**Multimedia and Control
Networking Technology**

**MOST Tool Kit
Application Examples
V4.0.X
Application Note**

Document Information
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MOST®
Media **O**riented **S**ystems **T**ransport

Further Information

For more information on SMSC's automotive products, including integrated circuits, software, and MOST development tools and modules, visit our web site: http://www.smsc-ais.com. Direct contact information is available at: http://www.smsc-ais.com/offices.

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Legend

MOST Tool Kit

Application Examples

V4.0.X

Document History

Version	Date	Section	Comment on changes
V4.0.X-1	2012-08-24	All	Microchip logo added.
		All	Sections adapted for new version
		5.1.2.2	Description of selection adapted in Figure 5-2
		5.1.2.3	Video transmission via DTCP added.
V3.8.X-1	2011-09-26	All	Totally revised: description adapted as NSV2Example has been removed, replaced by MOST Interface Control.
		1.6	Section 'Naming Conventions' removed.
V3.6.X-1	2010-11-22	All	Description of mbtest, mbstream improved: They are command line reference applications.
		5 (old)	Chapter describing synchronous transmission of video stream removed.
		5	Description adapted (ffdshow is used now).
		5.1	Description improved; mbstream and video file added.
		5.1.2.2	Description revised, referring to a demo video file.
V3.4.X-2	2010-06-10	All	NSV2Example figures adapted according to the new GUI. New start of the NSV2Example introduced.
		5	Title renamed.
		5.1.2.2, 6.1.2.3	Sections merged (i.e., section 6.1.2.3 removed) and revised.
V3.4.X-1	2009-08-20	All	Examples adapted due to the new MOST NetServices Example.
		All	NIC related sections removed.
		1.2	New section: AN valid only for INIC related MOST PC Interfaces.
		5	New chapter added about isochronous transmission.
V3.2.X-1	2009-05-12	All	Examples adapted due to the new MOST NetServices Example.
		1.1	Content adapted.
		1.4	New section: Information Sources
		3.3	New section: Setting up a Gateway via MOST
V1.3.0-1	2008-03-10	All	MOST PCI Interface 150o added. Examples adapted accordingly.
V1.2.0-1	2007-10-24	All	MOST PCI Interface 25o NIC added. Examples adapted accordingly.
V1.0.X-2	2007-06-29	All	Document completely revised: Examples also adapted for MOST PCI Interface 25o NIC. Step by step instructions split in INIC and NIC specific steps.
		1.5	Title adapted.
		1.6	Section added.
V1.0.X-1	2006-12-13		First version

Table of Contents

1 Preface

1.1 Intended Use

This SMSC product is intended to be used for developing, testing, or analyzing MOST based multimedia products and systems by persons with experience in developing multimedia devices.

The operation of SMSC products is only admitted with original SMSC devices.

1.2 Validity

This application note is valid only for INIC based MOST PC Interfaces.

1.3 Scope of Delivery

This product is delivered with:

- MOST PC Interface
- Cables
- USB stick: MOST Tool Kit Software containing
    - o MOST Device Drivers
    - o MOST Tool Foundation
    - o User manuals

Check your shipment for completeness.
If you have any complaints direct them to sales-ais-europe@smsc.com (Europe and Asia) or to sales-ais-usa@smsc.com (America). Providing the delivery note number eases the handling.

1.4 Information Sources

1. MOST Tool Kit Application Examples (this document) [1]
   It offers a series of "recipes" to provide an understanding of some of the possibilities available when using a MOST PC Interface.
2. MOST Driver Utilities [2]
   It describes small utilities installed together with the MOST Driver stack:
   - MOST Control Panel
   - MOST Video Viewer
   - mbtest
3. MOST Tool Kit Installation Guide [3]
   It covers:
   - a software overview for INIC based MOST PC Interfaces
   - the installation of the MOST PC Interfaces
   - the installation of the drivers
   - the installation of the MOST Tool Foundation
   - the removal of the software installations

1.5 Terms

Within this manual, the following terms are used for improving readability:

Terms	Description
CD	Compact Disc
DTCP	Digital Transmission Content Protection
ePHY	electrical Physical Layer
FPGA	Field Programmable Gate Array
FW	Firmware
GraphEdit	GraphEdit is a visual tool for building and testing filter graphs.
HW	Hardware
INIC	Intelligent Network Interface Controller
INIC based MOST PC Interfaces	• MOST PCI Interface 150o • MOST PCI Interface 50e • MOST PCI Interface 25o
MediaLB	Media Local Bus
MOST	Media Oriented Systems Transport
MOST NDIS adapter / driver	Driver for network device on a MOST PC Interface
oPHY	optical Physical Layer
OptoLyzer OL3XXX	This is the hardware of the OptoLyzer G2 3XXX (e.g., an OptoLyzer OL3025o, an OptoLyzer OL3050e, or an OptoLyzer OL3150o).
OS	Operating System
PC	Personal Computer
PCI	Peripheral Component Interconnect
PS	Program streaming
Quadlet	4 byte-wide units on the MOST Frame
Schwan.ts, SchwanHD1.ts, SchwanHD2.ts, smsc_demo.mpg	Special video streams. They can be found on the MOST Tool Foundation CD. Click "Browse CD", and then browse to the folder Data/Add_ons/Demo Files.
SW	Software
TS	Transport streaming

Table 1-1: Terms

2 Introduction

This application note offers a series of "recipes" to provide an understanding of some of the possibilities available when using a MOST PC Interface. A MOST PC Interface refers to either a MOST PCI Interface 25o, a MOST PCI Interface 50e or a MOST PCI Interface 150o. Each of them can be used in the examples provided in this documentation.

The MOST PC Interface is addressed to different kinds of users:

1. Users who run only their applications (network functionality, sound and video) using the MOST PC Interface. Several examples demonstrate by using the MOST Interface Control how the MOST PC Interface can be used.

2. MOST NetServices developers interested in using the MOST NetServices V2.x Basic Example as a reference for their own MOST NetServices application development have to contact the technical support to get the sources and for specific licenses. Addresses can be found on page 2.

The application note provides typical examples for:

- The MOST PC Interface as a Network Card (chapter 3) – This section contains examples that show how to use the MOST Interface Control to build network connections on separate PCs.
- The MOST PC Interface as a Sound Card (chapter 4) – This section contains examples for streaming synchronous data to and from the MOST network using Winamp and Sound Recorder.
- The MOST PC Interface as a Video Card (Isochronous Transmission) (chapter 5) – This section shows an example how video files can be transferred and played over the MOST network using a MOST PC Interface.

Right now the recipes are described if a MOST PCI Interface 150o, MOST PCI Interface 50e, or a MOST PCI Interface 25o is used. All steps that are necessary are described for executing the recipes. In addition, the sections provide information about which tools (both hardware and software) are necessary to execute an example (i.e., a recipe). Some software that is used in the following examples can be downloaded from the Internet, found on the CD or purchased from the company that produces the suggested software.

3 The MOST PC Interface as a Network Card

The MOST PC Interface acts similar to a network card. Thus it can be used to network PCs. The PCs equipped with a MOST PC Interface can share folders, printers, files, Internet connection etc. The following section outlines some of the possibilities available for networking using the MOST PC Interface.

3.1 Folder Sharing

This section outlines how to use the MOST PC Interface as a network card in order to share folders of the operating system across the MOST network.

3.1.1 Requirements

1. 2 PCs running Windows 7 or Windows XP with administrator rights, and a MOST PC Interface installed on each PC.
2. MOST Driver Stack is installed.
3. The MOST PC Interfaces have to be switched to static IP address as described in the user manual "MOST Tool Kit Installation Guide".
4. INIC based MOST PC Interface (see page 8):

   Installation of MOST Tool Foundation inclusive the MOST Interface Control delivered on an USB stick.

   > **Notice**   If the MOST Interface Control connected to a MOST PC Interface starts the MOST network for the first time, the OS installs the MOST NDIS Adapter. For the installation of the MOST NDIS Driver switch to the *MOST Tool Kit Installation Guide [3]*.

5. The Windows firewall has to be switched off for this example. Therefore start Control Panel, double-click Windows Firewall and select "Off".
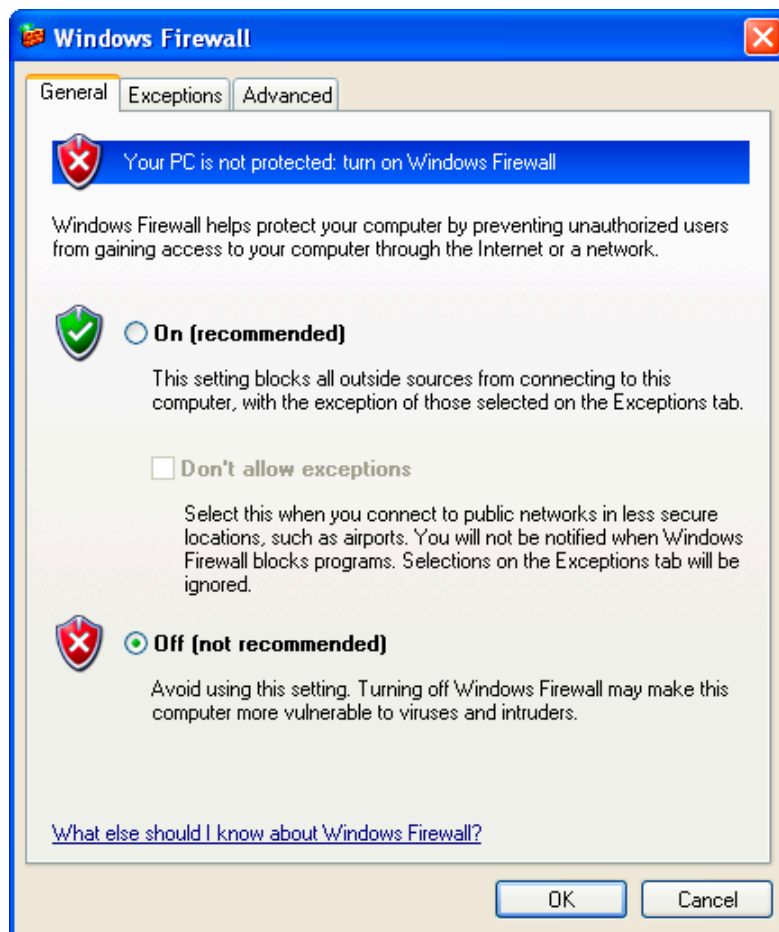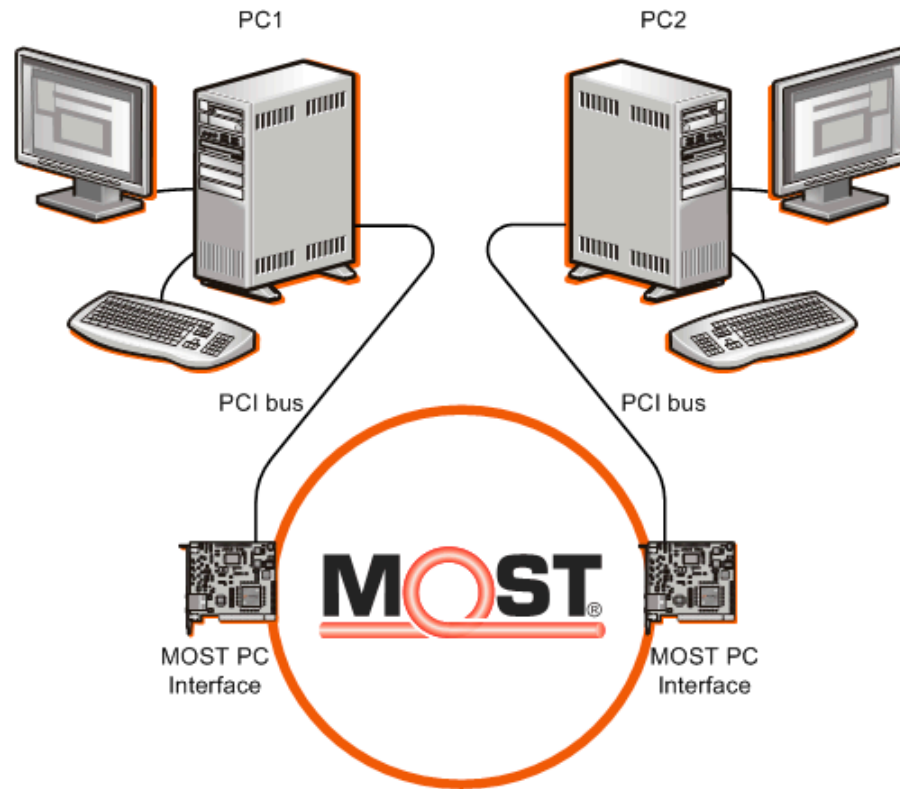
Figure 3-1: Firewall Switched Off

3.1.2 Step by Step Instructions

1. Hook up the MOST network as follows:

Figure 3-2: MOST Network Setup - Share Folder

2. On the PCs, make sure to log on to an account with administrator privileges.

3. On both PCs: Start the MOST Interface Control. Click "Start | Programs | SMSC | MOST Tool Foundation | MICtrl".[1]

4. Ensure all MOST nodes in the MOST system have a unique node address. On both PCs switch to the Node tab and set e.g., on PC1 node address 0x0100 and e.g., on PC2 node address 0x0101.

5. PC1: Switch back to the Mode tab and select "Master". The MOST network should have light and lock. The status bar shows the status of the connection, the network state and the lock state. When switching back to the Node tab the MOST Interface Control shows the current values of the Node Address, the Group Address, the Node Position Address and the Boundary.

6. Verify the modifications are valid. Open a Command Prompt window on each PC (PC1 and PC2 as shown in Figure 3-2 on page 12). Determine the IP address of each MOST PC Interface by typing "ipconfig /all" at the command prompt and press the "Enter" key. Afterwards a list of the current interfaces is displayed.

   Find the entry for e.g., "Network Device on MOST PC Interface[2]" (Windows XP) and locate the "IP Address" entry. The values for IP address and Subnet Mask have to match the values entered during the installation of the MOST NDIS driver (described in the user manual "MOST Tool Kit Installation Guide"). The "Physical Address" has to show the node address that has been changed in the Node tab of the MOST Interface Control.

   If there are other entries, disable them prior to continuing (see Windows XP help files for instructions on disabling Network adapters).

