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Introduction

FactorySuite Gateway's DDE Client is often used to connect Excel with Wonderware client applications such as Industrial Application Server and InTouch.

This Tech Note demonstrates connecting the FactorySuite Gateway (FSG) DDE client to Microsoft Excel spreadsheet as a DDE server, under newer MS Operating Systems such as Windows7 or Windows2008.

Application Versions

• FactorySuite Gateway 2.0

Before You Begin

This Tech Note uses Windows Task Manager to monitor the session IDs that are assigned to each logged in user. The Session ID column does not appear in Task Manager by default.

You can add the Session ID column using the following steps:

- 1. Start Windows Task Manager (right-click the Windows task bar and click Start Task Manager).
- 2. Click the Processes tab.
- 3. Click View/Select Columns (Figure 1 below).

📮 Windows Task Ma	anager	_	-		×
File Options View	v Help				
Applications P	Refresh No	w	Ve	tworking User	s
	Update Sp	eed			
Image Name	Select Colu	umns		Description	Â.
BJMYPRT.EX_	25005	~~		Canon My	
CNMNSUT.exe	xilic	00	1,288 K	Canon IJ	
csrss.exe		00	1,120 K		
dwm.exe	xilic	00	21,872 K	Desktop	
explorer.exe	xilic	00	13,648 K	Windows	-
GrooveMonito	xilic	00	2,368 K	GrooveM	-
hkcmd.exe	xilic	00	1,404 K	hkcmd Mo	
igfxpers.exe	xilic	00	948 K	persisten	
igfxsrvc.exe	xilic	00	1,660 K	igfxsrvc	
mobsync.exe	xilic	00	1,820 K	Microsoft	
MSASCui.exe	xilic	00	4,344 K	Windows	
ONENOTEM.EXE	xilic	00	348 K	Microsoft	
sidebar.exe	xilic	00	14,996 K	Windows	
sttray.exe	xilic	00	3,760 K	Sigmatel	
taskeng.exe	xilic 00 3,44			Task Sche	÷
Show process	es from all us	ers	(End Process	
Select which columns	s will be visib	ole on t	the Process p	age	

FIGURE 1: VIEW/SELECT COLUMNS

4. The Select Process Page Column window appears. Check the Session ID option to add the Session ID column to the Task Manager display.

1	Windows Task Manager	23
Fi	le Options View Help	_
Se	elect Process Page Columns	x
	Select the columns that will appear on the Process page of the Task Manager.	
	PID (Process Identifier)	
	User Name	
<	Session ID	
	CPU Usage	_
	CPU Time	=
	Memory - Working Set	
	Memory - Peak Working Set	
	Memory - Working Set Delta	
	Memory - Private Working Set	
	Memory - Commit Size	
	Memory - Paged Pool	
	Memory - Non-paged Pool	
	Page Faults	
	Page Fault Delta	
	Base Priority	-
		_
	OK Cancel	
Pro	ocesses: 61 CPU Usage: 4% Physical Memory: 35%	.::

FIGURE 2: ADD SESSION ID COLUMN TO THE PROCESS PAGE DISPLAY

The Session ID column now appears in Task Manager (Figure 3 below).

