

# OPC (OLE for Process Control)

OPC

CERN – JCOP(Joint Controls Project)

- OPC Foundation™(<http://www.opcfoundation.org>)
- Intellution ([http://www.intellution.com/opchub/opc\\_interfaces\\_overview.asp](http://www.intellution.com/opchub/opc_interfaces_overview.asp))

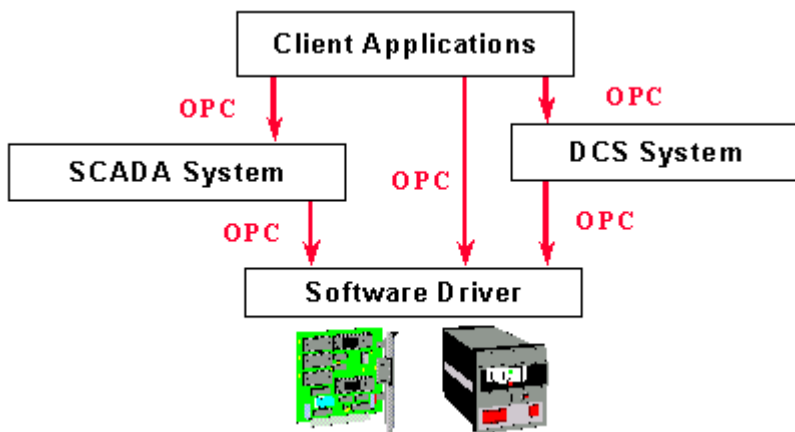
OPC 가?

"OPC™ (OLE for Process Control) automation/control application, field systems/device business/office application

## OPC™ Data Access

OLE/COM DCOM

OPC™, OPC™ Data Access



Data Access

Data Access

OPC™  
(COM  
)

COM(Microsoft Component Object Model)

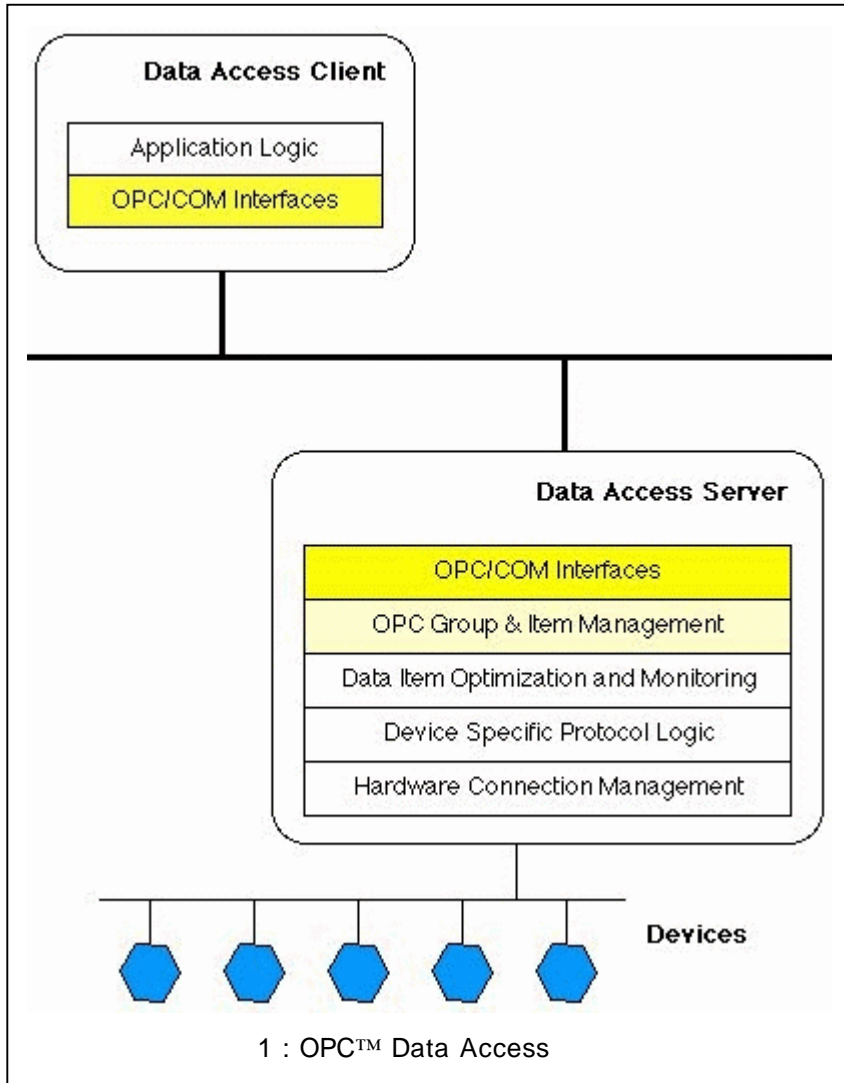
OPC™ Data Access

4

DCOM(Distributed Component Object Model) COM

- (Synchronous call)
- (Asynchronous call)
- Refresh

- Subscription



가  
polling  
가 가  
Refresh Subscription  
(callback)  
(  
OPC Group ).  
Refresh "pull"  
Subscription  
"push"  
가 Refresh  
OPC  
Server

