# 28 Tips for Faster Communication

Getting to Know the Performance of the Configured System	
Grouping Symbols	
Array of Symbols	
Cache Registration of Frequently Used Devices	28-18
Device Access Log	
	Grouping Symbols Array of Symbols Cache Registration of Frequently Used Devices

This chapter describes how to shorten the communication time and achieve efficient communication.

1 First, get to know the present performance!

<sup>(C)</sup> "28.1 Getting to Know the Performance of the Configured System"

2 Improve communication efficiency by controlling symbols proficiently!

"28.2 Grouping Symbols""28.3 Array of Symbols"

**3** Improve communication efficiency by stocking the data of Device/PLC to the PC!

"28.4 Cache Registration of Frequently Used Devices"

4 Which device do you often use?

"28.5 Device Access Log"

#### Getting to Know the Performance of the Configured System 28.1

This feature allows you to measure the reading time of device data from the specified node.

A result of measu	urement		
	Time	208 msec	
	Begin	Close	

#### 28.1.1 Measuring Reading Time

1 Click [Reading Time Measurement] from [Tool] on the menu bar.



2 Set each item on the "Reading Time Measurement" screen.

Data Read Performan	ce Measurement
Read out	the specified device and measure the required time.
Node Name	AGP1
Device/PLC	PLC1
Device Address	Sheet2.MeasurementSymbol
Number	255
A result i	Access Type Bit 15Bit 32Bit Double of measurement Time msec Begin Close



For details about the setting items, please refer to "28.1.2 Setting Guide".

The [Processing Status] screen is displayed, indicating the measurement progress of reading performance.

now	
Now reading device data.	
0/10000: 0%	Cancel

After reading, the following dialog box will appear.

Pro-Serv	Pro-Server EX Tools 🛛 🗙				
1	Processing is completed normally				
	ОК				

The measurement result (ms) is displayed in [Time] after processing.

A result of mea	surement
	Time 208 msec Begin Close

NOTE	•	Measurement results may vary according to the environmental conditions (number of tags on the
		screen, PLC connection style, application programs running on Windows at the same time and so
		on).

• If the set contents are incorrect, the following screen will appear.

Message	Required action
You cannot specify a BIT symbol for measurement other than in BIT format	If you have specified a BIT symbol in the [Device Address] field, you cannot set an access type other than BIT to measure reading time. Reset the access type to [Bit], and then execute measurement.
You cannot specify a symbol other than BIT for measurement in BIT format	If you have specified a symbol in formats other than BIT in the [Device Address] field, you cannot set [Bit] as an access type to measure reading time. Reset the access type to other than [Bit], and then execute measurement.

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# 28.1.2 Setting Guide

Data Read Performan	ce Measurement
Read out	the specified device and measure the required time.
Node Name	<b>_</b>
Device/PLC	
Device Address	<b></b>
Number	255
- A result o	Access Type Bit C 16Bit C 32Bit Double fi measurement Timemsec Begin Close

Setting item	Setting content						
Node Name	Select the node name that you wish to	measure.					
Device/PLC	Select the Device/PLC having the devi	ice you wish to measu	re.				
Device Address	Enter the device address directly or sel	lect the symbol by clic	king the list button.				
	<ul> <li>depending on the device type and the a</li> <li><b>NOTE</b></li> <li>If you specify a special protocol syn</li> </ul>	<ul> <li>Enter the number of devices. The maximum number is 65535 although it changes depending on the device type and the access type.</li> <li><b>NOTE</b></li> <li>If you specify a special protocol symbol in [Device Address], the maximum number is restricted as shown in the table below.</li> </ul>					
	Device Type to Access	Data Type	Max Value				
Number	Bit Device	Bit	255				
		Bit	255				
	16-bit Device	16 bits	255				
		32 bits	127				
	32-bit Device	Bit	255				
		32 bits	255				
Access Type	Select an access type.						
Read Type	<ul> <li>Select a read type.</li> <li>Direct</li> <li>Read device values directly.</li> <li>Cache</li> <li>Read cached device data.</li> </ul>						

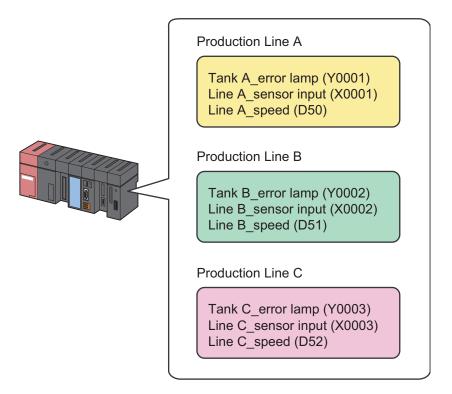
# 28.2 Grouping Symbols

### 28.2.1 Grouping Symbols

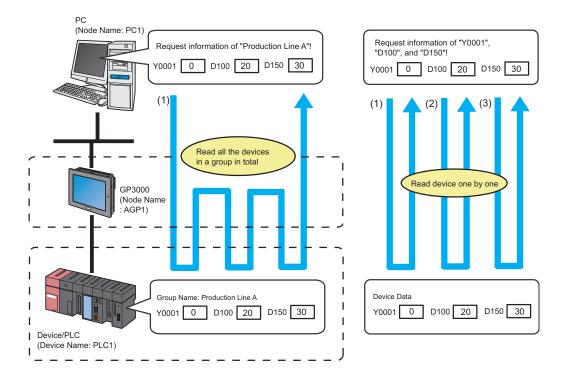
This feature allows you to collect and group multiple symbols.

