MBARI Instruments

Laser Raman Spectrometer Reference Guide

Release 0.0
#000000DOC

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Table of Contents

1

Introduction

CComing soon...

Install Holograms and NetMeeting 2

Overview

This document describes the steps to install the Holograms and NetMeeting software on the *ramandesktop* client.

The Holograms software runs the Laser Raman Spectrometer and can be used to operate the spectrometer directly or remotely. This document describes how to install Holograms for remote operation only. NetMeeting is a utility that permits sharing of desktops and files between Windows computers and is commonly used for teleconferencing between computers.

In the LRS application, NetMeeting is run from the *ramandesktop* client. From NetMeeting, a "call" is placed to the *ramansbc* computer. If the call is successful, you can access desktop and files remotely on any *target* network from *ramandesktop*.

Installation CD

Use the custom CD labeled LaserRaman for the following installations. The CD is available in the LRS project black media binder labeled LASERRAMANDISKS.

Holograms installation

1. Insert the LaserRaman disk in the *ramandesktop* CD drive, and open it in Windows Explorer
2. Go to the directory `Hologram/HoloGRAMS` and double-click on `setup.exe`.
3. Install using the defaults.
4. Go to the directory `Hologram\Andor` and double-click on `support.bat`.

###WRITER'S NOTE: ...and? What happens here?

Holograms update installation

Note: The Holograms update must be done *after* Holograms installation.

1. Go to the directory`HologramUpdgrade` and double-click on `setupex`.
2. Install using the defaults.

NetMeeting installation

1. Go to the directory`NetMeeting3` and double-click on `nm30.exe`
2. Install using the defaults.

NetMeeting setup for remote sharing

1. Run NetMeeting from the start menu: *Start->Programs->NetMeeting*
2. Enter your name and email address. Location and comments are not required.
3. If not checked, select "Log on to a directory server when NetMeeting starts"
4. Select "Local Area Network"
5. If not checked, select "Put a shortcut on my Quick Launch bar".
6. Continue on through the setup until the NetMeeting window appears. (It will be labeled "NetMeeting - Not in a Call".)
7. Select *Tools->Options*.
8. Click the Security tab. Check "I prefer to make secure outgoing calls".
9. If you don't yet know the target names, this is the end of the setup for now.
10. To enter target names Select *Call->New Call.*

    In the *To* box, enter the target name. (Target names are in the table of Supported Networks in "LRS Network Setup", page 2.)
11. Enter user name: **`Administrator`**
    and password: **`Administrator`**.

    Both are case-sensitive. Leave the domain blank.

12. If the call is placed successfully, you should now see a target desktop with only a login window. (If the login box does not appear, in the *target* desktop, select Control>send *ctrl+alt+del)*

13. Login to the *target* from this window:

    Enter user name: **`Administrator`**
    and password: **`Administrator`**.

    The window for the target desktop will appear.

###WRITER'S NOTE: When doing this procedure in the lab, there are connections to be made (or undone). Does the cabling take care of this in the field?

LRS Network Setup 3

Overview

This document describes the procedure to set up the Laser Raman Spectrometer (LRS) instrument for networked operation. In this document, *target* refers to the embedded instrument computer, which has a different name depending on where the LRS is being used. (See Supported networks on page 2 for the target names.) The client desktop computer is called *ramandesktop* in all cases.

The LRS is controlled over a standard Ethernet connection using TCP-IP protocol. Network connectivity must be established between the *target* and *ramandesktop* to operate the instrument.

The steps required to establish and test a network connection are:

1. [Make correct cable connections--instructions coming...]
2. Reset *target* network using Netmeeting and Netswitcher software.
3. Reset *ramandesktop* using Netswitcher software.
4. Ping test the network connection.
5. Edit *hologram.ini* file with results from ping test.
6. Run Hologram and LRSClient software from *ramandesktop*.

Supported networks

The following table describes the supported network setups. The connection from desktop to target can be made with a standard RJ45 Ethernet cable or through an ROV fiber-to-Ethernet connection. The network routing may be peer-to-peer or through a hub or router, depending on the network setup.

Network	*<target name>	Target IP address	Routing
Western Flyer	*ramansbc.flyer*	134.89.21.25	Tiburon top-side router
MBARI	*ramansbc*	DHCP assigned	Hub (Bocca box or equivalent)
Point Lobos	*ramansbc.lobos*	134.89.22.100	None, peer-to-peer

*<target name> is not case sensitive

Network setup

Cable connections

[Coming soon...]

Reset target network

The *ramandesktop* computer should be running. Each network target has a different power-up procedure:

Network	Target	Power-on procedure
MBARI(lab)	*ramansbc*	Switch the test box ON.
R/V *Point Lobos*	*ramansbc.lobos*	Using the latching button for the Port Science port on the main page of the Ventana GUI,click once to turn ON.
R/V *Western Flyer*	*ramansbc.flyer*	tbd

1. Power on the target, and wait two minutes for the boot to complete.
2. To check whether the boot is complete, do a ping test of the target.
   See ping test on page 5.
3. On *ramandesktop*, run Netmeeting (shortcut on the desktop).
4. From the dropdown box to the left of the *Call* icon (small phone), select *Last known target name*. (For example, *ramansbc.lobos* would be the name, if the target is currently set up for the Point Lobos network.)