---

[1] If the MOST Interface Control cannot be started refer to chapter 6 on page 32.
[2] MOST PC Interface stands for the assembled interface.

```
Windows IP Configuration

        Host Name . . . . . . . . . . . . : PC1
        Primary Dns Suffix  . . . . . . . :
        Node Type . . . . . . . . . . . . : Hybrid
        IP Routing Enabled. . . . . . . . : No
        WINS Proxy Enabled. . . . . . . . : No
        DNS Suffix Search List. . . . . . :


Ethernet adapter MOST  system:

        Connection-specific DNS Suffix  . :
        Description . . . . . . . . . . . : Network Device on MOST PCI Interface 150o (OP3400)
        Physical Address. . . . . . . . . : 00-00-00-00-01-00
        Dhcp Enabled. . . . . . . . . . . : No
        IP Address. . . . . . . . . . . . : 192.168.1.1
        Subnet Mask . . . . . . . . . . . : 255.255.255.0
        Default Gateway . . . . . . . . . :
```

Figure 3-3: Ipconfig Command for PC1, Showing 192.168.1.1 for IP Address

```
Windows IP Configuration

        Host Name . . . . . . . . . . . . : PC2
        Primary Dns Suffix  . . . . . . . :
        Node Type . . . . . . . . . . . . : Hybrid
        IP Routing Enabled. . . . . . . . : No
        WINS Proxy Enabled. . . . . . . . : No
        DNS Suffix Search List. . . . . . :


Ethernet adapter MOST system:

        Connection-specific DNS Suffix  . :
        Description . . . . . . . . . . . : Network Device on MOST PCI Interface 150o (OP3400)
        Physical Address. . . . . . . . . : 00-00-00-00-01-01
        Dhcp Enabled. . . . . . . . . . . : No
        IP Address. . . . . . . . . . . . : 192.168.1.2
        Subnet Mask . . . . . . . . . . . : 255.255.255.0
        Default Gateway . . . . . . . . . :
```

Figure 3-4: Ipconfig Command for PC2, Showing 192.168.1.2 for IP Address

7. Now use the ping command to assure that each PC can reach the other.

```
C:\>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

Reply from 192.168.1.1: bytes=32 time<1ms TTL=128
Reply from 192.168.1.1: bytes=32 time<1ms TTL=128
Reply from 192.168.1.1: bytes=32 time<1ms TTL=128
Reply from 192.168.1.1: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>_
```

Figure 3-5: Send Ping from PC2 to PC1

```
C:\>ping 192.168.1.2

Pinging 192.168.1.2 with 32 bytes of data:

Reply from 192.168.1.2: bytes=32 time<1ms TTL=128
Reply from 192.168.1.2: bytes=32 time<1ms TTL=128
Reply from 192.168.1.2: bytes=32 time<1ms TTL=128
Reply from 192.168.1.2: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

Figure 3-6: Send Ping from PC1 to PC2

8. Open the Windows Explorer on PC1 and create a new folder that will be shared with PC2. Name the new folder as desired. Create a file (e.g., a text file).

9. Right-click on the newly created folder and choose "Sharing and Security…" from the menu.
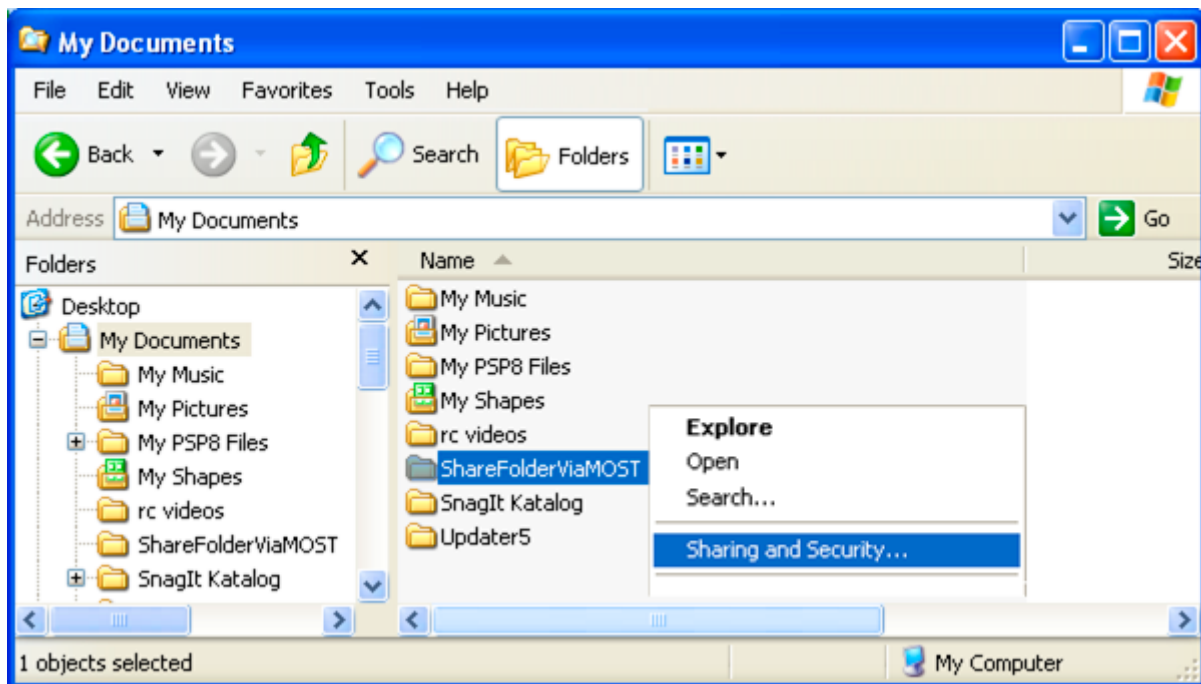

Figure 3-7: Right Click Menu for the New Folder Named ShareFolderViaMOST

10. The following dialog window will be presented:
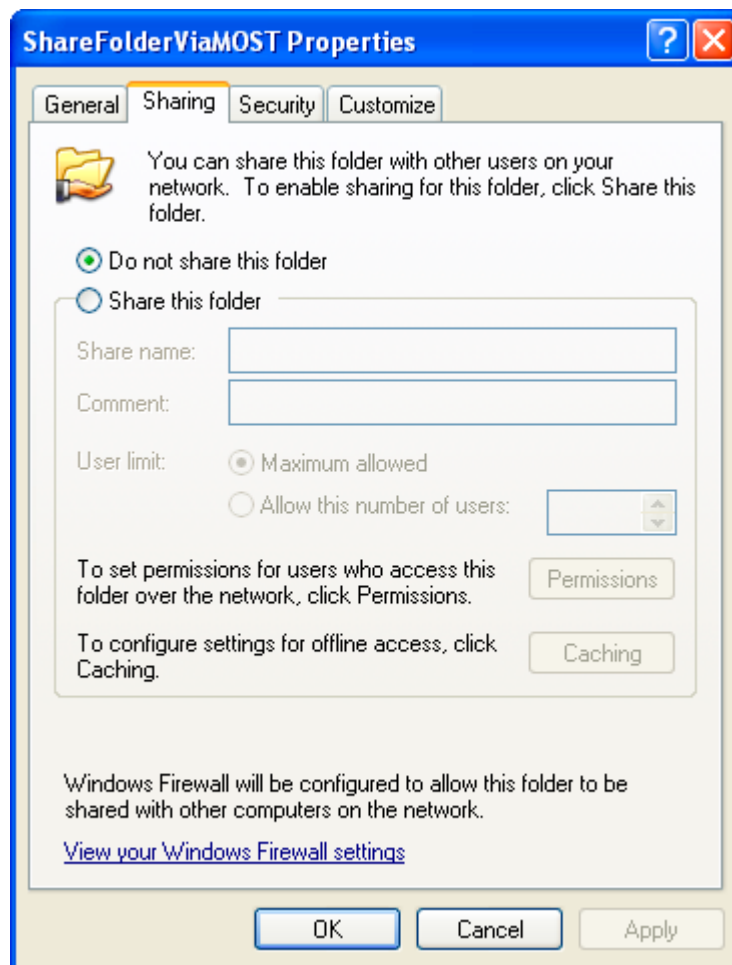
Figure 3-8: ShareFolderViaMOST Properties Dialog Box

11. Click on the "Share this folder" radio button and enter a name (e.g., ShareFolderViaMOST).
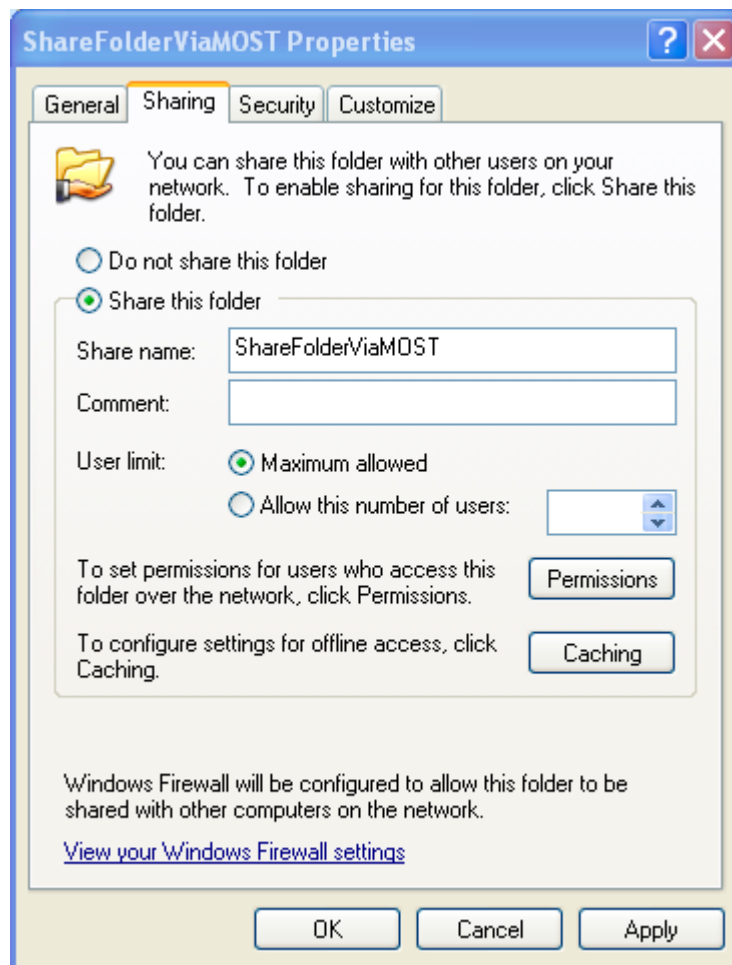
Figure 3-9: Share Folder via MOST Properties Dialog Box 2

12. Click Permissions. A new window opens.
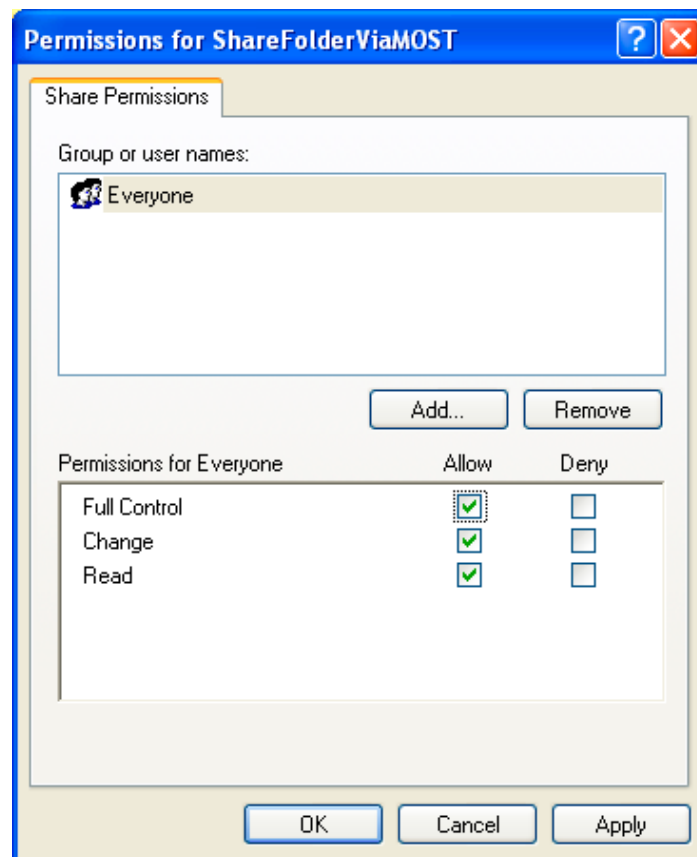
Figure 3-10: Set Permissions

13. Select "Everyone" and then select "Full Control: Allow". Afterwards click OK. Now it is possible to read or to change data on the shared folder from another PC.

14. On PC2 open the Windows Explorer. Enter the IP of PC1 in the address e.g., \\192.168.1.1. If a password is requested, type in the local administrator log in and password for that PC1 (as stated in the "Requirements" section, access to the administrator account is necessary).
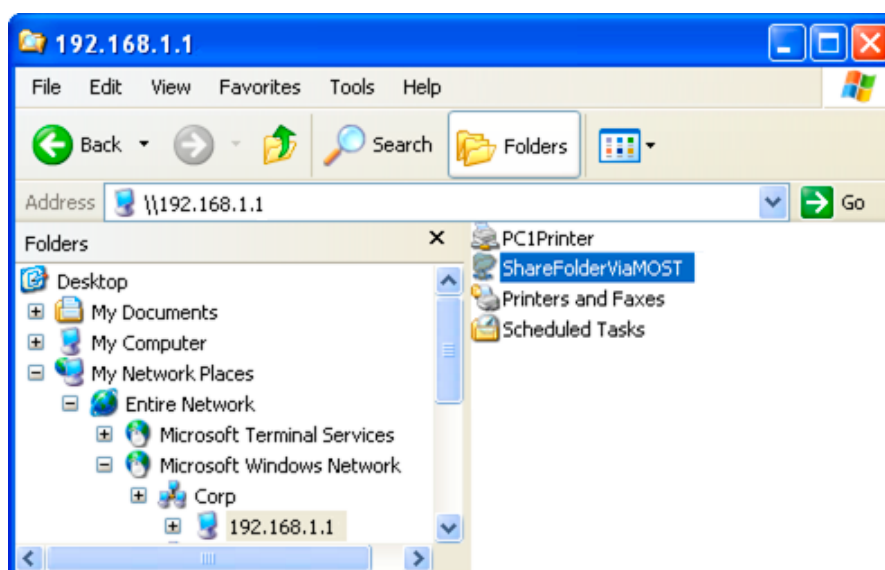
Figure 3-11: Shared Folder on PC2

15. Double-click the folder "ShareFolderViaMOST".
16. The file (e.g., the test file) created on PC1 should be available on PC2.
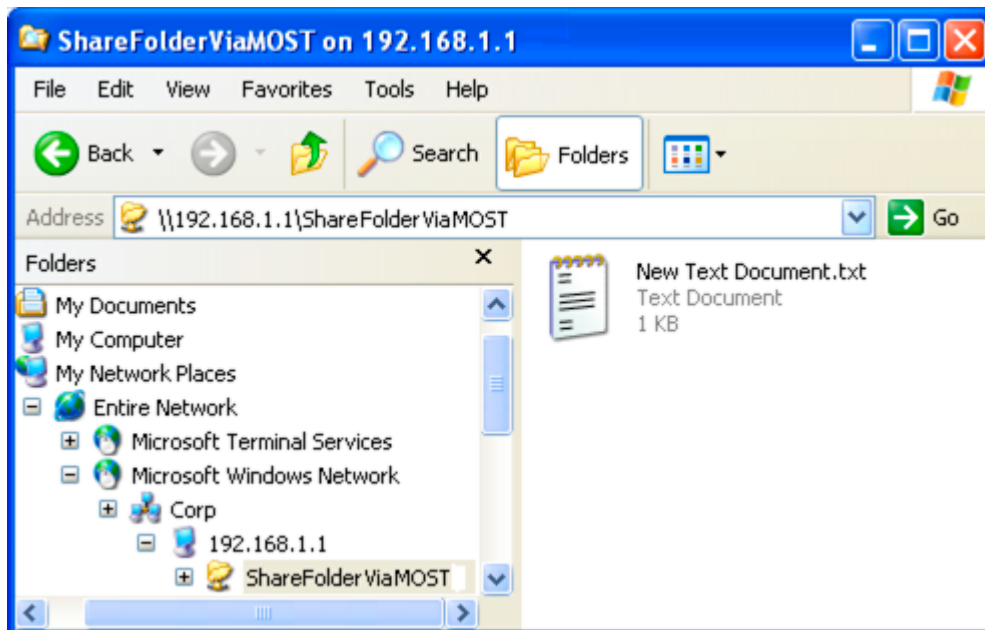
Figure 3-12: Shared Folder on PC2 - File

3.2 Sharing Printers

This section outlines how to share a printer inside the Windows operating system with another PC connected to the MOST network using the MOST PC Interface as a network card.

3.2.1 Requirements

1. 2 PCs running Windows 7 or Windows XP with administrator rights, and a MOST PC Interface installed on each PC.
2. MOST Driver Stack is installed.
3. The MOST PC Interfaces have to be switched to static IP address as described in the user manual "MOST Tool Kit Installation Guide".
4. INIC based MOST PC Interface (see page 8):
   - Installation of MOST Tool Foundation inclusive the MOST Interface Control delivered on an USB stick.

   Notice   If the MOST Interface Control connected to a MOST PC Interface starts the MOST network for the first time, the OS's hardware wizard detects the MOST NDIS Adapter. For the installation of the MOST NDIS Driver switch to the *MOST Tool Kit Installation Guide [3]*.

5. It is assumed all MOST nodes in the MOST system have a unique node address. Check it according to step 4 on page 13.

3.2.2 Step-by-Step Instructions

1. Hook up the MOST network as follows:
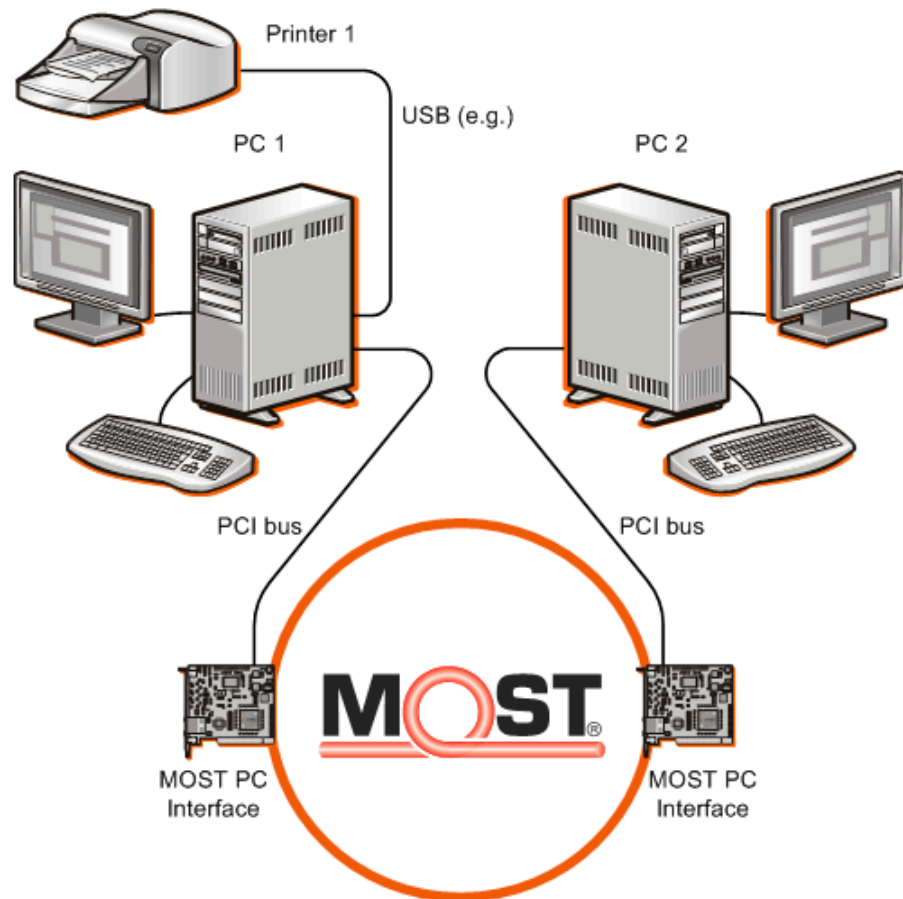
Figure 3-13: MOST Network Setup - Share Printer

2. On the PCs, make sure to log on to an account with administrator privileges.
3. On both PCs: Start the MOST Interface Control. Click "Start | Programs | SMSC | MOST Tool Foundation | MICtrl"[3].
4. PC1: Switch to the Mode tab if necessary and select "Master". The MOST network should have light and lock. The status bar shows the status of the connection, the network state and the lock.
5. Open a Command Prompt window on each PC (PC1 and PC2 as shown in Figure 3-13 on page 21). Determine the IP address of each MOST PC Interface by typing "ipconfig /all" at the command prompt and press the "Enter" key.

---

[3] If the MOST Interface Control cannot be started refer to chapter 6 on page 32.

6. Afterwards a list of the current interfaces is displayed. Find the entry for e.g., "Network Device on MOST PC Interface[4]" (Windows XP) and locate the "IP Address" entry. The values for IP address and Subnet Mask have to match the values entered during the installation of the MOST NDIS driver (described in the user manual "MOST Tool Kit Installation Guide"). If there are other entries, disable them prior to continuing (see Windows XP help files for instructions on disabling Network adapters).