Within the same Device/PLC, symbol grouping is available regardless of sequential/non-sequential addresses or data type to establish efficient communication at data transfer and access from API.

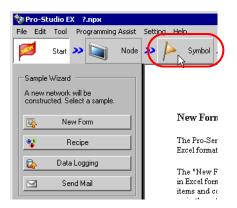
In addition, grouping makes symbol control easier.



Communication Example Using Grouping



1 Click the [Symbol] icon on the status bar.



2 Select the symbol sheet where the symbols you wish to group are registered.

Pro-Studio EX ?.npx ile Edit Tool Programming Assist	Setting	Help					
Start >> 🛐 Node	»	Symbol »	Feature ⋗ [	- Sa	ive ᠉ 🆄 T	ransfer	Monite Statu
Symbol		Node Name AGP1		Device	Name PLC1		
Group Ungroup Insert Delete		Sheet Name Sheet3		Set it as	a global symbol shee	et.	
Copy Cut Paste		Symbol	Data Type	Consec utive	Device Address	No. of Data	Comment
Symbol Sheet		TankA_error_lanmp	Bit		Y0001	1	
Add Delete		LineA_sensor_input	Bit		×0001	1	
		LineA_speed	16Bit(Signed)		D0050	1	
Check Duplication/List Used Addres						1	
		TankB_error_lanmp	Bit		Y0002	1	
Global Constant Setting Screen		LineB_sensor_input	Bit		×0002	1	
	=1	LineB_speed	16Bit(Signed)		D0051	1	
∃▼ WindowsPC		X()			2	1	
PC1 (192.168.0.1) #INTERNAL:Sheet1		TankC_error_lanmp	Bit		Y0003	1	
E ▼ GP3000 Series		LineC_sensor_input	Bit		×0003	1	
Ġ- 🔄 AGP1 (192.168.0.2)		LineC_speed	16Bit(Signed)		D0052	1	
#INTERNAL:Sheet2	Ì 🖌					1	
PLC1:Sheet3 A Series						1	
GR Series	ht i					1	
🔤 🕨 Global Symbol	- Li			<u> </u>	, [	1	

**3** Click the symbols you wish to group on the symbol sheet.

A							
💱 Pro-Studio EX 🛛 ?.npx							
File Edit Tool Programming A	Assist <u>S</u> ettin	g <u>H</u> elp					
💋 Start ン 🔪	Node ン	≽ Symbol ⋗ 葇	Feature ≫ 📑	- Sa	ave 渊 🆄 T	ransfer	Monitor Status
Symbol		Node Name AGP1		Device	Name PLC1		
Group Ung	roup	Sheet Name Sheet3	<b></b>	Set it as	a global symbol shee	et.	
Insert Del	lete						
Copy Cut	Paste	Symbol	Data Type	Consec utive	Device Address	No. of Data	Comment
Symbol Sheet		TankA_error_lanmp	Bit		Y0001	1	<u> </u>
Add Del	lete	LineA_sensor_input	Bit		×0001	1	
		LineA_speed	16Bit(Signed)		D0050	1	
Check Duplication/List Used Addresses							
		TankB_error_lanmp	Bit		Y0002	1	
Global Constant Setting Sc	creen	LineB_sensor_input	Bit		×0002	1	
		1. 0	A OD WOLL D		D OOD4	4	

The selected symbol row turns gray.

**NOTE** • To select sequential multiple symbols at a time, click the first symbol row to be selected and drag the mouse over the last symbol row.

4 Click the [Group] button.

💱 Pro-Studio EX 🛛 ?.npx						_ 🗆 ×
File Edit Tool Programming Assist Settin	g Help					
Start 🌺 💟 Node ≫	≽ Symbol ≫ 🥃	Feature ≫ 🗜	- Sa	ave 渊 🆄 T	ransfer	Monitor Status
Sumbol	Node Name AGP1		Device	Name PLC1		
Group Ungroup Insert Delete	Sheet Name Sheet3					
Copy Cut Paste	Symbol	Data Type	Consec utive	Device Address	No. of Data	Comment
Symbol Sheet	TankA_error_lanmp	Bit		Y0001	1	<u> </u>
Add Delete	LineA_sensor_input	Bit		×0001	1	
	LineA_speed	16Bit(Signed)		D0050	1	
Check Duplication/List Used Addresses					1	
Check Dupication/List Osed Addlesses	TankB_error_lanmp	Bit		Y0002	1	
Global Constant Setting Screen	LineB_sensor_input	Bit		×0002	1	
	LineP aread	10DWCianad)		D0051	1	

The "Group" screen appears.

Group		×
Group Symbol Name Group1		
Identification Color		
	Form Array	
Other Colors		
	ОК	Cancel

**5** Enter a group symbol name in [Group Symbol Name] and click a color that you wish to use from the color palette for distinguishing the group symbol.

Group	×
Group Symbol Name Production_	LineA
Identification Color	
	🗖 Form Array
Other Colors	OK Cancel

NOTE

• If you do not find one you wish to use on the palette, click the [Other Colors] button. This displays the [Color Setup] screen, where you can set the color.

"30.2 Registering Symbols on a Symbol Sheet"

6 Click the [OK] button.

A group display column (indicated as "G") is created on the left of the symbol display window. The set group name is displayed in the top row of the symbols.

Additionally, the group display column of the grouped symbols shows the identifying color set above.

