



Redundant Alarm Monitoring Configuration

Redundant Alarm Configuration Examples

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Redundant Alarm Monitoring Configuration

This document presents two Alarm Monitoring configurations. The first involves two computers connected to the host network; one computer is configured as the primary alarm server and one is configured as the secondary alarm server. The second example adds a third computer running RTPView, which is configured as an alarm client.

These examples require three computers and one 3000 Series target node, all connected on the same local network. Computer #1 functions as the primary Project Tag Database server and the primary alarm server. Computer #2, which functions as the backup Project Tag Database server and the secondary alarm server. Computer #3, which functions as the RTPView HMI workstation. It is important to understand that the computer names used in these examples will not be the same as the computer names on your network that you will use for Computer #1, Computer #2, and Computer #3. You must substitute actual names within your network for the three computer names given in these examples.

Example 1

In this example, two computers will be running RTPADA. Computer #1 will be configured as the primary; Computer #2 will be configured as the secondary. Remember that these names are of no importance.

Project Tag Database – Computer #1

The first step is to create a new Project Tag Database on Computer #1, and configure this computer for the Primary Project Tag Database.

- On Computer #1, press Start and select Programs ► RTP NetSuite ► NetArrays.
- From the NetArrays **Tags** menu, select **PTDB Manager** to display the Project Tag Database Manager window.

📕 NetArrays Developer Studio - Registered to RT	P Corp Version 8.0.0.5	<u>- 🗆 ×</u>
File View Properties Project Compile Debug Device	Tags Window Help	
	Import Export	
IOC Main A B Main B Scan Scan Scan B RTPDiag B MForm1	Get from PTDB PTDB Manager Tags and I/O Arrays Browser Search & Replace	
J.• .	Device=Simulator	

• In the PTDB Manager **Database** menu, select **Connect**. The PTDBM Connection dialog will appear.

🐫 TagDB.rtp - P1	I DBM			
Database Edit V	iew Help			
Connect		< > > > A		
Compact	/pe	IP Address	Application	
Print Devices	mulator	In Address	Application	
Devices 🕨				
Tags 🕨				
J				
Open database conn	ection dialog			Pri: Online Bac: Online 🏼 🎢

• Click on the Primary **Local** radio button. Type in the path and file name "SamplePTDB.rtp" (followed by a Return) in the Primary Tag Database File field to create a new Project Tag Database for this example. • Click on the Backup **Remote** radio button. Click on the browse button to the right of the Computer field. In the Computer Name Selector dialog, select the name of Computer #2. Click **OK** to close the Computer Name Selector dialog.

PTDBM Connection	Select Local
Primary - C Local - C Remote Tag Database File	Type in local PTDB file name
C:\RTP NetSuite\PTDB\SamplePTDB.rtp	Select Remote
Backup-C Local - Remote	Browse to select Computer #2
Computer BACKUP	
OK Cancel	

Backup Project Tag Database – Computer #2

Now, move over to Computer #2 and configure it as the backup for the Project Tag Database.

• On Computer #2, press Start and select Programs > RTP NetSuite > PTDBM.

🐫 TagDB.rtp -	PTDBM			
Database Edit	View Help			
Connect		< 🕨 🖬 🎆 👘		
° Compact	ype	IP Address	Application	(
Print Devices	mulator		Pippingdion	
Devices Tago				
Tags	•			
J				
Open database co	nnection dialog			Pri: Online Bac: Online 🏼 🎢

• In the PTDB Manager **Database** menu, select **Connect**. The PTDBM Connection dialog will appear.

- Click on the Primary **Remote** radio button. Click on the browse button to the right of the Computer field. In the Computer Name Selector dialog, select the name of Computer #1. Click **OK** to close the Computer Name Selector dialog.
- Click on the Backup Local radio button. Type in the path and file name "SamplePTDB_Backup.rtp" (followed by a Return) in the Backup Tag Database File field to create a new Backup Project Tag Database for this example.
- Click on the OK button to close the PTDBM Connection dialog. Close the PTDB Manager window.

