# 29 Tips for Faster Communication

29.1	Getting to Know the Performance of the Configured System	
29.2	Grouping Symbols	
29.3	Array of Symbols	29-15
29.4	Cache Registration of Frequently Used Devices	
29.5	Device Access Log	29-32

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

1 First, get to know the present performance!

<sup>(C)</sup> "29.1 Getting to Know the Performance of the Configured System"

2 Improve communication efficiency by controlling symbols proficiently!

"29.2 Grouping Symbols""29.3 Array of Symbols"

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

"29.4 Cache Registration of Frequently Used Devices"

4 Which device do you often use?

"29.5 Device Access Log"

# 29.1 Getting to Know the Performance of the Configured System

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

A result of measu	irement		
	Time	208 msec	
	Begin	Close	

#### 29.1.1 Measuring Reading Time

1 Click [Measure Read Time] from [Tools] on the menu bar.



2 Set each item on the "Data Read Performance 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 o	Access Type



• For details about the setting items, please refer to "29.1.2 Setting Guide".

The "now" 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-Server EX Tools					
1	Processing is completed normally				
	OK				

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

A result of mea	asurement
	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.

ſ

# 29.1.2 Setting Guide

Data Read Performan	e Measurement
Read out	the specified device and measure the required time.
Node Name	▼
Device/PLC	<b>X</b>
Device Address	<b></b>
Number	255 -
⊢ A result c	Access Type Bit C 16Bit C 32Bit Double f measurement Time Begin Close

Setting item	item Setting content		
Node Name	Select the node name that you wish to measure.		
Device/PLC	Select the Device/PLC having the device you wish to measure.		
Device Address	Enter the device address directly or select the symbol by clicking the list button.		
Number	Enter the number of devices. The maximum number is 65535 although it changes depending on the device type and the access type.		
Access Type	Select an access type.		
Read Type	Select a read type. • [Direct] Read device values directly. • [Cache] Read cached device data.		

# 29.2 Grouping Symbols

#### 29.2.1 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 1.npx					
File Edit Tool Programming Assist Settin	na Help				
Start >> Node >>	Symbol >>	Feature ン [	Save ン	transfer Transfer	Monitor Status
Symbol	Node Name AGP1		Device Name PL	C1	
Group Ungroup	Sheet Name Sheet3		Set it as a global sy	mbol sheet.	
Copy Cut Paste	Symbol	Data Type	Consec utive Device.	Address No. of Data	Comment
Symbol Sheet	TankA_error_lamp	Bit	Y0001	1	
Add Delete	LineA_sensor_input	Bit	×0001	1	
	LineA_speed	16Bit(Signed)	D0050	1	
Cheerly Duralization // intelligent Andresson				1	
Check Duplication/List Osed Addresses	TankB_error_lamp	Bit	Y0002	1	
Global Constant Setting Screen	LineB_sensor_input	Bit	×0002	1	
	LineB_speed	16Bit(Signed)	D0051	1	
E▼ Pro-Server EX				1	
E	TankC_error_lamp	Bit	Y0003	1	
GP3000 Series	LineC_sensor_input	Bit	×0003	1	
🚊 🔄 AGP1 (192.168.0.100)	LineC_speed	16Bit(Signed)	D0052	1	
#INTERNAL-Sheet2				1	
PLC1:Sheet3 A Series CPU I				1	
WinGP 45				1	
FI 3000     F GP Series				1	
Global Symbol			i i i i i i i i i i i i i i i i i i i	1	