```
Windows IP Configuration

        Host Name . . . . . . . . . . . . : PC1
        Primary Dns Suffix  . . . . . . . :
        Node Type . . . . . . . . . . . . : Hybrid
        IP Routing Enabled. . . . . . . . : No
        WINS Proxy Enabled. . . . . . . . : No
        DNS Suffix Search List. . . . . . :


Ethernet adapter MOST  system:

        Connection-specific DNS Suffix  . :
        Description . . . . . . . . . . . : Network Device on MOST PCI Interface 150o (OP3400)
        Physical Address. . . . . . . . . : 00-00-00-00-01-00
        Dhcp Enabled. . . . . . . . . . . : No
        IP Address. . . . . . . . . . . . : 192.168.1.1
        Subnet Mask . . . . . . . . . . . : 255.255.255.0
        Default Gateway . . . . . . . . . :
```

Figure 3-14: Ipconfig Command for PC1, Showing 192.168.1.1 for IP Address (e.g., for INIC)

```
Windows IP Configuration

        Host Name . . . . . . . . . . . . : PC2
        Primary Dns Suffix  . . . . . . . :
        Node Type . . . . . . . . . . . . : Hybrid
        IP Routing Enabled. . . . . . . . : No
        WINS Proxy Enabled. . . . . . . . : No
        DNS Suffix Search List. . . . . . :


Ethernet adapter MOST system:

        Connection-specific DNS Suffix  . :
        Description . . . . . . . . . . . : Network Device on MOST PCI Interface 150o (OP3400)
        Physical Address. . . . . . . . . : 00-00-00-00-01-01
        Dhcp Enabled. . . . . . . . . . . : No
        IP Address. . . . . . . . . . . . : 192.168.1.2
        Subnet Mask . . . . . . . . . . . : 255.255.255.0
        Default Gateway . . . . . . . . . :
```

Figure 3-15: Ipconfig Command for PC2, Showing 192.168.1.2 for IP Address (e.g., for INIC)

---

[4] MOST PC Interface stands for the assembled interface.

7. Now use the ping command to assure that each PC can reach the other.

```
C:\>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

Reply from 192.168.1.1: bytes=32 time<1ms TTL=128
Reply from 192.168.1.1: bytes=32 time<1ms TTL=128
Reply from 192.168.1.1: bytes=32 time<1ms TTL=128
Reply from 192.168.1.1: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>_
```

Figure 3-16: Send Ping from PC2 to PC1

```
C:\>ping 192.168.1.2

Pinging 192.168.1.2 with 32 bytes of data:

Reply from 192.168.1.2: bytes=32 time<1ms TTL=128
Reply from 192.168.1.2: bytes=32 time<1ms TTL=128
Reply from 192.168.1.2: bytes=32 time<1ms TTL=128
Reply from 192.168.1.2: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

Figure 3-17: Send Ping from PC1 to PC2

8. Connect a printer to PC1, and load the appropriate drivers. Once the printer is fully installed, rename it e.g., to "Printer on PC1". Then go to the "Start" menu and click on "Settings" followed by "Printers and Faxes" (if the "Printers and Faxes" window is not already available).
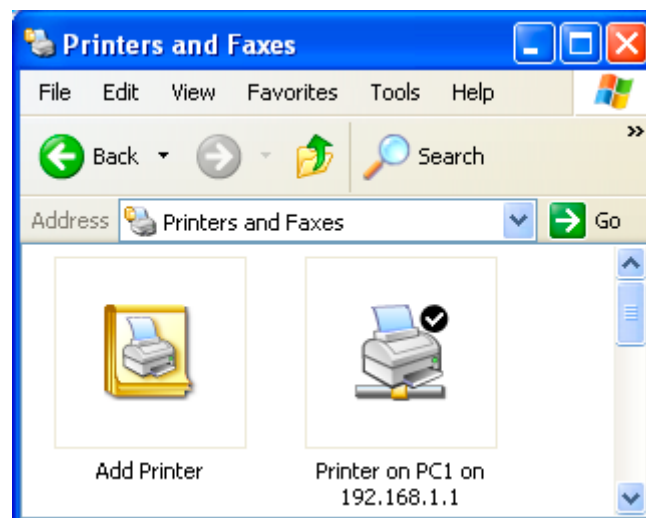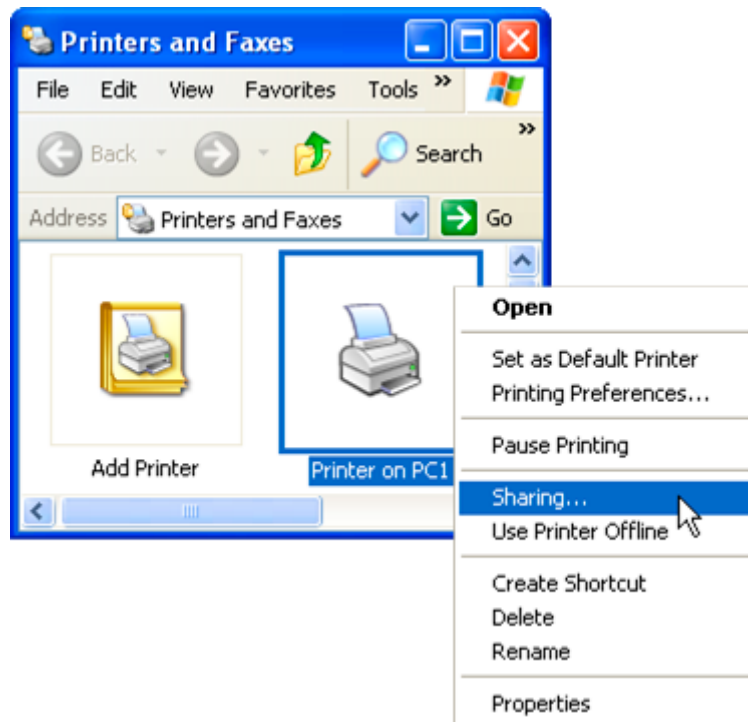
Figure 3-18: Printers Window Displaying Newly Installed Printer

9. Right-click on the printer that was just installed and select "Sharing…".

Figure 3-19: Right Click Menu for Installed Printer

10. Click on the "Share this printer" radio button. Type in a name (e.g., PC1Printer), or leave the suggested sharing name. Select "List in the directory".
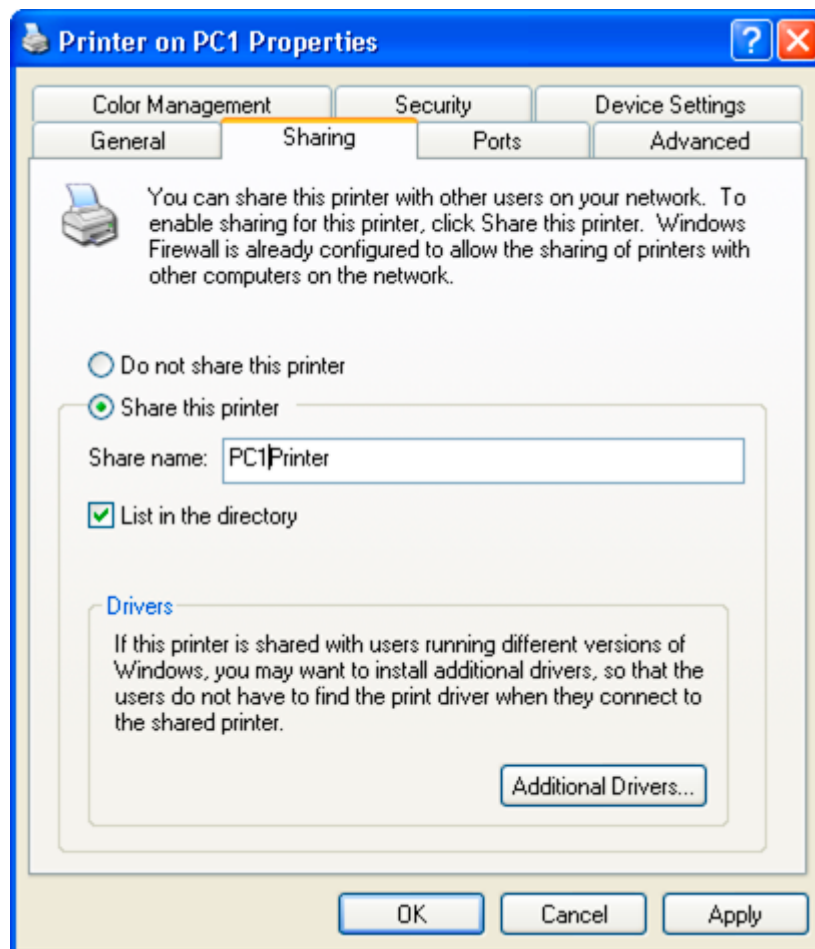
Figure 3-20: Sharing Properties for "Printer on PC1"

11. If PC1 is running on a different operating system from that of PC2, use the "Additional Drivers" button (shown in Figure 3-20) to install the necessary additional driver. By default the operating system Windows XP is supported immediately.

12. Click OK to finish sharing the printer. This printer is now available to any other PC on the MOST network.

13. To establish a connection among PC1 and PC2 open the Windows Explorer on PC2. Enter the IP of PC1 in the address e.g., \\192.168.1.1. If a password is requested, type in the local administrator login and password for that PC1.