PTDBM Connection	Select Remote
Primary - C Local - Remote Tag Database File \\DEM09\C\RTP NetSuite\PTDB\SamplePTDB.rtp	Browse to select Computer #1
Computer DEM09	—— Select Local
Backup- Cocal - C Remote Tag Database File C:\RTP NetSuite\PTDB\SamplePTDB_Backup.rtp	Type in local Backup PTDB file name
OK Cancel	

Project Tag Database Continued – Computer #1

Return to Computer #1. Now that the Primary and Backup Project Tag Databases have been created, we will use the project program "My_first.dbn" to enter all the tag names into the Project Tag Database. "My_first" was created in the Setup Example "NetArrays Project Program Development". This will then be the source of the tag names picked in the Alarm and Data Archive (RTPADA) system and in RTPView.

• The PTDBM Connection dialog should now look like the one pictured below. Click **OK** to close the PTDBM Connection dialog.

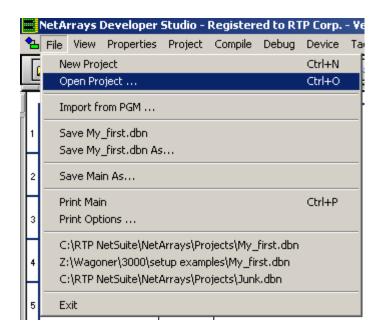
PTDBM Connection	
Primary - C Local - C Remote	
Tag Database File	
C:\RTP NetSuite\PTDB\SamplePTDB.rtp	
	Path and name of Backup PTDB file
Backup-C Local - Remote	will appear here
Tag Database File	
\\BACKUP\C\RTP NetSuite\PTDB\SamplePTDB_Backu	
Computer	
BACKUP	
OK Cancel	

• Configure the node that will run the project program. Enter the name in the **Device** column, select **TCP/IP** in the **Type** column, and enter the assigned "IP address" in the **IP Address** column. (Note that for this example we are using Node31 as the device name, the name of your device and its IP address may be different.) Click in the empty cell below the device just created. Close the PTDB Manager window. Note that the Application name does not appear until the program is downloaded.

Database Edit View Help
」 º''''' ⊘ K K ▶ ▶ #
Device Type IP Address Application
Simulator Simulator
Node31 TCP/IP 90.31.0.0
*
Ready Pri: Online Bac: Online //

Configure the Device in the new Project Tag Database

 In the NetArrays File menu, select Open Project... and select the project file My_first.dbn that was created in the Setup Example "NetArrays Project Program Development". Click on Open. If you have not previously created this program, do so now.



Open Project					<u>?</u> ×
Look jn	C Projects		•	🗢 🗈 💣 🎟•	
My Recent Documents Desktop	My_first.dbn				
My Documents My Computer					
Demo16	File <u>n</u> ame: Files of <u>type</u> : Proje	ect (*.dbn)		•	<u>O</u> pen Cancel

• In the NetArrays **Device** menu, select **Select** ▶ **Node31** (or the name of the target node you are going to use to run the My_first project program created in the Setup Example "NetArrays Project Program Development").

🧮 NetArrays Developer Studio - Registered	to RTP Corp Version 8.1.0.1 - [I	0C]
🧱 File View Properties Project Compile Debug	Device Tags Window Help	
	Select Configure	None Node31
	Status Time Synchronize Node Information	✓ Simulator
(Vetsion)=0 (Vetsion)	Download Project Download Project w/Online Update	Device Me
⊕ ∰IIIII Rack 01=3000/13D Rack Rack 02=Empty	Upload Project Update Project	

• Open the **Property Manager** by left clicking on **Properties** and select **project My_first.dbn Properties...** Change **IPAddress** to match your system. For this example we used **90.31.0.0**.

Property Manager -	· 0	×
Default Tag Prefix		
(TimeStamp)	11/4/2008 3:18:14 PM	
(Version)	18	
DebugDevColor	&HDFDFDF	
DebugSimColor	&HD5FFDB	
PassWordDebug	***	
PassWordDownLoad	***	
IPAddress	90.31.0.0	

• From the **Device** menu select **Download Project**.