   Note: If the target name is not in the dropdown box, go to the *Call* menu, and select *New Call*. Enter the target name in the *To* field.
5. Click the *Call* icon (small telephone).

   The connection to the target should be relatively quick if the target is up and running. If not, wait a few minutes. It takes approximately two minutes for the target to boot.
6. A window labeled *Remote Desktop - Sharing Password* will appear.
   Enter user name: **`Administrator`**
   and password: **`Administrator`**.

   Both are case-sensitive. Leave the domain blank.
7. A *target* window will open that looks like a Windows desktop within your desktop.

   Note: If a login window does not appear, go to the *Control* menu and select *Send ctrl-alt-del* to open it.

8. Enter (case sensitive) user name: **Administrator**
   and password: **Administrator**.

   You should now have a *target* window labeled "*Ramansbc desktop - controlled by Administrator User".* This is the window interface to the target desktop. Use this interface to monitor the target, transfer files, or start and stop applications using Windows Explorer and Task Manager.

   Within the target desktop, is a window labeled *Atserver - disconnected*. The Atserver is an application that communicates with the Raman CCD camera. The window label will change to *Atserver - connected* when Holograms is running. During Holograms operation, messages will scroll down the Atserver window. Also in the target desktop, other DOS windows will be running the housekeeping sensor software.

   In the target desktop window, you can navigate and send commands as you normally would within a Windows NT desktop **with the exception of ctrl-alt-del**, which is done through the window interface *Control* menu.

9. In the *target* desktop window, select:
   Start>Programs>NetSwitcher for Windows>NetSwii.exe

   This will run the NetSwitcher software used to change the network setup on the *target*.

10. In the *Choose location* dropdown box select the target to change to. For example to change the target to *ramansbc.lobos*, select *PTLOBOS.*

11. Select *Apply*.

    You will see a window with booting options. Select *Reboot my computer now*. The *ramandesktop* will reboot with the new network setup, and you may skip to the next proceedure, "Reset ramandesktop".

    Note: If the mouse stops working when you try to select *Apply,* try using the tab key to highlight *Reboot my computer now*, and hit Enter.

12. If you lose communication with the *target*, do a hard reboot (of the target) by cycling the power. Each network and target has a different hard reboot procedure. (see table below).

IMPORTANT: After a hard reboot, you must **go back to Step 2** of this procedure.

Network	**Target**	**Hard reboot procedure**
MBARI(lab)	*ramansbc*	Switch the test box OFF, then ON.
R/V *Point Lobos*	*ramansbc.lobos*	Using the latching button for the Port Science port on the main page of the Ventana GUI,click once to turn OFF and click again to turn ON.
R/V *Western Flyer*	*ramansbc.flyer*	tbd

Reset *ramandesktop*

1. From the Start menu select *Programs->NetSwitcher->NetSwii.exe* . This will run the NetSwitcher software used to change the network setup on *ramandesktop*.
2. In the *Choose location* dropdown box, select the location to change to (for example to change to the Pt. Lobos network, select the *PTLOBOS* location), and click *APPLY*.
3. You will now see a window with booting options. Select *Reboot my computer* now. The *ramandesktop* will reboot with the new network setup.

ping test

To test network connectivity between *ramandesktop* and target, do a simple `ping` to the target.

1. Select *Start>Run* and enter:

   `ping -t <target name>`

2. You should get a reply from the *target* that looks like:

   `Reply from <target IP>  bytes=32  time<10ms  TTL=128`

   Make a note of the target IP address for the next procedure. The reply address will change depending on the target setup.

   If you do not get a reply, check for the correct target name. If the name is correct, the network setup may be wrong on either *ramandesktop* or on the target.

Contact Danelle Cline at extension 1947 for assistance.

Edit *hologram.ini*

Use the desktop shortcut to edit the `hologram.ini` file located in `c:\holograms`. Using the target IP determined by the ping test, edit the `hologram.ini` file as follows:

1. Check to be sure that:
   `Manufacturer = 3`
2. Change IP address:
   `IP Address = <target IP>`

Start *Hologram* and *lrsclient*

1. On *ramandesktop* click on the *Hologram* desktop shortcut.

   Note: Disregard the "...I2C device..." message that displays on startup. This is a bug we're working with Kaiser to resolve.

2. On *ramandesktop* click on the *lrsclient* desktop shotcut. This will run the custom houskeeping sensor application.

You are now ready to acquire a spectrum.

Diagnostics

Run *Netmeeting* to connect to target

1. On *ramandesktop*, run *Netmeeting* from the desktop shortcut.
2. From the drop down box, select the current target name.
3. Select *Call*.

   If the login window is not available, from the *Control* menu (top left), select *Send>ctrl-alt-del.*
4. In the login window:
   Enter user name: **`Administrator`**
   and password: **`Administrator`**.

   (Both are case-sensitive.)