🂱 Pro-Studio EX project02.npx							
Eile Edit Tool Programming Assist Setting	g <u>H</u> e	lp					
Start 🔉 🟹 Node 🔉	Þ	Symbol 🔉 襆	Feature ≫ 📑	Save	ン 🔖 Trans	fer	Monitor Status
Symbol	N	lode Name AGP1	D	evice Nar	ne PLC1		
Group Ungroup Insert Delete	s	heet Name Sheet3	Set	it as a glo	obal symbol sheet.		
Copy Cut Paste	G	Symbol	Data Type	Consec utive	Device Address	No. of Data	Comme
Symbol Sheet	·	Production_LineA					
Add Delete		TankA_errorlamp	Bit		Y0001	1	
		LineA_sensorinput	Bit		×0001	1	
Check Duplication/List Used Addresses		LineA_speed	16Bit(Signed)		D0050	1	
Check Duplication/List Osed Addresses	$\cup$					1	
Global Constant Setting Screen		TankB_errorlamp	Bit		Y0002	1	
		LineB_sensorinput	Bit		×0002	1	
⊡ · ▼ WindowsPC		LineB_speed	16Bit(Signed)		D0051	1	
Ē-₩ PC1 (192.168.0.100)						1	

With the group configuration symbols displayed, the [-] button is placed in the column displaying the group name. Clicking the [-] button hides the configuration symbols and displays only the group name. (The [-] button changes to the [+] button.)

饕 Pro-Studio EX project02.npx						_ 🗆 ×
File Edit Tool Programming Assist Settin	ng <u>H</u> elp					
Start 🔉 🟹 Node 🔉	🜔 Symbol ᆇ	Feature 🔉 📄	Save	» 🆄 Trans	ifer 😡	Monitor Status
Symbol	Node Name AGP1	D	evice Nam	e PLC1		
Group Ungroup	Sheet Name Sheet3	Se	titas a do	bal symbol sheet.		
Insert Delete	encertaine <sub>j</sub>		gio			
Copy Cut Paste	G Symbol	Data Type	Consec utive	Device Address	No. of Data	Comme
Symbol Sheet	Froduction_LineA					<u> </u>
Add Delete	4				1	
	TankB_errorlamp	Bit		Y0002	1	
Check Duplication/List Used Addresses	LineB_sensorinput	Bit		X0002	1	
Circle Dupication Elst Dised Addresses	LineB_speed	16Bit(Signed)		D0051	1	
Clabel Constant Cotting Courses					1	

• When clicking the [OK] button, the group names are checked whether they are duplicated or not. Reset the same names to be different ones.

### Ungrouping

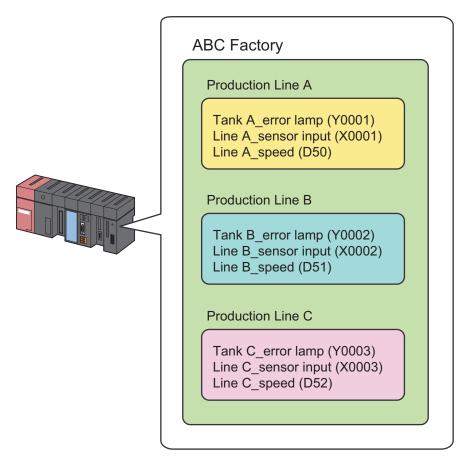
Click the column displaying the group name, and then click the [Ungroup] button.

牧 Pro-Studio EX project02.npx							_ 🗆 ×
File Edit Tool Programming Assist Setting	j <u>H</u> e	lp					
Start >> 🛐 Node >>		Symbol 🔉 襆	Feature ン 📄	Save	🔉 🆄 Trans	sfer 🛛	Monitor Status
Symbol	Ν	lode Name AGP1	D	evice Nar	me PLC1		
Group Ungroup Insert Delete	S	heet Name Sheet3	🗌 🗌 Set	; it as a gli	obal symbol sheet.		
Copy Cut Paste	G	Symbol	Data Type	Consec utive	Device Address	No. of Data	Comme
Symbol Sheet	•	Production_LineA					
Add Delete		TankA_errorlamp	Bit		Y0001	1	
		LineA_sensorinput	Bit		X0001	1	
Check Duplication/List Used Addresses		LineA_speed	16Bit(Signed)		D0050	1	
Check Dupication/List Osed Addresses						1	
Global Constant Setting Screen		TankB_errorlamp	Bit		Y0002	1	
		LineB_sensorinput	Bit		X0002	1	
· ▼ WindowsPC		LineB_speed	16Bit(Signed)		D0051	1	
È 🐺 PC1 (192.168.0.100)						1	

Symbols are ungrouped.

## 28.2.2 Grouping Groups/Symbols Together

Grouping is available up to 2 hierarchies. You can create a new group by gathering two different groups, or a group and symbols.



1 Select the groups or symbols you wish to group from the symbol sheet, and then click the [Group] button.

💱 Pro-Studio EX project02.npx							
<u>File Edit Tool Programming Assist Settin</u>	ng <u>H</u> e	lp					
Start >> 🔪 Node >>	1	Symbol ⋗ 襆	Feature ≫ 🔡	Save	» 🆄 Trans	fer 😺	Monitor Status
Cymbol	N	lode Name AGP1	D	evice Nan	ne PLC1		
Group Ungroup Insert Delete	S	heet Name Sheet3	🗖 Se	titasa glo	bal symbol sheet.		
Copy Cut Paste	G	Symbol	Data Type	Consec utive	Device Address	No. of Data	Comme
Symbol Sheet	+	Production_LineA					<u> </u>
Add Delete						1	
	+	Production_LineB					
Check Duplication/List Used Addresses						1	
	+	Production_LineC					
Global Constant Setting Screen						1	
						1	
						1	

The "Symbol Grouping" screen appears.



• When you click the [Yes] button:

The "Group" screen appears.