NetArrays Developer	Studio - Register	ed to RT	P Corp	- Yersi	on 8.1.0.	0 - [Main]	
殆 File View Properties	Project Compile	Debug	Device	Tags	Window	Help	
	+ 🔳 🖬 🛱 🖁		Select Confi	t gure			•
A	В		Statu	s			E
1	Main]	Time :	outedI(Synchro Inform	onize		
2	o-o Scan		Down	load Pr	oject		
		-	Down	load Pr	oject w/O	nline Update	е –
3	Stop Scan]		d Proje te Proje			•

• When prompted type in the password "rtp" (or the password assigned to your node. Then click **OK**.

Download Password				
xxx				
ОК	Cancel			

• When prompted, "Do You Want to Overwrite", select **Yes**. Download should complete with no errors.

Do you w	ant to overwrite	×
?	Target Node : PTDB : PTDB Backup :	Node31 C:\RTP NetSuite\PTDB\SamplePTDB.rtp
	<u>Y</u> es	<u>[</u> 0

RTPADA Alarm Configuration – Computer #1

Now that we have created a new Project Tag Database, we will now create a very simple alarm configuration file. We will be monitoring two variables for alarm conditions, one analog and one digital. The output of the Waveform Generator object **CV_Output** will be considered in a High High alarm condition if it rises above 95, and a High alarm condition if it rises above 75. A Low alarm will be signaled if it drops below 25, and a Low Low alarm if it drops below 5. The digital (Boolean) variable **CDO_00** will be in an alarm condition if it is True.

• Open the PTDB Manager. Select Database, Tags, and Export.

🖷 Main011909.rtp - PTDBM			<u>- D ×</u>
Database Edit View Help			
Connect Compact	N M		
 Automatic Integrity Check 	IP Address	Application	
Print Devices		Default	
Devices •	90.31.0.0	SOE_00Z Node50E	
Tags 🕨	Import	EJOE	
	Export		
	Delete Unassigned Unassign Simulator		
		Pri: Onli	ine Bac //

• Select a target *directory* (we used "RTPADA") and type the *file name* (we used "RTPADA_Import") into the **File Name:** and select **Save**.

Save As					? ×
Save jn: 🗀	RTPADA	•	🗢 🔁	r 🖽	
, File <u>n</u> ame:	RTPADA_Import			<u>S</u> ave	;
Save as <u>t</u> ype:	Comma Seperated Value Files (*.c	csv)	•	Cance	

• This will create the file "RTPADA_Import.csv" in the **RTP NetSuite\RTPADA** directory. If this file already exists, delete it or rename/move it if you want to save it. • Open this file with Excel. We will then define the alarm conditions and import the modified file into RTPADA. Navigate to the rows **CDO_00** and **CV_Output**. Modify the file as shown below. Save the file by overwriting the current file.

	A	В	С	D	E	F	G	Н	I	J	K	L	M	N	
	Tag	Group	Name	Priority	Engine	Hardware	Digital_Trig	LowLow	Low	High	HighHigh	DevSet	DevAlarm	Deadband	Cor
207	Al2_Fl31_B														
208	Al2_Fl31_C														
	Al2_IE_A														
210	Al2_IE_B														
211	Al2_IE_C														
	CD0_00	1	Wave Output	1			1							0.1	
213	Celsius														
214	counter														
215	CV_Output	1	Boolean Value	1				5	25	75	95			0.1	
216	DI1_BI00_A														
217	DI1_BI01_A														

*Note that only part of the file is shown for clarity.

- Press **Start** and select **Programs RTP NetSuite RTPADA**. The RTPADA window will appear on your screen.
- Left click on File and select Import Configuration.

