

Alarm Logging

ALARM!

A new Alarm System for EPICS
or
“Pushing Alarms from the IOC“

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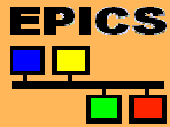
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Klaus Valett (LDAP)

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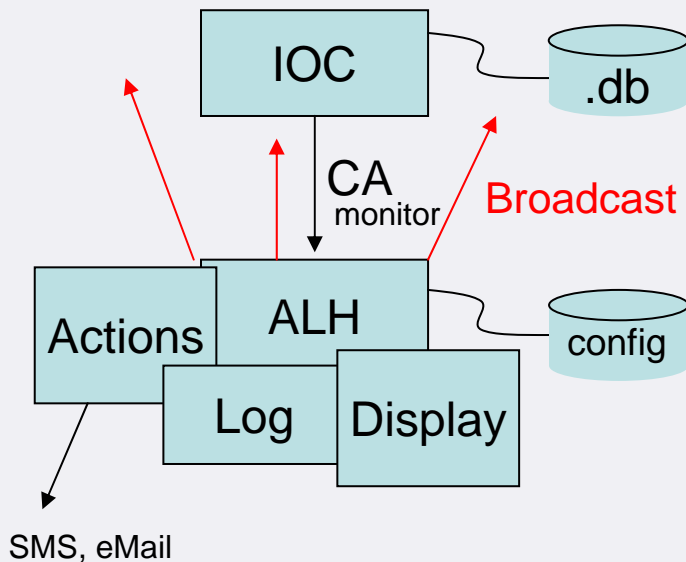
Tikto GmbH (Filter manager)



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Why do we need a new alarm system?

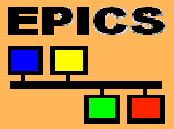
1. Using ALH with CA



Disadvantages:

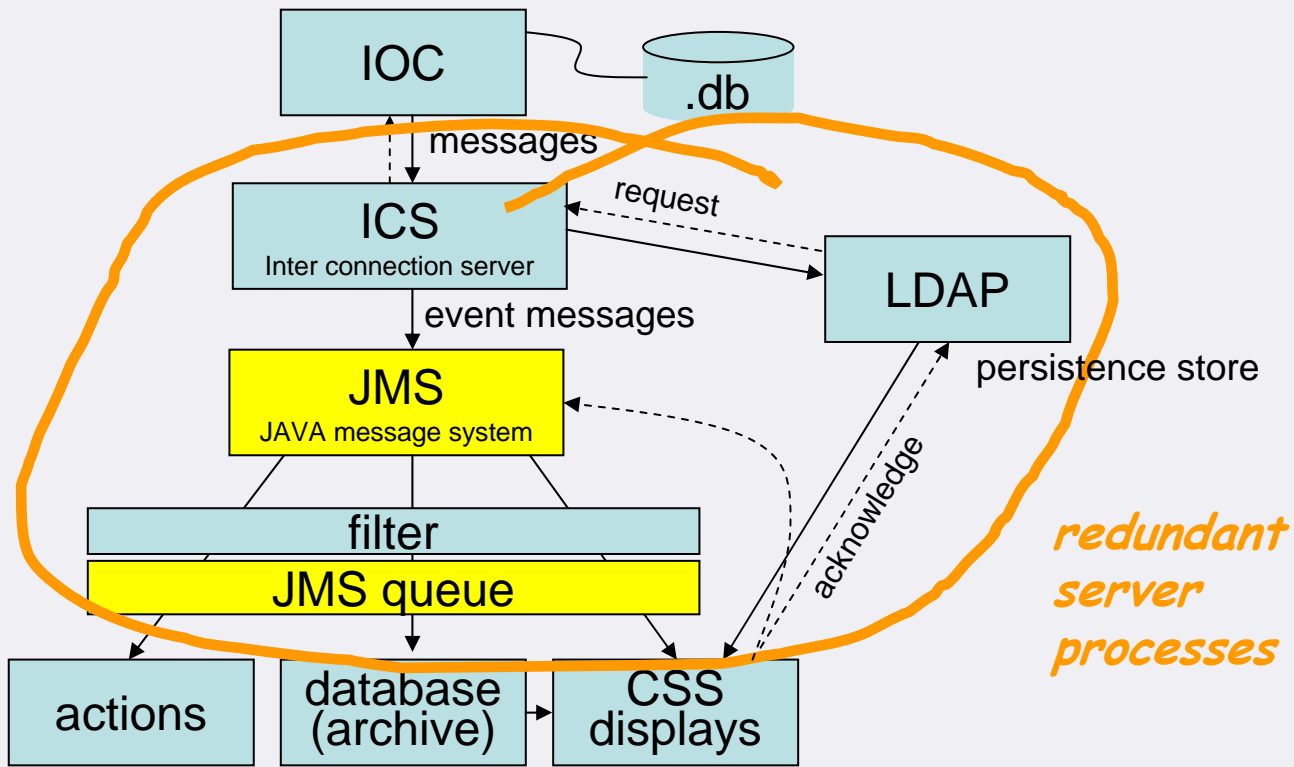
- ALH depends on X-windows
- ALH is integrated with display
- When workstation is closed ALH stops
- Configuration needed for all channels

