

OPTIMIZING YOUR POLLING ENGINE

Eric Kramer

CygNet Support Team Lead

November 5th 2018





AGENDA

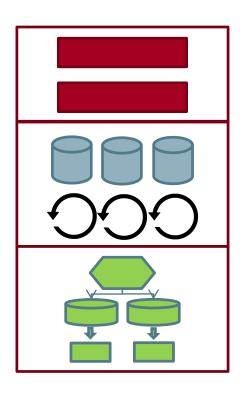
- 1 UIS: How does it work?
- **2** Optimizing!
- **3** Tools and Best Practices



UIS: HOW DOES IT WORK? POLLING AND PROCESSING

W

How does it work?



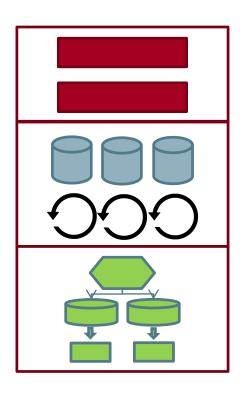
Message Creation

Comm Processing

Response Processing



How does it work?

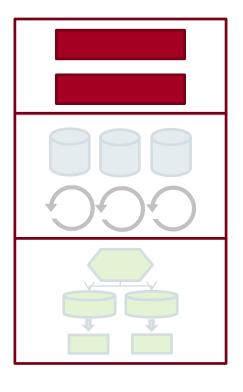


Message Creation

Comm Processing

Response Processing

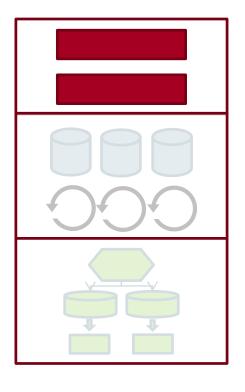




Message Creation



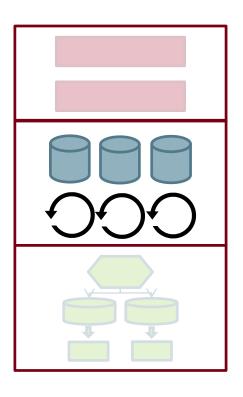


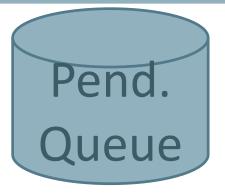


Message Creation

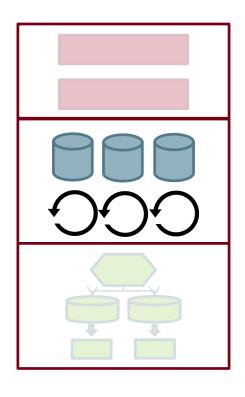


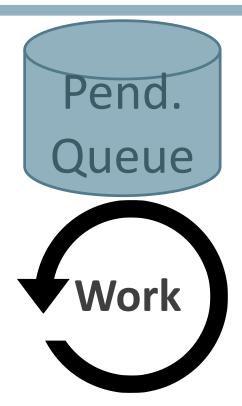




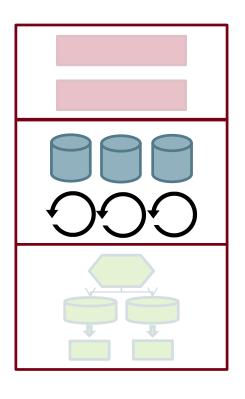


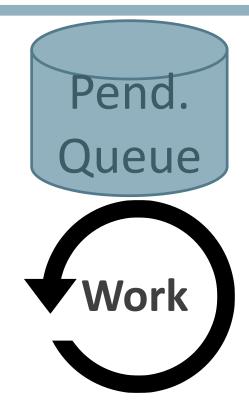




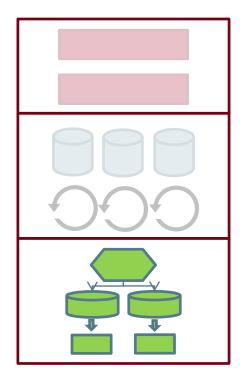




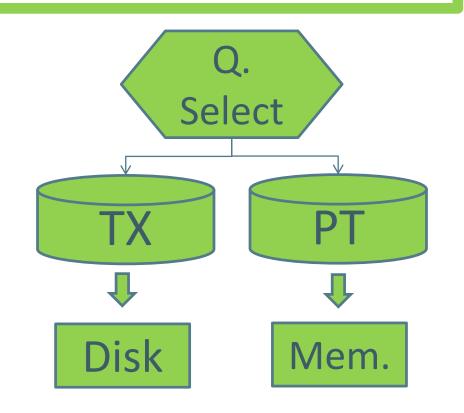


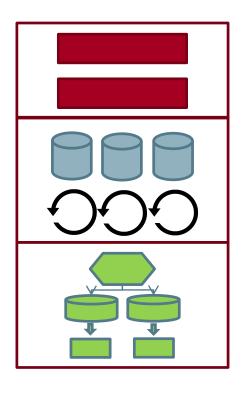


Breakdown



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.