🍌 u	Intitled.d	lc - RTPAI	D <mark>A(</mark> RTP A	larm 8	Dat	a Ai	rchive)
File	Project	Execute	Security	View	Help		
N	lew Projec	t					
C	pen Proje	ct			⊢	-	Deserietie
S	ave Proje	ct			-		Descriptio
S	ave Proje	ct As					
I	mport Tag						
Ir	mport Con	figuration					
Р	rint Config	guration					
Р	rint Alarm						
Р	rint Alarm	Log					
Р	rint Syster	m Log					
Р	rint Archiv	/e					
P	rint Setup						
1	Test3.md	Ь					
2	Test2.md	Ь					
3	Test1.md	Ь					
4	C:\RTP N	etSuite\PTI	DB\Test1.n	ndb			
E	×it						

• Navigate to the RTP NetSuite\RTPADA directory and select RTPADA_Import.csv and click Open. This will import the alarm definitions into RTPADA.

Open			? ×
Look jn: 📔	RTPADA	- 🖬 📩 🖬	
RTPADA_I	mport.csv		
File <u>n</u> ame:	RTPADA_Import.csv	<u>O</u> pen	
Files of <u>type</u> :	RTPADA Project (*.csv)	▼ Cance	

• Open the RTPADA File menu and select **Save Project As**. In the Save As dialog type in the file name "Sample" and then click the **Save** button. This concludes the configuration of the two alarms.

🌺 Untitled.dc - RTPADA(RTP A	larm	& Da	ata Arc	hive)			
File Project Execute Se	curity	Viev	v He	lp				
New Project	G							
Open Project				Statu	16	Value	_	Descri
Save Project					12			Desch
Save Project As								
Import Tag								
Import Configuration								
Print Configuration								
Print Alarm								
Print Alarm Log								
Print System Log								
Print Archive								
Print Setup								
1 Sample.mdb								
2 Test3.mdb								
3 Test2.mdb								
4 Test1.mdb								
Exit	ct nan	ne				u	ser:	none //

Save As			? ×	
Savejn: 🔂 F	TPADA) 🖻 🗢 💌	* 🎟 *	
				Type in the name "Sample"
			F	
File <u>n</u> ame:	Sample		<u>S</u> ave	
Save as <u>t</u> ype:	RTPDC Project (*.mdb)	•	Cancel	

• Now we will configure the RTPADA setup parameters. From the RTPADA **Project** menu, select **Setup**.



- In the RTPADA Setup dialog, click on the **Redundant** Tab. Then, check the **Enable** checkbox.
- In the **Run As** field, click the **Primary** radio button to define this computer as the primary alarm server. Click on the **browse** button to the right of the **Secondary Computer Name** field to display the **Computer Name Selector** dialog.

Check Enable	RTPAMS Setup XI Display Logging Print Redundant	Redundant Tab
Select Primary	Enable Run As Primary Secondary Secondary	Browse to select Computer #2
	OK Cancel Apply Help	

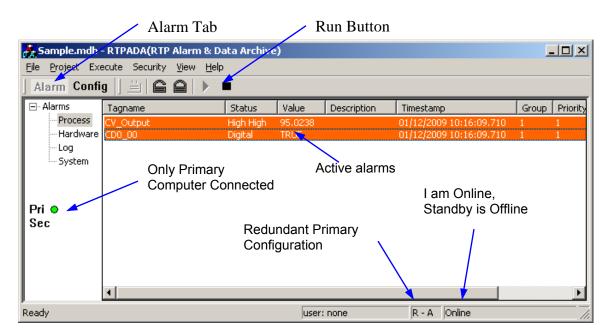
- In the **Computer Name Selector** dialog, select the name of Computer #2 and click the **OK** button to define Computer #2 as the secondary alarm server.
- Move to Computer #2 and configure it as the Secondary Alarm Server.
- Click the **Secondary** radio button to define this computer as the secondary alarm server. Click on the **browse** button to the right of the **Primary Computer Name** field to display the **Computer Name Selector** dialog.

