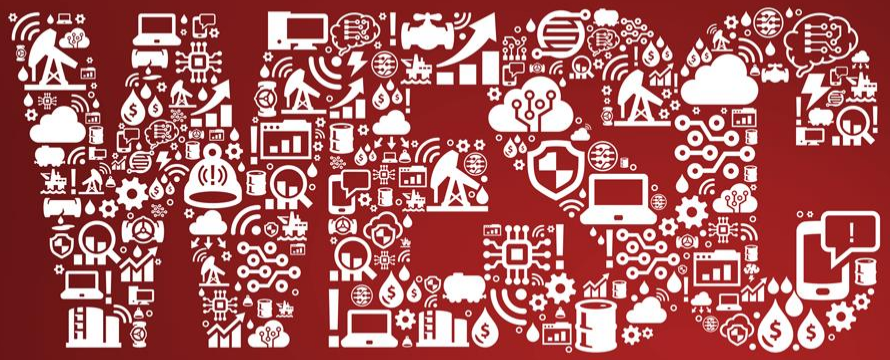


OPTIMIZING YOUR POLLING ENGINE

Eric Kramer
CygNet Support Team Lead

November 5th 2018

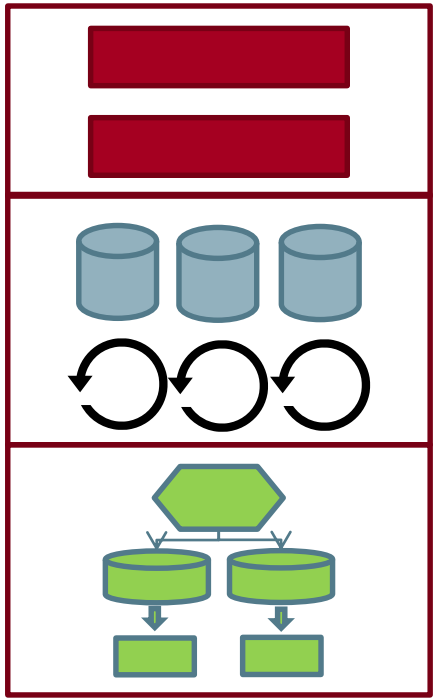
Weatherford®

AGENDA

1. UIS: How does it work?
2. Optimizing!
3. Tools and Best Practices

UIS: HOW DOES IT WORK?
POLLING AND PROCESSING

How does it work?

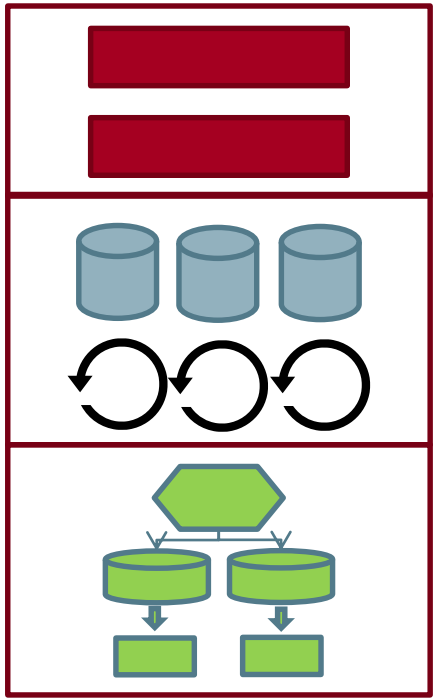


Message Creation

Comm Processing

Response Processing

How does it work?