1	Nindows Task Manager					_ _ ×
File	Options View Help					
	Processes Convine Desfermance Natur		_			
Ap	plications Processes Services Performance Netwo	orking User	s			
	×				-	
	Image Name	User Name	Session ID	90	Memory (^
	aaBootstrap.exe *32	SYSTEM		00	1,648 K	
	aaGR.exe *32	SYSTEM	0	00	18,096 K	
	aahSCM.exe *32	SYSTEM	0	00	848 K	=
	aaLogger.exe *32	SYSTEM	0	00	1,952 K	
	AdobeARM.exe *32	xilic	1	00	3,116 K	
	atashost.exe *32	SYSTEM	0	00	652 K	
	CcmExec.exe *32	SYSTEM	0	00	16,420 K	
	communicator.exe *32	xilic	1	00	31,600 K	
	conhost.exe	SYSTEM	0	00	500 K	
	conhost.exe	LOCAL	0	00	472 K	
	csrss.exe	SYSTEM	0	00	1,500 K	
	csrss.exe	SYSTEM	1	00	4,984 K	
	dwm.exe	xilic	1	00	10,500 K	
	explorer.exe	xilic	1	00	29,692 K	
	fdhost.exe *32	LOCAL	0	00	1,492 K	
	fdlauncher.exe *32	LOCAL	0	00	728 K	
	FrameworkService.exe *32	SYSTEM	0	00	8,084 K	
	hkcmd.exe	xilic	1	00	1,684 K	
	igfxpers.exe	xilic	1	00	1,532 K	
	igfxsrvc.exe	xilic	1	00	1,880 K	
	igfxtray.exe	xilic	1	00	1,776 K	-
	iuchade avo *21	vilia	1	00	0 016 V	
	Show processes from all users					End Process
Proc	esses: 74 CPU Usage: 29% Physical N	lemory: 57%	6			

FIGURE 3: SESSION ID COLUMN

Connecting FSGateway to Excel in Windows 2003 or Earlier

In older Windows Operating System such as Windows 2003 Server or prior, getting data from Excel DDE server is fairly easy. You can run both Excel and a DDE client (such as FSGateway DDE Client) as services or as applications in the Console mode, and you can establish the DDE Connection between Excel and FSGateway using DDE protocol.

Figures 4-6 (below) show the connection between FSG and Excel in Windows Task Manager. WWClient is our client application for this demo. Running FSGateway as a service and Excel as an application in Windows 2003 console, both the logged-in user and the System account are running in session **ID 0** – the Console session (Figure 4 below).

blications Processes	Performance] N	letworking Users	1		
Image Name	User Name	Session ID	CPU	Mem Usage	
dllhost.exe	xilic	0	00	9,768 K	
DVDLauncher.exe	xilic	0	00	3,696 K	
EngineServer.exe	SYSTEM	0	00	664 K	
EventClientMultipl	SYSTEM	0	00	7,008 K	
EventServer exe	SYSTEM	0	00	7,544 K	
EXCEL.EXE	xilic	0	00	11,952 K	
explorence.c	seilig	0	00	27,296 K	1
FCDBLog.exe	SYSTEM	0	00	7,288 K	
flexsvr.exe	SYSTEM	0	00	4,356 K	
FortiTray.exe	xilic	0	00	6,692 K	
FrameworkServic	SYSTEM	0	00	828 K	
FSGateway,exe	SYSTEM	0	00	12,240 K	
FTActivationBoost	SYSTEM	0	00	12,876 K	
FxControl.exe	SYSTEM	0	00	4,816 K	
hpcmpmgr.exe	xilic	0	00	6,576 K	
hpotdd01.exe	×ilic	0	00	4,384 K	
hpwuSchd.exe	xilic	0	00	2,112 K	
iexplore.exe	xilic	0	00	27,072 K	
jqs.exe	SYSTEM	0	00	1,444 K	
jusched.exe	xilic	0	00	2,360 K	
Imgrd.exe	SYSTEM	0	00	2,256 K	
Imgrd.exe	SYSTEM	0	00	3,664 K	
lsass.exe	SYSTEM	0	00	10,732 K	
Mcshield.exe	SYSTEM	0	22	44,264 K	
McTray.exe	xilic	0	00	756 K	
MDM.EXE	SYSTEM	0	00	3,412 K	-
mfaann ava	CVCTEM	n.,	00	1 014 1	1
Show processes fro	om all users			End Proces	s

FIGURE 4: SESSION ID IN WINDOWS TASK MANAGER

• Configure FSGateway with the DDE and Group objects. Figure 5 (below) shows the FSGateway Object running as a Service.



FIGURE 5: FSGATEWAY RUNNING AS A SERVICE

Figure 6 (below) shows the DDE Object configuration parameters pointing to Excel as the DDE Server.