	Project Setup	×	
Select Secondary	Security Logging Print Redundant Enable Run As Primary Primary Computer Name DEM012		Browse to select Computer #1
	OK Cancel Apply H	elp	

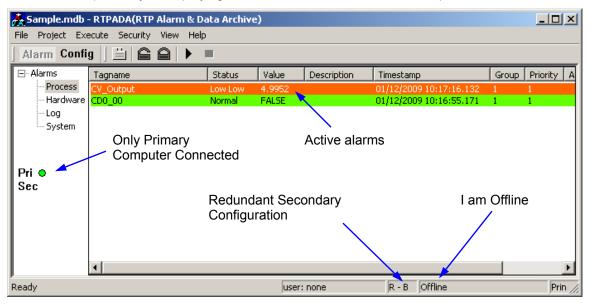
- In the **Computer Name Selector** dialog, select the name of Computer #1 and click the **OK** button to define Computer #1 as the primary alarm server. Click **OK** to close the RTPADA Setup dialog.
- In the RTPADA File menu, select Save Project.

Verification

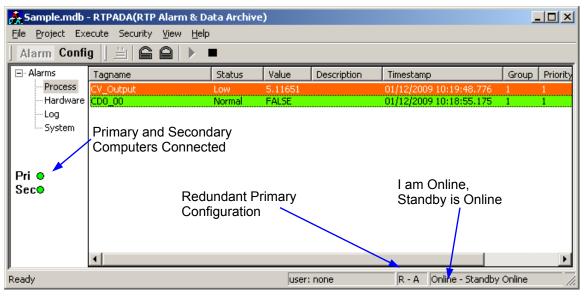
At Computer #1, click on the ▶ (Run) button. Then click on the Alarm Tab to view alarms. Observe CV_Output and CDO_00 going into and out of alarm conditions as determined by My_first.dbn. The Status Bar should indicate "R-A" for primary redundant alarm configuration, and "Online" for the RTPADA status.



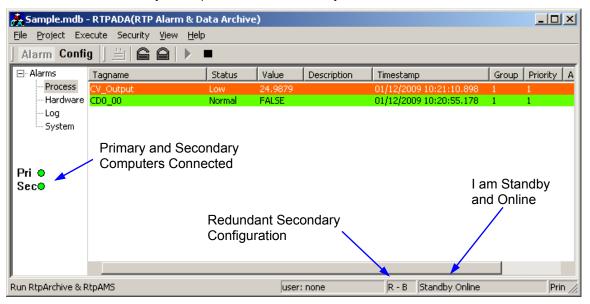
• At Computer #2, click Alarm and observe CV_Output and CDO_00 going into and out of alarm conditions. The Status Bar should indicate "R-B" for secondary redundant alarm configuration and "Offline" for the RTPADA status. At this point, this computer is just displaying the alarm status received from Computer #1.



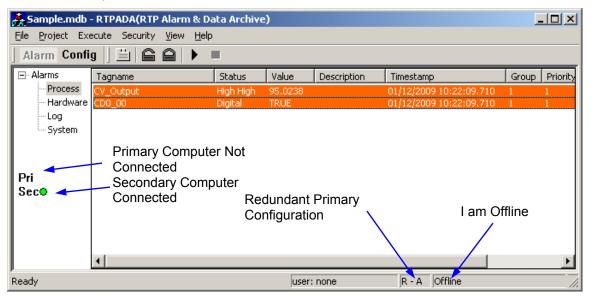
- Click on the (Run) button in the RTPADA Toolbar to start alarm server functions on Computer #2.
- At Computer #1, observe that the indication in the Status Bar changes from "Online" to "Online - Standby Startup" and then to "Online - Standby Online". Both computers are now connected and active.



• At Computer #2, observe that the indication in the Status Bar changes from "Offline" to "Standby Startup" and then to "Standby Online".



- Move over to Computer #1 and click on the 🔳 (Stop) button in the RTPADA Toolbar to stop alarm server functions.
- At Computer #1, observe that the indication in the Status Bar changes from "Online - Standby Online" to "Offline". Only the Secondary computer is connected and active. At this point, this Computer #1 is just displaying the alarm status received from Computer #2.



• At Computer #2, observe that the indication in the Status Bar changes from "Standby Online" to "Online". Only the Secondary computer is connected and active. Computer #2 has taken over as the primary alarm server.