Set [Group Symbol Name] and [Identification Color] for the group in the second hierarchy, and then click the [OK] button.

The second hierarchy group is now created, and the groups or the group and symbols selected above are registered as a new group.

💱 Pro-Studio EX project02.npx					- 🗆 ×
Eile Edit Tool Programming Assist Sett	ting <u>H</u> elp				
Start >> 🐚 Node >>	🕨 ≽ Symbol ⋗ ≷ Fea	iture 💙 🔡 Save 💙	Transfer		Monitor Status
Symbol	Node Name AGP1	Device Name F	PLC1		
Group Ungroup	Sheet Name Sheet3	 Set it as a global	symbol sheet.		
Insert Delete					
Copy Cut Paste	G G Symbol	Data Type Consec utive	Device Address	No. of Data	Сог
Symbol Sheet	ABC_Factory				
Add Delete	+ Production_LineA				
	+ Production LineB			1	-8
Check Duplication/List Used Addresses				1	
Global Constant Setting Screen	+ Production_LineC				
				1	
				1	

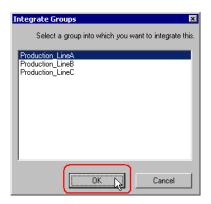
• When you click the [No] button:

According to the combination of the groups or symbols selected, either (1) or (2) given below will be performed.

(1) Combination of a group and symbols: The selected symbols are integrated (added) into the existing group to be selected.

(2) Combination of two different groups: The selected group is added into the other group.

Select the group name to be integrated on the [Group Integrate] screen, and then click the [OK] button. The other group will be added into the group selected here.

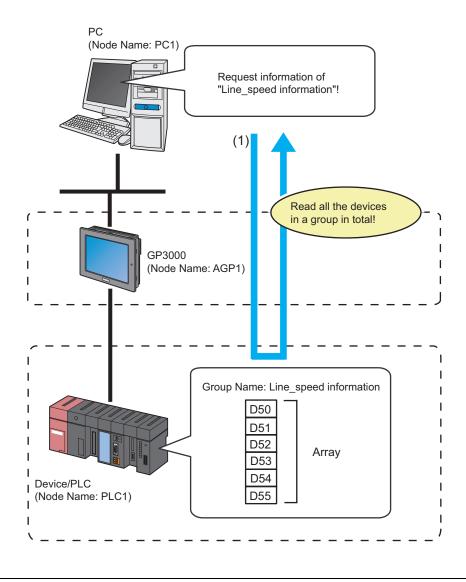


# 28.3 Array of Symbols

## 28.3.1 Advantages of Symbol Array

'Pro-Server EX' offers efficient communication by storing data to be read or written in sequential devices. Moreover, array symbols allows you to save the effort of registering sequential devices as symbols respectively, making symbol control easier.

You can register sequential devices on a symbol sheet as [Array].



NOTE

Data types should be integrated into Word or Bit type.

• As for the Word type, you can add Bit offset symbols into an array. However, it is impossible to place these symbols at the first address of the array.

1 Click the [Symbol] icon on the status bar, and select the symbol sheet where the symbol you wish to array are registered.

Pro-Studio EX ?.nj	ж						_ 🗆 ×
ile <u>E</u> dit <u>T</u> ool <u>P</u> rogra	amming Assist Setti	ng <u>H</u> elp					
对 Start ≫ 🗓	🔪 Node ン	🌔 Symbol 🌺 🍝	Feature ン 📑	Sav	ve 😕 🆄 T	ransfer	Monito Statu:
Symbol		Node Name AGP1		Device N	Name PLC1		
Group	Ungroup	Sheet Name Sheet3		Set it as a	global symbol shee	et.	
Insert	Delete						
Copy Cut	Paste	Symbol	Data Type	Consec utive	Device Address	No. of Data	Comment
Symbol Sheet		Line_speed	16Bit(Signed)		D0050	6	<u> </u>
Add	Delete					1	
						1	
Check Duplication/Lis	t Used Addresses					1	
		<u>.</u>				1	
Global Constant S	etting Screen					1	
∃… ▼ WindowsPC						1	
	801)					1	
I HINTER						1	
GP3000 Series						1	
🖻 🔙 AGP1 (192.1						1	
	NAL:Sheet2					1	
	neet3 A Series CPU [					1	
<ul> <li>GP Series</li> <li>Global Symbol</li> </ul>						1	
r alobal symbol						1	

2 Click the symbol you wish to align, and click the [Group] button of [Symbol] on the symbol sheet.

🂱 Pro-Studio EX 🛛 ?.npx						_ 🗆 ×
Eile Edit Tool Programming Assist Settin	g <u>H</u> elp					
Start >> 🔄 Node >> 🌽 Symbol >> ڿ Feature >> 📄 Save >> 🆄 Transfer						
Symbol	Node Name AGP1		Device	Name PLC1		
Group Ungroup Insert Delete	Sheet Name Sheet3		Set it as	a global symbol shee	ł.	
Copy Cut Paste	Symbol	Data Type	Consec utive	Device Address	No. of Data	Comment
Symbol Sheet	Line_speed	16Bit(Signed)		D0050	6	
Add Delete					1	
					1	
Check Duplication/List Used Addresses					1	
	· · · · · · · · · · · · · · · · · · ·				1	
Global Constant Setting Screen					1	

**3** Set the group symbol name and identification color.

Group		×
Group Symbol Name Line_speed	information	
Identification Color		
	🗖 Form Array	1
Other Colors	OK	Cancel

4 Check the [Array] check box, and enter the number of array (elements).

Group	×
Group Symbol Name Line_speed	linformation
	Form Array
Other Colors	OK Cancel

**NOTE** • You can select the number of alignments with global constants.

## "30.6.3 Global Constant Setting"

• When multiple values are set for the element number, sequential groups from the original device address are created by the number of elements.