14. On PC2, open the Control Panel, and then double-click "Printers and Faxes".
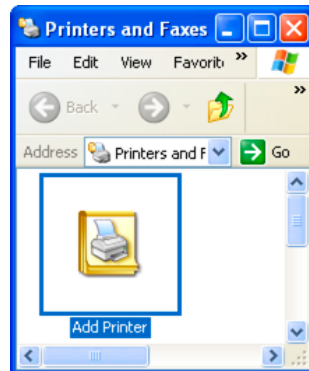

Figure 3-21: Printers Window

15. Double-click on the "Add Printer" icon.
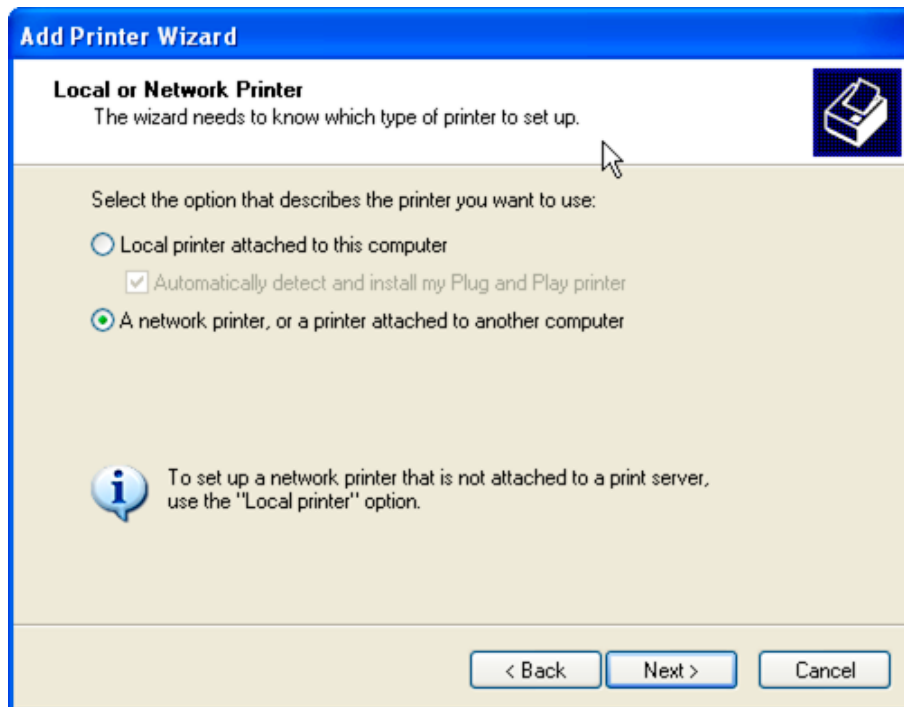
Figure 3-22: Add Printer Wizard Window 1

16. Select "A network printer, or a printer attached to another computer" and click Next.
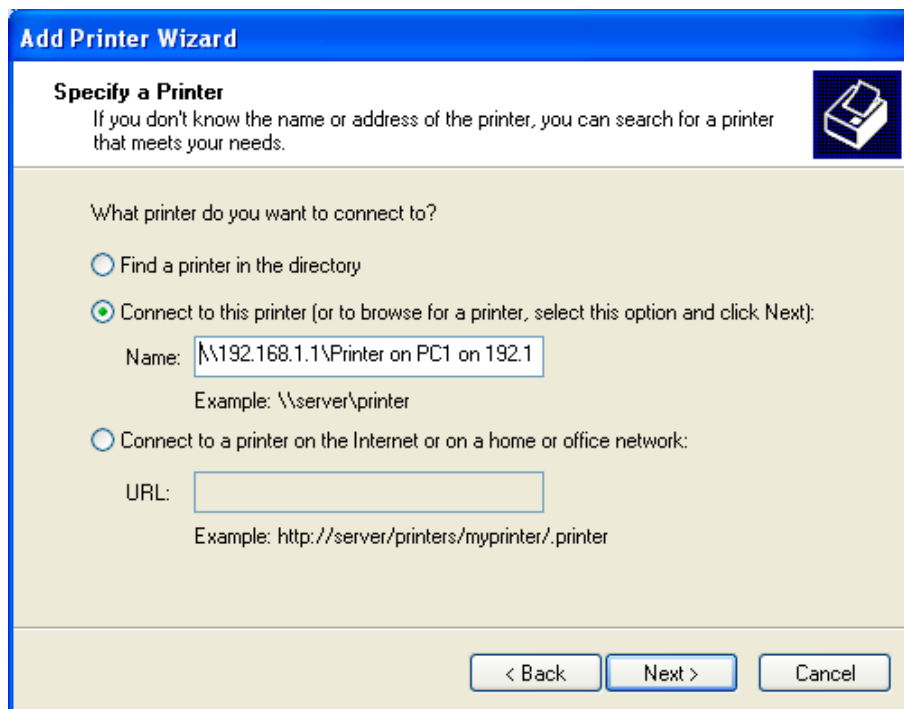
Figure 3-23: Add Printer Wizard Window

17. Select "Connect to this printer…" and enter the server and printer name separated by a back slash e.g., \\192.168.1.1\Printer on PC1 on 192.168.1.1 and click Next.

18. Specify in the next window whether the printer shall be the default printer or not and click Next.

Figure 3-24: Add Printers Wizard, Final Step

19. Click Finish.

Figure 3-25: Printers Window Showing the PC1 Printer

20. The printer is now available and ready for printing through the MOST network from any application.

3.3 Setting up a Gateway via MOST

This section specifies how to set up a PC as a gateway and how the PC's Internet connection is used from another PC connected via MOST PC Interfaces acting as network cards.
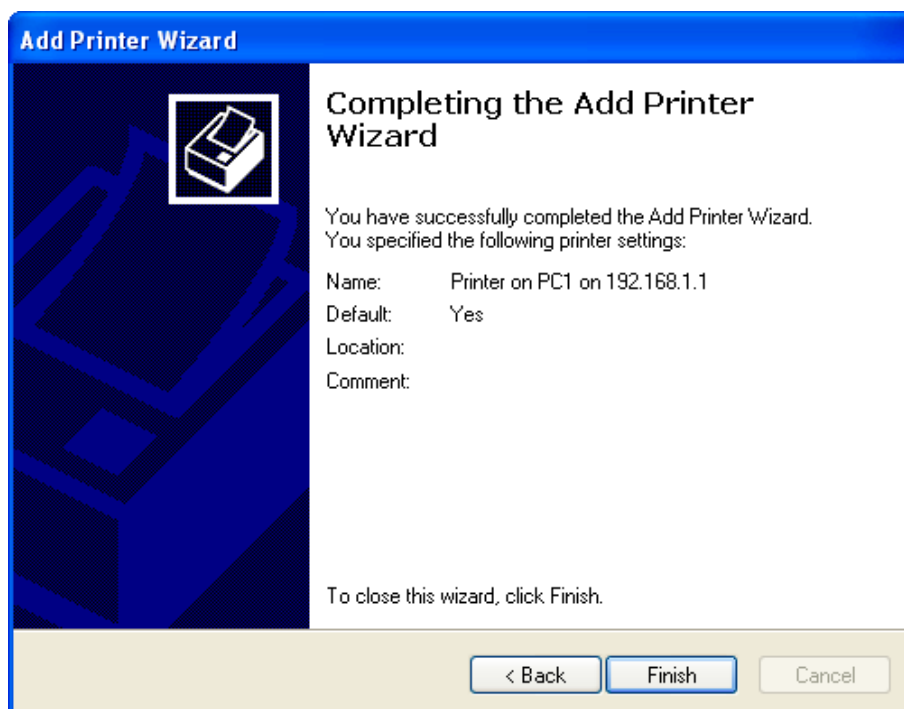
3.3.1 Requirements

1. 2 PCs running Windows 7 or Windows XP with administrator rights, and a MOST PC Interface installed on each PC.
2. MOST Driver Stack is installed.
3. The MOST PC Interfaces have to be switched to static IP address as described in the user manual "MOST Tool Kit Installation Guide".
4. INIC based MOST PC Interface (see page 8):

   Installation of MOST Tool Foundation inclusive the MOST Interface Control delivered on an USB stick.

   Notice   If the MOST Interface Control connected to a MOST PC Interface starts the MOST network for the first time, the OS's hardware wizard detects the MOST NDIS Adapter. For the installation of the MOST NDIS Driver switch to the *MOST Tool Kit Installation Guide [3]*.

5. It is assumed all MOST nodes in the MOST system have a unique node address. Check it according to step 4 on page 13.

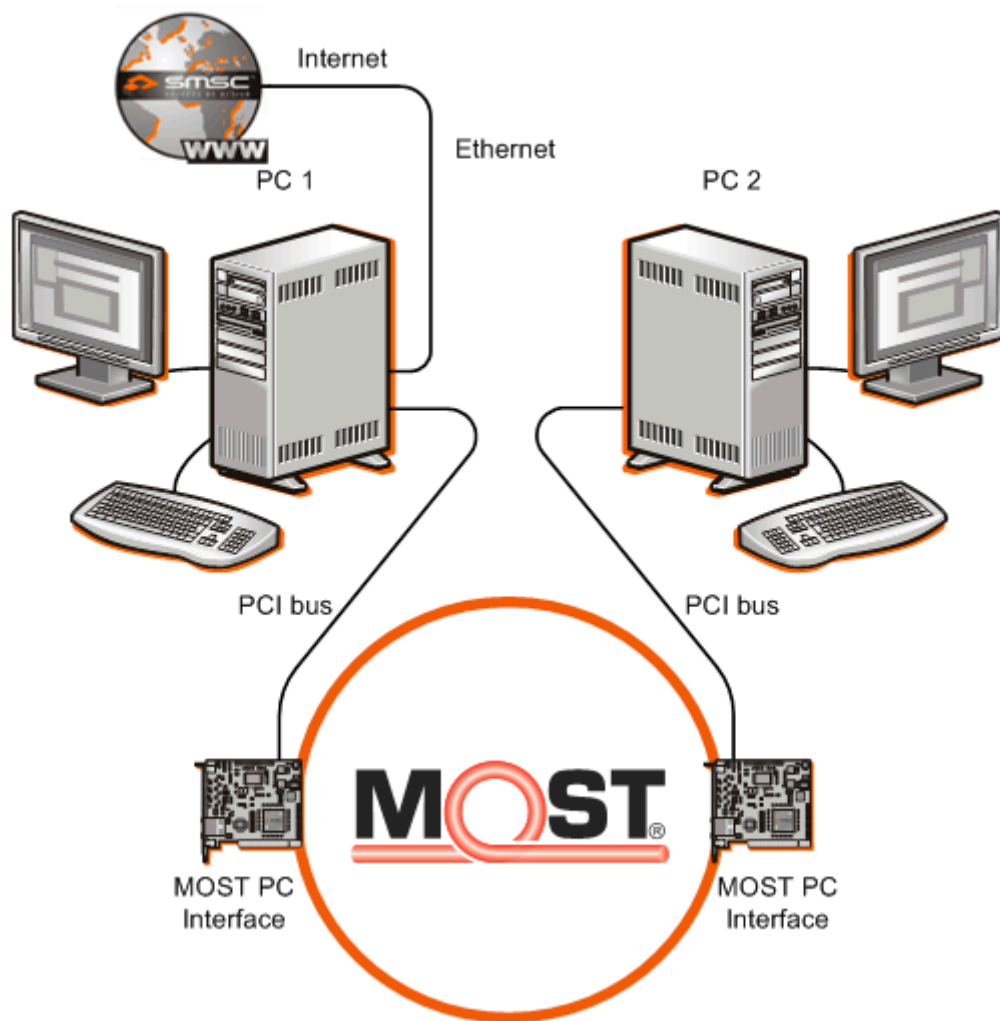## 3.3.2 Step-by-Step Instructions

1. Hook up the MOST network as follows:

Figure 3-26: MOST Network Setup – Share Internet Connection

2. On the PCs, make sure to log on to an account with administrator privileges.
3. On both PCs: Start the MOST Interface Control. Click "Start | Programs | SMSC | MOST Tool Foundation | MICtrl"[5].
4. PC1: Switch to the Mode tab if necessary and select "Master". The MOST network should have light and lock. The status bar shows the status of the connection, the network state and the lock.
5. Open a Command Prompt window on each PC (PC1 and PC2 as shown in Figure 3-26 on page 30). Determine the IP address of each MOST PC Interface by typing "ipconfig /all" at the command prompt and press the "Enter" key.

---

[5] If the MOST Interface Control cannot be started refer to chapter 6 on page 32.

6. Afterwards a list of the current interfaces is displayed. Find the entry for e.g., "Network Device on MOST PC Interface2[6]" (Windows XP) and locate the "IP Address" entry. The values for IP address and Subnet Mask have to match the values entered during the installation of the MOST NDIS driver (described in the user manual "MOST Tool Kit Installation Guide"). If there are other entries, disable them prior to continuing (see Windows XP help files for instructions on disabling Network adapters).

```
Windows IP Configuration

        Host Name . . . . . . . . . . . . : PC1
        Primary Dns Suffix  . . . . . . . :
        Node Type . . . . . . . . . . . . : Hybrid
        IP Routing Enabled. . . . . . . . : No
        WINS Proxy Enabled. . . . . . . . : No
        DNS Suffix Search List. . . . . . :


Ethernet adapter MOST  system:

        Connection-specific DNS Suffix  . :
        Description . . . . . . . . . . . : Network Device on MOST PCI Interface 150o (OP3400)
        Physical Address. . . . . . . . . : 00-00-00-00-01-00
        Dhcp Enabled. . . . . . . . . . . : No
        IP Address. . . . . . . . . . . . : 192.168.1.1
        Subnet Mask . . . . . . . . . . . : 255.255.255.0
        Default Gateway . . . . . . . . . :
```

Figure 3-27: Ipconfig Command for PC1, Showing 192.168.1.1 for IP Address (e.g., for INIC)

```
Windows IP Configuration

        Host Name . . . . . . . . . . . . : PC2
        Primary Dns Suffix  . . . . . . . :
        Node Type . . . . . . . . . . . . : Hybrid
        IP Routing Enabled. . . . . . . . : No
        WINS Proxy Enabled. . . . . . . . : No
        DNS Suffix Search List. . . . . . :


Ethernet adapter MOST system:

        Connection-specific DNS Suffix  . :
        Description . . . . . . . . . . . : Network Device on MOST PCI Interface 150o (OP3400)
        Physical Address. . . . . . . . . : 00-00-00-00-01-01
        Dhcp Enabled. . . . . . . . . . . : No
        IP Address. . . . . . . . . . . . : 192.168.1.2
        Subnet Mask . . . . . . . . . . . : 255.255.255.0
        Default Gateway . . . . . . . . . :
```

Figure 3-28: Ipconfig Command for PC2, Showing 192.168.1.2 for IP Address (e.g., for INIC)

---

[6] MOST PC Interface stands for the assembled interface.

7. Now use the ping command to assure that each PC can reach the other.

```
C:\>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

Reply from 192.168.1.1: bytes=32 time<1ms TTL=128
Reply from 192.168.1.1: bytes=32 time<1ms TTL=128
Reply from 192.168.1.1: bytes=32 time<1ms TTL=128
Reply from 192.168.1.1: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>_
```