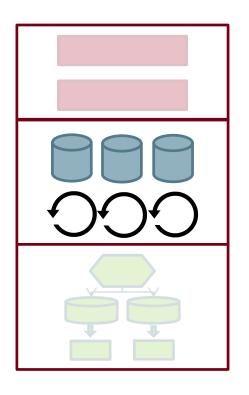


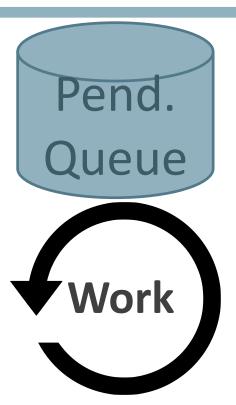
UIS Optimization: Types of comm environments

- One-to-many
 - Single connection

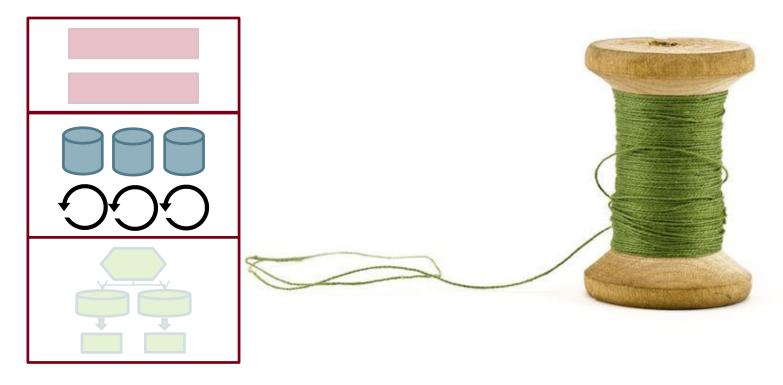
- One-to-one
 - Simultaneous connections



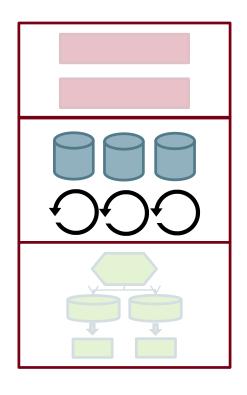






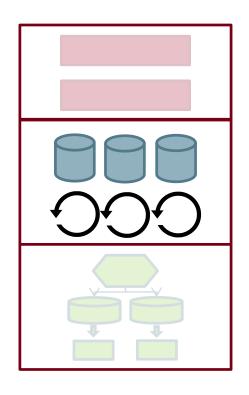














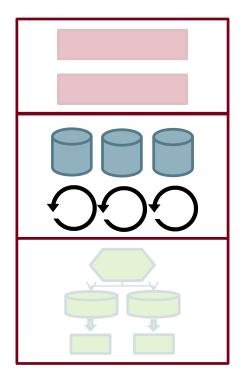






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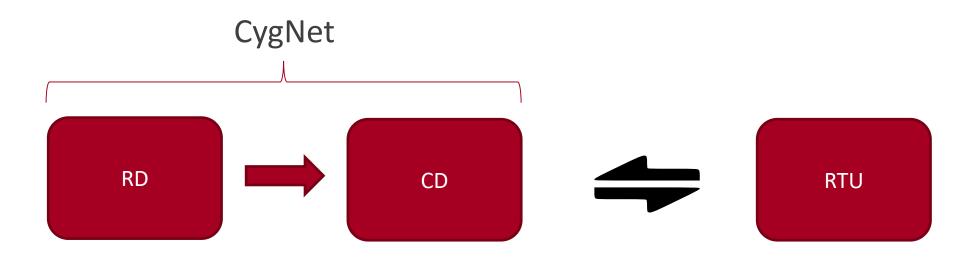


