

IOC Shell Parser

Log parsing for error detection and monitoring.

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1. Motivations

- Errors and warnings only printed in IOC shell
- No proper error handling
- Only kept track of in log files

2. Solution: IOC Shell Parser

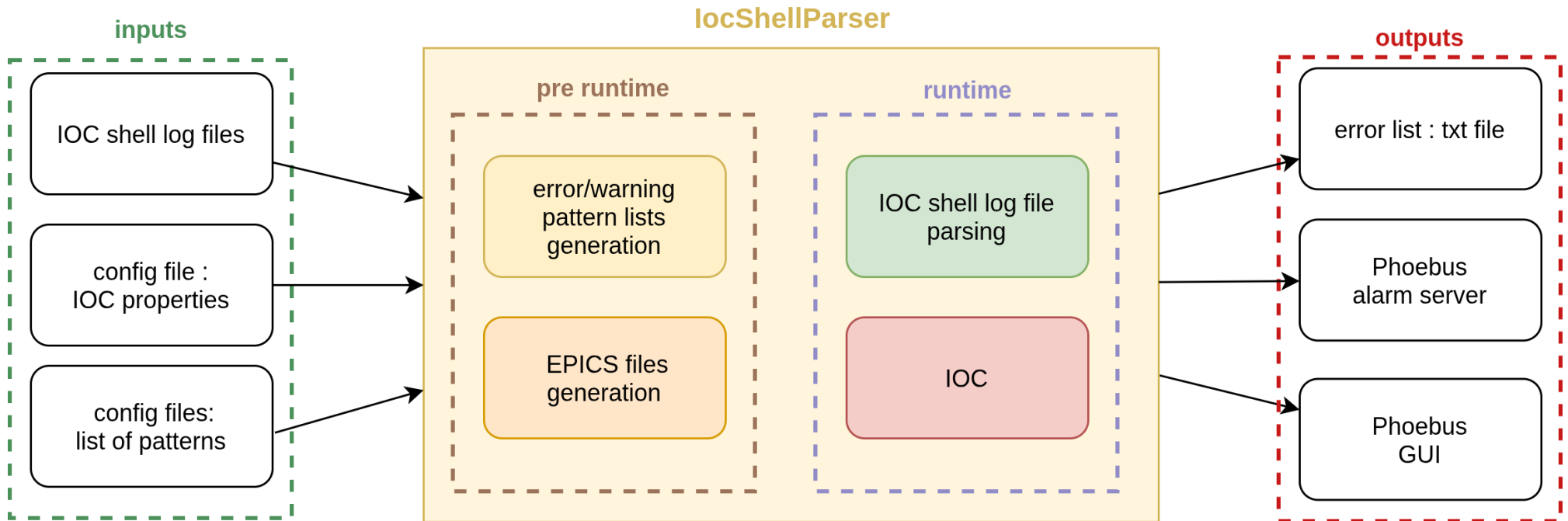
Process of IOC Shell Parser

- Parse log file and detect errors/warnings
- Push info to EPICS PVs
- Display them in phoebus GUI and Phoebus alarm

Philosophy

- Make it easy to check if errors occurred
- Add and ignore error/warning easily with regex
- Tolerance for delay when retrieving an error, it's not a real time application