Figure 3-29: Send Ping from PC2 to PC1

```
C:\>ping 192.168.1.2

Pinging 192.168.1.2 with 32 bytes of data:

Reply from 192.168.1.2: bytes=32 time<1ms TTL=128
Reply from 192.168.1.2: bytes=32 time<1ms TTL=128
Reply from 192.168.1.2: bytes=32 time<1ms TTL=128
Reply from 192.168.1.2: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

Figure 3-30: Send Ping from PC1 to PC2

8. In a next step the Ethernet connection of PC1 is shared i.e., a gateway is set up. Go to the Control Panel.

Notice   If the steps described below do not match due to differences to the corporate network (e.g., the input of the IP address), please ask the system administrator for help.

9. PC1: Double-click Network Connections.
10. PC1: Double-click the Ethernet connection.
11. PC1: Click Properties.
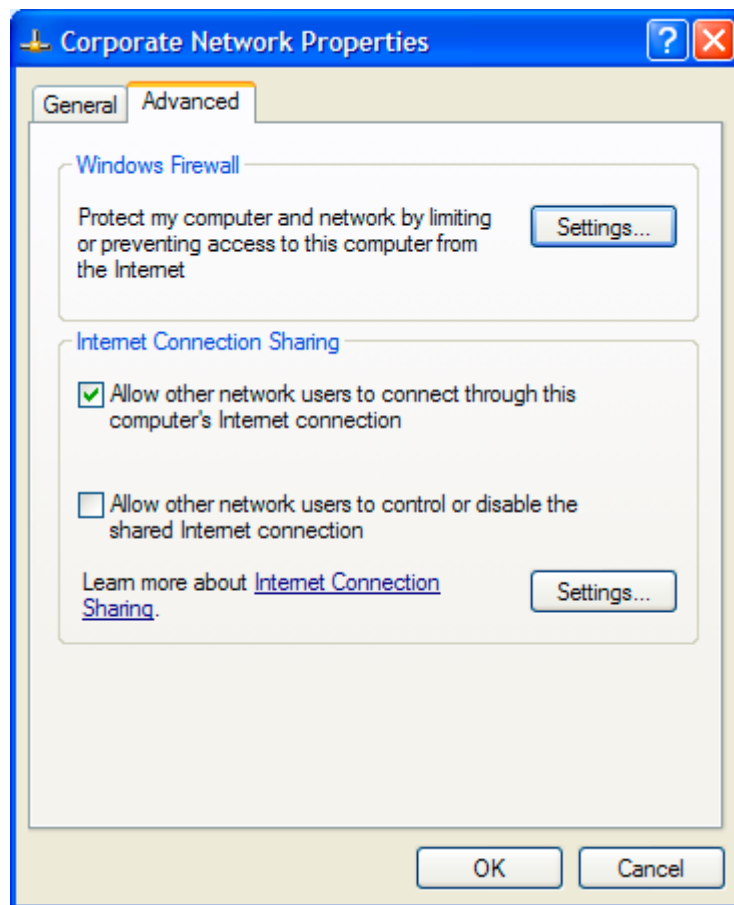12. PC1: Switch to the tab 'Advanced'.

Figure 3-31: Sharing Internet Connection

13. PC1: Select "Allow other network users to connect through this computer's Internet connection".

14. PC1: Click OK.

15. PC2: Go to the Control Panel.

16. PC2: Double-click Network Connections.

17. PC2: Double-click the MOST network connection having the device name "Network Device on MOST PC Interface" where MOST PC Interface stands for one of these interfaces:
    - MOST PCI Interface 25o
    - MOST PCI Interface 50e
    - MOST PCI Interface 150o

18. PC2: Click Properties.

19. PC2: Choose 'Internet Protocol (TCP/IP)' and click Properties.

20. PC2: Enter the MOST network IP address of PC1 in "Default gateway" (e.g., 192.168.1.1).

21. PC2: Select "Use the following DNS server addresses:".

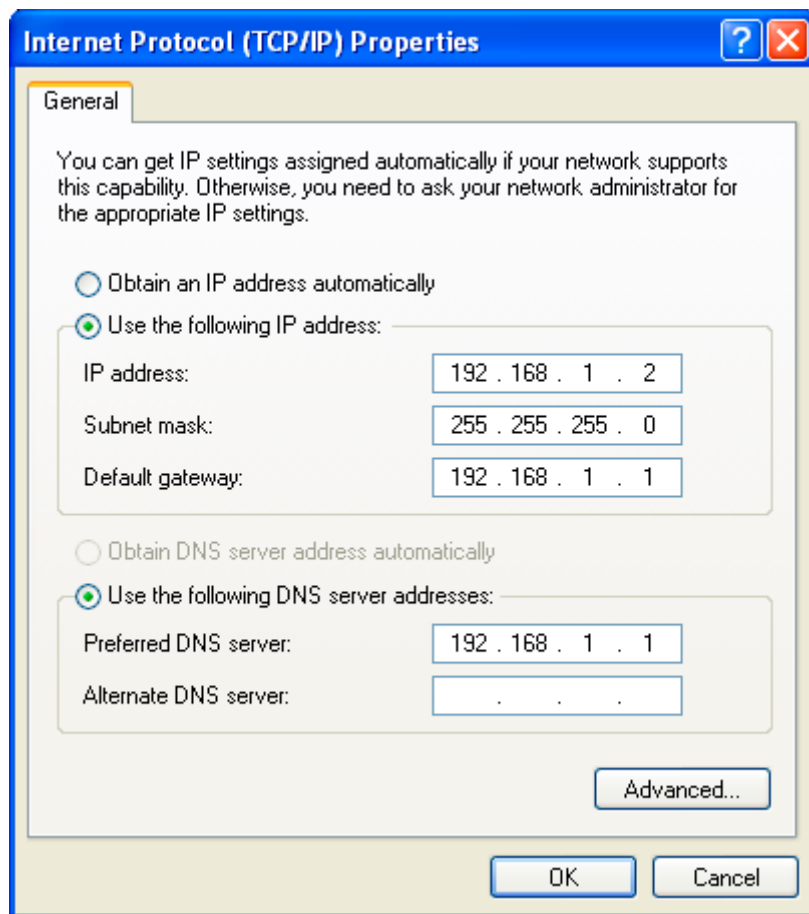22. PC2: Enter the MOST network IP address of PC1 in "Preferred DNS server" (e.g., 192.168.1.1).

Figure 3-32: Specifying DNS Server

23. Click OK.
24. Start the Internet Explorer on PC2 and test the gateway connection.

4 The MOST PC Interface as a Sound Card

This section describes how to stream synchronous data onto and off of the MOST network. The goal of this section is to show how a MOST PC Interface can have the same functionality as that of a sound card, or even multiple sound cards.

4.1 Playing Audio Using Winamp

The example in this section uses the following applications: MOST Interface Control and the software Winamp. It is part of the MOST Tool Foundation installation. It controls startup and shutdown of the MOST network and manages the channel allocation for INIC related MOST PC Interfaces. Winamp streams audio data to the MOST network using a MOST PC Interface. This software can be downloaded from the Internet at www.winamp.com.

4.1.1 Requirements

1. A PC running Windows 7 or Windows XP with administrator rights, and a MOST PC Interface installed on each PC.
2. MOST Driver Stack is installed.
3. INIC based MOST PC Interface (see page 8):
   - Installation of MOST Tool Foundation inclusive the MOST Interface Control delivered on an USB stick.

   Notice   If the MOST Interface Control connected to a MOST PC Interface starts the MOST network for the first time, the OS's hardware wizard detects the MOST NDIS Adapter. For the installation of the MOST NDIS Driver switch to the *MOST Tool Kit Installation Guide [3]*.

4. Winamp (used version in this application note: v5.5)
5. *Optional:* OptoLyzer OL3XXX. Use it (e.g.) to listen to the allocated quadlets.
6. *Optional:* Another PC running Windows 7 or Windows XP with administrator rights, and a MOST PC Interface installed with the current driver version.

4.1.2 Step-by Step Instructions
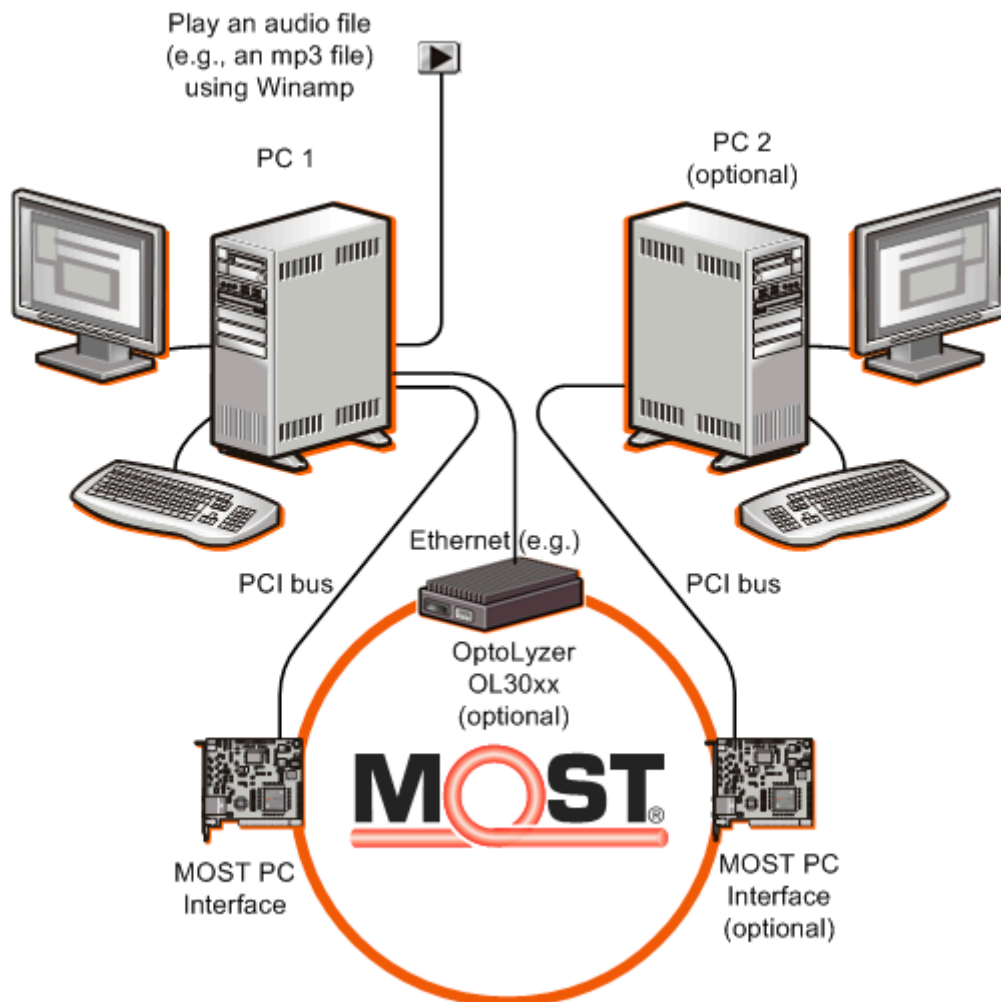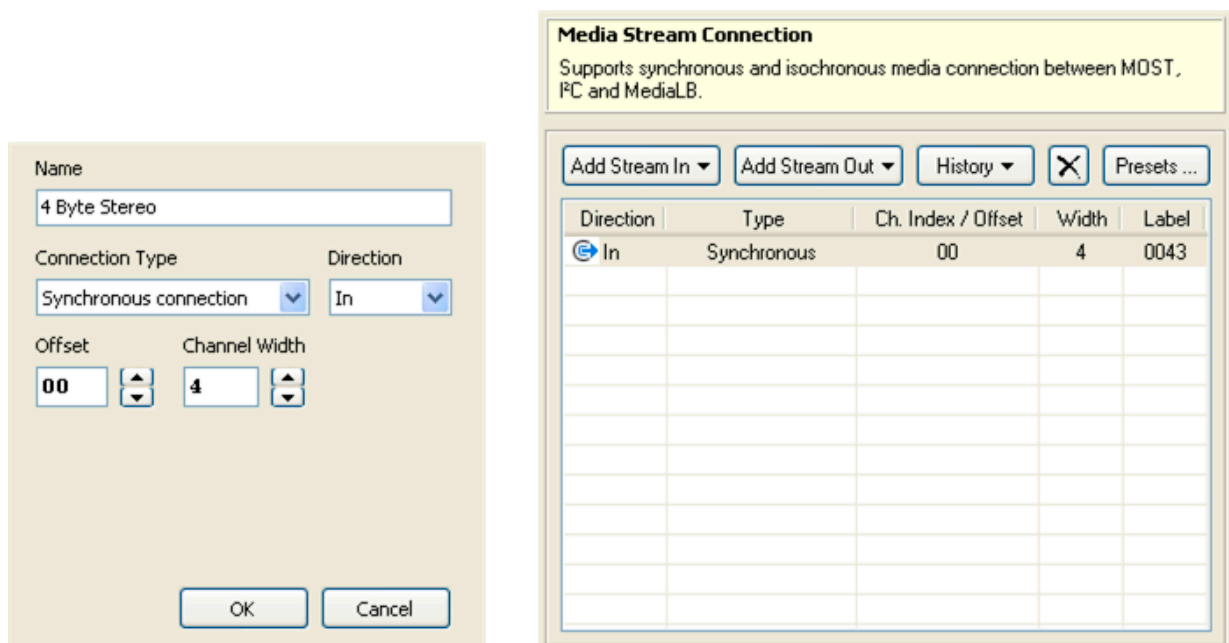
1. Hook up the MOST network as follows:

Figure 4-1: MOST Network Setup - Use Winamp

2. When logging on to PC1, be sure to log in as administrator on that particular machine.

3. On both PCs: Start the MOST Interface Control. Click "Start | Programs | SMSC | MOST Tool Foundation | MICtrl"[7].

4. PC1: Switch to the Mode tab if necessary and select "Master". The MOST network should have light and lock. The status bar shows the status of the connection, the network state and the lock.

5. PC1: Switch to the Media tab and click `Add Stream In` and select the preset '4 Byte Stereo'. In the 'Add Connect Stream Details' window insert a friendly name, set the connection type to 'Synchronous Connection', select direction 'In' and a channel width of '4'. The offset is adapted automatically. Click `OK`. Now the MOST PC Interface allocates a channel (a data quadlet assuming a bandwidth "4" is specified) on the MOST network and is ready for streaming data. The corresponding connection label is displayed, e.g., "Label: 0000" for a MOST25 system or a "Label: 0042" for a MOST50 system or "Label: 0043" for a MOST150 system (Figure 4-2). Sinks (e.g., Winamp in this example) can connect to this channel and process streamed data.

Figure 4-2: Settings in the MOST Interface Control

6. Start Winamp.

7. In the menu bar click "Options | Preferences" to open the "Preferences" window.

8. Choose "Output" in the left hand column, select the current version of "DirectSound output" in the "Output plug-ins" range and then click the `Configure`. (The selection of "waveOut output" is also supported).

---

[7] If the MOST Interface Control cannot be started refer to chapter 6 on page 32.
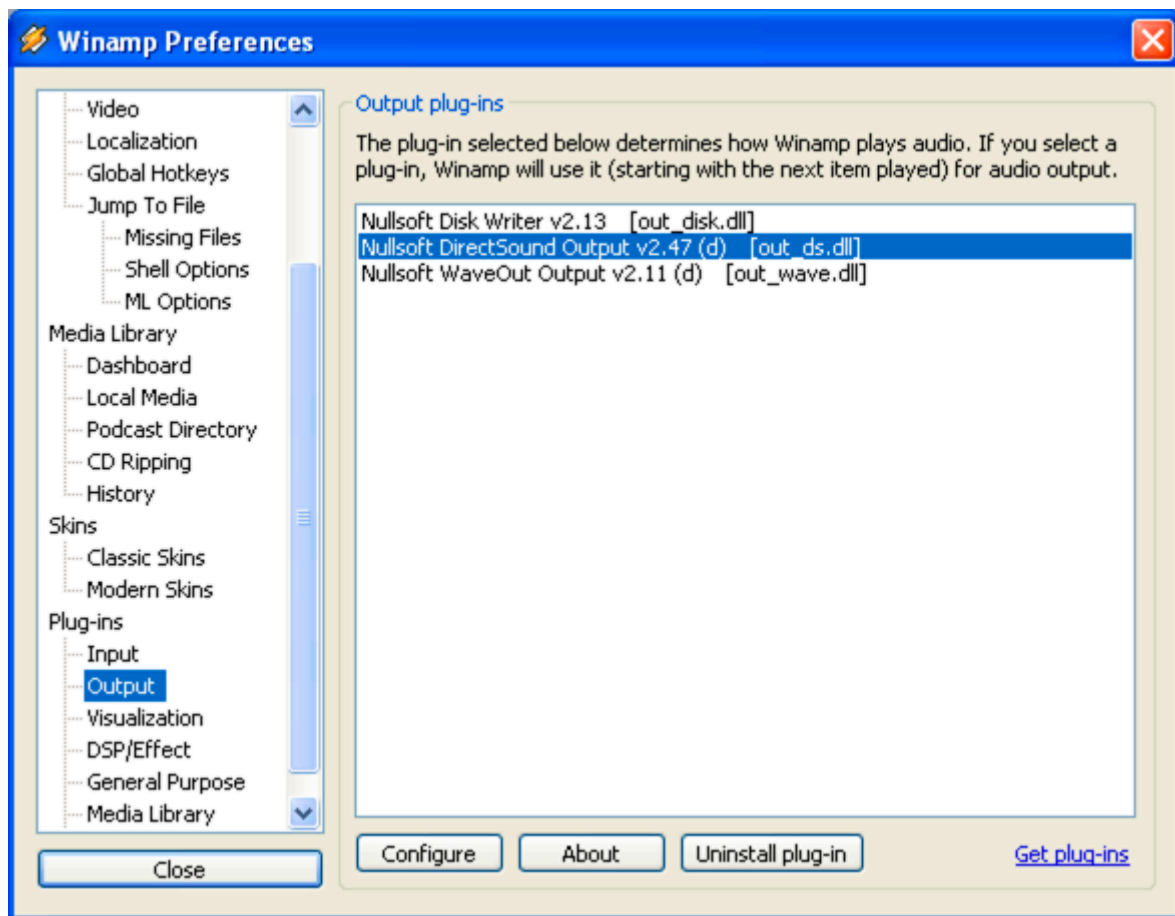
Figure 4-3: Winamp Output Preferences

9. Under Windows XP, click on the drop down button on the "Device" tab to display the available channels. They are labeled "MOST Audio Channel 0 (or MOST Render 0)", "MOST Audio Channel 1 (or MOST Render 1)", etc. Choose "MOST Audio Channel 0" (or MOST Render 0). In case you have assembled more than one MOST PCI Interface you can assign a friendly name to the channels. Therefor refer to the description of the MOST Control Panel in *MOST Driver Utilities [2]*.
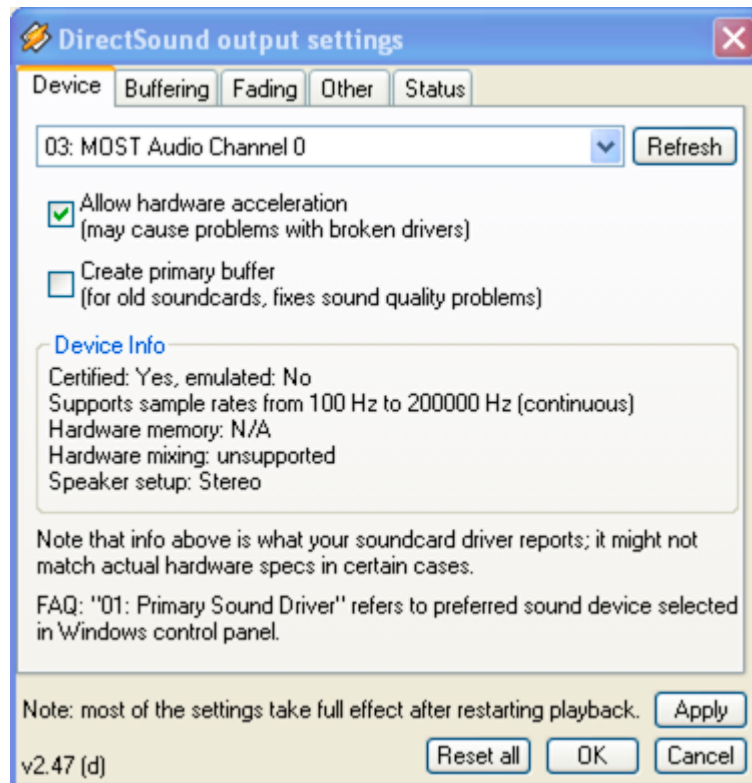
Figure 4-4: Winamp DirectSound Output Settings

10. Click OK, and click Close in the "Preferences" window to continue.
11. Winamp is now configured to output the played audio data onto the MOST network. Open any audio file in Winamp (to learn how to do this, utilize the Winamp help) and click the play button.
12. The audio is now being streamed to the MOST network.

The audio data on the MOST network can be listened e.g., using an OptoLyzer OL3XXX. If listening via the OptoLyzer OL3XXX is desired refer to OptoLyzer OL3XXX's user manual. Recording of transferred audio data is described in the next section.

4.2 Recording Audio Using Sound Recorder

In this example Winamp plays audio data on PC1 onto the MOST network, while a Sound Recorder started on PC2 records the data coming from the MOST network to a file.

4.2.1 Requirements

1. 2 PCs running Windows 7 or Windows XP with administrator rights, and a MOST PC Interface installed on each PC.
2. MOST Driver Stack is installed.
3. INIC based MOST PC Interface (see page 8):

    - Installation of MOST Tool Foundation inclusive the MOST Interface Control delivered on an USB stick.