가  
Subscription  
thread

(Synchronous writes) 가

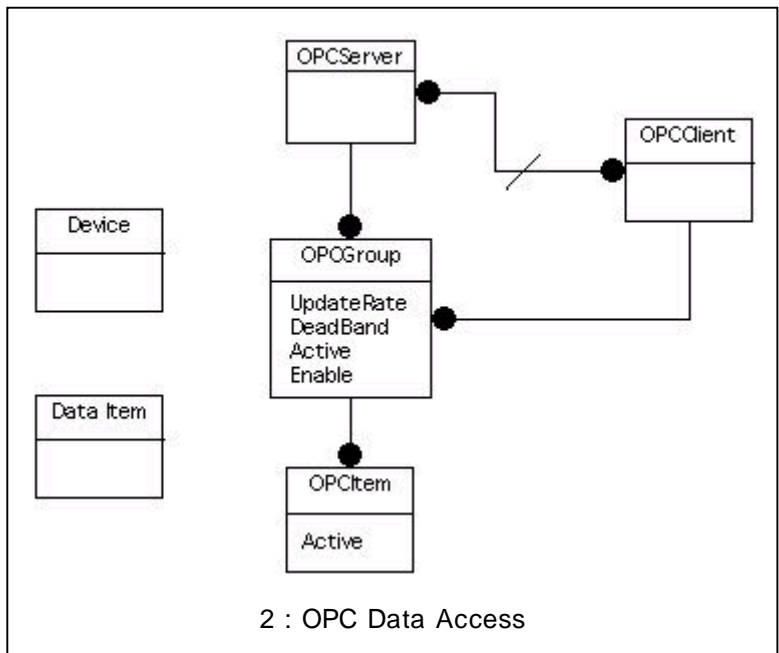
가 가

가  
thread

OPC Data Access

UML

(Asynchronous writes) 가



Data Access  
 OPC Group  
 OPC Item  
 1 OPC  
 Server  
 1 OPC Server  
 OPC Client  
 1 OPC Client가 1  
 Data  
 OPC  
 Client OPC  
 Server

Data Access 가 : OPC Group  
 OPC Data Access가 (private)"  
 Data Access (public group)  
 OPC Item 가 OPC Server  
 OPC Item OPC Client  
 OPC Item OPC Data Access clone  
 Group OPC  
 Group OPC Client  
 Group OPC Item OPC  
 Group OPC Client OPC OPC™ Data Access OPC  
 Server 가 OPC Item OPC Server 가 Client  
 OPC Group  
 OPC Group  
 Subscription

**Active**

OPC Group OPC Item "Active" .  
 . 가  
 . 가 "Dead band" ( IPC  
 "Active" Item )  
 가 OPC Item OPC Item ,  
 OPC Item .  
 OPC Server ( Dead band 0  
 ) "Enable" ,  
 .

**Update Rate**

**Cache/ Device**  
 "UpdateRate" 가 .  
 OPC Server  
 local copy, , 가 . onDataChange  
 Refresh  
 가 Device .

3  
 Subscription . OPC Item 0

**Enable / Disable** 가 .  
 device가  
 Subscription 가  
 . "Enable" .  
 / .

**Dead band ( )**  
 가 . OPC  
 Item 가  
 가 onDataChange OPC Item

/

### Subscription

- (Synchronous read)**
- OPC Group 가 Active
  - OPC Group 가 Active
  - OPC Item 가 1 ( Device)
  - OPC Item

- (Asynchronous read)**
- OPC Group 가 (Active )
  - OPC Item 가
  - OPC Item 가 1 ( )
  - OPC Item 가 1 ( )
  - OPC Item
  - OPC Item

- 가 Enable, Active, UpdateRate, DeadBand OPC Group 가
- 가 (Active )
- OPC Group 가
- OPC Group OPC Item
- UpdateRate (milliseconds)
- OPC Group OPC Item

### OPC

- OPC Foundation™ 가
- Data Access v1.0a, 1997 9
  - Data Access v2.0, 1998 11
  - Alarms & Events, 1999 1
  - Historical Data Access가 1999 1
  - White paper on security aspects( : Harrison)
  - White papers on performances aspects( : Burke, Chisholm)
  - White paper on the memory management ( : Chisholm)