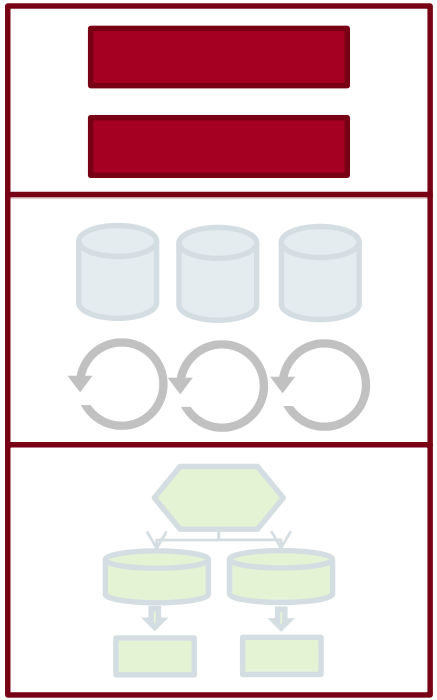


Message Creation

Comm Processing

Response Processing

Breakdown

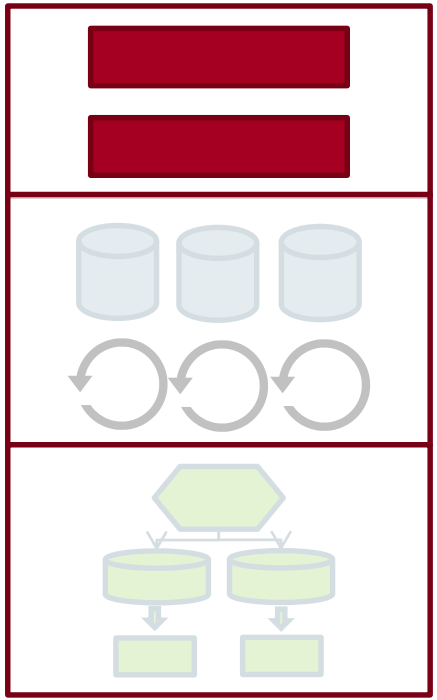


Message Creation

UIS Command

UIS/EIE

Breakdown

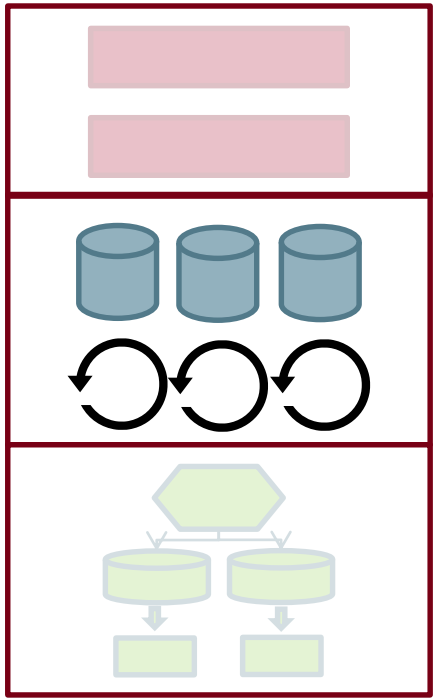


Message Creation

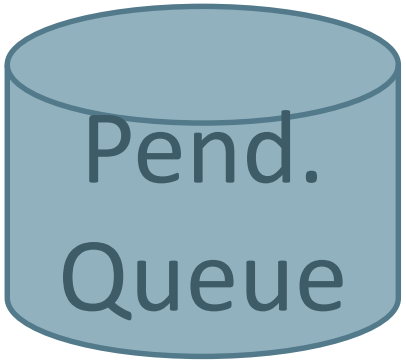
UIS Command

UIS/EIE

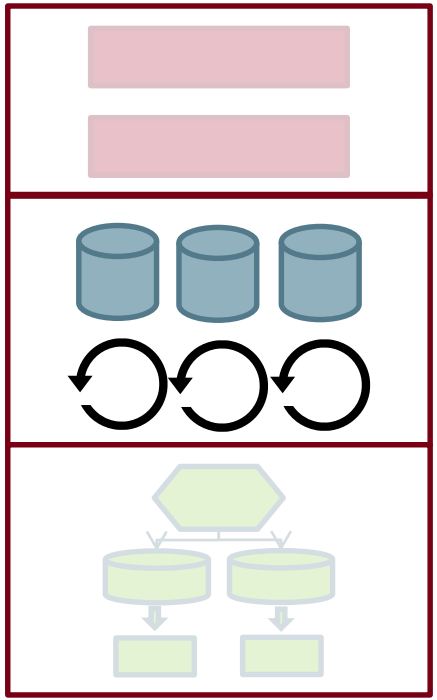
Breakdown

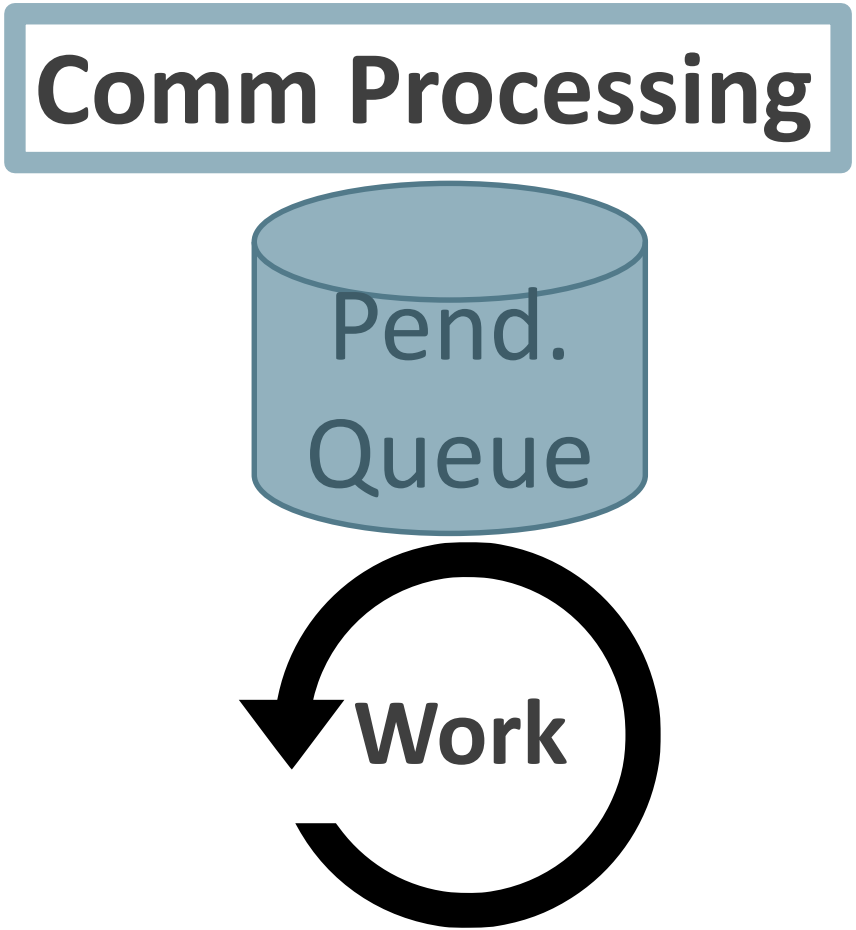


Comm Processing

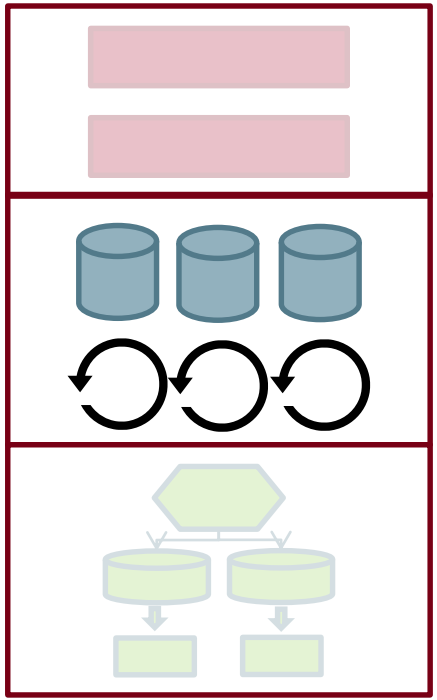


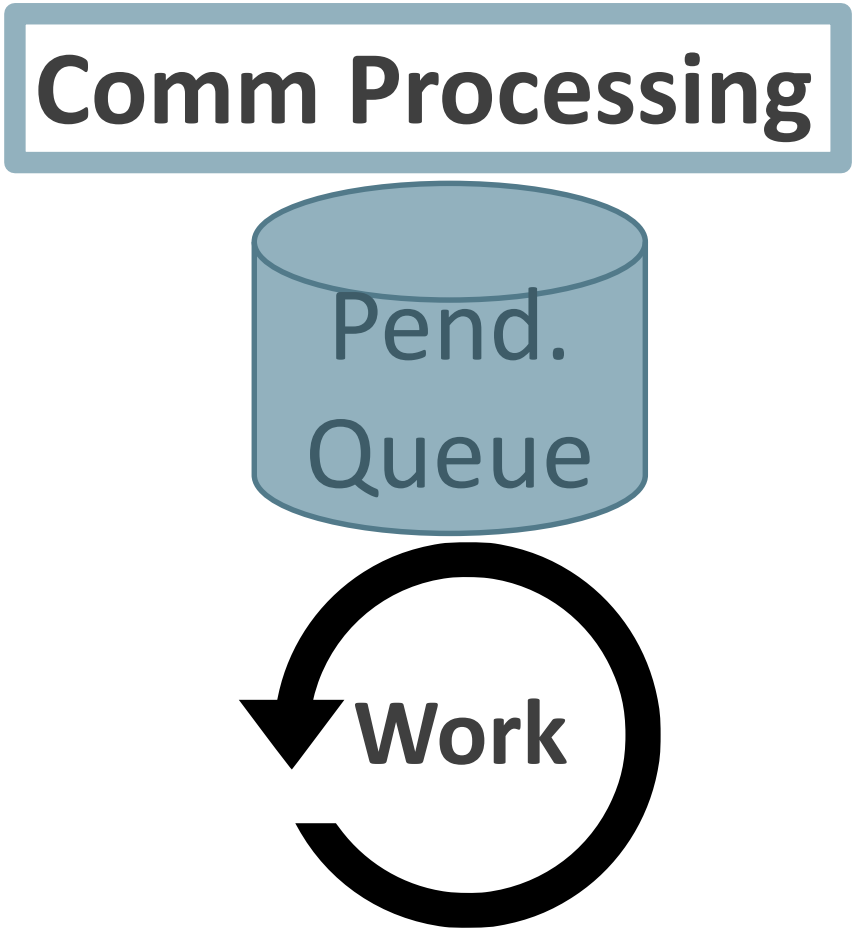
Breakdown



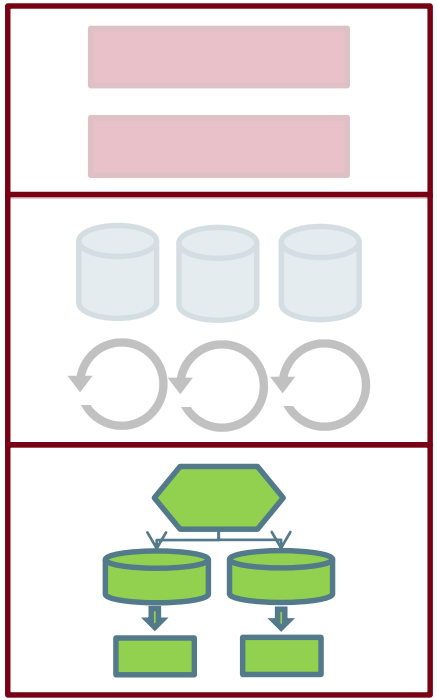


Breakdown