    > **Notice**   If the MOST Interface Control connected to a MOST PC Interface starts the MOST network for the first time, the OS's hardware wizard detects the MOST NDIS Adapter. For the installation of the MOST NDIS Driver switch to the *MOST Tool Kit Installation Guide [3]*.

4. Winamp (this software can be downloaded from the Internet at www.winamp.com)
5. Sound Recorder has to be installed (normally found under 'Start | All Programs | Accessories').
6. It is assumed all MOST nodes in the MOST system have a unique node address. Check it according to step 4 on page 13.
7. It is assumed a consecutive allocation of channels is possible without any gap.

4.2.2 Step-by Step Instructions

1. Hook up the MOST network as follows:
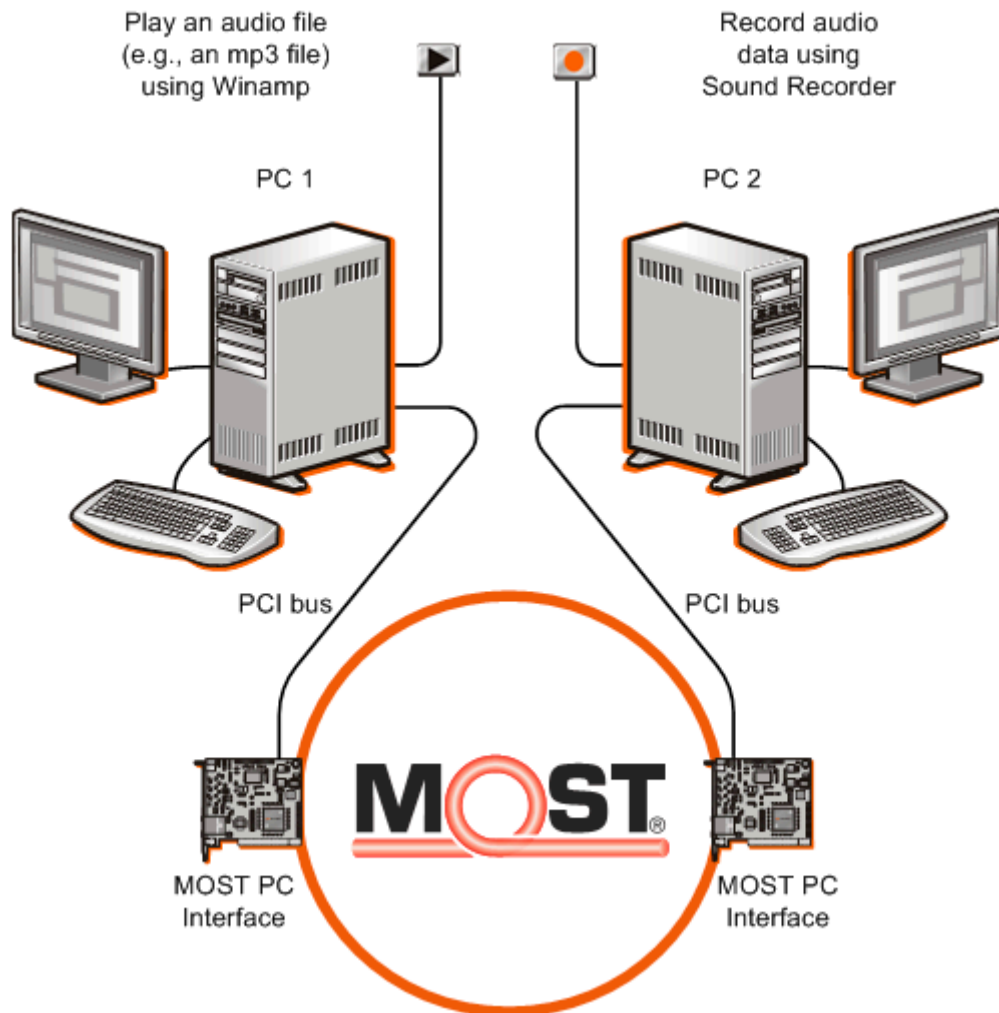
Figure 4-5: MOST Network Setup - Use Sound Recorder

2. On the PCs, make sure to log on to an account with administrator privileges.

3. On both PCs: Start the MOST Interface Control. Click "Start | Programs | SMSC | MOST Tool Foundation | MICtrl"[8].

4. PC1: Switch to the Mode tab if necessary and select "Master". The MOST network should have light and lock. The status bar shows the status of the connection, the network state and the lock.

5. PC1, PC2: Use the ping command to assure that each PC can reach the other according to step 7 in section 3.1.2 on page 12.
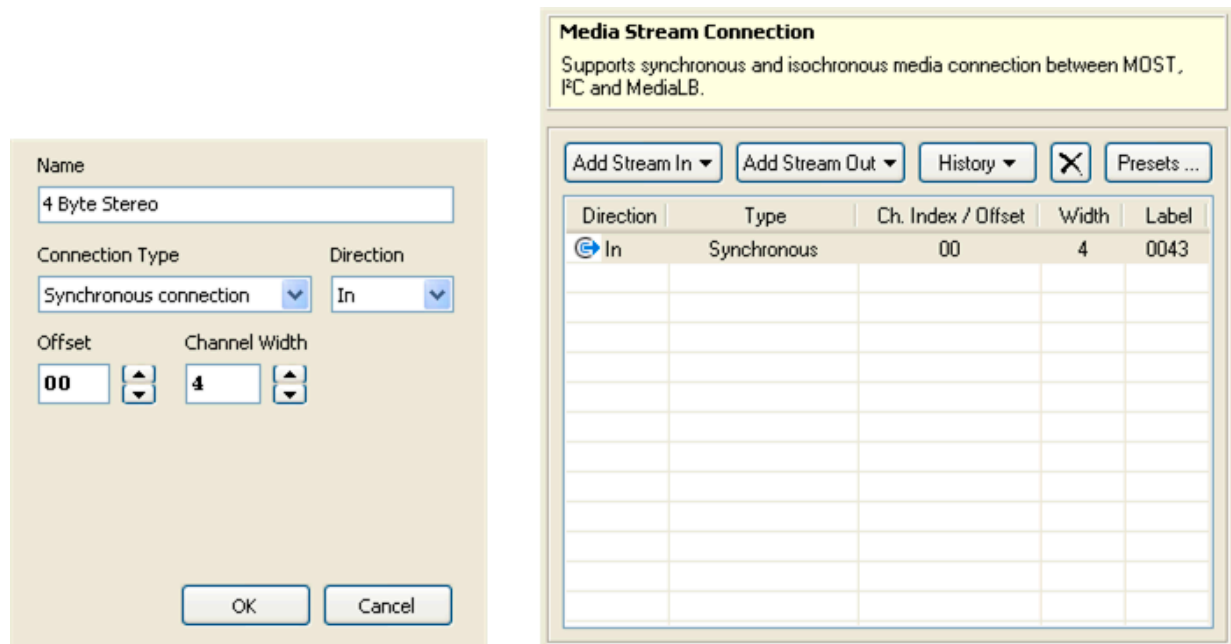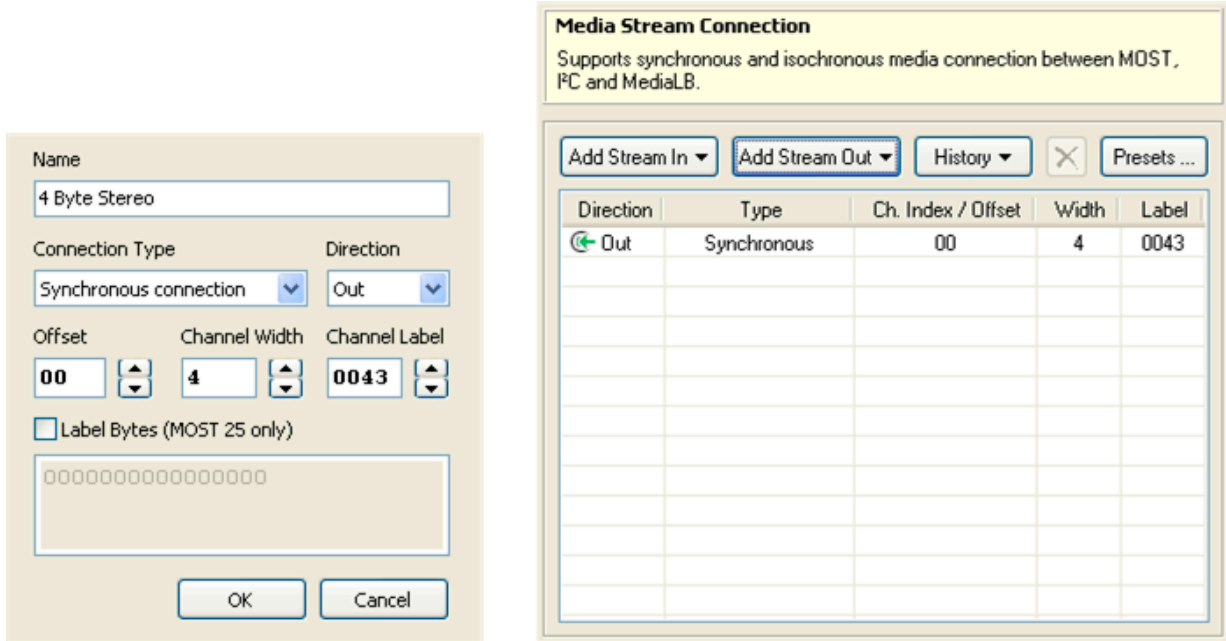

Figure 4-6: Settings in the MOST Interface Control (PC1)

6. PC1: Switch to the Media tab, click Add Stream In and select the preset '4 Byte Stereo'. In the 'Add Connect Stream Details' window insert a friendly name, set the connection type to 'Synchronous Connection', select direction 'In' and a channel width of '4'. The offset is adapted automatically. Click OK. Now the MOST PC Interface allocates a channel (a data quadlet assuming a bandwidth "4" is specified) on the MOST network and is ready for streaming data. The corresponding connection label is displayed, e.g., "Label: 0000" for a MOST25 system or a "Label: 0042" for a MOST50 system or "Label: 0043" for a MOST150 system (Figure 4-2). Sinks (e.g., Winamp in this example) can connect to this channel and process streamed data.

7. PC2: Start the MOST Interface Control. Switch to the Media tab, click Add Stream Out and select the preset '4 Byte Stereo'. In the 'Add Connect Stream Details' window insert a friendly name, set the connection type to 'Synchronous Connection', select direction 'Out' and a channel width of '4'. Add the Channel Label according to the source specified on PC1. The offset is adapted automatically. Only for a MOST25 network check 'Label Bytes' and enter them. Click OK.

---

[8] If the MOST Interface Control cannot be started refer to chapter 6 on page 32.

Figure 4-7: MOST Interface Control: Settings on PC2

8. Start Winamp on PC1.

9. In the menu bar click "Options | Preferences" to open the "Preferences" window.

10. Choose "Output" in the left hand column, select the current version of "DirectSound output" in the "Output plug-ins" range and then click Configure.
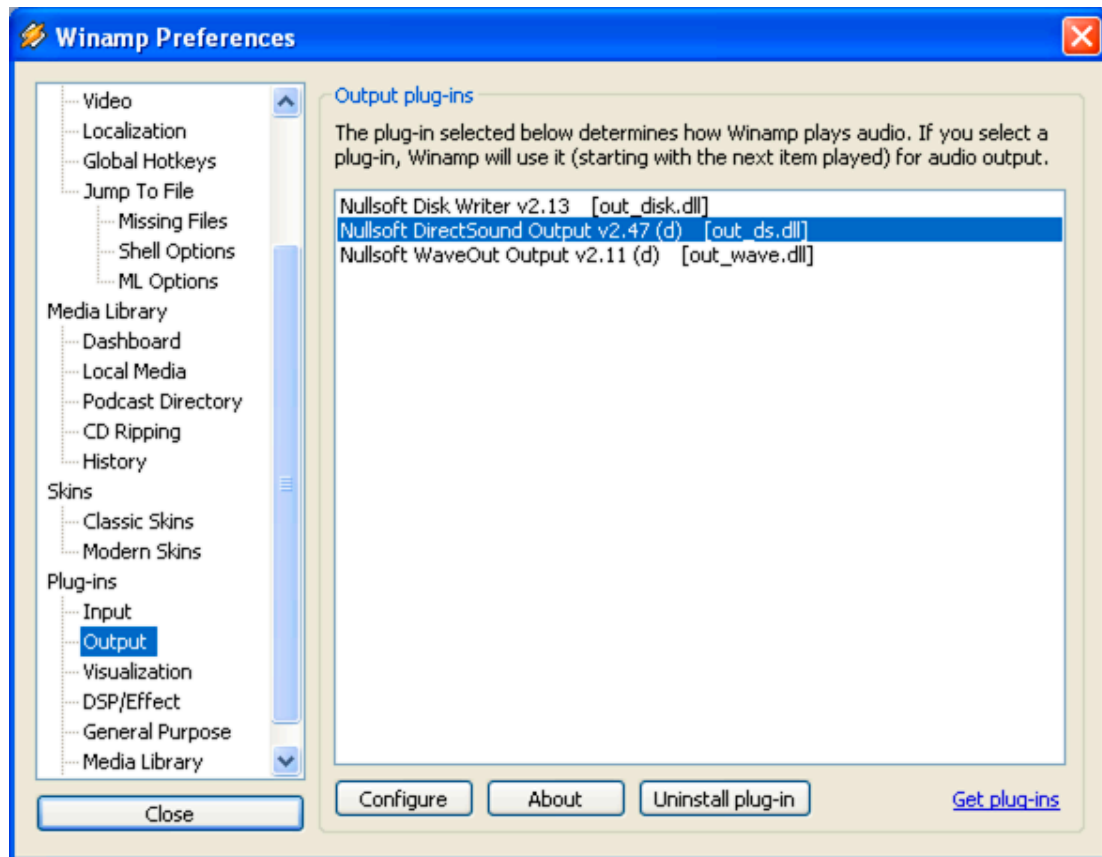
Figure 4-8: Winamp Output Preferences

11. Under Windows XP, choose "MOST Audio Channel 0" from the drop down menu on the "Device" tab. Under Windows XP, the selections are labeled "MOST Audio Channel 0 (or MOST Render 0)", "MOST Audio Channel 1 (or MOST Render 1)", etc.
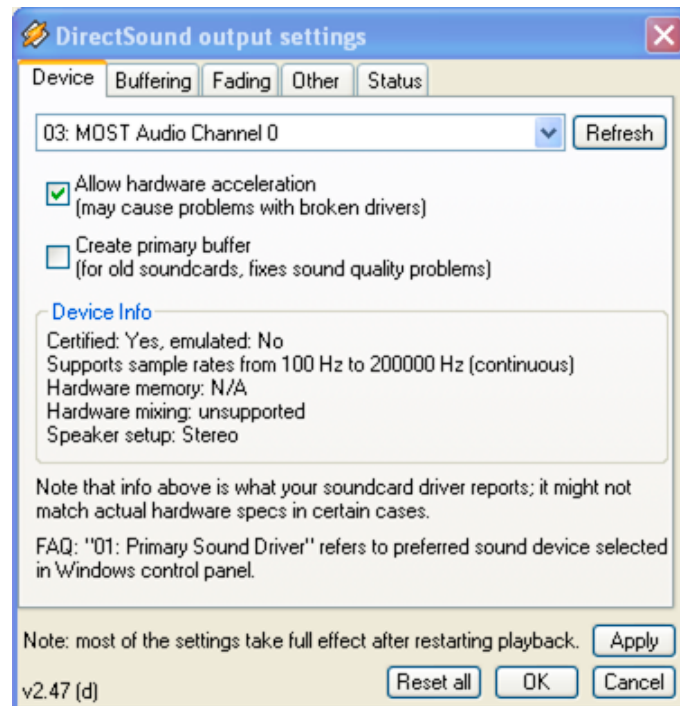
Figure 4-9: Winamp DirectSound Output Settings

12. Click OK in Figure 4-9, and click Close in the "Preferences" window to continue.

13. Winamp is now configured to output the audio data played onto the MOST network. Open any audio files in Winamp (to learn how to do this, utilize the Winamp help) and click the play button.

14. The audio is now being streamed to the MOST network.

15. On PC2 start the Sound Recorder by clicking on "Start | Programs | Accessories | Entertainment | Sound Recorder".

Figure 4-10: Sound Recorder

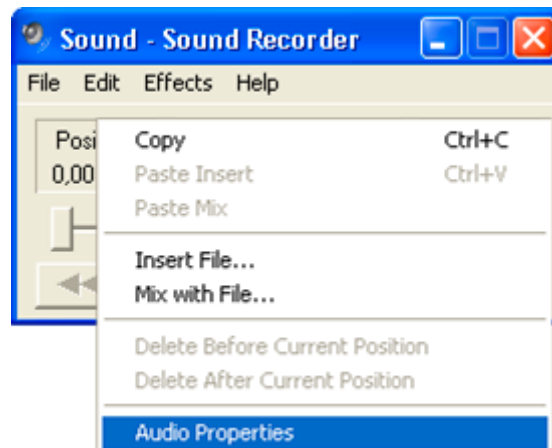16. Click on the "Edit" menu, and select "Audio Properties" from the menu.

Figure 4-11: Sound Recorder Edit Menu

17. In the "Sound recording" section, choose "MOST Audio Channel 0 (or MOST Capture 0)" from the drop down list.
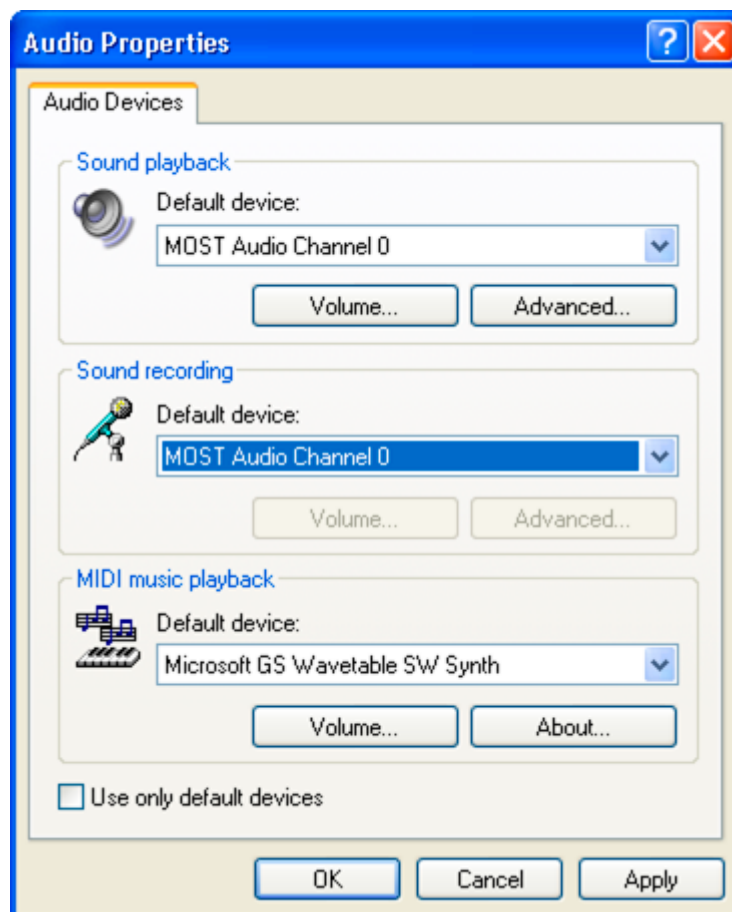

Figure 4-12: Audio Properties for the Sound Recorder

18. Click OK.
19. Restart the Sound Recorder. Now it is ready for recording.
20. Now click on the record button to start recording.

Figure 4-13: Sound Recorder Recording Audio from the MOST Network

21. The recorded file can be saved, played, or analyzed depending on the desired application.

5 The MOST PC Interface as a Video Card (Isochronous Transmission)

This chapter describes how a video program stream is created and transferred **isochronously** over a MOST network and finally can be displayed on another PC. This example can be only executed in a MOST150 network i.e., MOST PCI Interfaces 150o have to be installed.

5.1 Playing a Video File

The example in this section uses the following applications: MOST Interface Control, mbtest and mbstream. The MOST Interface Control is provided on the CD. It controls startup and shutdown of the MOST network and manages the channel allocation for INIC related MOST PC Interfaces. Mbtest and mbstream are applications started in the Command Prompt window. They are installed together with the MOST Driver Stack. Mbtest is used to send an isochronous data stream to the MOST network. Started on a second PC mbtest receives the transferred isochronous data stream and checks by using a counter whether the transmission is complete. Mbtest uses a fixed bandwidth i.e., timestamps are not considered (see section 5.1.2.1 on page 49). If an optimized transmission shall be tested, i.e., the timestamps have to be considered, mbstream has to be used instead. It adjusts the payload data to send (see section 5.1.2.2 on page 53). This means mbtest is used to check whether the transmission is possible whereas mbstream is used to transmit real videos. In the example beneath the MPEG decoder functionality of the ffdshow (revision 3119) is taken for verifying. ffdshow is a free media encoder and decoder that supports a lot of video and audio formats.

5.1.1 Requirements

1. 2 PCs running Windows 7 or Windows XP with administrator rights, and a **MOST PCI Interface 150o** installed on each PC.
2. MOST Driver Stack is installed.
3. **MOST150 network**
4. MOST PCI Interface 150o V2:

   - Installation of MOST Tool Foundation inclusive the MOST Interface Control delivered on an USB stick.

     Notice   If the MOST Interface Control connected to a MOST PC Interface starts the MOST network for the first time, the OS's hardware wizard detects the MOST NDIS Adapter. For the installation of the MOST NDIS Driver switch to the *MOST Tool Kit Installation Guide [3]*.

5. mbtest and mbstream applications installed together with the MOST Driver Stack.
6. Transport stream video files, examples can be found on the CD in the folder Add_ons\Demo Files.