💑 Sample.mdb - RTPADA(RTP Alarm & Data Archive)										
<u>File Project Execute Security View Help</u>										
Alarm Config	9 <u> </u>									
🖃 Alarms	Tagname	Status	Value	Description	Timestamp	Group	Priority A			
Process Hardware	CV_Output CD0_00	High High Digital	95.0238 TRUE		01/12/2009 10:22:09.710 01/12/2009 10:22:09.710	1	1 1			
- Log - System	_									
Pri Seco	Primary Computer									
360	Secondary Compu Connected	Redur	ndant Se juration	econdary	I am Online, Standby is O	ffline	•			
, Ready			user:	none	R - B Online		Prin //			

 Move back the Computer #1 and click on the
 (Run) button in the RTPADA Toolbar.

Congratulations! You have created a new Project Tag Database and configured two computers for redundant RTPADA alarm monitoring.

Example 2

In this example, Computer #3 is running RTPView. The first two computers will remain configured and running as they were in the previous example. Computer #1 is the primary and Computer #2 is the secondary. Move over to Computer #3.

PTDB Manager – Computer #3

The first step is to connect to the Project Tag Database as a client. This allows RTPView to access the data from the project program running in the target node.

- On Computer #3, press A Start and select Programs > RTP NetSuite > PTDBM.
- In the PTDB Manager **Database** menu, select **Connect**. The PTDBM Connection dialog will appear.

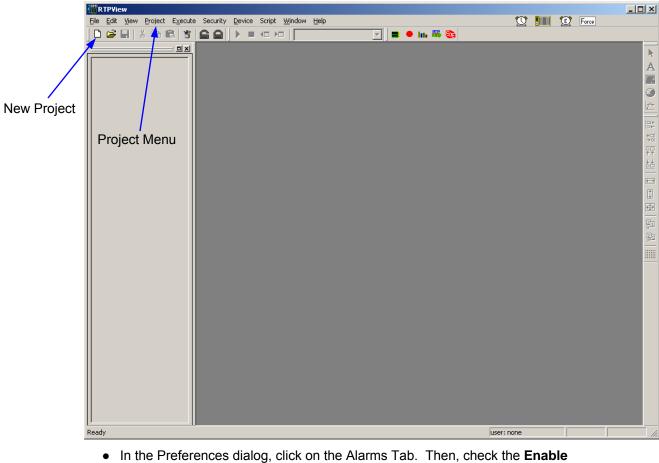
開 TagDB.rtp -	PTDBM			
Database Edit	View Help			
Connect		< > > < 🏘		
Compact	/pe	IP Address	Application	
Print Devices Devices	mulator			
Tags	· —			
, Open database co	nnection dialog			Pri: Online Bac: Online //

- Click on the Primary **Remote** radio button. Click on the browse button to the right of the Computer field. In the Computer Name Selector dialog, select the name of Computer #1. Click on the **OK** button to close the Computer Name Selector dialog.
- Click on the Backup Remote radio button. Click on the browse button to the right of the Computer field. In the Computer Name Selector dialog, select the name of Computer #2. Click on the OK button to close the Computer Name Selector dialog.
- Click on the **OK** button to close the PTDBM Connection dialog. Close the PTDB Manager window.

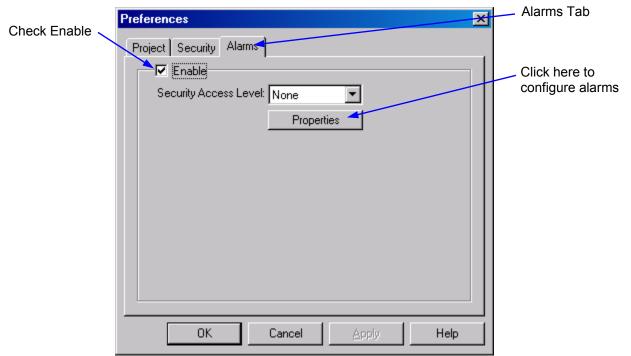
PTDBM Connection	Select Remote
Primary - C Local - Remote Tag Database File \\DEM09\C\RTP NetSuite\PTDB\SamplePTDB.rtp	Browse to select Computer #1
Computer DEM09	Select Remote
Backup-O Local - Remote Tag Database File \\BACKUP\C\RTP NetSuite\PTDB\SamplePTDB_Backu	Browse to select Computer #2
Computer BACKUP	
OK Cancel	

RTPView – Computer #3 We will now run RTPView on Computer #3, configure RTPView for alarm monitoring, and create a very simple HMI project.