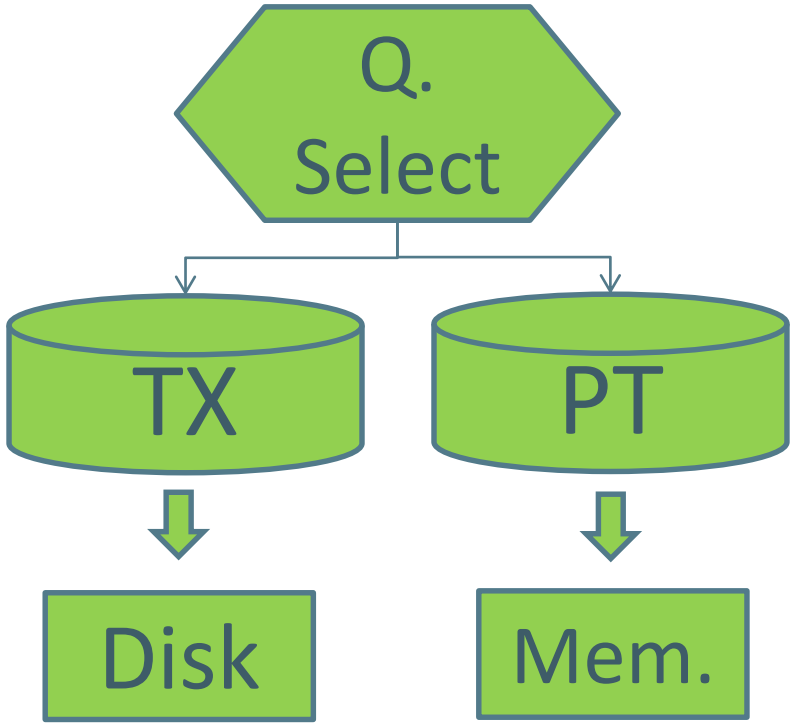


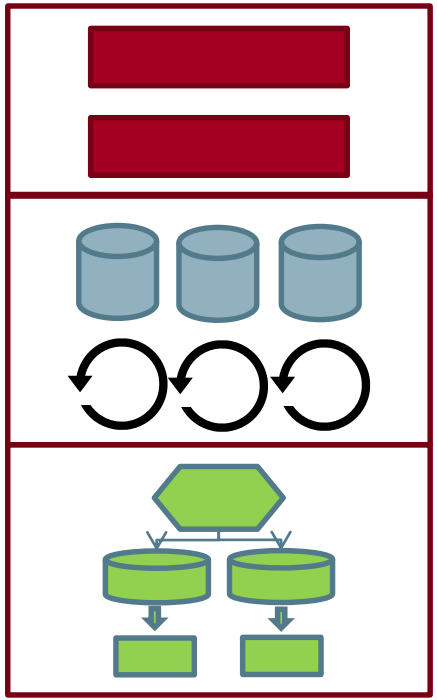


Breakdown



Response Processing





Message Creation

Comm Processing

Response Processing

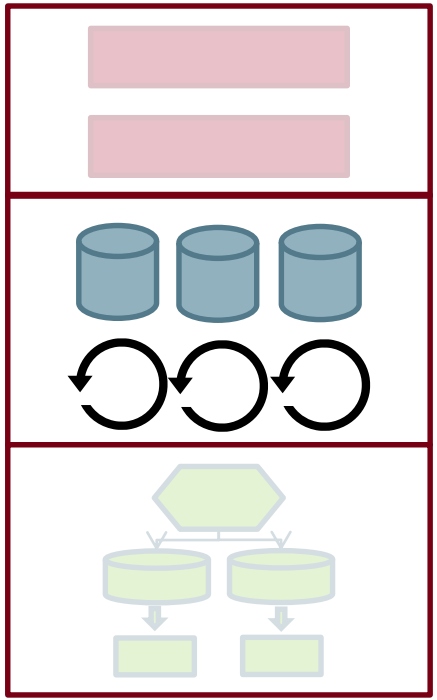
Optimizing!

UIS Optimization: What's the goal?

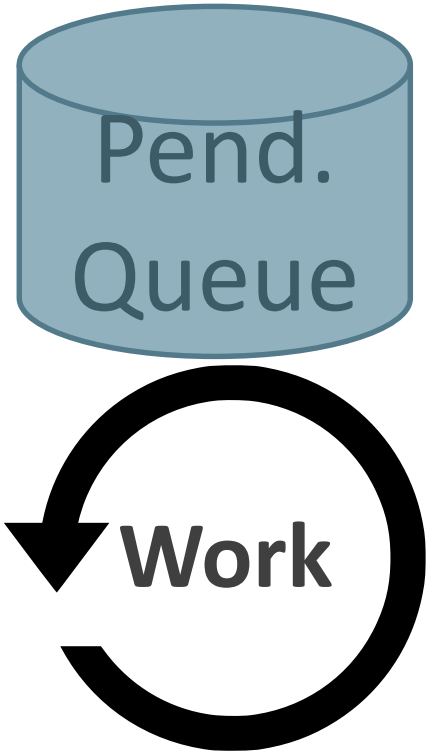
- Allow the UIS to poll as frequently as possible using existing communications infrastructure.

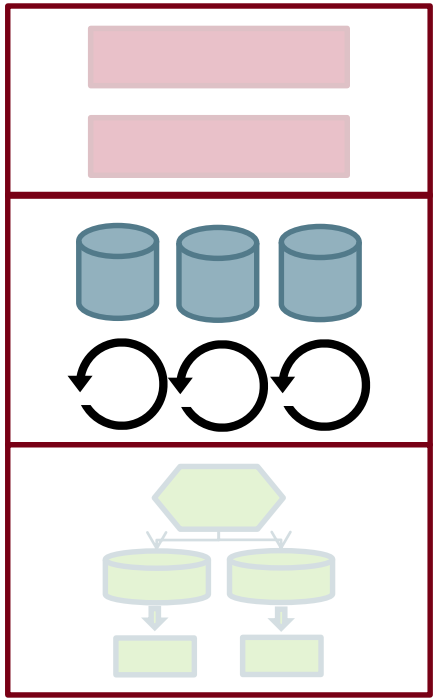
UIS Optimization: Types of comm environments

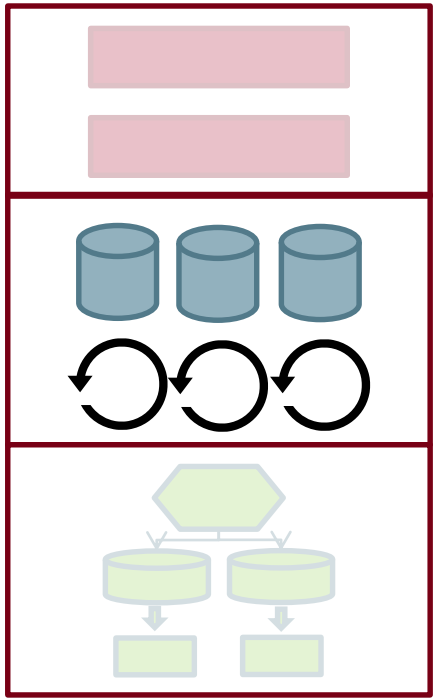
- One-to-many
  - Single connection
- One-to-one
  - Simultaneous connections