7. ffdshow (rev. 3119 is used in this example) is installed and configured, i.e., the video and audio formats that are needed are enabled. The used revision can be downloaded from the Internet.
8. It is assumed all MOST nodes in the MOST system have a unique node address. Check it according to step 4 on page 13.

5.1.2 Step-by Step Instructions

5.1.2.1 Hook Up the MOST Network and Check Transmission

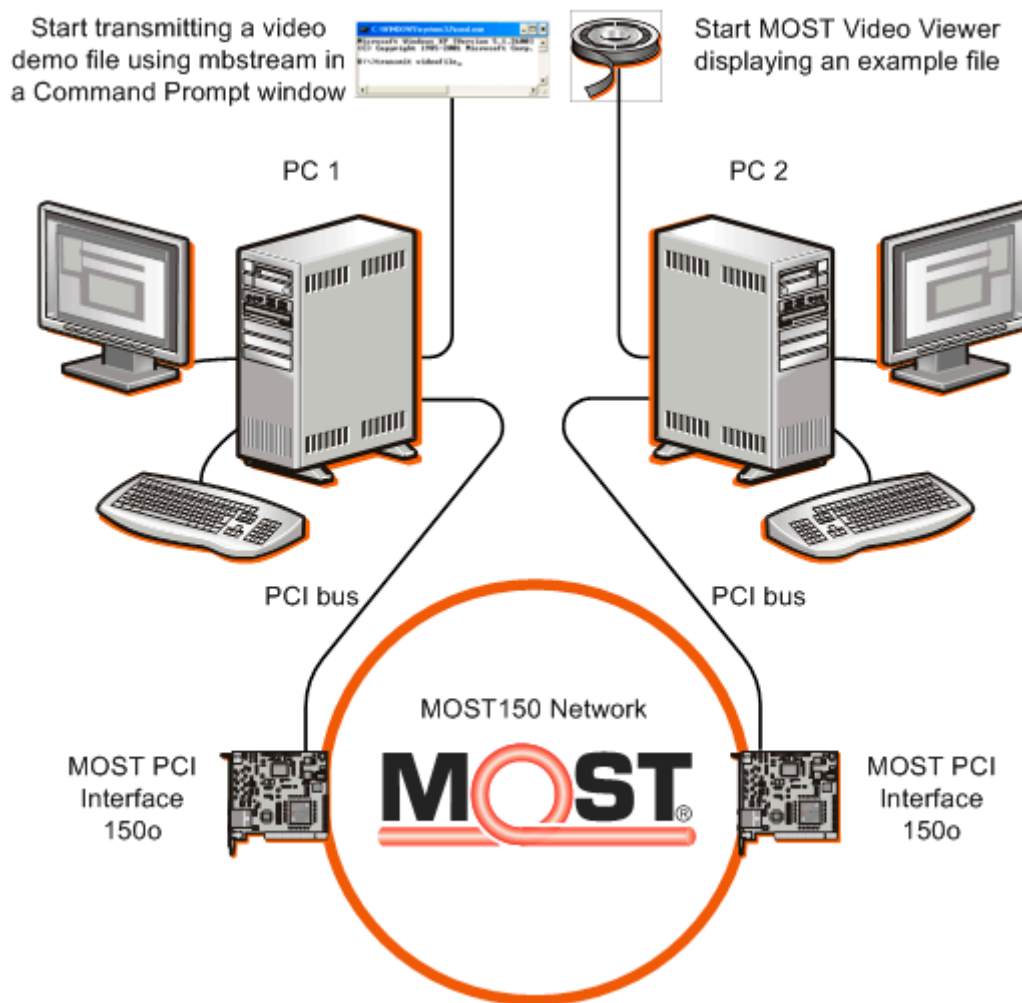1. Hook up the MOST network as follows:

*Figure 5-1: MOST Network Setup - Use MOST Video Viewer*

2. On both PCs, make sure to log on to an account with administrator privileges.
3. On both PCs: Start the MOST Interface Control. Click "Start | Programs | SMSC | MOST Tool Foundation | MICtrl"[9].
4. PC1: Switch to the Mode tab if necessary and select "Master". The MOST network should have light and lock. The status bar shows the status of the connection, the network state and the lock.

---

[9] If the MOST Interface Control cannot be started refer to chapter 6 on page 32.
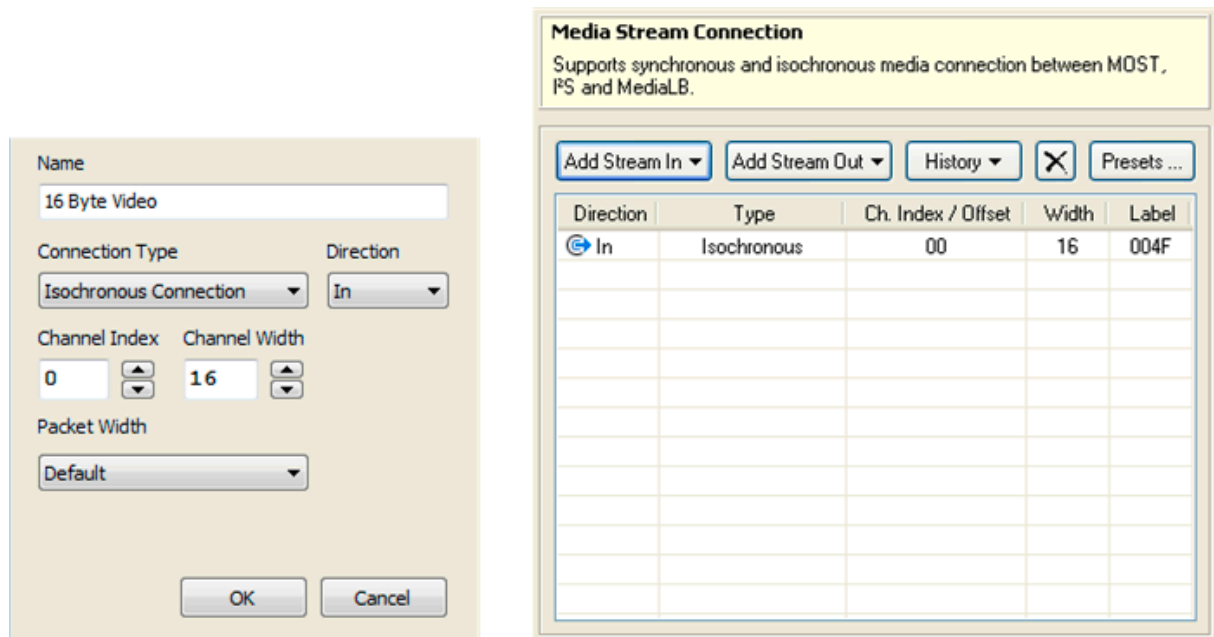
Figure 5-2: Settings in the MOST Interface Control (PC1)

5. PC1: Switch to the Media tab, click ⌷Add Stream In⌷ and select the preset '16 Byte Video'. In the 'Add Connect Stream Details' window insert a friendly name, set the connection type to 'Isochronous Connection', select direction 'In' and the channel index '00' (alternatively '01' e.g., if '00' is already used or vice versa). Select a channel width of '16' and use the 'Default' packet width. Click OK. This allocates four isochronous source data quadlets (16 byte-wide unit on the MOST frame) to the MOST PC Interface. The corresponding label is assigned automatically e.g., "Label: 004F" in Figure 5-2.

6. PC2: Start the MOST Interface Control. Switch to the Media tab, click ⌷Add Stream Out⌷ and select the preset '16 Byte Video'. In the 'Add Connect Stream Details' window insert a friendly name, set the connection type to 'Isochronous Connection', select direction 'Out' and the same channel index as on PC1. Adapt the channel width to '16'. Add the Channel Label and the packet width ('Default') according to the source specified on PC1. This routes the four isochronous source data quadlets (16 byte-wide unit on the MOST frame) from the MOST PC Interface.

7. PC1: Open a Windows Explorer. Navigate to the installation folder specified during the installation of the MOST Driver Stack (described in the user manual "MOST Tool Kit Installation Guide"). Assuming default settings have been accepted the path is as follows: "C:\Program Files\SMSC\MOST Driver Stack\bin".

8. PC1: Create a shortcut and adapt the properties for the target e.g., to: C:\WINDOWS\system32\cmd.exe. Add the installation folder in "Start in" (e.g., "C:\Program Files\SMSC\ MOST Driver Stack \bin").

9. PC1: Double-click the shortcut. A Command Prompt window opens.
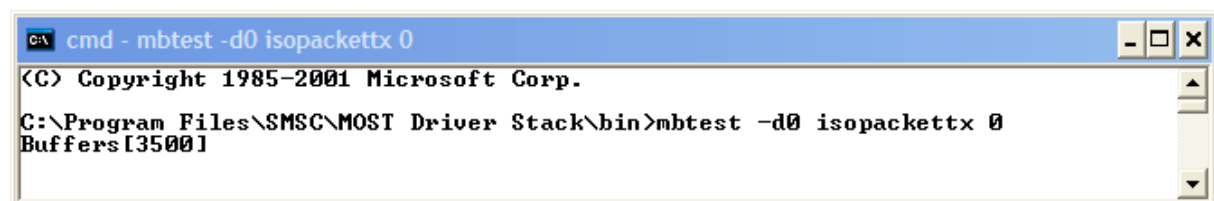
Figure 5-3: Command Prompt Window - Starting Mbtest for Sending

10. PC1: Enter "mbtest –d0 isopackettx 0"
where
mbtest is a small command line reference application designated to test the transmission over the MOST network,
d is an optional parameter indicating a device number is following. In the case only one MOST PC Interface is installed this optional parameter can be omitted. By default a device number "0" is taken. If e.g., two MOST PC Interfaces are installed in PC2, it depends on the sequence of the devices whether this parameter needs to be added or not. Use MOST Control Panel to find out how many devices are installed on your PC. Click "Start | Programs | SMSC | MOST Driver Stack | MOST Control Panel".
0 is the number of the device (e.g., a MOST PCI Interface 150o device)
isopackettx is a command that sends a continuous isochronous data stream to the MOST network,
0 is the first instance (there are two instances available).

11. PC1: Press the "Enter" key. This starts sending a continuous isochronous data stream to the MOST150 network. Beneath the sent buffers are counted and displayed. (The action can be stopped by pressing the "Q" and the "Enter" keys.)

12. PC2. Open a Windows Explorer. Navigate to the installation folder specified during the installation of the MOST Driver Stack. Assuming default settings have been accepted the path is as follows: "C:\Program Files\SMSC\MOST Driver Stack\bin".

13. PC2: Create a shortcut and adapt the properties for the target e.g., to: C:\WINDOWS\system32\cmd.exe. Add the installation folder in "Start in" (e.g., "C:\Program Files\SMSC\MOST Driver Stack\bin").

14. PC2: Double-click the shortcut. A Command Prompt window opens.

15. PC2: Enter "mbtest –d0 isopacketrx 0 –c"
where
d is an optional parameter indicating a device number is following. In the case only one MOST PC Interface is installed this optional parameter can be omitted. By default a device number "0" is taken. If e.g., two MOST PC Interfaces are installed in PC2 as in this example, it depends on the sequence of the devices whether this parameter needs to be added or not.
0 is the number of the device (e.g., a MOST PCI Interface 50e device)
isopacketrx is a command that receives a continuous synchronous data stream to the MOST network,
0 is the first instance (there are two instances available),
c checks receiving frames, a continuous 16 bit counter is expected.

Figure 5-4: Command Prompt Window - Starting Mbtest for Receiving

16. PC2: Press the "Enter" key. This starts receiving an isochronous data stream from the MOST network. Beneath the received buffers are counted and displayed followed by the number of TotalErrors. If the counter for the errors shows zero the transmission over the MOST network is working properly. If a completion error occurs, the driver receives more data than it can process. Add –n64 to the command (this parameter adapts the buffer to be used for the transmission in case the default of 4 bytes is not enough to handle the transmission), i.e.:

Enter "mbtest –d0 isopacketrx 0 –c –n64"

If there are other problems, check the cables' connections and check whether the MOST network is in stable lock. The instance number (0) has to match on PC1 (transceiver) and PC2 (receiver). Further on Windows activities can have influence.

17. PC2: Press the "Q" and the "Enter" key in the Command Prompt window (PC2) to finish receiving the data stream coming from the MOST network.

18. PC1: Press the "Q" and the "Enter" key in the Command Prompt window to finish sending a continuous data stream to the MOST network.

5.1.2.2 Transmit and Display Video Stream

1. PC2: Select the Media Stream Connection in the Media tab and click ☒. The routing of the channel label is removed.
2. PC1: Select the Media Stream Connection in the Media tab and click ☒.
3. PC1: Open an Explorer, switch to the CD and open the "readme.rtf" (folder "Add_ons/Demo Files" on the CD). The "readme.rtf" lists some video demo files that are delivered together with the MOST Tool Kit. It also contains all details for the video demo files that are required for decoding of the video stream e.g., Video PID and Audio PID.
