NTP SYNCHRONIZATION BETWEEN NOLDUS AND DSI COMPUTERS

SCOPE OF DOCUMENT

This document serves two goals:

- As a documented record of how the Media Recorder PC's are synced to the DSI PC at Boehringer Ingelheim.
- As a template for other researchers who need to sync the computer clock from either an EthoVision or a Media Recorder PC to a DSI PC.

TECHNICAL NOTE

INSTALLATION OF THE DSI PC

Network Time Protocol (NTP):

The DSI Ponemah software will install the NTP server on the PC. NTP should be running from this installation. The running state of NTP may be verified in the Computer Manager | Services and Applications | Services.

To monitor the time server performance, the NTP Time Server Monitor application may be installed on the DSI PC.

NTP Time Server Monitor:

- 1. Create the following Folder structure:
 - C:\NTP\ETC\
 - C:\NTP\Installation\
 - C:\NTP\Installation\ntp-time-server-monitor-104.exe The exe-file can be found in the same folder as this manual document.

NTP Time Server Monitor 1.04 estination Location		>
estination Location		
Setup will install NTP Time Server Monitor 1.	04 in the following folder.	
To install into a different folder, click Browse,	, and select another folde	г.
You can choose not to install NTP Time Serv Setup.	ver Monitor 1.04 by clickir	ng Cancel to exit
Destination Folder		

- 2. Run the installer ntp-time-server-monitor-104.exe
 - a. In the installation choose the "C:\NTP" folder as the monitor destination:
 - b. Next keep Meinberg selected as Program manager Group. Click Next.

Select Program Manager Group		
Enter the name of the Program Manag to: Meinberg	er group to add NTP Time Server Monitor	1.04 icons
Accessibility Accessories Administrative Tools Aspell Autolt AVG Basler Beyond Compare 3 Cppcheck x86 1.70 Dell SonicWALL NetExtender		~
ise Installation Wizard®	< Back Next>	Cancel

c. Continue the installation and let the installer finish.



3. The installation will install the NTP Time Server Monitor application and add this icon to the desktop:



- 4. Open the Monitor by right-clicking on it and choosing **Run as administrator**.
 - a. Select the **Status** tab. You should see that the line is green indicating that the service is running correctly.

irrent local NTP Statu	s: Sync to: LOCAL(0) Of	fset: 0.000ms St	tratum: 7				<u>a</u> 9	Refresh In	tervall: 1
TP Status: Remote	Befid	Stratum	Тире	When	Poll	Reach	Delau	Offeet	litter
		G	Local clock	10	64	377	0.000	0 000	0 977

RETRIEVING THE IP ADDRESS

Now we need to know the IP address in order to connect the NTP clients to the server.

Note: The DSI PC has 2 network interface cards of which one is connected to the Matrix 2.0 (MX2) and the other one should be connected to the network which connects the DSI-PC to the Noldus Client PC (Running EthoVision or Media Recorder).

- 1. Open the Network and sharing center.
- 2. Select to Change adapter settings.
- 3. Select the appropriate network card and right-click on the network card and choose **Status**.

Note: To determine which card is the correct one, temporarily disconnect the network cable. You should see an update displayed in the dialog and will help you to distinguish the network card that you need.

4. In the *Status* dialog choose **Details**.

	United Area Conne	ction Status	28	
	General			
	Connection IPv4 Connective	Network Connection Detail	s	2
	IPv6 Connectivi	Network Connection Details		
	Duration:	Property	Value	
	Speed:	Connection-specific DN	noldusby Broadcom Net Xtreme 57~ Globb	# Co
South States	Details	Physical Address	BC-30-5B-D4-AB-A1	
	Activity ———	IPv4 Address IPv4 Subnet Mask	192.168.31.62 255.255.0.0	
		Lease Obtained Lease Expires	Friday, March 23, 2018 12:05:08 Monday, March 26, 2018 12:05:0	PM =)8 PN
	Bytes:	IPv4 DHCP Server	192.168.31.30 192.168.31.29	
		II VY DIVO SCIVCIO	192.168.31.30	
	Properties	IPv4 WINS Servers	192.168.31.29 192.168.31.30	
		NetBIOS over Tcpip En	Yes	
		Link local in vo Address	1600085.6300.031.4103%11	

5. Note the IPv4 Address e.g. 192.168.31.62



INSTALLATION ON THE NOLDUS CLIENT PC

The client installation will adjust the client clock in such a way that it will be in sync with the clock of the NTP server. Install the NTP client on the PC's that are recording with EthoVision or Media-recorder. This will ensure that the system time of these computers are in sync with the system time of the DSI computer.

Do the installation as followed:

- 1. First create the following Folder structure:
 - C:\NTP\
 - C:\NTP\ETC\
 - C:\NTP\ETC\ntp.conf
 - C:\NTP\Installation\
 - C:\NTP\Installation\ntp-4.2.8-win32-setup.exe
 - C:\NTP\Installation\ntp-time-server-monitor-104.exe
- 2. Run the client installer ntp-4.2.8-win32-setup.exe
 - a. Choose C:\NTP\ as the target location.