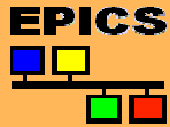
We want all alarms from all IOCs!



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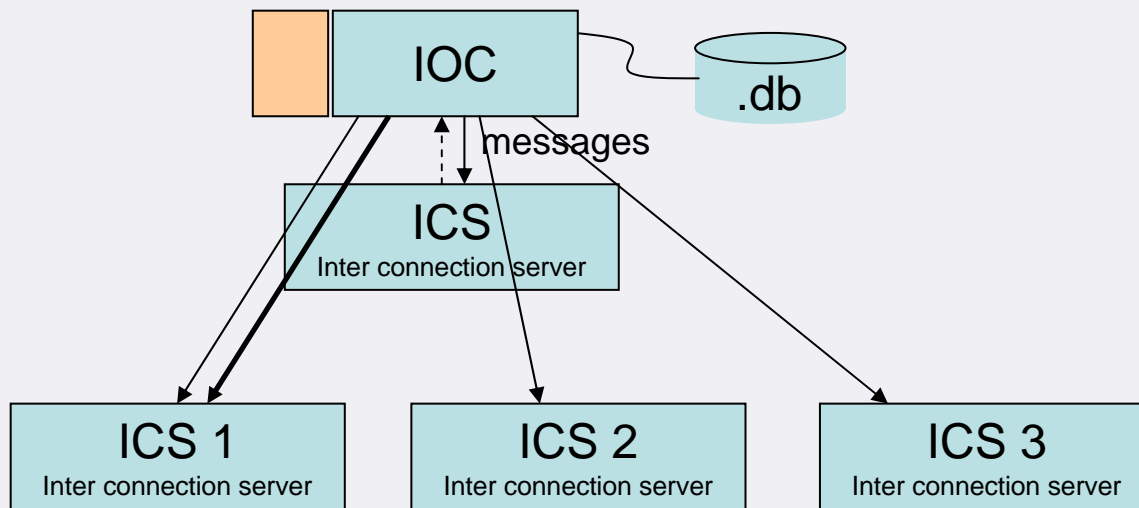
2. New approach avoiding ALH disadvantages and use with CSS



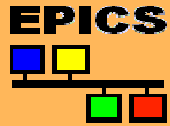


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3. Implementation in the IOC



1. Count records
2. Allocate message buffer
3. Send beacons to configured servers
4. Select a server
5. Send messages



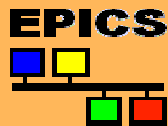
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Changes in iocCore