4. PC1: Decide which video demo file you want to transmit over MOST. This decision influences the choice of the bandwidth you have to enter in the Media tab of the MOST Interface Control and defines the corresponding settings that have to be inserted on PC2 later when customizing the MOST Video Viewer.
5. PC1: Click `Add Stream In` and select a preset. In the 'Add Connect Stream Details' window insert a friendly name, set the connection type to 'Isochronous Connection', select direction 'In' and the channel index '00'. Select a channel width according to your decision reserving enough bandwidth for transmitting the video demo file (transport stream). In addition select 'Default' as packet width. Click OK. The corresponding label is assigned automatically.
6. PC2: Switch to the Media tab, click `Add Stream Out` and select a preset. In the 'Add Connect Stream Details' window insert a friendly name, set the connection type to 'Isochronous Connection', select direction 'Out' and the same channel index, channel width and packet width ('Default') as on PC1. Add the Channel Label according to the source specified on PC1.
7. PC1: Open an Explorer again, switch to the CD and copy one of the video demo files (folder "Add_ons/Demo Files" on the CD) into the installation folder (e.g., "C:\Program Files\SMSC\MOST Driver Stack\bin"). This means the video demo file and the application mbstream should be located in the same folder.
8. PC1: Switch to the Command Prompt window.
9. PC1[10]: Enter "mbstream ts2iso –d0 –i0 –l example.ts"
where
mbstream is a utility that is able to transmit e.g., packet data over a MOST network and that reads and provides the Video and Audio PIDs,
ts2iso is a command that reads TS packets from file and sends the packets to MOST,
d0 is a command that must be entered in case multiple MOST INIC devices are installed but can be omitted in this case as there is only one MOST PC Interface installed.
i0 is a command that describes the zero-based index of the isochronous hardware ports,
l is a command that loops i.e., that restarts from the beginning when the end of the file is reached,
example.ts is a demo video file used in this example. Use one of the files you have copied into your installation folder some steps previously (source folder "Add_ons/Demo Files" on the CD).
10. PC1: Refer to the "readme.rtf" file and view the settings of the video demo file you have transmitted.

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[10] To view a live stream from MOST, replace PC1 with the real video source and use MOST bandwidth, Video PID and Audio PID like defined in the source device.

11. PC2: Open a Windows Explorer. Navigate to the installation folder specified during the installation of the MOST Driver Stack. Assuming default settings have been accepted the path is as follows: "C:\Program Files\SMSC\MOST Driver Stack\bin".

12. PC2: Double-click MOSTVideoViewer.exe. The MOST Video Viewer starts. On page "MOST Settings" choose the used MOST adapter of the MOST network.
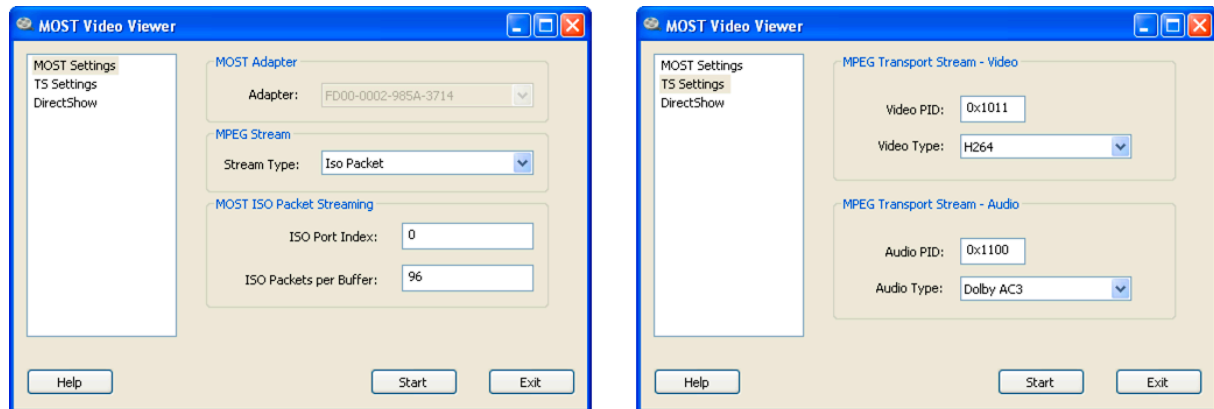
13. PC2: Select "Iso Packet" as stream type.

Figure 5-5: Example of Video Viewer Settings

14. PC2: Ensure the values shown in "MOST ISO Packet Streaming" match the values specified in the Media tab of the MOST Interface Control: "ISO Port Index" must match the channel index, i.e., "0" in this example. "ISO Packets per Buffer" must match the channel width that is associated with the index.

15. PC2: Switch to page "TS Settings".

16. PC2: Enter the following settings: video PID, video type (e.g., H264 or MPG2), audio PID, audio type (e.g., Dolby AC3 or MPEG Audio). Enter them according to your choice of the video demo file. Refer to the "readme.rtf" that has been opened on PC1 in a previous step (folder "Add_ons/Demo Files" on the CD).

17. PC2: Switch to page "DirectShow".

18. PC2: Ensure a video and an audio decoder[11] are installed that are capable to view the video demo file. Select these decoders on tab DirectShow.

19. PC2: Then click "Start". The MOST Video Viewer plays the video stream using the selected decoders.

Note: Via the application GraphEdit – a developer tool, which allows working with DirectX filter drivers – you can view the video stream on PC2. For more details please contact support-ais-de@smsc.com.

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[11] Use e.g., ffdshow but of course all decoders that are capable to handle the files are allowed.

5.1.2.3 DTCP Extension

MOST Tool Kit offers some additional features regarding DTCP streams. In comparison to the default TS-mode providing 188 bytes, MOST also defines an extended stream using 8 bytes DTCP header for encrypted audio/video transmissions. For complete description of DTCP on MOST, please refer to DTCP specifications available via the [MOST Cooperation](). All use cases described in section 5.1 Playing a Video File that are using the applications mbtest, mbstream or VideoViewer are also available including DTCP header handling.

As there is only one standard 188 bytes TS format, the MOST Tool Kit extends some features to combine both worlds MOST and DTCP with standard video codecs like ffdshow.

The following separate use cases can be handled via the applications mbtest, mbstream or VideoViewer for test purposes:

1. A MOST PC Interface streams a standard TS file (188 byte as source) that is either streamed by a mbtest command or transformed by a mbstream command into a DTCP format (196 byte).
2. A MOST PC Interface streams a MOST DTCP file (196 byte as source) over the MOST network by using an mbtest command.
3. A MOST PC Interface receives a MOST DTCP file (196 byte as sink) that is processed by the VideoViewer which prepares the file for the use with ffdshow.
4. A MOST PC Interface receives a MOST DTCP file (196 byte as sink) that is prepared by mbstream for use with VLCViewer.
5. A MOST PC Interface receives a MOST DTCP file (196 byte as sink) that is prepared by mbstream commands for use either again as MOST DTCP file (196 bytes) or as standard TS file (188 bytes).

Refer to the MOST Driver Utilities [2] that include specific sections describing commands available for these use cases.

6 Troubleshooting

6.1 MOST Interface Control Cannot Be Started

If a MOST PC Interface is installed and can be seen in the device manager but the MOST Interface Control cannot be started it can help to stop and restart the MOST Services. A reason can be a MOST PC Interface has been installed or exchanged and the MOST Services have been started before completing the installation (e.g., the MOST NDIS Driver). Follow these steps:

1. Click: "Start | Programs | SMSC | MOST Tool Foundation | MOST Tool Kit Configurator".
2. Click"Stop Service" to stop the MOST Services.
3. Click "Start Service" to start the MOST Services.
4. Start the MOST Interface Control.

Appendix A: List of Figures

Appendix B: List of Tables