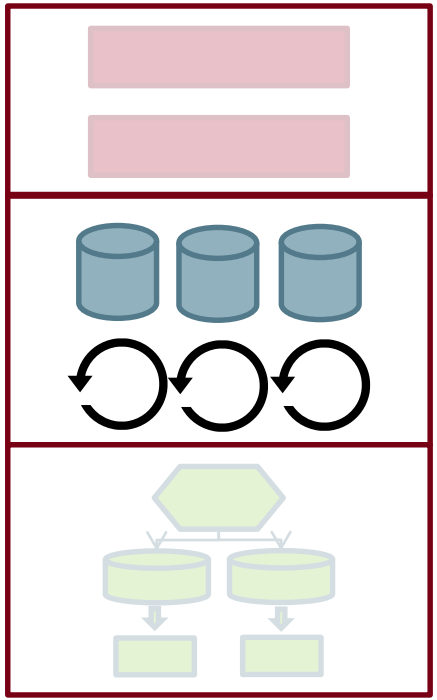


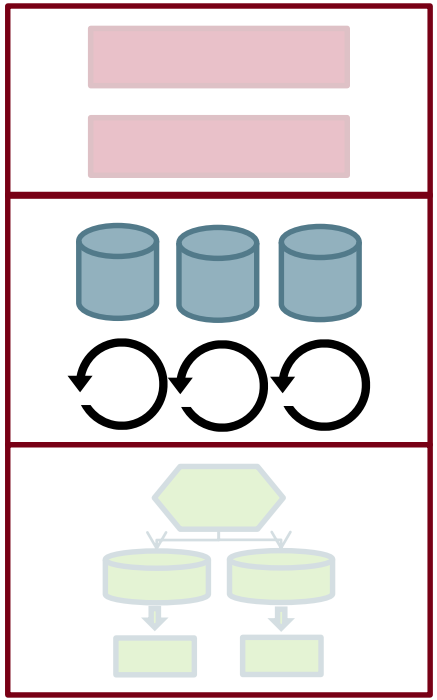
Comm Processing







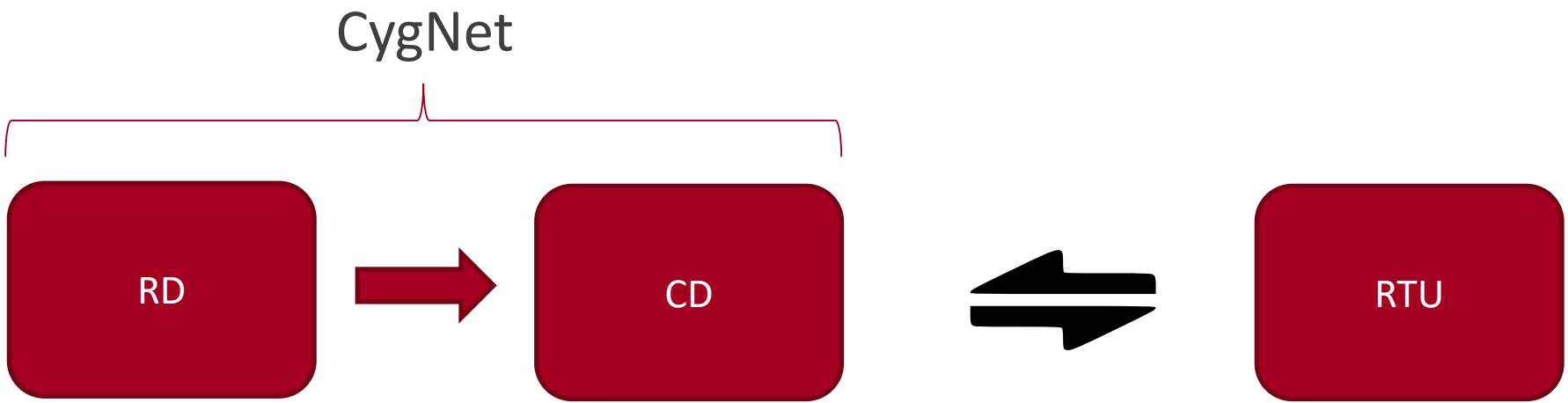




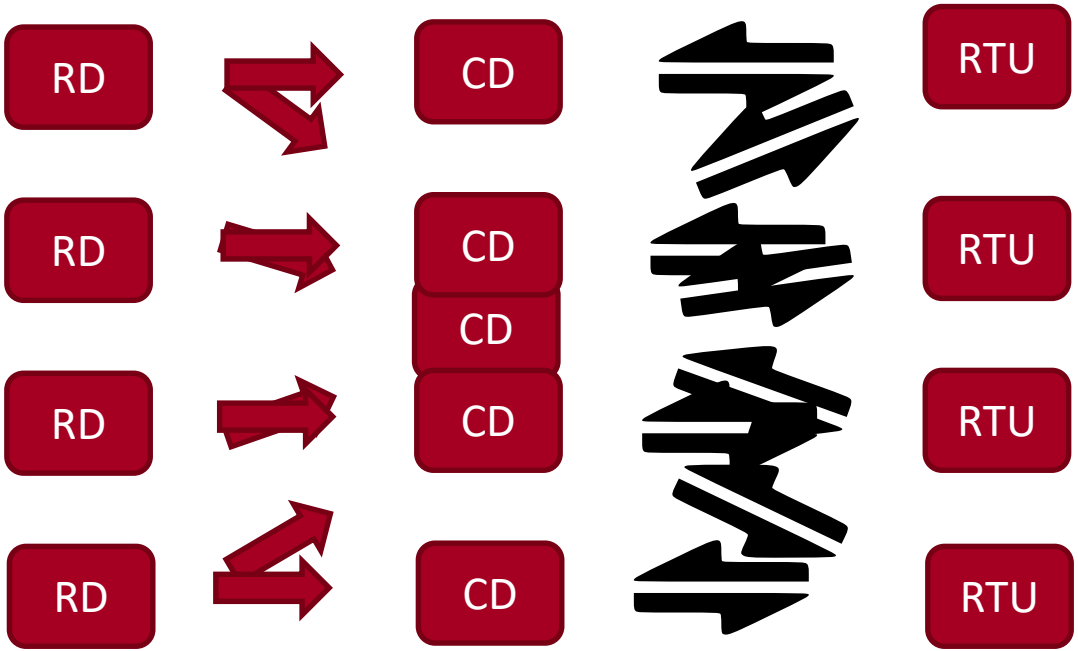
UIS Optimization: Direct Connect Considerations

- Uses more system resources
- Can overload comm infrastructure

UIS Optimization: Direct Connect Considerations



UIS Optimization: Direct Connect Considerations



UIS Optimization: Direct Connect Considerations

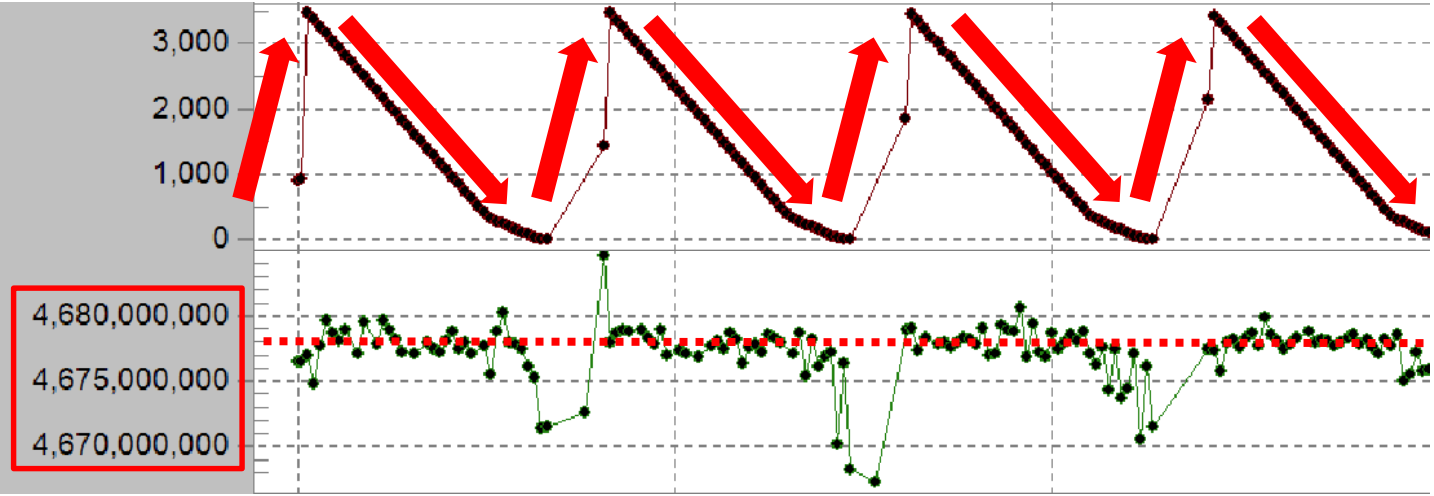
- TCP/IP Multipoint
  - Maximize polling
  - Prevent comm overload
  - Simplify scheduling

UIS Optimization: Direct Connect Considerations

Pending Comm Queue: Limitations

- Virtual Memory
  - 32-bit process – 4GB memory limit
  - 64-bit process – 16.8 million terabyte memory limit