Architecture of the project



Running with Python and pyepics



```
#This is where you can override command options
[Main_config]
output = "./output"
documentation_path = "."

[GUI_config]
frame_width=1680
frame_height=836

#This are the macros for the main IOC
#This is mandatory for epics-gen and live-parse command
[IOC_config]
SecSub="IOC-SHELL-PARSER:"
S_bi="Stat"
S_bo="Cmd"
S_waveform_char=""
S_longin="Code"

#This is the list of IOCs to monitor

[IOC_list.MPSTS]
out_iocSbctSr = {IocName = 'out-iocSbctSr', LogPath = '/data/logs/MPSTS-CMX/out-iocSbctSr.log', IocInfo = '', Engineer = '', Ld
ut-iocTimingEVRSBCT = {IocName = 'out-iocTimingEVRSBCT', LogPath = '/data/logs/MPSTS-CMX/out-iocTimingEVRSBCT.log', IocInfo = '', Engineer = '', Ld
out-iocBdm = {IocName = 'out-iocBdm', LogPath = '/data/logs/MPSTS-CMX/out-iocBdm.log', IocInfo = '', Engineer = '', Ld
out-IOC-MPSTS-SBCT = {IocName = 'out-IOC-MPSTS-SBCT', LogPath = '/data/logs/MPSTS-SBCT/out-IOC-MPSTS-SBCT.log', IocInfo = '', Engineer = '', Ld
out-iocMpstsSbctSim = {IocName = 'out-iocMpstsSbctSim', LogPath = '/data/logs/MPSTS-CMX/out-iocMpstsSbctSim.log', IocInfo = '', Engineer = '', Ld
out-iocBomSaraf = {IocName = 'out-iocBomSaraf', LogPath = '/data/logs/MPSTS-CMX/out-iocBomSaraf.log', IocInfo = '', Engineer = '', Ld
ut-iocMaxPulseWidth = {IocName = 'out-iocMaxPulseWidth', LogPath = '/data/logs/MPSTS-CMX/out-iocMaxPulseWidth.log', IocInfo = '', Engineer = '', Ld
out-iocCavControl = {IocName = 'out-iocCavControl', LogPath = '/data/logs/MPSTS-CMX/out-iocCavControl.log', IocInfo = '', Engineer = '', Ld
out-iocTimingEVM-1 = {IocName = 'out-iocTimingEVM', LogPath = '/data/logs/MPSTS-CMX/out-iocTimingEVM.log', IocInfo = '', Engineer = '', Ld
out-iocTimingEVRBDM = {IocName = 'out-iocTimingEVRBDM', LogPath = '/data/logs/MPSTS-CMX/out-iocTimingEVRBDM.log', IocInfo = '', Engineer = '', Ld
out-iocTmg = {IocName = 'out-iocTmg', LogPath = '/data/logs/MPSTS-CMX/out-iocTmg.log', IocInfo = '', Engineer = '', Ld

[IOC_list.COMexE3-Timing]
out-iocTimingEVM = {IocName = 'out-iocTimingEVM', LogPath = '/data/logs/COMexE3-Timing/out-iocTimingEVM.log', IocInfo = '', Engineer = '', Ld
iocTimingTestEVMFan = {IocName = 'out-iocTimingTestEVMFan', LogPath = '/data/logs/COMexE3-Timing/out-iocTimingTestEVMFan.log', IocInfo = '', Engineer = '', Ld
t-iocTimingTestEVR1 = {IocName = 'out-iocTimingTestEVR1', LogPath = '/data/logs/COMexE3-Timing/out-iocTimingTestEVR1.log', IocInfo = '', Engineer = '', Ld
t-iocTimingTestEVR2 = {IocName = 'out-iocTimingTestEVR2', LogPath = '/data/logs/COMexE3-Timing/out-iocTimingTestEVR2.log', IocInfo = '', Engineer = '', Ld
```



```
#Anything containing "error"
ERROR
Error
error

#issue : https://drf-gitlab.cea.fr/EPICS/iocshellparser/-/issues/1
not found

#issue : https://drf-gitlab.cea.fr/EPICS/iocshellparser/-/issues/2
.+ Has unexpanded macro
macro DRVL is undefined \expanding string      field\ (DRVL, "\$(DRVL,undefined)\")

#issue : https://drf-gitlab.cea.fr/EPICS/iocshellparser/-/issues/3
error opening sub file .+

#Can't find any issue for this, where does it came from ?
autoConnect could not connect

#issue : https://drf-gitlab.cea.fr/EPICS/iocshellparser/-/issues/5
invalid memory request

#issue : https://drf-gitlab.cea.fr/EPICS/iocshellparser/-/issues/6
Bad init_rec return value PV: .+

#issue : https://drf-gitlab.cea.fr/EPICS/iocshellparser/-/issues/7
out of range

#issue : https://drf-gitlab.cea.fr/EPICS/iocshellparser/-/issues/8
read error

#issue : https://drf-gitlab.cea.fr/EPICS/iocshellparser/-/issues/9
Invalid integer value. Var .+ not changed

#issue : https://drf-gitlab.cea.fr/EPICS/iocshellparser/-/issues/10
Error at or before "." in path "(.*)*.*" file ".+"

#issue : https://drf-gitlab.cea.fr/EPICS/iocshellparser/-/issues/12
Bad character '.' in record name ".+"
```

3. Commands

One Shot mode

IOC Shell Parser runs once and output a list of errors in a text file.