#### 5 Click the [OK] button.

A group display column (indicated as "G") is created on the left of the symbol display window. The top row of the symbols shows the group name, array type (Word type or Bit type) and the number of array (elements).

🂱 Pro-Studio EX 🛛 ?.npx							_ 🗆 ×
Elle Edit Iool Programming Assist Settin			Feature 🔉 🔡	Save	» 🆄 Trans	fer 😡	Monitor Status
Symbol Group Ungroup Insett Delete		ode Name AGP1 heet Name Sheet3		evice Nar titas a gli	ne PLC1 obal symbol sheet.		
Copy Cut Paste	G	Symbol	Data Type	Consec utive	Device Address	No. of Data	Comme
Symbol Sheet	·	Line_speedinformation Line_speed	Word-type Array 16Bit(Signed)		D 0050	6	
Add Delete		cino_opood				1	
Check Duplication/List Used Addresses						1	

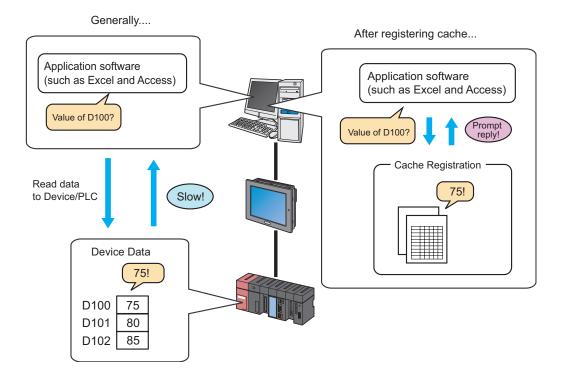
# 28.4 Cache Registration of Frequently Used Devices

Device cache makes 'Pro-Server EX' automatically access a device and temporarily save the values into the memory in a PC.

When a device receives the access request from the application, 'Pro-Server EX' replies promptly by returning cached data temporarily stored in the memory of a PC if the device has been already cached. If there is no cached data, 'Pro-Server EX' is to read to the Device/PLC via a GP.

Using device cache minimizes delay of data transfer or disruption on the line due to access concentration.

To utilize the device cache function, the specified device should be registered on the network project in advance.



There are two methods to register device cache as follows:

- Register manually."28.4.1 Manual Registration"
- Register by importing from device access log. "28.4.2 Import Registration from Device Access Log"

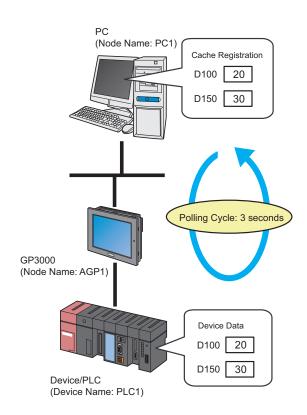
• To utilize the device cache function, the specified device should be registered on the network project in advance.

#### 28.4.1 Manual Registration

The following describes how to cache-register the device manually.

• You can register devices of multiple nodes in one device cache, but cannot start polling to the other nodes if any of the nodes cannot establish communication. Therefore, it is recommended to register a device for each node as a separate device cache as much as possible.

#### Manual Cache Registration of Devices



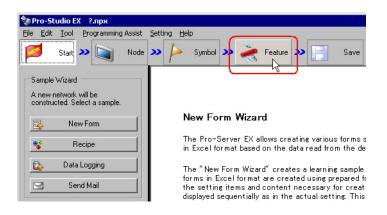
NOTE

• A polling cycle means a time cycle to update the device value that is cache-registered.

/ Ex. /

Setting item	Setting content
Device Cache Name	Cache Registration
Polling Cycle	3 seconds
Polling Start Timing	At Pro-Server EX Startup
Cache Subject Device	"D100" to "D150" of Device/PLC (PLC1)

1 Click the [Feature] icon on the status bar.



2 Select [Device Cache] from the tree display on the left of the screen, then click the [Add] button.

饕 Pro-Studio EX	?.прх			
<u>File Edit Tool</u>	Programming Assist			
Start >	Node			
Add	Import			
Edit	Delete			
ACTION     Trigger Condition     Data Transfer     Device Cache				

**3** Enter "Cache Registration" in [Device Cache Name] as a device cache name to be registered.

Device Cache Setting		×
Device Cache Name Cache1		
Polling Cycle		
O Always		
Polling Cycle	1.0 🛨 sec	
Polling Start Timing		
At Pro-Server EX Startup		
C Automatically start when a registered devi	ce is read.	
sec of lapse from the	last access stops	s Poling.
C Disable Auto Start		
Cache Subjec	t Device	
Add Edit Delete		
Node.DeviceName Device Address	Data Type	No. of Data
	OK	Cancel

4 Check [Polling Cycle] and set "3.0 seconds".

Device Cache Setting	×
Device Cache Name Cache1	
Polling Cycle	
O Always	
Polling Cycle 30 sec	
Polling Start Timing	
At Pro-Server EX Startup	
C Automatically start when a registered device is read.	
□ 30 🛋 sec of lapse from the last access stops Poling.	
O Disable Auto Start	

5 Check [At Pro-Server EX Startup] of [Polling Start Timing].

Device Cache Setting
Device Cache Name Cache1
Polling Cycle
C Always
Polling Cycle     3.0 + sec
Polling Start Timing
At Pro-Server EX Startup
C Automatically start when a registered device is read.
□ 30 sec of lapse from the last access stops Poling.
C Disable Auto Start

6 Register a device to be cached.

1) Click the [Add] button.

	ache Subject Delete	Device	
Node.DeviceName	Device Address	Data Type	No. of Data
		OK	Cancel

2) Select the node name "AGP1" in [Node Name] which has a device to be cached.