Pending Comm Queue: Limitations



Pending Comm Queue

Virtual Memory

Pending Comm Queue: Limitations

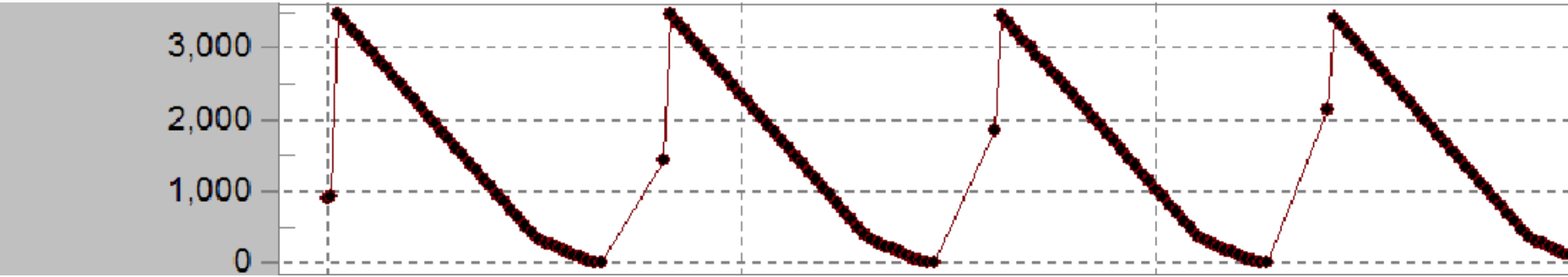
Pending Comm Queue

Virtual Memory

Pending Comm Queue: Limitations

- Preventing death by pending comm queue
  - Alarms
    - Virtual memory (SVMVIRT)
    - Pending comm queue (SVMUISPNDC)
    - Failed communications (SYCSSTAT)
  - MSS Throttling