**OPC™** (<http://www.opceurope.org/products.htm>)  
 - OPC™ OPC  
**OPC™** Programmers' Connection  
 OPC™ (<http://dspace.dial.pipex.com/opc/freestuf.shtml#servers>)  
 OPC  
 Foundation(<http://www.opcfoundation.org>)  
 CERN CERN Profibus DP Siemens  
 OPC™ PLC Siemens Simatic  
 , OPC™ , OPC™ 3가 OPC™ Applicom OPC™  
 OPC™  
**OPC™** OPC™ Data Access  
 Citect SCADA  
 (TBD: ).  
 OPC™ SST,  
 OPC™ 가 Softing (TBD: ,  
 Device 가 가)  
 Device  
**OPC™** Data Access  
 가 PLC Data Access 2 .  
 OPC™ 가 Alarms & Events OPC™  
 가 SCADA DCS  
 ( SCADA OPC™ )  
**OPC™** OPC™ Data Access  
 SCADA . JCOP 가  
 OPC™ OPC™  
**OPC™** , ,  
 가 가  
 ( : G2). 가 OPC™  
 - OPC™ Iconics OPC™  
 ([http://www.iconics.com/\\_OPCServers/OPCList.htm](http://www.iconics.com/_OPCServers/OPCList.htm))  
 - OPC™ OPC

CERN

OPC™

OPC

가

OPC™

- Applicom OPC™
- National Instrument Server Explorer
- Softing Demo
- SST

- Microprocess OPC™ Seminar(<http://www.microprocess.com/formation/developmen tindus/d7.htm>)
- Softing OPC™ Seminar(<http://www.softing.com/OPC>)

**TOOL Kit**

가

OPC™

OPC™ Data  
Toolkit

OPC Europe

Access

Toolkit

1.0

2.0

OPC™ Data Access

가

OPC™ Toolkit

OPC

OPC

OPC™

PLC

OPC

- OPC Programmers' Connection Toolkit  
(<http://dSPACE.dial.pipex.com/opc/source.shtml>)
- OPC Toolkit (<http://www.opceurope.org/develop.htm>)

OPC™

가

OPC

CERN

OPC

가

National Instrument  
(TBD: PG JRSR

가

가).

Softing Toolkit

OPC

OPC

DCOM

가

OPC

가

- (DCOM ) . DCOM OPC 가 SCADA ( , National Instrument BridgeView, PVSS II, Citect, Panorama .) . SCADA가 OPC Item
- OPC ( 가 ) . OPC 가 " " ( , National Instrument Server Explorer (Applicom OPC National Instrument Server Explorer ) Applicom OPC Client) Item

CHANN	PROTOCOL	SPEED	HSA	TS	EQU NUM	SYMBOLIC NAME	FMS Serv Ref	Loc Sap	Time-out	Words Ad
0	PROFIBUS	9600	002	000						
0					000	HMS-IO-32				
0					001	HMS_D_RAM				
0							02	40	1000	-1
0							03	41	1000	-1
0							04	42	1000	-1
0							05	43	1000	-1
0							06	44	1000	-1
0							07	45	1000	-1
0							08	46	1000	-1
0							09	47	1000	-1

4 : PROFIBUS network configuration

- OPC Item 가(Applicom OPC National Instrument Server Explorer ) OPC™ Item OPC OPC ( , , PLC protocols, OPC Item OPC Client TCP/IP ) . OPC 가 2 .



- ( front-end )

### LHCb test beam

- OPC

LHCb test beam 가

1

Commercial OPC

(“Applicom OPC  
PROFIBUS access” ).

- National Instrument's BridgeView(OPC  
Client );

- Applicom OPC server for Profibus DP.

OPC 가

OPC Component : S. HAIDER(<http://consult.cern.ch/xwho/people/6130>),

OPC

R. BARILLERE(<http://consult.cern.ch/xwho/people/7749>).

(Applicom

). OPC aliases,

### Test Bench

#### COTS OPC

JCOP

OPC 가 CERN

OPC Component : H. MILCENT  
(<http://consult.cern.ch/xwho/people/5949>)

가

#### HMPID

#### B1GCS

JCOP

가

OPC Component : L. PENUELA  
(<http://consult.cern.ch/xwho/people/62454>),  
R. BARILLERE.

- Commercial OPC

Siemens S7 OPC

- National Instrument's BridgeView(OPC  
Client ).