- On Computer #3, press Start and select Programs > RTP NetSuite > RTPView.
- In the RTPView main toolbar, click on D (New Project) to start a new project.
- From the RTPView **Project** menu, select **Preferences**.



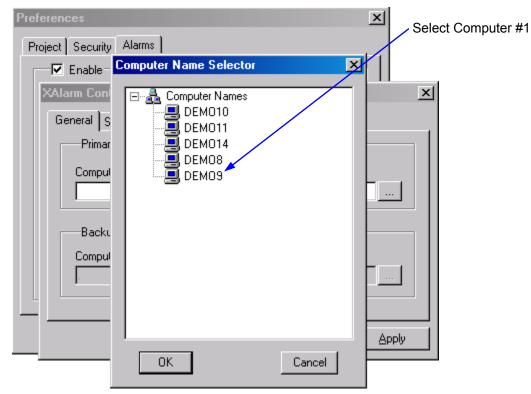
- In the Preferences dialog, click on the Alarms Tab. Then, check the Enable checkbox.
- Click the Properties button. This will display the XAlarm Control Properties dialog.



• In the Primary field, click the **Remote** radio button. Click on the browse button to the right of the Computer field to display the Computer Name Selector dialog.

Preferences	
Project Security Alarms	Select Remote
Enable	_
XAlarm Control Properties	
General Sound	Browse to select
Primary-O Local - Remote	Computer #1
Computer	
Backup 💿 Local - 🔿 Remote	
Computer	
OK Cancel Apply	

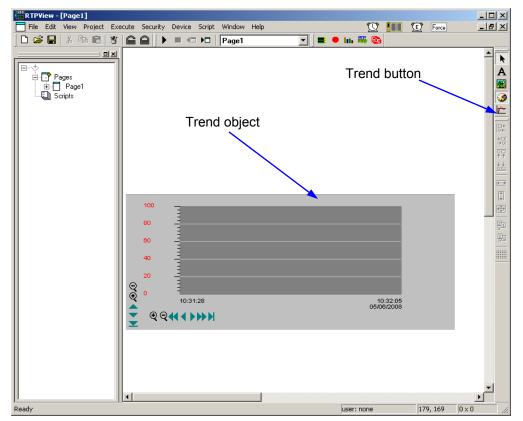
• In the Computer Name Selector dialog, select Computer #1 and click the **OK** button to define Computer #1 as the primary alarm server.



- In the Backup field, click the **Remote** radio button. Click on the browse button to the right of the Computer field to display the Computer Name Selector dialog.
- In the Computer Name Selector dialog, select Computer #2 and click the **OK** button to define Computer #2 as the secondary alarm server.

XAlarm Control Properties	1
General Sound	
Primary O Local O Remote	
Computer	Select Remote
DEM09	
Backup O Local - Remote	Browse to select
Computer	Computer #2
BACKUP	
OK Cancel <u>Apply</u>	

- Click on the **OK** button to close the XAlarm Control Properties dialog and then click on the **OK** button the close the Preferences dialog and save the configuration.
- Click on the (Trend) button in the Palette toolbar. Move the curser onto the work area and click the mouse button to place the Trend object onto the page.



