

Channel Access Security Lab

John Sinclair,
Kay Kasemir

July 2026

ORNL is managed by UT-Battelle, LLC for the US Department of Energy



U.S. DEPARTMENT OF
ENERGY

Plan

Run a database with “..:ramp” and “..:limit” records

Note that there are no restrictions on modifying ..:limit

Reconfigure the IOC to use access security

Assert that only user “expert” may modify the above PV when security is enabled

Disable access security and verify no restrictions

Open two terminal windows

Window 1 – run IOC

- `cd /ics/examples/10_casecurity`

Read database and run it

- `gedit demo.db &`
- `softloc -m S=demo -d demo.db`

Check who's connected

- `casr 1`

Verify that there is no acc.sec.

- `asdbdump`

Window 2 – access it

- `camonitor demo:ramp`

Ctrl-C to stop camonitor, then

- `caput demo:limit 5`

Note that write succeeds

- `caget demo:limit`
- `camonitor demo:ramp`

Add Access Security

Window 1 – run IOC

- `cd /ics/examples/10_casecurity`

Check what we're running

- `gedit secure.acf &`
- `softloc -m S=demo -d demo.db -a secure.acf`

Check who's connected

- `casr 1`

Verify that acc.sec. rules are defined

- `asdbdump`

Window 2 – access it

- `camonitor demo:ramp`

Note that write still succeeds

- `caput demo:limit 5`
- `caget demo:limit`
- `camonitor demo:ramp`

Explain why!

Enable Access Security

Window 1 – Update database & run IOC

- `cd /ics/examples/10_casecurity`

Check “ACF” comments in demo.db,
compare to solution.db

- `softloc -m S=demo -d solution.db -a secure.acf`

Check who’s connected

- `casr 1`

Verify that acc.sec. rules are defined

- `asdbdump`

Window 2 – access it

- `camonitor demo:ramp`

Enable Access Security .. and test it

Window 2

Verify that the “training” user can no longer write

- caput demo:limit 5

Change the mode, check we can write in that state

- caput demo:accessState 1
- caput demo:limit 5

Back to normal

- caput demo:accessState 0
- caput demo:limit 10

Enable Access Security .. and test it

Window 2

Change to "expert" (password is \$expert), check if that user can write

- su expert
- caput demo:limit 5

Check if that is independent from the "demo:accessState"

Check with GUI

Create a display or use solution.bob.

Note how the text entry for demo:limit changes based on mode

Access Security Demo

Ramp: 4

Limit: 5

Mode: Expert-Only
 Anybody

Note

- We used 'softloc' and its '-a /path/to/config.asg' option.
- Run with added option '-v' to see what would go into the st.cmd of a makeBaseApp IOC

```
$ softIoc -v -m S=demo -a secure.acf -d solution.db
...
asSetSubstitutions("S=demo")
asSetFilename("secure.acf")
...
dbLoadRecords("solution.db", "S=demo")
iocInit()
```