- very small hook in recGbl → recGblResetAlarms

```
/* Hook Routines */
RECGBL_ALARM_HOOK_ROUTINE recGblAlarmHook = NULL;
.....
if(sevr!=nsev || stat!=nsta) {
    /* HOOK for alarm logging */
    if (recGblAlarmHook) (*recGblAlarmHook)(pdbc, stat, sevr);
.....
```

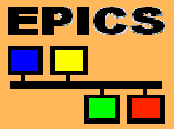
- loading and starting the alarm logging software redefines recGblAlarmHook



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Alarm Logging Software

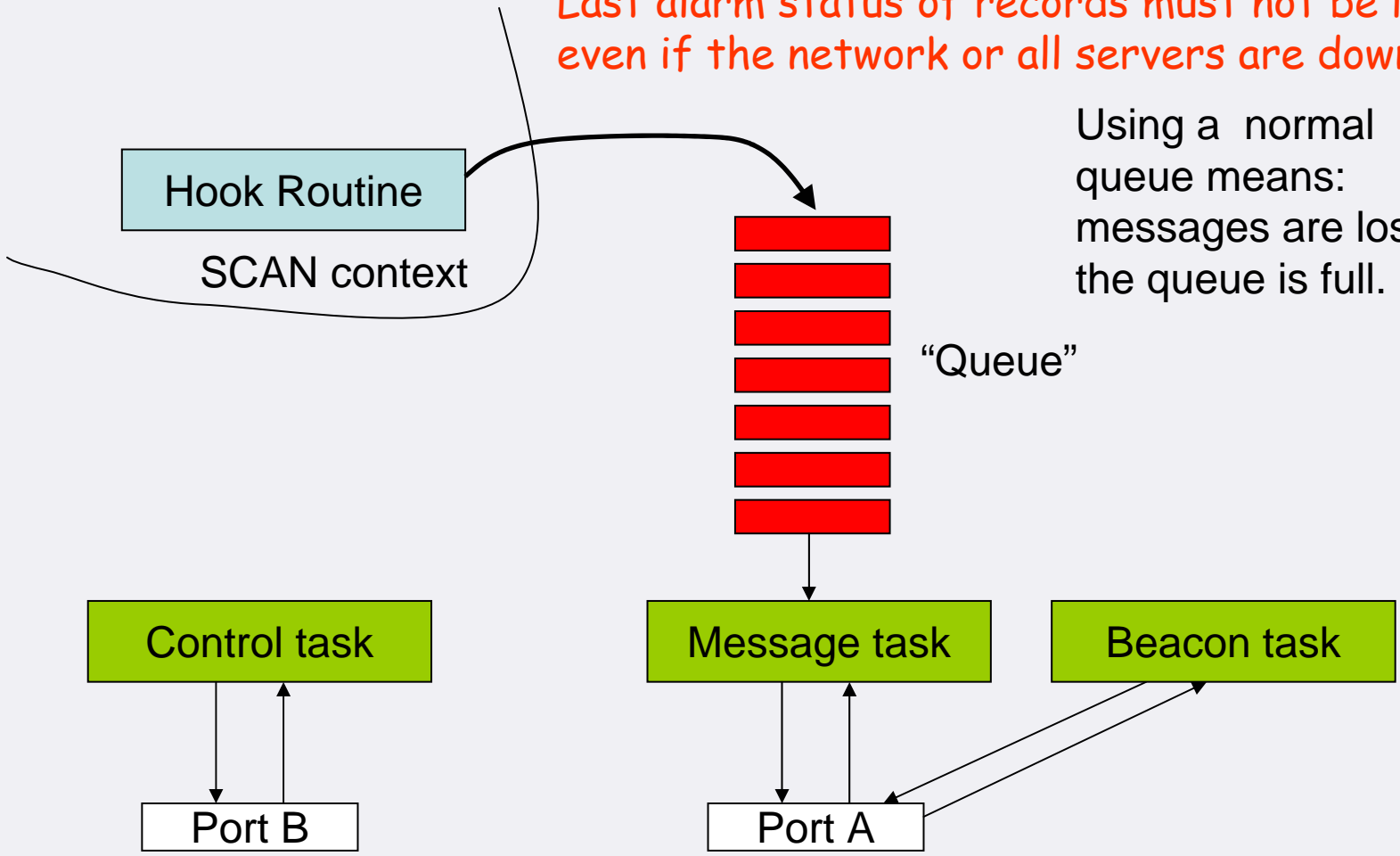
- Initialization: traverse thru the database, count records, allocate
- All network messages use UDP
- Beacon task checks configured servers and selects one
- Message task sends messages to selected server
- All messages and beacons must be acknowledged
- Use text messages like "PROPERTY=VALUE;..."
- Command task can accept commands from the servers
- Last alarm status of records must not be lost even if the network or all servers are down