Add Cache Subje	ect Device	×
	e subject symbol/group.	
Node Name		
PC1	<b>•</b>	
PC1		
		IJ
Device Addr	ess	
<u></u>	<u>•</u>	
Data Type	16Bit(Signed) No. of Data	
	OK Cancel	

3) Select "PLC1" in [Device Name].

dd Cache Subject Device 🗙
Specify a cache subject symbol/group. Node Name
AGP1
Device Name
#INTERNAL
Data Type 16Bit(Signed) No. of Data 1
OK Cancel

4) Set "D100" in [Device] as a device to be cached.

Add Cache Subjec	t Device		×
Specify a cache s Node Name	ubject symbol/gro	up.	
AGP1			<b>•</b>
Device Name			
PLC1			•
Device Addres	\$		
D0100			
Data Type	16Bit(Signed)	No. of Data	1
		ОК	Cancel

5) Set "16Bit(Signed)" in [Data Type] as a device data type and "1" in [No. of Devices] as the number of devices, then click the [Add] button.

Add Cache Subject Device	×
Specify a cache subject symbol/group. Node Name	
AGP1	•
Device Name	
PLC1	•
Device Address	
₫D0100	•
Data Type [16Bit(Signed) No. of Data	13
ОК	Cancel

"D100" has now been registered as a device to be cached.

Register the device "D150" in the same manner as "D100".

## 7 Click the [OK] button.

Ac		ache Subject Delete	Device		
	Node.DeviceName	Device Address	Data Type	No. of Data	
•	AGP1.PLC1	D0100	16Bit(Signed)	1	
	AGP1.PLC1	D0150	16Bit(Signed)	1	
			OK	Cance	

Now you can see the device cache name specified above in the tree display on the left of the screen and "Device Cache Subject List" on the right.

	roject02.npx <u>P</u> rogramming As:	sist <u>S</u> ettin	g <u>H</u> elp		_					
Start >>	Node	>> /> Edit	Symbol >>	elete	e <b>&gt;&gt;</b> [			ransfer Jbiect List	<b>.</b>	Monitor Status
Add	Import	Device C Cache1	ache Name	Node.DeviceN AGP1.PLC1	ame	Device Address	Data Ty 16Bit(Si	No. of D 1	Start Timing At Pro-Server	EX
Edit ACTION Frigger Condit Data Transfer Cachel Cachel				AGP1.PLC1		D0150	16Bit(Si	1		

# Setting Guide

Device Cache Setting
Device Cache Name Cache1
Polling Cycle
C Always
Polling Cycle     I.0     sec
Polling Start Timing
At Pro-Server EX Startup
C Automatically start when a registered device is read.
□ 30 sec of lapse from the last access stops Poling.
C Disable Auto Start
Cache Subject Device
Add Edit Delete
Node.DeviceName Device Address Data Type No. of Data
OK Cancel

Setting item	Setting content
Device Cache Name	Enter a device cache name.          NOTE         • Device cache names will be used in the case of control from API.
Polling Cycle	<ul> <li>Sets the polling time (data update cycle) of the device to be registered.</li> <li>Always</li> <li>Check this when updating device data regularly.</li> <li>Polling Cycle</li> <li>Check this when updating device data at a particular interval, which can be set in increments of 100ms (0.1sec).</li> <li><b>NOTE</b></li> <li>If a WindowsPC node or a GP Series node (including GLC Series or FGW) is included in a cached record, you cannot specify [Always].</li> </ul>

Setting item		Setting content
Polling Start Timing		<ul> <li>Selects the timing to start polling.</li> <li>At Pro-Server EX Startup</li> <li>When 'Pro-Server EX' starts, polling is executed. And when 'Pro-Server EX' exits, polling is stopped.</li> <li>Automatically start when a registered device is read.</li> <li>Polling starts when any registered device is accessed.</li> <li>If checked, the item [Polling stops if there is no access for * seconds] becomes active, and polling stops if no read access is given for the period specified here.</li> <li>If not checked, polling does not stop until 'Pro-Server EX' exits.</li> <li>Disable Auto Start</li> <li>Polling starts according to the request not from 'Pro-Server EX' but from API.</li> </ul>
	Add	Set [Node Name], [Device Name], [Device] (or symbol), [Data Type] and [No. of Data] on the "Add device for cache registration" screen. Then, click the [Add] button to register.
Cache Subject Device	Edit	Specify the device you wish to edit, and edit the contents on the "Edit device for cache registration" screen. Then, click the [Edit] button.
	Delete	Specify the device you wish to delete, and click the [Yes] button on the "Delete device cache" screen.

## 28.4.2 Import Registration from Device Access Log

Cache registration is available from the output results of "Device Access Log".

On [Device Access Log], you can output device access logs into a CSV-format file, and then import that file for cache registration.

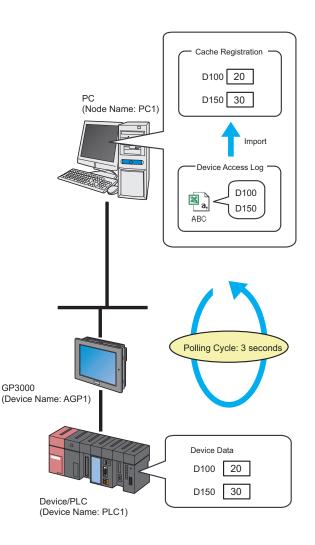
**NOTE** • Refer to "28.5 Device Access Log" about creating device access logs.

