

# EPICS OPC Gateway

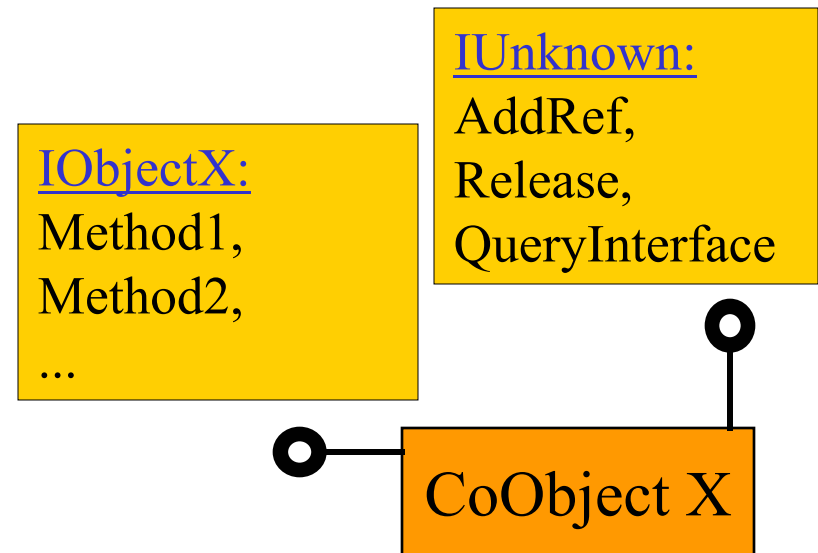
Nov. 2000 ... May 2002

CA Client->OPC:	Andrei Makhnachev, DESY
OPC-> CA Server:	Kay-Uwe Kasemir, LANL
OPC Experience:	Matthias Clausen, DESY
Investigating:	Sverdrup (TN, SNS conv. Fac.)

# OPC?



- OPC: ~~OLE~~ COM for Process Control
- COM: Component Object Model, Microsoft/Win32 API
  - CORBA w/ actual application support
- All COM Objects have Interface *IUnknown* plus interfaces to implement an...
  - ActiveX Component/Widget
  - ActiveX Automation Server: (Visual Basic, Interpreters)
    - OPC Data Access Server/Client
  - ....





# OPC Data Access Details

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- Specs: <http://www.OPCFoundation.org>
- Data Access Object Model:  
OPC Server, Group, Item
- Other Interfaces:
  - Browsing  
(Info for humans, does not show what items can be created dynamically)
  - Subscribe to group (max. rate, deadband) for async. notification
  - Read/write item data (Timestamp, quality, value)
- AllenBradley, Siemens, National Instruments, ... provide OPC Server as a generic "Driver"

# OPC and CA

## OPC-CAS: OPC client, CA Server

- allows browsing (mostly for debugging)
- reads ASCII config file
- puts all Items in one group "Default", requests 10Hz updates, serves via EPICS ChannelAccess

```
SERVER=OPC Simulated Data Demo
# Explicitly list OPC Name & PV:
ITEM
{
  # Required: Name of OPC Item
  NAME=SINE:0.0..10.0:2.0
  # Optional: PV, defaults to Item name
  PV=Sine
  # Optional, will be served/observed
  EGU=Ticks
  HIHI=9
  HIGH=8
  LOW=2
  LOLO=1
}
```

```
# Browse OPC Server, pick OPC items via regular
# expression, maybe use translation file.
# Here, items matching "SINE:xxx:yyy"
# will be served as "SINEzzz" where
# "zzz" is "yyy" translated via numbers.trs which
# looks like this:
#   1.0   one
#   2.0   two
ITEMCLASS
{
    NAME=(SINE):.*:(.*)
    TRANSLATE2=numbers.trs
    DELIM=:
    EGU=Parts
}
```

- Andrei Makhnachev (DESY) wrote CA client/OPC server
- Both: Softing OPC lib. ⇒ can distribute binaries, needs license to compile

# OPC-CAS Snapshot

The screenshot displays the OPC-CAS software interface with several windows open:

- Gateway - OPC-CAS:** Shows a menu bar (File, View, Help) and a list of connected OPC servers. The 'OPC Simulated Data Demo' server is selected. Below, it lists items served from this server: SINE:0.0..8.0:2.0 (PV SINE:two), SINE:1.0..5.0:10.0 (PV SINE:ten), SINE:2.0..6.0:3.0 (PV SINE:three), VT\_R8:0.0..10.0 (PV Ramp), VT\_R8:1.0..10.0 (PV Ramp2), and VT\_R8:1.0..1000.0 (PV Ramp1).
- Prompt:** A command window showing the execution of 'caget -m' for 'Ramp'. It displays a table of data points with columns for Name, host, field, element, and monitoring, along with a timestamp of Nov 06, 2000 11:46:44. The status is 'Ready'.
- Server Browser:** Shows available servers for connection, including 'OPC Server Interface to Lookout', 'OPC Simulated Data Demo', 'RSLinx OPC Server', 'RSLinx Remote OPC Server', and 'Softing OPC Engine Sample OPC Server'. It also shows a tree view of items on the connected 'OPC Simulated Data Demo' server, including Analog Items (Floats and Integers), Digital Items, and Function Items.
- NISIM\*70.OPC:** A configuration window for the 'OPC Simulated Data Demo' server, showing item details for 'VT\_R8:0.0..10.0', including PV=Ramp, HIHI=10.0, HIGH=9.0, LOW=1.0, LOLO=0.0, and EGU="Ticks".



# Conclusions?

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- OPC: Great Idea for PC platform
  - Standard across vendors, no longer separate drivers for LabVIEW, Intellution, VisualBasic, ...
  - EPICS 3.14 for Win32 Hosts should support DTYP "OPC"  
⇒ benefit from OPC drivers instead of having to implement many device specific drivers

```
record(ai, "opc:xx")
{
  field(DTYP, "OPC")
  field(INP, "# 'OPC Server XYZ' fred")
  ...
}
```

- Problems:
  - No experience with performance, dependability
  - Already different versions (IOPCAsyncIO2...)
  - Networked via DCOM but no connection management