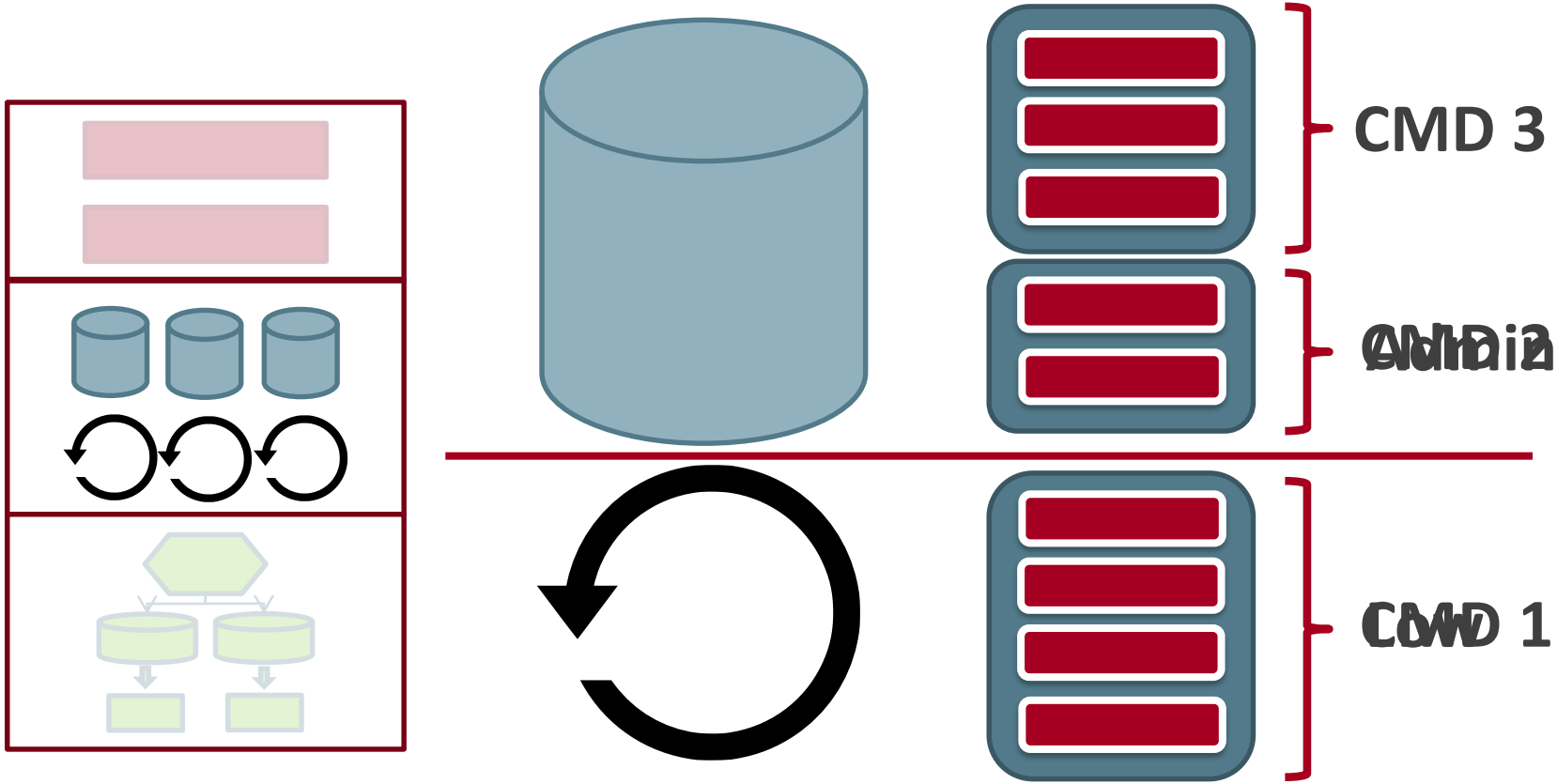
Pending Comm Queue: Limitations



Pending Comm Queue: Considerations

- FIFO
- Prioritization
- No interruptions

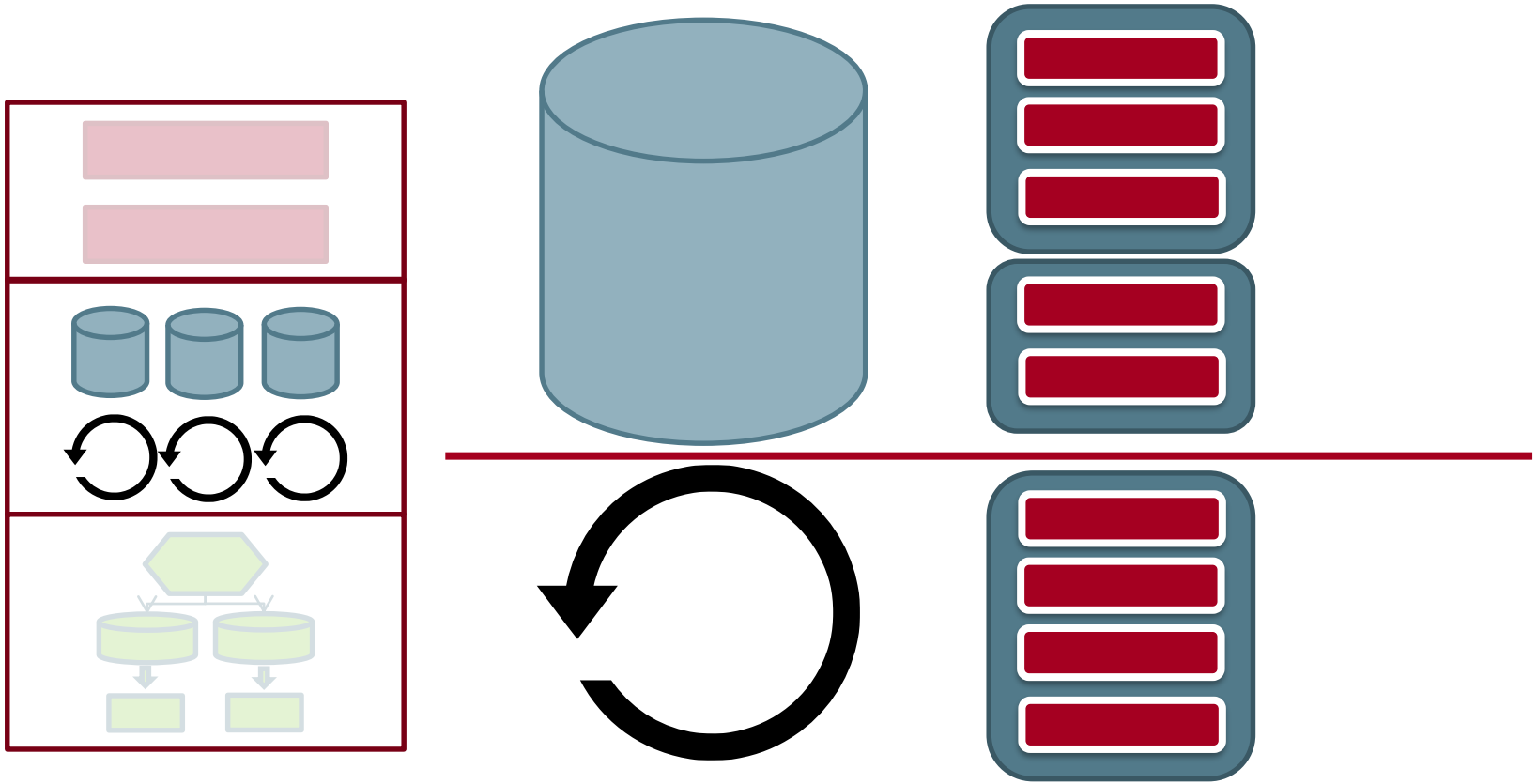
Pending Comm Queue: Considerations



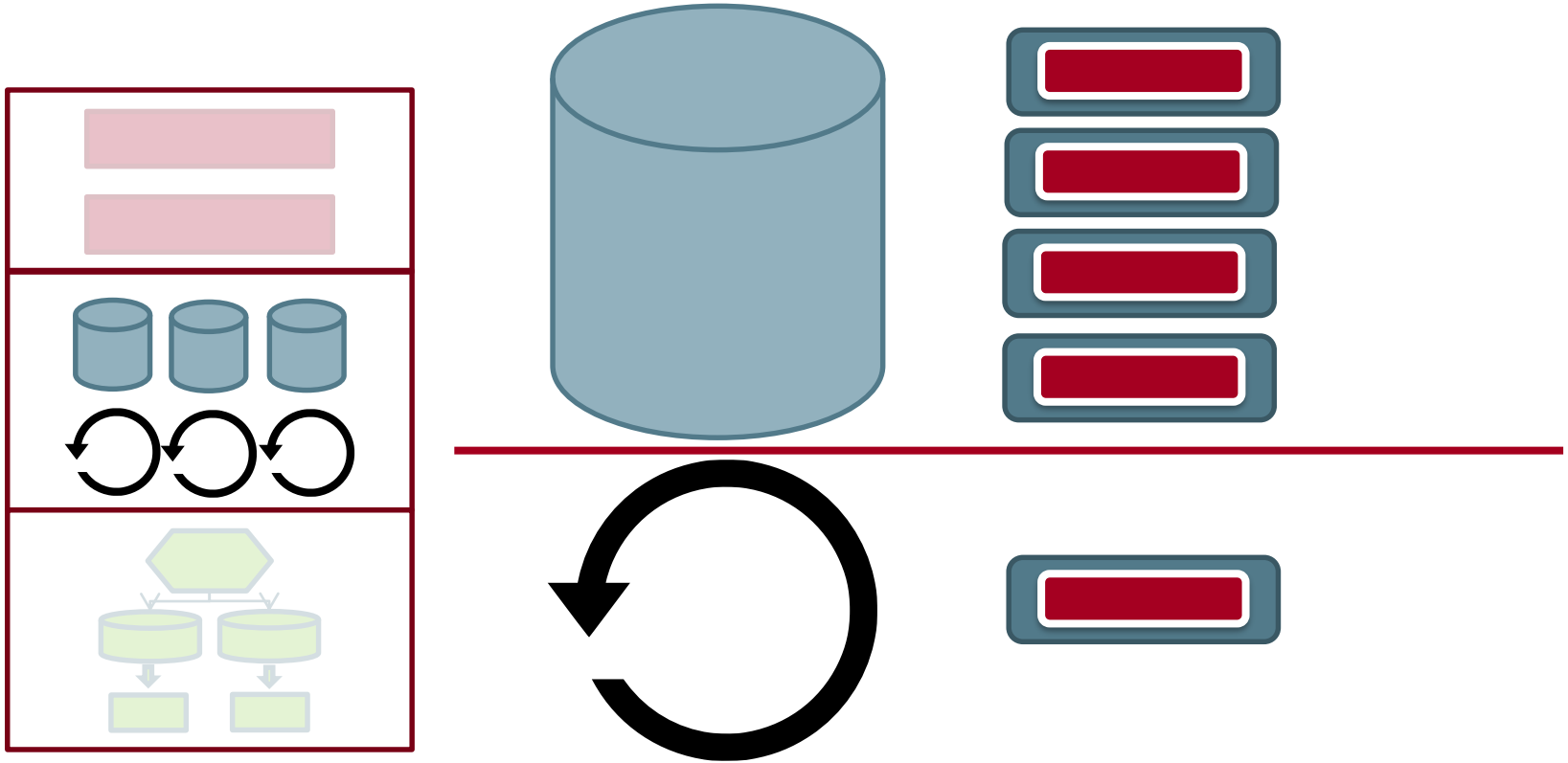
Pending Comm Queue: Considerations

- FIFO
- Prioritization
- No interruptions
  - Exception: SPLIT_MULTIFAC_COMMANDS