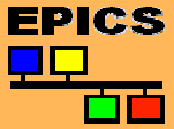


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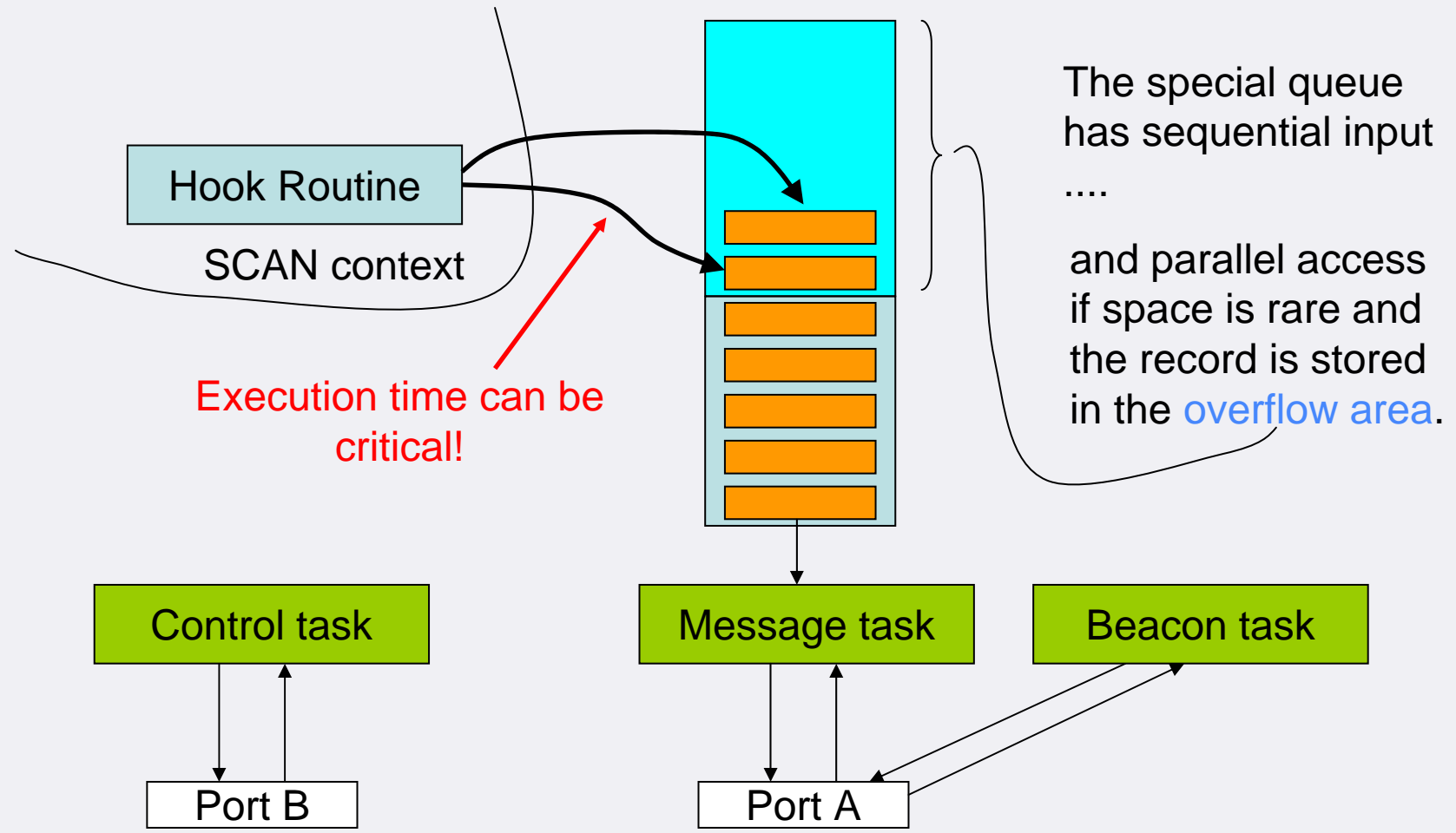
Last alarm status of records must not be lost even if the network or all servers are down