FIGURE 6: EXCEL AND FSGATEWAY IN SAME SESSION

Figure 7 (below) shows the Group Object configuration.



FIGURE 7: GROUP OBJECT CONFIGURATION

Figure 8 (below) shows the WWClient getting Excel updates via the FSGateway DDE Client Configuration.

1	licrosoft Ex	cel - Book1														
	<u>File</u> <u>E</u> dit	<u>V</u> iew <u>I</u> ns	ert F <u>o</u> rmat	<u>I</u> ools <u>D</u>	ata <u>W</u> indov	/ <u>H</u> elp										
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: .																
	612	•	Jx	D	F	F	0	11		1	17	1	64	hl	0	D -
1	A 103	D		U	E		6			J	ĸ	E:	1M	IN IN	0	
2	125			÷												
3	Martin	CI.												1.51		
4	Tile Con	erware Liler	1C	1-									<u>الد</u>			
5	Elle Sch	JC. Connectic	ins Item <u>Fi</u> e	жр.	0.00055-10	с н										
5	r1c1	anostasyate	wayluue_yluup 1	123 11	0x0030303010	9:49.14.0289	02/29/20	12 0x00d	:0							
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19																

FIGURE 8: DDE CONNECTION TO EXCEL SPREADSHEET

Connecting FSGateway to Excel DB in Windows 7 and Windows 2008

In the newer Windows Operating Systems, the Console Mode is a thing of the past. The newer OS always runs all Services in Session **0**, and each logged-in user is assigned a *different* Session ID.

What this means is that if you are running any program as a service, it is automatically assigned the Session ID of **0**. MS Excel cannot run as service. It runs as an application under the logged in user. Once Excel starts you will see it runs under a different Session ID.

Figure 9 (below) shows Excel and FSGateway running under the same logged in user, but in different Session IDs. Excel runs as an application (not as a service), and FSGateway is running as Service with the Session ID of **0**.

ji V	/indows Task Manager							x
File	Options view Help							
Ap	Nications Processes Services Performance Networking Users							
	^		here and an over	Toologo	To the second second			
	Image Name	User Name	Session ID	CPU	Memory (Threads	Description	^
	csrss.exe	SYSTEM	1	00	3,936 K	10	Client Server Runtime Process	
	DASAgent.exe *32	xilic	0	00	3,328 K	7	DASAgent Module	
	dllhost.exe *32	xilic	0	00	3,960 K	5	COM Surrogate	_
	dwm.exe	xilic	1	01	11,112 K	5	Desktop Window Manager	-
	EngineServer.exe	SYSTEM	0	00	400 K	3	McAfee Engine Service	=
	EXCEL.EXE *32	xilic	1	00	7,640 K	8	Microsoft Excel	
	explorer.exe	xilic	1	06	38,772 K	43	Windows Explorer	
	explorer.exe	xilic	1	02	12,488 K	23	Windows Explorer	
	fdhost.exe *32	LOCAL	0	00	2,520 K	6	SQL Full Text host	
	fdlauncher.exe *32	LOCAL	0	00	600 K	3	SQL Full-text Filter Daemon Launc	
	FrameworkService.exe *32	SYSTEM	0	00	7,336 K	34	Framework Service	
	FSGateway.exe *32	xilic	0	00	5,004 K	21	ServerExe Module	
	hkcmd.exe	xilic	1	00	1,256 K	3	hkcmd Module	
	iexplore.exe *32	xilic	1	00	32,028 K	22	Internet Explorer	
	iexplore.exe *32	xilic	1	00	5,968 K	10	Internet Explorer	
	igfxpers.exe	xilic	1	00	1,136 K	3	persistence Module	-
[Show processes from all users						End Process	
Proc	esses: 99 CPU Usage: 43% Physical Memory: 61%							

FIGURE 9: APPLICATION AND SERVICE UNDER THE SAME LOGGED-IN USER AND DIFFERENT SESSION IDS

Figure 10 (below) shows the FSGateway DDE Client Object configurations to the Excel as a DDE Server on the Windows7 Operating System.