Usage : CI, development/integration/support: analyze specific log file(s).

Output example :

```
Mon Feb  9 17:41:08 2026 Error at or before ")" in file "/  
my_file.db" line 607
```

```
Mon Feb  9 17:41:48 202602/09/26 17:41:48.081 some-ioc: waiting for  
input failed: Connection timed out
```

4. Commands

Live mode

IOC Shell Parser runs continuously, write results in an IOC, and PVs are displayed in Phoebus.



documentation **IOC shell Parser** LED clear all

no tag MPSTS COMexE3-Ti...

IOC	Errors	Warnings	Expert
out-iocSbctSr		clear	Expert
iocSbct_SL-MPS		clear	Expert
iocMaxPulseWidth-sim		clear	Expert
EVR BDM >		clear	Expert

IOC	Errors	Warnings	Expert
EVR SBCT		clear	Expert
out-iocMpstsSbctSim		clear	Expert
iocCavControl-beam-dest-test		clear	Expert
TMG PPlus application		clear	Expert

IOC	Errors	Warnings	Expert
BDM Plus		clear	Expert
BOM Plus		clear	Expert
EVM Master MPSTS>		clear	Expert

```
IOC-SHELL-PARSER:out-iocTmg:locName
TMG PPlus application, 2026-04-17 10:55:30.940873680
HIHI: 0.0
HIGH: 0.0
LOW: 0.0
LOLO: 0.0
```



IOC status

Last log date

2026-04-17 11:20:40

Errors

not found

clear 7 errors 

Warnings

warning

clear 1 warnings 

IOC info

IOC name	Description
EVR SBCT	
Engineer	
Alexis Gaget	
Location	
MCS-MPS-UH1	
Log file path	
/data/logs/MPSTS-CMX/out-locTimingEVRSBCT.log	



iocShellParser ▾

- ▼ **no tag**
 - ▶ iocTimingTestEVMFan
 - makeGuiWorkspace
 - ▶ out-IOC-BPM-CM4-1
 - ▶ out-IOC-BPM-CM4-2
 - ▶ out-IOC-LLRF-CM1-1
 - ▶ out-IOC-LLRF-CM1-2
 - ▶ out-IOC-MPSTS-SBCT
 - ▶ out-IOC-SBCT
 - ▶ out-iocBdm
 - ▶ out-iocBomSaraf
 - ▶ out-iocCavControl
 - ▶ out-iocMpstsSbctSim
 - ▶ out-iocSbctSr
 - ▶ out-iocTimingEVM
 - ▶ out-iocTimingEVM-1
 - ▶ out-iocTimingEVRBDM
 - ▶ out-iocTmg
 - ▶ out-topSbct
 - ▶ t-iocTimingTestEVR1
 - ▶ t-iocTimingTestEVR2
 - ▶ ut-iocMaxPulseWidth
 - ▶ ut-iocTimingEVRSBCT
 - ▼ **ut-iocTimingEVRSBCT-1**
 - ⚠ PV: IOC-SHELL-PARSER:ut-iocTimingEVRSBCT-1:ErrCmd - MAJOR/STATE_ALARM
 - ⚠ PV: IOC-SHELL-PARSER:ut-iocTimingEVRSBCT-1:ErrCntCode - MAJOR/HIGH_ALARM
 - ⚠ PV: IOC-SHELL-PARSER:ut-iocTimingEVRSBCT-1:WarnCmd - MINOR/STATE_ALARM
 - ⚠ PV: IOC-SHELL-PARSER:ut-iocTimingEVRSBCT-1:WarnCntCode - MINOR/HIGH_ALARM

5. Performance

- Performance impact starts at 1000 IOCs on my dev machine
 - Slow startup
 - About 1 min of delay when retrieving error
- NFS can cause delay
 - Logs shared via NFS in our lab
 - Observed around 2 min of delay because of this



6. Conclusion

Currently in testing phase, it was recently deployed in our lab, and soon to be deployed in production.