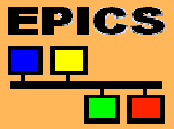
Using a normal queue means: messages are lost if the queue is full.



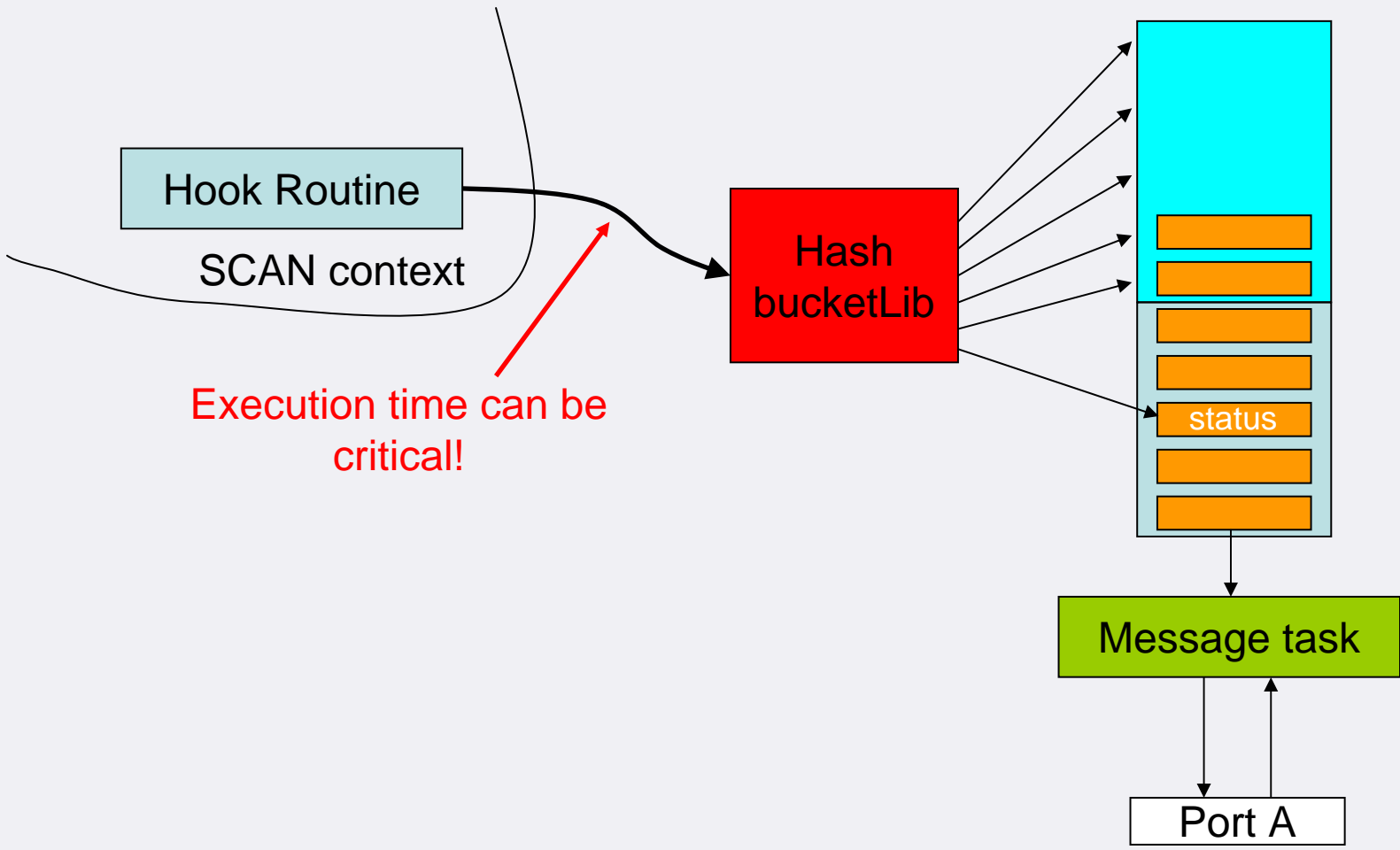


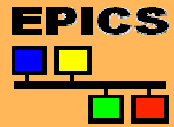
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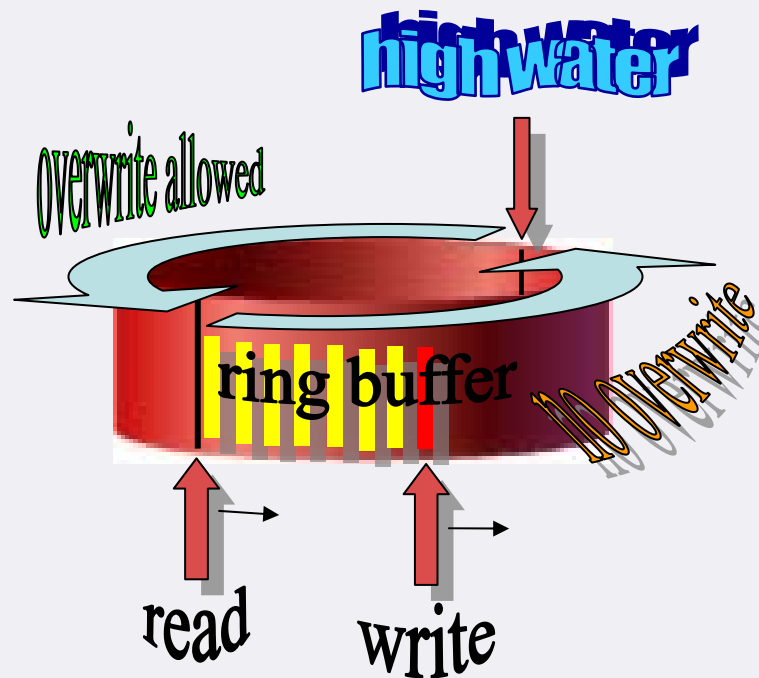
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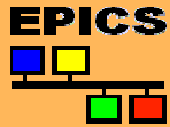




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“Special Queue” is Constructed as Ring Buffer





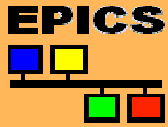
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Summary / Status

- IOC sends Alarm messages as Text over UDP
- Inter-connection servers forwards to JMS and LDAP
- JMS distributes messages to recipients
- LDAP server is a persistence store for alarm states
- Filters control the data flow into log-database and for SMS etc.

- First implementation running

- Different solutions can use parts (simple interfaces)



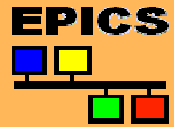
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To Do

- System performance testing with many IOCs
- Test of commands, sent to IOC
- Test redundancy of services
- Enable IOC alarm logging software for usage in redundant IOCs

Outlook / Plans

- Enhance performance of message transmission on the IOC
- Use message mechanism for CA-put-logging
- Use message mechanism for system log messages on IOC



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ALARM !

The End