Pending Comm Queue: Considerations



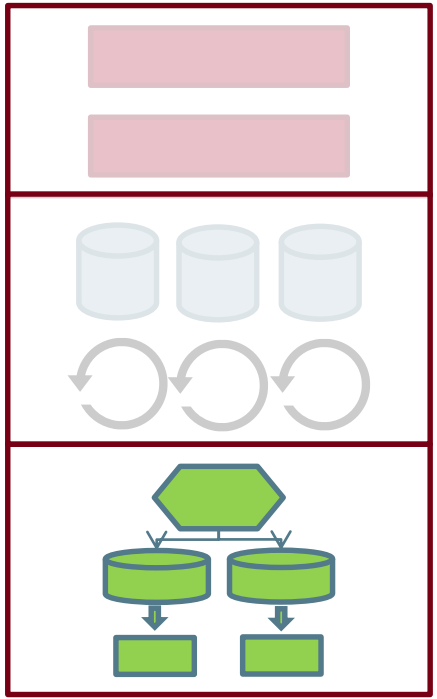
Pending Comm Queue: Considerations

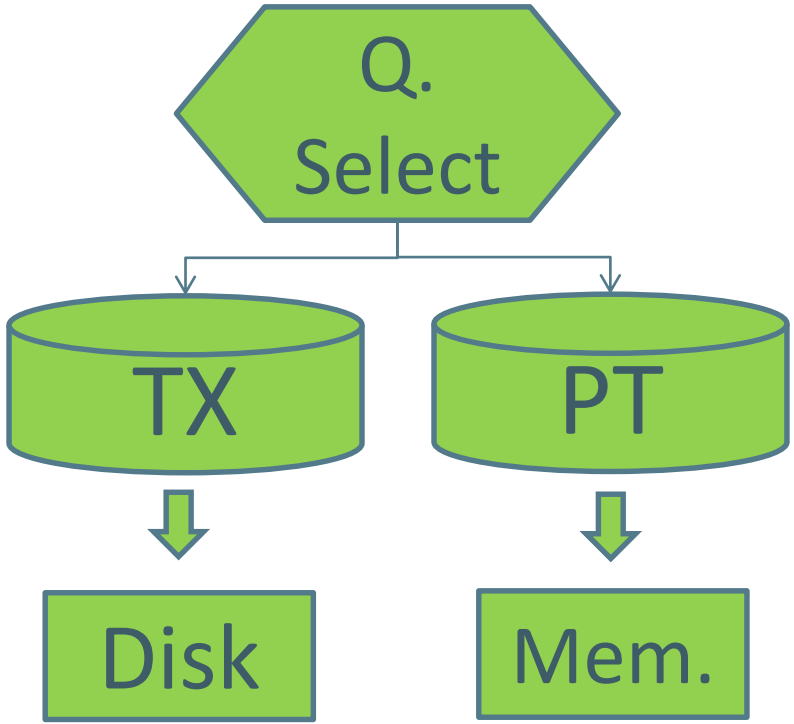


Pending Comm Queue: Considerations

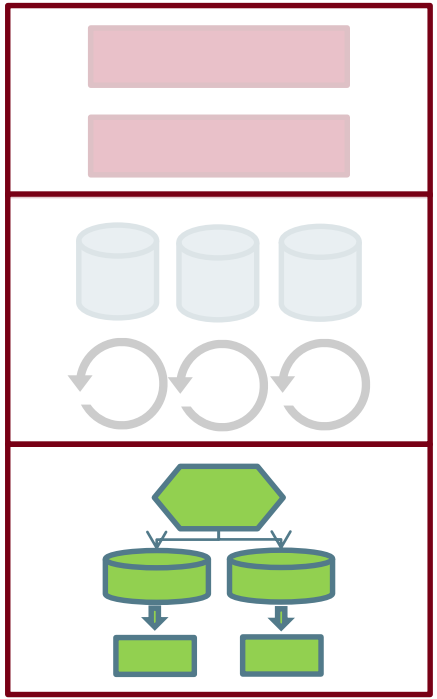
- Benefits of split commands
  - Faster processing for high priority items
  - Regulates flow to Response Processing
- Implement with caution