   The target desktop window will pop up. Label:
   Ramansbc desktop—controlled by Administrator User

   This is the window interface to the target desktop. Use this interface to monitor the target, transfer files, or start and stop applications using Windows Explorer and Task Manager.

Within the target desktop, is a window labeled *Atserver - disconnected*. The Atserver is an application that communicates with the Raman CCD camera. The window label will change to *Atserver - connected* when Holograms is running. During Holograms operation, messages will scroll down the Atserver window. Also in the target desktop, other DOS windows will be running the housekeeping sensor software.

In the target desktop window, you can navigate and send commands as you normally would within a Windows NT desktop **with the exception of ctrl-alt-del**, which is done through the window interface *Control* menu.

Flash Card Setup A

Overview

These are the instructions to setup a 128 MB SanDisk compact flash card for the Laser Raman Spectrometer (LRS).

Note: Two spare compact flash cards for the LRS project are already configured to boot NTE, so you can safely skip this procedure unless you are preparing a newly purchased compact flash card.

The two general steps to create a compact flash for the LRS are:

- Create a WinNT Embedded (NTE) bootable compact flash card
- Install the LRS software image into the NTE bootable flash.

Hardware

- *ramandesktop* computer
- Embedded Windows NT 4.0 Server installation CD-ROM
- LRS electronics assembly
- External 3.5" floppy drive to connect to LRS electronics CPU board
- SanDisk 128 MB Compact Flash card.

Note: A card larger than 128 MB can be used, but not a smaller one. The embedded software will not fit on a card smaller than 128 MB.

Software

Windows NT headless workstation development kit (Annasoft Systems Inc.) Includes Embedded Windows NT 4.0 Server installation CD-ROM. (*Headless* means there is no support for a monitor, keyboard, or mouse.)

Create a bootable flash card

Note: If you are preparing a new compact flash card you must complete these steps. If you have a flash already modified to boot NTE, you can skip this procedure.

The following instructions explain the steps to initialize the boot sector on the Compact Flash card required for booting NTE. This procedure alters the SanDisk compact flash boot sector to boot NTE (instead of remaining non-bootable and functioning as a standard IDE disk). Unless the boot sector is corrupted for some reason, this step is only required once in the lifetime of the flash card.

On the *ramansbc* computer located in the LRS electronics assembly:

1. Turn off *ramansbc* power by turning off test box power.
2. Install keyboard and monitor.
3. If there is a compact flash installed, remove the flash card.
4. Install the floppy drive. Connect the 4-pin power cable from the Axiom SBC (Single Board Computer) card to the floppy drive. Also connect the SBC to the floppy with the standard ribbon cable.
5. Turn on test box power.
6. Insert the disk labeled “DOS boot disk” in the floppy drive. This disk should contain the DOS boot files (such as `command.com`, `sys.com`, `autoexec.bat`, etc.) and the NTBoot script, `ntboot.bat`.
7. Insert compact flash and turn test box power on.
8. System should boot from the floppy drive. If not, check the polarity of the floppy drive cable.
9. At the a:> prompt, enter:

   `ntboot`

10. [TBD]

###WRITER’S NOTE: ***explain what files you should see on the CF with dir command here.***

Install the LRS software image

The next step (and typically only step) required to build a flash is to build the NT file image, then copy the built image on to the compact flash. Included in the NT file image are all NTE operating system files and LRS software required for operation.

The following instructions explain the steps to install the Embedded Windows NT files and LRS application software on the bootable compact flash card.

On the *ramandesktop* computer:

1. Insert the compact flash card into the SanDisk compact flash card reader.
2. Using Explorer, open compact flash drive F:
3. In the F: drive, highlight all the folders and files. Use *Shift+Delete* to delete all the highlighted files you selected so they don't go into the Recycle Bin can on the flash.
4. Insert the Embedded Windows NT 4.0 Server installation CD-ROM.
5. Select `Start>Programs>Windows NT Embedded 4.0>Target Designer`.
   In the `All Nodes` pane, you should see the `Laser Raman.cfg` node—a graphical representation of the system configuration for the LRS system. **DO NOT EDIT THIS CONFIGURATION**.Changing this configuration will break the LRS software. All NTE operating system and LRS application files are built based on the `Laser Raman.cfg`.
6. From Target Designer, Select `Image->Build Only`.
7. A `Check Dependencies` warning window may pop-up. Select `Yes`.
   If the image has all the correct files needed, the dependency check will run (10-20 seconds). When the check is complete, it will indicate all dependencies have been resolved. Select `OK`.
8. A window labeled `Build Laser Raman.cfg`. will appear.
   Select `Start` to begin the build.
9. A few more windows will pop up. Select `OK` or `Yes` to the remaining windows. When the build finally starts, it will take a few minutes to complete.
10. Following the build, the next step is to copy the built image on the compact flash. From Target Designer, Select Image->Install Only. Select Start. The files will install on the compact flash. You should see the LED flashing on the compact flash reader. When the install is complete, wait a few seconds for the LED to stop flashing, indicating all files are written before pulling out the flash card.

11. Write on the flash card: **LRS** followed by the date, in the format MMDDYY.
    Example: **LRS072802**
12. Install the flash card in the target.

Index

R

S

T

W