• For better performance, it is recommended to open the device access log file before importing it, by means of an application like Excel or Notepad, and to follow the actions below:

(1) Delete the devices that do not require device cache.

(2) Register the devices that can be arranged in sequence as one sequential device as much as possible.

#### Import Registration



NOTE

• A polling cycle means a time cycle to update the device value that is cache-registered.



Setting item	Setting content
Polling Cycle	3 seconds
Polling Start Timing	At Pro-Server EX Startup
Output file of device access logs to be cached	C:\Desktop\ABC.csv

1 Click the [Feature] icon on the status bar.

💱 Pro-Studio EX 🛛 ?.npx	
File Edit Tool Programming Assist	Setting Help
Start 😕 🐚 Node	🍑 눧 Symbol 赵 ≷ Feature ⋗ 📄 Save
Sample Wizard On the 2nd time or later, samples will be added to the network. Rew Form	2-Way Network
🏂 Recipe	2-Way network is a network connecting FA units and in Excel format by acquiring data of the GPs and the v
🚱 Data Logging	connected to the GPs, and transmit the information of connection units.
Send Mail	Pro-Studio EX

2 Select [Device Cache] from the tree display on the left of the screen, then click the [Import] button.

🎕 Pro-Studio EX	project02.npx		
<u>File Edit Too</u>	I <u>P</u> rogramming As:	sist	
Start .	>> 🔪 Node	<b>&gt;&gt;</b>	
Add			
Edit	Delete	C	
ACTION     Trigger Condition     Data Transfer     Concernation     Cache     Cache			

**3** Check [Polling Cycle] and set "3.0 seconds".

Import Device Cache Buffer	×
Device Cache Buffer is automatically generated to cache data of devices written in the output result of the device access log.	
Set Cache Buffer to Generate	
Polling Cycle	
O Always	
Polling Cycle 3.0 sec	
Polling Start Timing	1
At Pro-Server EX Startup	
C Automatically start when a registered device is read.	
□ 30 ★ sec of lapse from the last access stops Poling.	
C Disable Auto Start	

4 Check [At Pro-Server EX Startup] of [Polling Start Timing].

Import Device Cache Buffer	x
Device Cache Buffer is automatically generated to cache data of devices written in the output result of the device access log.	
Set Cache Buffer to Generate	
Polling Cycle	
O Always	
Polling Cycle     30 <sup></sup> sec	
Polling Start Timing	
At Pro-Server EX Startup	
C Automatically start when a registered device is read.	
sec of lapse from the last access stops Poling.	
C Disable Auto Start	

5 Set the file name "aaa.csv" in [Output file of device access logs to be cached], and then click the [Create] button.

Output File of Device Access Log to Cache	
C:¥Documents and Settings¥Administrator¥デスクトップ¥aaa.csv	Browse
	Ī
Create	Cancel

# Setting Guide

Import Device Cache Buffer 🛛 💌
Device Cache Buffer is automatically generated to cache data of devices written in the output result of the device access log.
Set Cache Buffer to Generate
Polling Cycle
O Always
Polling Cycle
Polling Start Timing
C At Pro-Server EX Startup
C Automatically start when a registered device is read.
□ 30 → sec of lapse from the last access stops Poling.
C Disable Auto Start
Output File of Device Access Log to Cache
Browse
Create Cancel

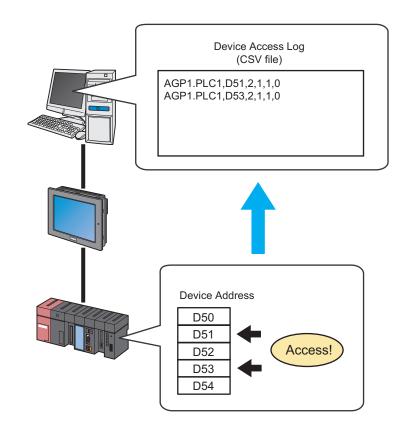
Setting item	Setting content
Polling Cycle	<ul> <li>Sets the polling time (data update cycle) of the device to be registered.</li> <li>Always</li> <li>Check this when updating device data regularly.</li> <li>Polling Cycle</li> <li>Check this when updating device data at a particular interval, which can be set in increments of 100ms (0.1sec).</li> <li>NOTE</li> <li>When you import the output file including a WindowsPC node or a GP Series node (including GLC Series or FGW) with [Always] selected, the setting will be automatically changed to [Polling Cycle 1.0 second]. After importing, check it again.</li> </ul>
Polling Start Timing	<ul> <li>Selects the timing to start polling.</li> <li>At Pro-Server EX Startup</li> <li>When 'Pro-Server EX' starts, polling is executed. And when 'Pro-Server EX' exits, polling is stopped.</li> <li>Automatically start when a registered device is read.</li> <li>Polling starts when any registered device is accessed. If checked, the item [Polling stops if there is no access for * seconds] becomes active, and polling stops if no read access is given for the period specified here.</li> <li>If not checked, polling does not stop until 'Pro-Server EX' exits.</li> <li>Disable Auto Start</li> <li>Polling starts according to the request not from 'Pro-Server EX' but from API.</li> </ul>

Setting item	Setting content
Output file of Device Access Logs to Cache	Click the [Browse] button, and select a device access log file (CSV file) on the "Save As" screen.

# 28.5 Device Access Log

'Pro-Server EX' records accessed devices as needed basis, and allows you to output this record (Device access log) to a CSV file.