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

🂱 Pro-Studio EX 1.npx						_ 🗆 🗵
File Edit Tool Programming Assist Settin	ng Help					
Start 🔉 🟹 Node 🔉	녿 Symbol ⋗	≷ Feature ン 📑	- Sa	ive ᠉ 🆄 T	ransfer	Monitor Status
Symbol	Node Name AGP1		Device	Name PLC1		
Group Ungroup	Sheet Name Sheet3		Setitas	a global sumbol shee		
Insert Delete	onocritanoj-		000000			
Copy Cut Paste	Symbol	Data Type	Consec utive	Device Address	No. of Data	Comment
Symbol Sheet	TankA_error_lamp	Bit		Y0001	1	
Add Delete	LineA_sensor_input	or_input Bit		X0001	1	
	LineA_speed	16Bit(Signed)		D 0050	1	
Check Duplication / List Lload Addresses					1	
	TankB_error_lamp	Bit		Y0002	1	
Global Constant Setting Screen	LineB_sensor_input	Bit		×0002	1	
	LineB_speed	16Bit(Signed)		D0051	1	
Pro-Server EX			1			

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 1.npx						_ 🗆 ×
File Edit Tool Programming Assist Settin	g Help					
💋 Start ン 🟹 Node ン	≽ Symbol ⋗ 葇	Feature ン 📑	Sa	we 🔉 🆄 Ti	ransfer	Monitor Status
Node Name AGP1 Device Name PLC1						
Group	Sheet Name Sheet3	r	Set it as	a alobal symbol shee	ət.	
Insert Delete						
Copy Cut Paste	Symbol	Data Type	Consec utive	Device Address	No. of Data	Comment
Symbol Sheet	TankA_error_lamp	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	
Critery Dupiloutery Elst 0360 Addresses	TankB_error_lamp	Bit		Y0002	1	
Global Constant Setting Screen	LineB_sensor_input	Bit		X0002	1	
	LineB_speed	16Bit(Signed)		D0051	1	

The "Group" screen appears.

Group		×
Group Symbol Name <mark>(Broup)</mark> 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.



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.

"32.2 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 1 ppy							
File Edit Tool Programming Assist Settin	a Help						
Start >> 🔪 Node >>	Symbo	ı » ≷	Feature >> 📄	Save	🔉 🆄 Trans	fer	Monitor Status
Symbol	Node Nar	ne AGP1	D	evice Nar	ne PLC1		
Group Ungroup	Sheet Nar	e Sheet3	Set	it as a du	nhal sumhol sheet		
Insert Delete			1.000	k do digit	boar symbol shoot.		
Copy Cut Paste	G	Symbol	Data Type	Consec utive	Device Address	No. of Data	Comme
Sumbol Sheet	Product	ion_LineA					
Add Delete	TarikA_	enor_iamp	Bit		110001	1	
	LineA_s	ensor_input	Bit		×0001	1	
Check Duplication/List Used Addresses	LineA_s	peed	16Bit(Signed)		D0050	1	
	$\mathbf{\nabla}$					1	
Global Constant Setting Screen	TankB_	error_lamp	Bit		Y0002	1	
	LineB_s	ensor_input	Bit		X0002	1	
E···▼ Pro-Server EX	LineB_s	peed	16Bit(Signed)		D0051	1	
FCT (132.166.0.1)						1	
	<b>1 1 0</b>		les l		Looon		

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.)

🎭 Pro-Studio EX 1.npx						_ 🗆 🗡
File Edit Tool Programming Assist Settin	g Help					
Start 🔉 🟹 Node >	🜔 Symbol ⋗ ≷	Feature ン 📄	Save ン	Transfer 🚺		Monitor Status
Symbol	Node Name AGP1	De	evice Name PL	.C1		
Group Ungroup	Sheet Name Sheet3	Set	it as a global si	umbol sheet		
Insert Delete	onoocritainoj	,	it do a global oj	,		
Copy Cut Paste	G Symbol	Data Type	Consec Der utive Der	vice Address	No. of Data	Comme
Symbol Sheet	Production_LineA					<u> </u>
Add Delete				1		
	TankB_error_lamp	Bit	Y000	)2 1		
Check Duplication/List Used Addresses	LineB_sensor_input	Bit	X000	)2 1		
Check Displeation Elst Used Addlesses	LineB_speed	16Bit(Signed)	D005	51 1		
Global Constant Setting Screen				1		
	T 10 1	lon l		55 La		

• 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.