Using FSG DDE Client With Excel DDE Server in Windows 7 and Windows 2008



FIGURE 10: OBJECT CONFIGURATION FOR DDE

In newer operating systems, running Excel and FSGateway in two different sessions is equivalent to running in a networked environment. This requires NetDDE. However, NetDDE is obsolete, and no longer available. The WWCleint application cannot make a connection between the FSGateway DDE client and Excel in this demo because NetDDE is not present.



FIGURE 11: NO COMMUNICATIONS AVAILABLE ACROSS SESSIONS

Resolution

To resolve this problem, start FSGateway from the local installation folder. This starts FSGateway as an Application.



FIGURE 12: RUN FSGATEWAY AS AN APPLICATION, FROM THE LOCAL INSTALLATION FOLDER

When FSGateway is showing Activated, return to the Task Manager and check the Session ID. You will see FSGateway and Excel running under the same Session ID.

e Options View Help	working Liser						
	norming osci						_
Image Name	User Name	Session ID	CPU	Memory (Threads	Description	
communicator.exe *32	xilic	1	00	36,408 K	43	Microsoft Office Communicator 20	
communicator.exe *32	Adminis	2	00	3,632 K	17	Microsoft Office Communicator 20	
conhost.exe	SYSTEM	0	00	452 K	2	Console Window Host	
conhost.exe	LOCAL	0	00	464 K	1	Console Window Host	
csrss.exe	SYSTEM	0	00	1,524 K	10	Client Server Runtime Process	
csrss.exe	SYSTEM	1	00	6,700 K	11	Client Server Runtime Process	
csrss.exe	SYSTEM	2	00	1,700 K	9	Client Server Runtime Process	
DASAgent.exe *32	xilic	0	00	2,248 K	8	DASAgent Module	
DASMBSerial.exe *32	SYSTEM	0	00	8,372 K	21	ServerExe Module	
dlhost.exe *32	xilic	0	00	4,940 K	6	COM Surrogate	
dwm.exe	xilic	1	00	8,692 K	7	Desktop Window Manager	
dwm.exe	Adminis	2	00	1,808 K	5	Desktop Window Manager	
EXCEL,EXE *32	xilic	1	00	10,800 K	9	Microsoft Excel	
explorer.exe	xilic	1	00	35,120 K	27	Windows Explorer	
explorer.exe	Adminis	2	00	26,716 K	25	Windows Explorer	
fdhost.exe *32	LOCAL	0	00	1,484 K	7	SOL Full Text host	
fdlauncher.exe *32	LOCAL	0	00	756 K	3	SOL Full-text Filter Daemon Launc	
FrameworkService.exe *32	SYSTEM	0	00	8,696 K	34	Framework Service	
FSGateway.exe *32	xilic	1	00	5,740 K	21	ServerExe Module	
hkcmd.exe	xilic	1	00	1.760 K	3	hkomd Module	
hkcmd.exe	Adminis	2	00	2,128 K	3	hkomd Module	
iexplore.exe *32	xilic	1	00	52,136 K	22	Internet Explorer	
iexplore.exe *32	xilic	1	00	6,804 K	10	Internet Explorer	
igfxpers.exe	xilic	1	00	1.792 K	4	persistence Module	
iofxpers.exe	Adminis	2	00	1,952 K	3	persistence Module	
iofxsrvc.exe	xilic	1	00	1,960 K	4	iafxsrvc Module	
iofxsrvc.exe	Adminis	2	00	2.036 K	5	infostyc Module	
igfxtrav.exe	xilc	1	00	2.084 K	5	iofxTray Module	
iucheck.eve *32	vilic	1	00	2.312 K	5	Java(TM) Update Checker	
indeck.eve #32	Adminis	2	00	2.336 K	5	Java(TM) Lindate Checker	
jusched eve *32	Adminis	2	00	1.884 K	۰ د	Java(TM) 2 Platform Standard Edi	
inched ava \$32	vile	1	00	1.836.K	4	Java(TM) 2 Platform Standard Edi	
, and the second		÷		4,000 13			
Show processes from all users						End Proce	ss

FIGURE 13: FSGATEWAY AND EXCEL RUNNING IN SESSION 1

You can run FSGateway as a local application in different ways (such as from Task Manager).