I network nine notocor setup			
Choose Install Location			0
Choose the folder in which to install N	Network Time Protocol.		
Setup will install Network Time Protoc click Browse and select another folde	ol in the following folder. To in r. Click Next to continue.	istall in a <mark>diffe</mark>	erent folder,
Destination Folder C:WTP\		Bro	WSe
Destination Folder C:\/TP\ Space required: 5.3MB Space available: 75.4GB	Ç;	Β <u>τ</u> οι	NSE
Destination Folder C:\/TP\ Space required: 5.3MB Space available: 75.4GB Jullsoft Install System v2.46	5	Β <u>τ</u> ον	wse



b. Keep these default installation settings. Click Next.

Choose whi <mark>c</mark> h features	of Network Time Pro	tocol you want to i	nstall.	1
Check the components nstall. Click Next to co	you want to install an ntinue.	nd uncheck the cor	nponents you dor	n't want to
Select components to ir	nstall:	moonents	Description	
		NTP Daemon NTP Tools	Position you over a comp see its descr	r mouse onent to iption.
	····· ¥	NTP Documentation		
Space required: 5.3MB				
	< .	,		

c. By default, the installer will ask for a C:\NTP\etc\ntp.conf file.
 Leave this as is since the file that you already copied into the folder C:\NTP\ETC\ should already have the correct content (except for the IP address). Click Next.

					C
Configuration Fil	e Settings				
Location of con	figuration file:				
C: WTP \etc \nt	p.conf				
Create an ir	itial configuration	on file with the	following setti	ngs:	
Want to us	se predefined p	ublic NTP serve	ers (see www.	pool.ntp.org)?	Choose
None					
You can sp	ecify up to 9 N	TP servers (co	mma separate	í) you want to	use:
Use fas	t initial sync mo	ode (iburst)	3		
Add loc	al clock as a las	t resort refere	nce, Stratum:	12	

d. Create a special account for the NTP service.

Note: Do not use the localAdmin account for this. If the localAdmin account is used, the NTP service will require a manual start and will not be able to be automatically started from the Monitor.

ase specify your service settings	
NTP Service Settings	
Create and use a special NTP accou	unt (recommended)
OUse existing account	
Use SYSTEM account (not recomme	nded)
Disable other Time Services eventu	ally installed (e.g. W32Time, other NTP flavours)
🗹 Start NTP service right after installa	n in the second s
Allow big initial timestep (>1000 sec	S)
Enable Multimedia Timer at startup	
Check Firewall Settings	
t Install System v2:46	< Back Next > Cance
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t Install System v2:46 twork Time Protocol Setup: NTP Se ing up NTP service ter the user ID and password used for the ITP Service Account Enter a name for the new NTPD account NTP Enter a password for the new account ••• Confirm the password:	<pre>< Back Next > Cance ervice Account - running the service nt:</pre>

- e. After this, the Service is installed and started automatically.
- f. If the service does not start after the installation, because of using an existing account, do the following:
 - i. Navigate to Computer Management | Services and Applications | Services.



- ii. Select the *Network Time Protocol Daemon* service.
- iii. Change the Logon Properties to the desired account.(If you do this the account will be granted services rights).
- iv. Start the Service.
- Run the installer ntp-time-server-monitor-104.exe.
 All the details can be found in the DSI PC installation on page Error! Bookmark not defined. onwards.
- 4. Once installed, start the **NTP Time Server Monitor** by right-clicking and selecting **Run as** administrator.
- 5. Navigate to the tab **NTP Configuration File**.
- 6. Change the IP address in the configuration file to the one obtained in section 2.1 step 5.



7. After the changes have been made, click on **Save configuration**. At this point you will be asked to restart the service.

Note: The Save configuration will fail if you did not start the Monitor as administrator. You can always restart the service in the Services.



8. Switch to the **NTP Status** tab. You should see the green line indicating that the service is running correctly.

rrent local NTP Status:	Sync to: 192.168.31.62	Offset: 1.689ms	Stratum: 8				<u>a</u> =	Refresh Ir	tervall: 1
P Status: Remote	Refid	Stratum	Туре	When	Poll	Reach	Delay	Offset	Jitter
192.168.31.62	LOCAL(0)	7	Unicast server	-	16	001	0.341	1.689	0.000

- 9. After a few minutes you will be able to see the statistics of the NTP synchronization. To do this:
 - a. Select the **Statistics** tab in the Monitor.
 - b. Browse to the Log File Folder: C:\NTP\Etc\
 - c. You will see a list of all the created loop statistics. Typically, one file is generated per day.
 - d. Click on the file to see the offset between the server and client time in red in the graphic.



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CONTENT NTP.CONF FILE

NTP Network Time Protocol

#IMPORTANT: WITH W7 MAKE SURE THE MONITOR RUNS AS ADMIN

SET THIS IN THE PROPERTIES OF THE SHORTCUT

ignore_bigtimestep yes

Use drift file

driftfile "C:\NTP\etc\ntp.drift"

The ntp.conf file is a normal text file. The text file should have the following content:

Please note the IP address should be the IP address of the NTP server, (the DSI-computer).