🂱 Pro-Studio EX 🛛 1.npx					_ 🗆 ×
File Edit Tool Programming Assist Settin	ng Help				
💋 Start 🔉 🟹 Node >	🜔 Symbol 😕 ≷	Feature ン 📑	Save ⋗ 🆄 Trans	sfer	Monitor Status
Symbol	Node Name AGP1	Dev	ice Name PLC1		
	Sheet Name Sheet3	🗔 🗖 Set it	as a global symbol sheet.		
Copy Cut Paste	G Symbol	Data Type C	Consec Device Address	No. of Data	Comme
Symbol Sheet	Production_LineA				<b>_</b>
Add Delete	TankA_error_lamp	Bit	Y0001	1	
	LineA_sensor_input	Bit	×0001	1	
Check Duplication/List Lised Addresses	LineA_speed	16Bit(Signed)	D 0050	1	
				1	
Global Constant Setting Screen	TankB_error_lamp	Bit	Y0002	1	
	LineB_sensor_input	Bit	X0002	1	
E Pro-Server EX	LineB_speed	16Bit(Signed)	D0051	1	
#INTERNAL Sheet1				1	
	TankC over Jamp	D3	20002	1	

Symbols are ungrouped.

### 29.2.2 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 1.npx							_ 🗆 ×
File Edit Tool Programming Assist Settin	ig Hel	p					
Start 🔉 🔪 Node 🔉		Symbol ⋗ ≷	Feature 🔉 📑	Save	ン 🔖 Trans	fer 🛛	Monitor Status
Symbol	N	ode Name AGP1	D	evice Nan	ne PLC1		
Group Ungroup	Sł	neet Name Sheet3	🗆 🗆 Set	; it as a glo	bal symbol sheet.		
Copy Cut Paste	G	Symbol	Data Type	Consec utivo	Device Address	No. of Data	Comme
Symbol Sheet	Ð	Production_LineA				1	<b>^</b>
Add Delete	Ŀ	Production_LineB					
Check Duplication/List Used Addresses	+	Production LineC				1	
Global Constant Setting Screen	F						
Pro-Server EX						1	
E- PC1 (192.168.0.1)	Î					1	

The "Group Symbols" 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 1.npx					. 🗆 🗙
File Edit Tool Programming Assist Settin	g Help				
Start 🔉 🟹 Node >	🜔 Symbol 😕 襓 Fe	ature ン 📑 Save ン	Transfer		Monitor Status
Symbol	Node Name AGP1	Device Name F	2.01		
Group Ungroup	Sheet Name Sheet3	Set it as a global	sumbol sheet		
Insert Delete	enect runej		ojinibor onoot.		
Copy Cut Paste	G G Symbol	Data Type Consec	Device Address	No. of Data	Coi
Symbol Sheet	ABC_Factory				<u> </u>
Add Delete	+ Production_LineA				
			1		_ []
Check Duplication/List Used Addresses	+ Production_LineB				- 11
Global Constant Setting Screen	+ Production LineC				
			1		
Pro-Server EX			1		
#INTERNAL:Sheet1			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 "Integrate Groups" screen, and then click the [OK] button. The other group will be added into the group selected here.



# 29.3 Array of Symbols

### 29.3.1 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 🛛 1.npx						
File Edit Tool Programming Assist Sett	ing Help					
Start >> 🐚 Node >>	Symbol >> 🧳	Feature > 📔	Sa	ve 渊 🆄 Ti	ransfer	Monitor Status
Symbol	Node Name AGP1		Device I	Name PLC1		
Group Ungroup	Sheet Name Sheet3		Set it as a	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	
Add Delete					1	
					1	
Check Duplication/List Used Addresses					1	
					1	
Global Constant Setting Screen					1	
					1	
E▼ Pro-Server EX					1	
#INTERNAL:Sheet1					1	
					1	
🖻 🖳 AGP1 (192.168.0.100)					1	
DI Chevro 2 A Carina CDU					1	
WinGP					1	
► LT3000					1	
GP Series					1	
🛄 🕨 Global Symbol					1	