**NOTE** • You can cache-register a device more easily by importing a CSV file.



This section describes a series of actions to collect, save and clear device access logs.

1 Click the [Status Monitoring] icon on the status bar.

The status monitor screen appears to indicate the ongoing status of 'Pro-Server EX'.



For details about the screen, see "Chapter 27 Simply Confirming On-site Status".

2 Click the [Device Access Log] button.

💱 Pro-Studio EX 🛛 project02.npx						
<u>F</u> ile	<u>E</u> dit <u>T</u> o	ol	<u>P</u> rogram	ming As:	si	
	Start	<b>&gt;&gt;</b>		Node		
P	Stat	us Mo	onitor			
	Device Monitor					
<u></u>	Sym	ool M	onitor		I	
LOG	Lo	g Vie	wer		I	
	Device	Acc	ess Log	Ç		

The "Device Access Log" screen appears.



# 28.5.1 Collecting Device Access Log

1 Click the [Start] button.



Collection of device access logs starts with the [Now collecting device access logs] message displayed.

💯 Device Access Log		
Stop	Save	Clear
Now collecting	device acces	s log.
	1	

When the collection finishes, csv file appears to indicate the collected log number.

Click the [Stop] button when you want to stop the collection.

Device Access Log		
	1	×
Stop	Save	Clear
Now collecting	device acces	s log.

## 28.5.2 Saving Device Access Log After Collecting

1 Click the [Save] button.



2 Enter a file name and click the [Save] button.

<b>S</b>	File name:		) (	Save
My Network Places	Save as type:	CSV File(*.csv)	•	Cancel

The Save Completed message now appears, and the collected device access logs are saved.

NOTE	•	You can collect at maximum 1000 logs.
	•	If 'Pro-Server EX' is closed with Device Access Log running, Device Access Log is also closed and
		the collected logs are to be broken.
	•	If 'Pro-Server EX' reloads a network project file during the Device Access Log operation, the
		collected logs are to be broken and the "Now collecting" message will turn to "Under suspension".

## Formats of Device Access Log to Be Saved

Formats of device access logs (CSV file) to be saved are as follows:

"Node Name. Device Name", "Group Name/Device Address", "Access Mode\*", "Access Point", "Access Count" and "0"

(Example) AGP1.PLC1,D100,2,5,2,0 AGP2,LS200,6,10,1,0

\* "Access Mode" is indicated as the numbers in the table below.

Mode	Value
Bit Access	1
16-bit Access (excluding BCD)	2
16-bit BCD Access	5
32-bit Access (excluding BCD)	6
32-bit BCD Access	9
64-bit Access Float Access	10
Double Access	11
Character String Access	12
Group	32768 (0x8000)

#### Order of Display

Device access logs are output to a CSV file and sorted in the following sequence:

- (1) Node Name. Device Name
- (2) Group Name/Device Address
- (3) Access Mode\*
- (4) Access Point

#### (Example)

AGP1.PLC1,D100,2,5,2,0 AGP1.PLC2,D100,2,5,2,0 AGP2.PLC1,D100,2,5,2,0 AGP2.PLC1,D101,2,5,2,0 AGP2.PLC1,D101,5,5,2,0 AGP2.PLC1,D101,5,10,2,0

## 28.5.3 Clearing Device Access Log After Collecting

1 Click the [Clear] button.



The [Clear logs?] message appears.

Device Access Log for Pro-Server EX 🛛 🛛 🔀					
?	Are you sure	you want to to clear the log?			
	<u>Y</u> es				

2 Select the [Yes] button.

Device Access Log for Pro-Server EX 🛛 🛛 🕅					
Are you sure you want to to clear the log?					
	Yes	No			

The collected device access logs are cleared.

#### 28.5.4 Restrictions

#### Conditions for collecting device access logs

Whether collecting device access logs or not is determined by the following conditions:

- If a device gives a read-request to the device of another node, device data are collected as logs. When a readrequest is received from another node, these data are not collected as logs.
- Access frequency is counted despite whether a request is via a network or not (whether cache read or not).
- Data is collected as logs despite whether actually accessed to devices or not (whether connected on the network or not).
- In the case of data transfer, data is not collected. (excluding a transfer source device when the transfer type is "Collection-type data transfer")

#### Conditions for access to the same device

Whether accessing the same device or not (whether access frequency is counted or not) is determined by the following conditions:

- The first address of the device is the same.
- The access mode is the same.
- The access point is the same.

If any of the above conditions are not satisfied, the access is judged as an access to another device.

(Example) These examples are the cases judged as different: 16-bit access x 1 point to LS100 and 32-bit access x 1 point to LS100 16-bit access x 2 points to LS100 and 32-bit access x 1 point to LS100 Bit access x 16 points to LS100:00 and 16-bit access x 1 point to LS100

When the same device is specified, moreover, the case specifying the device directly and that accessing the group where just one device is registered are judged as different. However, the case accessing by specifying the symbol or device inside of the group (excluding the nest group) is judged as an access by specifying the device directly.

#### Allowance of log collection

You can collect at maximum 1000 logs, and the logs exceeding this limit are not collected. In this case, it is not required to make the [Start] button on the "Device Access Log" screen invalid.

When the access frequency exceeds the maximum number (4294967295), the exceeding access is not counted.

#### Other restrictions

- If 'Pro-Server EX' is closed with Device Access Log running, Device Access Log is also closed (and the collected logs are to be broken).
- If 'Pro-Server EX' reloads a network project file during the Device Access Log operation, the collected logs are to be broken and the [Now collecting] message will turn to [Under suspension].