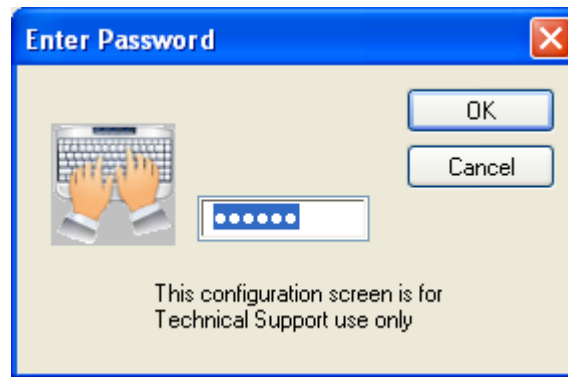
Calibration Test	Specification	Instructions
Z Start	100–200 microns maximum from the roller	
Pattern test for all heads	Examine the printed results	
Wiper Check	—	
UV Intensity	130%–180%	Run Wizard
Vacuum Panel	6 ± 0.3 cm of water at 5.3 ± 0.2 V	
Weight Test	± 1 V	Run Wizard
All transparency calibrations	Block rotation ± 20 μ	

2. After the tests pass successfully, print a customer model.

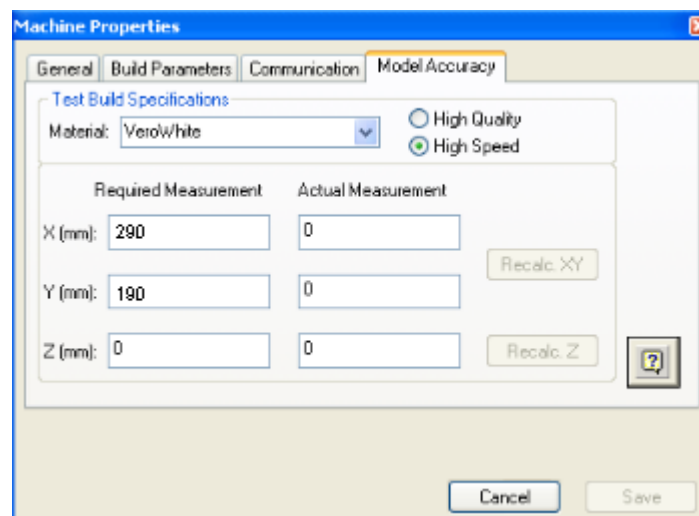
6.3 Model Scaling

This procedure describes how to enter the scaling specifications. These specifications ensure that the Alaris30 printer accurately produces models according to the required dimensions.

1. From the *File* menu, select **Machine Properties . . .**
2. Enter your password to continue.



3. In the *Machine Properties* dialog box, display the *Model Accuracy* tab.



4. In the *Required Measurement* fields:
 - In the X (mm) field, type **290**
 - In the Y (mm) field, type **190**

5. On the Desktop of the printer computer, open the following file:
Open Scaling.txt.
6. From the *Open Scaling* file:
 - copy the X (mm) measurement and paste it into the X (mm) Actual Measurement field.
 - copy the Y (mm) measurement and paste it into the Y (mm) Actual Measurement field.
7. Click **Recalc.XY** and **Save**.