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

🎨 Pro-Studio EX 1.npx						_ 🗆 ×
File Edit Tool Programming Assist Setti	ng Help					
Start 🔉 🟹 Node 🔉	🌔 Symbol ⋗ 葇	Feature ≫ 📑	Sa	ave > 🆄 T	ansfer	Monitor Status
Symbol	Node Name AGP1		Device	Name PLC1		
Group	Sheet Name Sheet3	F	Set it as	a global symbol shee	ł	
Lineert Delete	,			- 3		
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	
					1	

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

Group		×
Group Symbol Name Line_speedi	nformation	
Identification Color		
	Form Array	1
Other Colors	ОК	Cancel

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

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

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

## "32.6.3 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 1.npx							_ 🗆 ×
File Edit Tool Programming Assist Settin	g Help	<u> </u>					
💋 Start ン 🟹 Node ン		Symbol ⋗ ≷	Feature 🔉 📄	Save	🔉 🆄 Trans	fer 😡	Monitor Status
Symbol	No	ode Name AGP1	D	evice Nar	ne PLC1		
Group Ungroup	Sh	eet Name Sheet3	Set	itas a di	bal symbol sheet.		
Insert Delete		,			,		
Copy Cut Paste	G	Symbol	Data Type	Consec utive	Device Address	No. of Data	Comme
Symbol Sheet		ine_speedinformation					<u> </u>
Add Delete		_ine_speed	16Bit(Signed)		00050	Б	
						1	
Check Duplication/List Used Addresses						1	
						1	

# 29.4 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."29.4.1 Manual Registration"
- Register by importing from device access log. "29.4.2 Import Registration from Device Access Log"

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

#### 29.4.1 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.

物 Pro-Studio EX	?.прх
<u>File E</u> dit <u>T</u> ool	Programming Assist
Start 2	Node
Add	
Edit	Delete
ACTION     Trigger Co     Data Tran     Device Ca	ndition sfer iche

**3** Enter "Cache 1" in [Device Cache Name] as a device cache name to be registered.

evice Cache Setting
Device Cache Name Cachel
Polling Cycle
C Always
Polling Cycle
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 Subiect 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	
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	

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

Device Cache Setting	1
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 Device	
Node.DeviceName	Device Address   Data Type   No. of Data	
		l
		l
		I,
	OK Cancel	

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

Add Cache Subje	ect Device	×
Specify a cache	e subject symbol/group.	
Node Name		_
PC1	•	·
PC1		וו
Device Addr	ess	
<u></u>		
Data Type	16Bit(Signed) No. of Data 1	3
	OK Canc	el

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

Add Cache Subject Device	×
Specify a cache subject symbol/group	
Node Name	
AGP1	<u> </u>
Device Name	
	<b>_</b>
PLC1	
Data Type [16Bit(Signed)	No. of Data 1 🕂
	OK Cancel

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

Add	Cache Subje	ct Device		×
Sp	ecify a cache Node Name	subject symbol/grou	ıp.	
	AGP1			▼
	Device Name	•		
	PLC1			▼
0	Device Addre	\$\$\$		
L	EE D0100			<u> </u>
	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 Data] as the number of devices, then click the [OK] button.

Add Cache Subject Device	×
Specify a cache subject symbol/group. Node Name	
AGP1	-
Device Name	
PLC1	•
Device Address	
	<u> </u>
Data Type 16Bit(Signed) No. of Data	1±
	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.

	Ca	iche Subject	Device		
Ad	d Edit	Delete			
	Node.DeviceName	Device Address	Data Type	No. of Data	
•	AGP1.PLC1	D0100	16Bit(Signed)	1	
	AGP1.PLC1	D0150	16Bit(Signed)	1	
		6		<u>`</u>	
		[	OK	Cance	:
				, <u> </u>	

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.