After both Excel and FSGateway are running in the same session, check and make sure you are still using the same configuration showing in Figure 10 (above). WWClient now receives a proper data update (Figure 14 below).

Wonderware Client	- • ×
File Script Connections Item Help	_ 8 ×
DDE \\localhost\fsgatewaylDDE_Grp 0x00327bf0 1 r1c1 1234 15:20.54.0112 02/28/2012 0x00c0	

Final Note

Both Excel and FSGateway must run as applications *under the same user login* to communicate. If you run Excel and FSGateway under different user accounts, they will run in different Session IDs and the communication fails (Figure 15 below).

lications Processes Services Perform	nance Networking Users					
Image Name	Liser Name	Session ID	CPU	Memory (Description	-
asBooktrap ave \$37	SYSTEM	0	00	1.649.8	Bootstrap	-
asCD eve #32	SYSTEM	0	00	17 856 8	Calavy P	
aabMMCDC eye *32	viic	1	00	1.076 K	Archestra	
ashSCM eve #32	SYSTEM	0	00	974 K	Archestra	
aal onger, eve *32	SYSTEM	0	00	2.272K	aal ooper	
AdobeAPM eve *32	vic	1	00	3 160 K	Adobe Re	
atachost eve #37	SYSTEM	0	00	684K	WebEy H	- 1
audodo.exe	LOCAL SERVICE	0	00	10.080 K	Windows	
ComExect exe #32	SYSTEM	0	00	16,124K	CCM Exer	
communicator.exe #32	vic	1	00	36,152 K	Microsoft	
communicator.exe *32	Administrator	2	00	3.652 K	Microsoft	
conhost exe	SYSTEM	0	00	452 K	Console	
conhost exe	LOCAL SERVICE	0	00	454 K	Console	
rerse exe	SYSTEM	0	00	1.520 K	Client Ser	
rerec ava	SYSTEM	1	00	1,553 K	Client Ser	
rerse eve	SYSTEM	2	00	6.816 K	Client Ser	
DASAgent exe #32	vic	0	00	2, 196 K	DASAgen	
DASMBSerial eve *32	SYSTEM	ő	00	8.372 K	ServerEx	
dibost.exe *32	viic	0	00	4.604K	COM Surr	
dwm.exe	viic	1	00	2.054K	Deskton	
dwm.exe	Administrator	2	00	8.584K	Desktop	
EXCEL EXE *32	vir	1	00	9.888 K	Microsoft	
evolorer.exe	vic	1	00	34.604 K	Windows	
explorer.exe	Administrator	2	00	23,560 K	Windows	
fdhost.exe *32	LOCAL SERVICE	0	00	1.488 K	SOL Full T	
fdlauncher.exe *32	LOCAL SERVICE	0	00	756 K	SOL Full-t	
FrameworkService.exe *32	SYSTEM	0	00	5.692 K	Framewor	
FSGateway.exe *32	Administrator	2	00	5,732 K	ServerEx	
hkomd.exe	xiic	1	00	1,760 K	hkcmd Mo	
hkomd.exe	Administrator	2	00	2,128 K	hkcmd Mo	
explore.exe *32	xiic	1	00	52,140 K	Internet	
iexplore.exe *32	xiic	1	00	6,700 K	Internet	
igfxpers.exe	xilic	1	00	1,772 K	persisten	
igfxpers.exe	Administrator	2	00	1,988 K	persisten	
igfxsrvc.exe	xilic	1	00	1,976 K	igfxsrvc	
informer ava	Administrator	2	00	20164	informer	
Show processes from all users					End Proce	ess

FIGURE 15: EXCEL AND FSGATEWAY RUNNING IN DIFFERENT LOGINS/DIFFERENT SESSIONS: COMMUNICATION FAILS

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