#### JCOP SCADA 가

OPC Component : H. MILCENT  
(<http://consult.cern.ch/xwho/people/5949>),

OPC Component : A. DANEELS  
(<http://consult.cern.ch/xwho/people/922>),

B. PERRIN (<http://consult.cern.ch/xwho/people/61109>)

W. SALTER.

OPC

가 가

Server, Philippe GRAS;

- Lecroy HV power supply OPC Server, Benoit PERRIN;
- OPC server for CORBA, Mark BEHARRELL.

### OPC Data Generator

OPC OPC SCADA  
가

가 OPC OPC

OPC Toolkit National Instrument

- : Data , OPC

- effort

-

-

(JRSR, PG, BP)

softing

-

- (<http://dspace.dial.pipex.com/opc/freestuf.shtml>)

- OPC

(<http://cern.ch/~pgras/JCOPTestbenchOPCServers/talk/TestbenchOPCServers/ppframe.htm>)

- OPC

(<http://cern.ch/~pgras/OPCDataGenerator/index.html>)

### CAEN SY127 HV Power Supply OPC Server

CERN

OPC

CERN

OPC 가  
가

CAENNet

CAEN

OPC Toolkit National Instrument

- VME OPC server, Jose Ramon Sandon del RIO;

- OPC Data Generator, Philippe GRAS;

- CAEN SY127 HV Power Supply OPC

- CAEN SY127 HV Power Supply OPC Server  
(<http://cern.ch/~pgras/JCOPTestbenchOPCServers/talk/TestbenchOPCServers/ppframe.htm>)
- CAEN SY127 HV Power Supply OPC Server  
([http://cern.ch/~pgras/OPCCaenHV/spec\\_rev1.pdf](http://cern.ch/~pgras/OPCCaenHV/spec_rev1.pdf))
- CAEN SY127 HV Power Supply OPC Server  
(<http://cern.ch/~pgras/OPCCaenHV/SY127.html>)

**CORBA**

**OPC**

OPC

OPC/CORBA

OPC

Toolkit Softing

**OPC FAQ**

OPC

R. BARILLERE P. GRAS가

R.

**Lecroy HV power supply OPC Server**

BARILLERE(<http://consult.cern.ch/xwho/people/7749>)

OPC RS232 Lecroy

" RS232

Q

OPC

OPC

가?

ALICE Experiment

A

가

OPC 가

OPC

OPC Client

가 ."

OPC Server가

OPC Item OPC Client가 OPC

OPC Toolkit National Instrument

가

OPC Client

Alice

Q

([http://consult.cern.ch/alice/Internal\\_Notes/1999/42/abstract](http://consult.cern.ch/alice/Internal_Notes/1999/42/abstract))

A

act)

OPC Item

1 OPC  
 40 가  
 Q OPC Group OPC 가 OPC  
 가?  
 A A2  
 OPC OPC  
 OPC Item OPC  
 OPC  
 가 : 가 OPC  
 ( )

**Data Access**

Q OPC Item  
 가?  
 A OPC 가 NT  
 OPC 가?  
 A 가 OPC  
 Q NT OPC  
 가? NT  
 가? ( 가  
 A1 ) OPC  
 가  
 OPC Q OPC Client  
 Client ?  
 A OPC 가 OPC  
 OPC 가 OPC 가  
 (

) 가 OPC NT 가 .

SCADA : OPC Specification OS  
OPC

Q  
OPC 가  
가 OPC 가?

Q  
OPC  
가?  
A  
OPC  
NT

A  
OPC  
가 OPC

DCOM  
(dcomcnfg )  
- "Access " "Allow Access"  
- "Launch " "Allow launch"  
- "Configuration " "Read"

Q  
OPC Server가  
OPC Client가 가?  
A  
가 OPC

DCOM  
가(DISABLED) 가  
가(disabling)  
CoInitializeSecurity() Windows  
OPC OPC

가  
가 subscription  
OPC  
DCOM  
가

가 가 DCOM 가  
OPC OPC  
CDS 6 DCOM ping  
OPC ( IOPCDataCallback  
) OPC DCOM ( ,

I/O ) OPC  
가 OPC  
OPC SCADA  
IOPCDataCallback ( .  
Release() )  
OPC 1 sink Q  
. OPC DA specification v2.0( v1.0A) OPC OPC  
OPC가 가?  
IOPCServer::GetStatus() A  
OPC 가 OPC  
. DCOM 가 OPC  
. , OPC 가 OPC  
PC가 OPC  
OPC Q  
GetStatus() OPC 가 가  
. OPC OPC  
IOPCDataCallback 가?  
. 6 A  
가 . OPC  
IOPCAsyncIO(2)::Read() Quality  
IOPCAsyncIO(2)::Refresh() 가  
OPC  
. 가 가  
( : )  
(watchdog)  
Q  
OPC 가 ?  
A  
OPC OPC 가  
:  
. OPC