物 Pro-Studio EX	project02.npx					
<u>F</u> ile <u>E</u> dit <u>T</u> ool	<u>P</u> rogramming As	sist <u>S</u> etting <u>H</u> elp				
Start 2	Node	>> 🄑 Symbol 2	» ≷ Feature »	📑 Save 🔉	> 🆄 Transfe	er Monitor Status
		Edit	Delete	Device (	Cache Subje	ct List
Add	Import	Device Cache Name	Node.DeviceName	Device Address	Data Ty No.	of D Start Timing
Edit	Delete	Cache1	AGP1.PLC1 AGP1.PLC1	D0100 D0150	16Bit(Si 16Bit(Si	1 At Pro-Server EX 1
→ ACTION → Trigger Co → Data Trar → Device C. Cach	ondition Isfer ache					

# Setting Guide

Device Cache Setting 🔀 🗙
Device Cache Name Cache1
Polling Cycle
C Always
Polling Cycle     1.0     sec
Polling Start Timing
At Pro-Server EX Startup
C Automatically start when a registered device is read.
□ <sup>30</sup> sec of lapse from the last access stops Poling.
C Disable Auto Start
Cache Subject Device
Node.DeviceName Device Address Data Type No. of Data
OK Cancel

Setting item	Setting content
Device Cache Name	<ul> <li>Enter a device cache name.</li> <li><b>NOTE</b></li> <li>Device cache names will be used in the case of control from API.</li> </ul>
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 Pro-Server EX node or a GP Series node is included in a cached record, you</li> </ul>

Setting ite	em	Setting content
Polling Start Timin	g	<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 [* sec of lapse from the last access stops polling] 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 Cache Subject Device Edit Delete	Set [Node Name], [Device Name], [Device Address] (or symbol), [Data Type] and [No. of Data] on the "Add Cache Subject Device" screen. Then, click the [OK] button to register.	
	Edit	Specify the device you wish to edit, and edit the contents on the "Edit Cache Subject Device" screen. Then, click the [OK] button.
	Delete	Specify the device you wish to delete, and click the [Yes] button on the "Delete Device Cache" screen.

### 29.4.2 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 "29.5 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	🍑 🖒 Symbol 💙 ≷ Feature ⋗ 📄 Save
Sample Wizard On the 2nd time or later, samples will be added to the network.	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 y
😰 Data Logging	connection units.
Send Mail	Pro-Studio EX

2 Select [Cache1] from the tree display on the left of the screen, then click the [Import] button.

黎 Pro-Studio EX	project02.npx
<u>F</u> ile <u>E</u> dit <u>T</u> ool	<u>P</u> rogramming Assist
Start 2	Node Node
Add	
Edit	Delete
ACTION     Trigger Condition     Data Transfer     Device Cache     Cache     Cache1	

**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	
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	×
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	
C Always	
Polling Cycle     30     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 Cache], and then click the [Create] button.

Output File of Device Access Log to Cache	
C:\Documents and Settings\Administrator\Desktop\aaa.csv	Browse
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
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

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 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 [ * sec of lapse from the last access stops polling] 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.

# 29.5 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 "28 Simply Confirming On-site Status".

2 Click the [Device Access Log] button.

牧 Pro	-Studio EX projec	:t02.npx
<u>F</u> ile	<u>E</u> dit <u>T</u> ool <u>P</u> rog	ramming Assi
	Start ン 🞑	Node
r 🗗	Status Monitor	
<u>_</u>	Device Monitor	
<u></u>	Symbol Monitor	
	Log Viewer	
	Device Access Lo	

The "Device Access Log" screen appears.



## 29.5.1 Collecting Device Access Log

1 Click the [Start] button.



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

💯 Device Access Log		
Stop	5 Save	Clear
Now collecting	device acces	ss 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.



## 29.5.2 Saving Device Access Log After Collecting

1 Click the [Save] button.



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

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

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

## 29.5.3 Clearing Device Access Log After Collecting

1 Click the [Clear] button.



The "Are you sure you want to 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?	
(		

The collected device access logs are cleared.

#### 29.5.4 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].