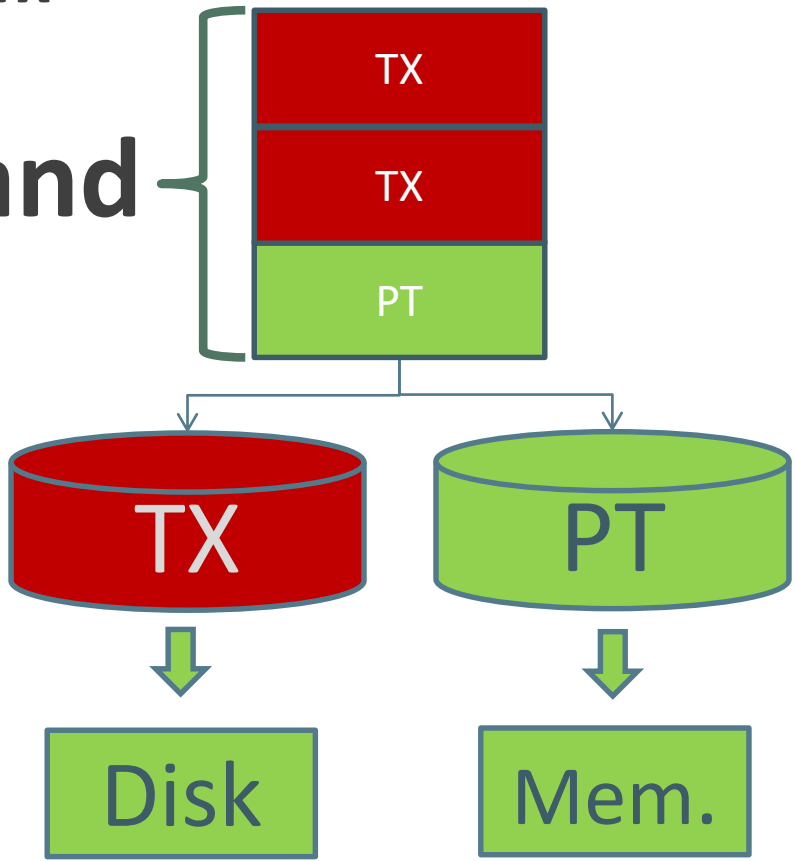
Response Processing – Writing Tx





Response Processing – Writing Tx

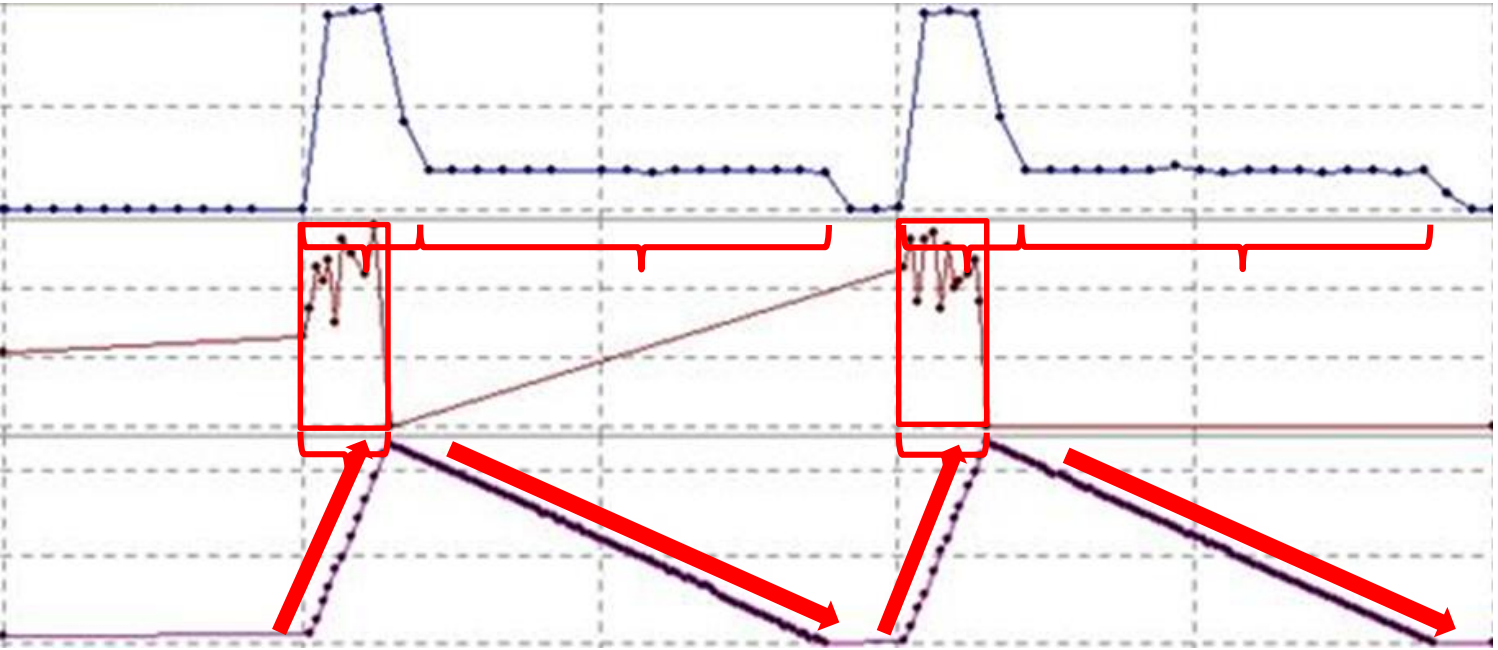




Response Processing: Threads

- Default: 3 threads per response queue
- Configurable up to 16 threads each

Response Processing: Threads

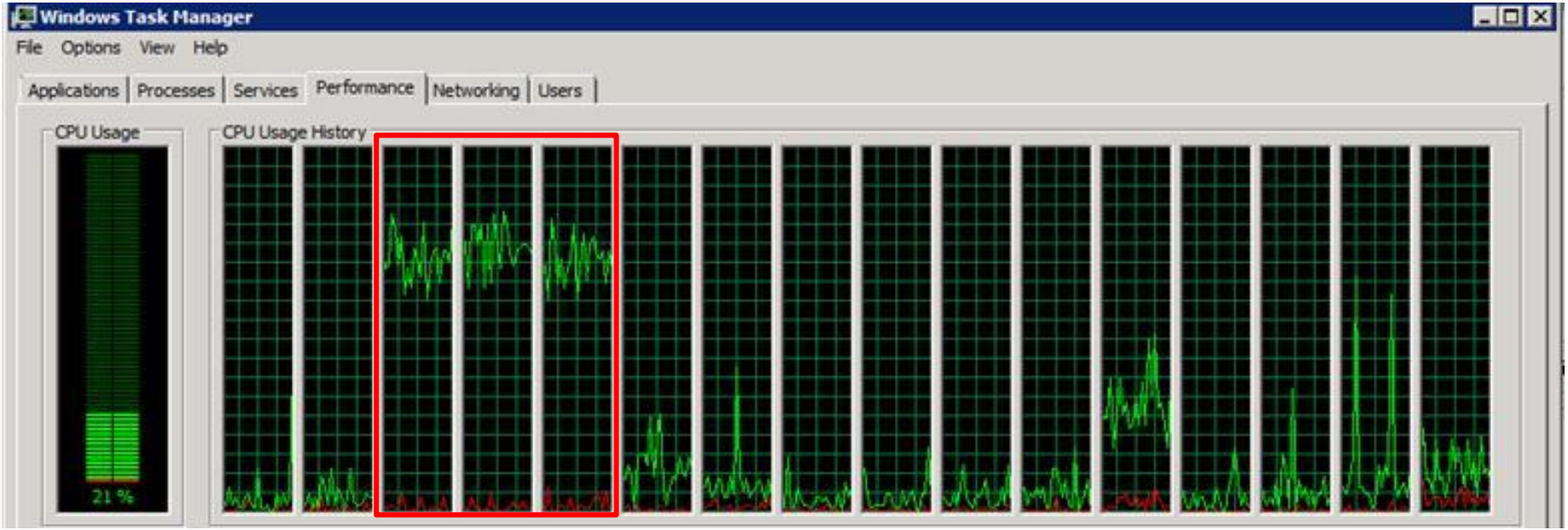


CPU Usage

Pending Comm Queue

Response Processing Queue

Identifying Bottlenecks



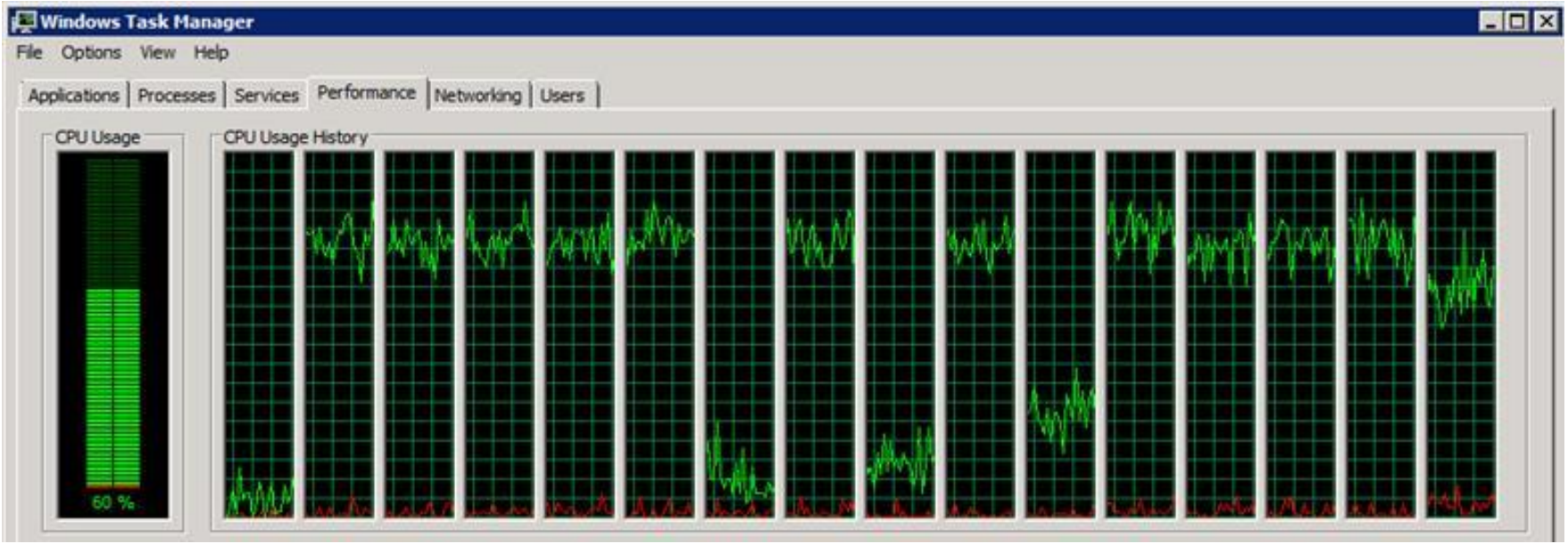
Identifying Bottlenecks

- Increase thread count
  - Add incrementally

Identifying Bottlenecks

- Increase thread count

12 Threads Configured



Identifying Bottlenecks

CPU: 3 Threads

Pending Comm Queue

Response Processing Queue

Identifying Bottlenecks

CPU: 12 Threads

Pending Comm Queue

Response Processing Queue

UIS Optimization: Review

- Match existing comm infrastructure
- Monitor Pending Comm Queue
- Sort TX vs PNT commands
- Optimize # of response processing threads

Tools!

CygNet Service Monitor (SVCMON)

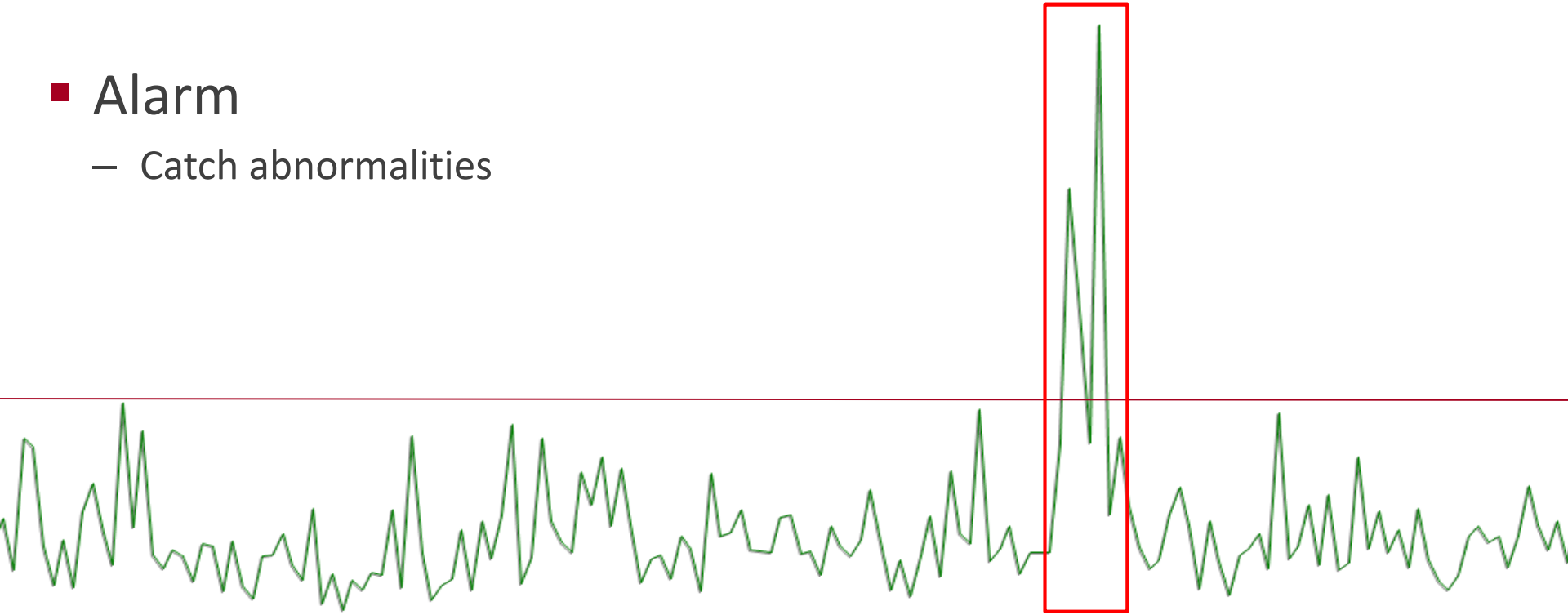
- What is SVCMON?
  - CygNet Current Value Service (CVS)
  - Gathers statistics
    - Host
    - Site
    - Service

CygNet Service Monitor (SVCMON)

- Items to monitor?
  - All of them
- Data retention?
  - At least a year

CygNet Service Monitor (SVCMON)

- Alarm
  - Catch abnormalities



Clean up logs

- Quickly spot abnormal behavior
- Easily identify relevant content

Working with Logs