- 🗆 × RTP¥iew - [Page1] File Edit View Project Execute Security Device Script Window Help 💟 🛄 😰 Force _ 8 × 🗅 😅 🖬 👗 🐚 💼 🦉 🚔 🖨 🚺 🕨 🖬 🖓 Page1 💽 🔳 🖷 🖿 🖬 🦉 • 미지 k A 3 2 **←**≯ ţ 100 Cut Ctrl+X <u>Ş</u>tı Ctrl+C Сору -ي Delete Align . Make Same Size Bring to Front $\underset{\odot}{\odot}$ Send to Back 10:34:48 10:35:25 05/06/2008 € € 4 • • Data Properties.. Object Properties Help • • Display the object properties for this object. 550 x 230 user: none 5, 250
- Right-click on the Trend object and select **Object Properties** from the popup menu.

In the Trend object's Properties dialog, select "CV_Output" from the list of Tag names to link the Trend plot to the NetArrays variable. Ensure that the Device corresponds to the device running My_first.dbn. Set Min to -25 and Max to 150. Leave the other properties at the default values. Click OK to close the Properties display.

Object2 Properties		×	Select CV_Output
Tags General Frame			
			Select Device
En Co Tagname CV_Output CV_Output	0.000 0.000 0.000 0.000 0.000	Max Scal Offset (150.0) 1.000 0.00000 0 100.0) 1.000 0.00000 0 100.0) 1.000 0.00000 0 100.0) 1.000 0.00000 0 100.0) 1.000 0.00000 0 100.0) 1.000 0.00000 0 100.0) 1.0000 0.00000 0 100.0) 1.0000 0.00000 0 100.0) 1.0000 0.00000	Set Max to 150Set Min to -25
	0.000	0 100.0 1.00C 0.00000	

• Right click on a blank part of the screen and select Data Properties.

Cut Copy Paste Delete	Ctrl+X Ctrl+C Ctrl+V
Align Make Same Size Bring to Front Send to Back Anchor	+
Group Ungroup Save Object Group I	File
Data Properties	
Object Properties	
Help	

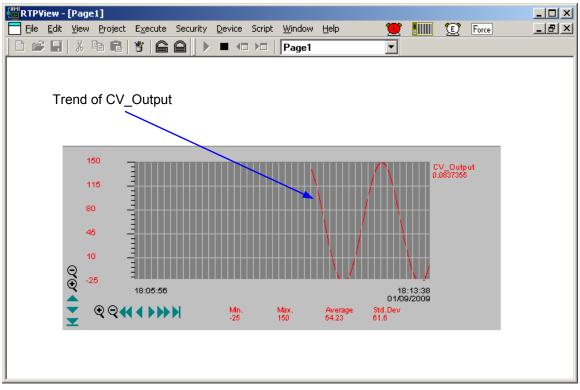
• Change Update Rate (ms): to 250. Click OK.

Properties	×
General	
	Security:
Name: Page1	Access Level: None
Update Rate (ms): 250	Deny Viewing
Background Color:	Popup Window Overlay Popup Position - Abs - C Rel X
	Y 0
Background Image Preview	
	X 0 Image Positiion: Y 0
	X 2 100 Image Scale: Y 2 100
	OK Cancel Apply Help

• Save the project by selecting **Save Project** in the **File** menu. In the Save As dialog enter the name "Sample" for the project and click the **Save** button.

Verification

Click on the ▶ (Run) button in the RTPView Toolbar to run the HMI project. The Trend object will begin to plot the values from the CV_Output variable. You can click on the ♀ ♀ icons to see a longer or shorter time view of the variable.



- The Process Alarm icon will start flashing to indicate the occurrence of an alarm condition.
- Click on an Alarm icon in the Main Menu Bar to view the Process Alarms page.



 In the Process Alarms page, observe CV_Output and CDO_00 going into and out of alarm conditions

Alarms							×
⊡ · Alarms	Tagname	Status	Value	Description	Timestamp	Group	Priority Acl
- Process	CV_Output	Low Low	1.29		04/18/05 10:38:38.921	1	1
- Hardware	CDO_00	Digital	TRUE		04/18/05 10:38:38.921	1	1
Log							
i System							
Pri o							
Seco							
	•						•

Congratulations! You have created an RTPView HMI project and configured it to monitor alarm conditions of variables in a NetArrays project program running in the target node.