Uses more system resources

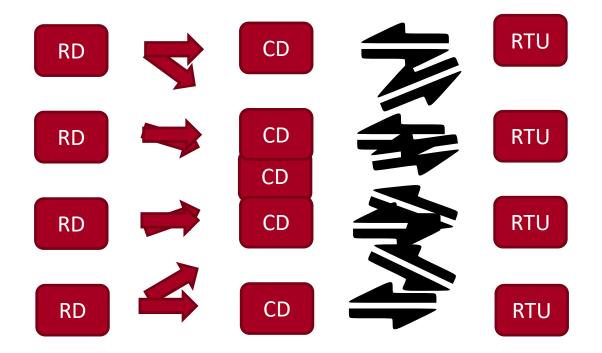
Can overload comm infrastructure



UIS Optimization: Direct Connect Considerations









TCP/IP Multipoint

Maximize polling

Prevent comm overload

Simplify scheduling



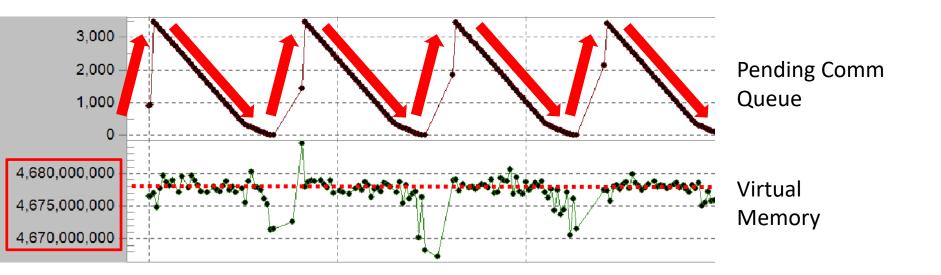


Pending Comm Queue: Limitations

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



Pending Comm Queue: Limitations



Pending Comm Queue: Limitations



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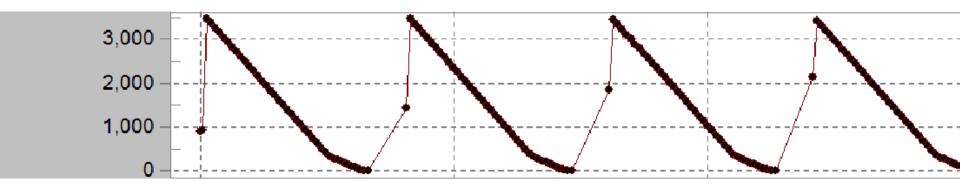


Pending Comm Queue: Limitations

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



Pending Comm Queue: Limitations





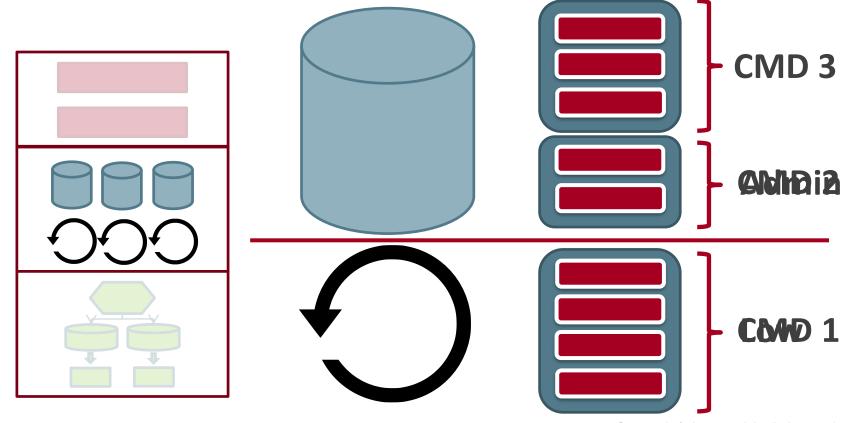
Pending Comm Queue: Considerations

FIFO

Prioritization

No interruptions

Pending Comm Queue: Considerations



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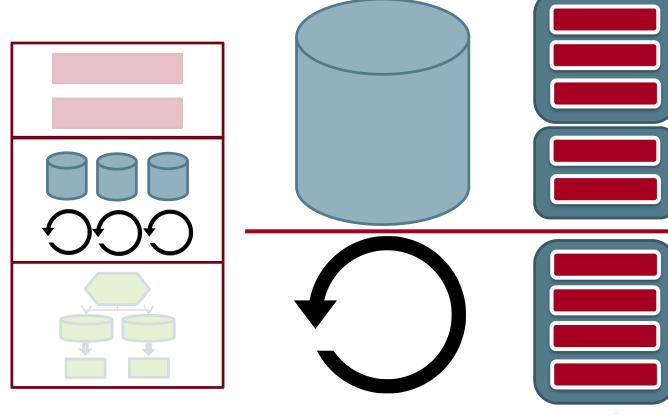


FIFO

Prioritization

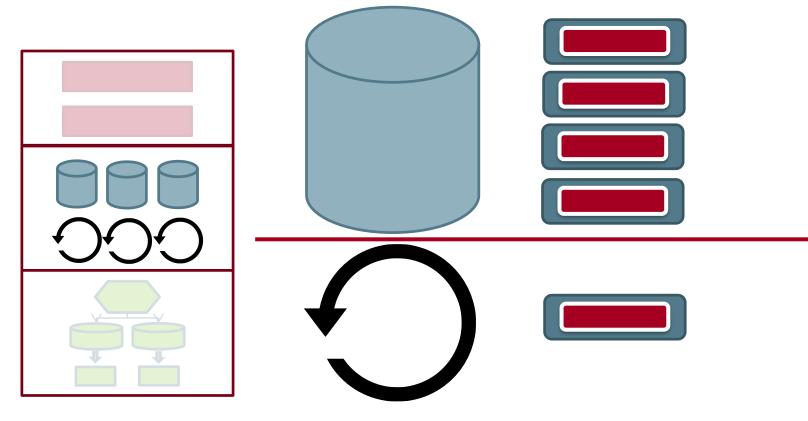
- No interruptions
 - Exception: SPLIT_MULTIFAC_COMMANDS

Pending Comm Queue: Considerations





Pending Comm Queue: Considerations





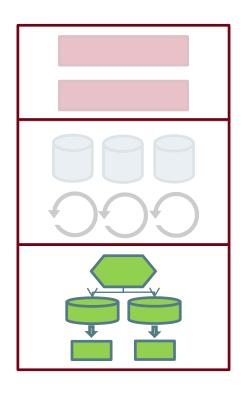
Pending Comm Queue: Considerations

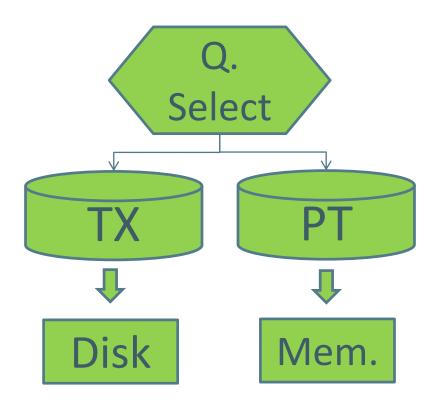
- Benefits of split commands
 - Faster processing for high priority items
 - Regulates flow to Response Processing

Implement with caution

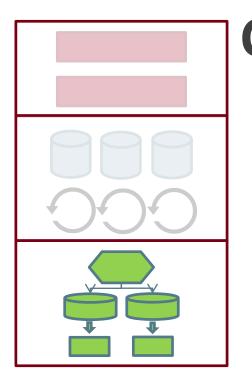


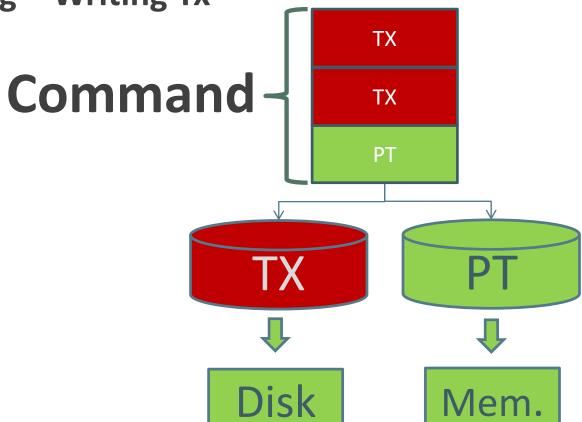
Response Processing – Writing Tx









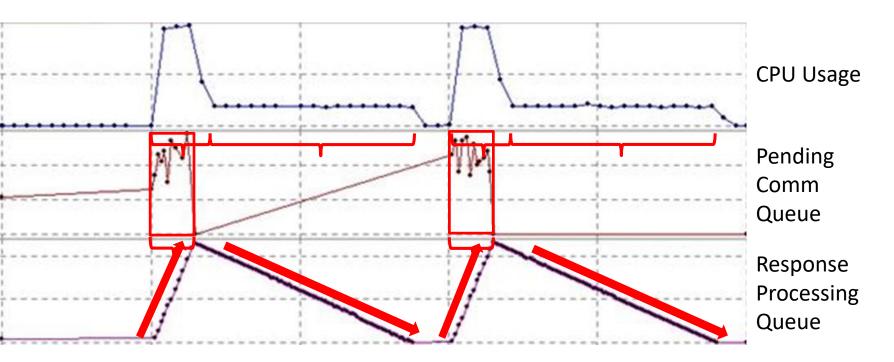




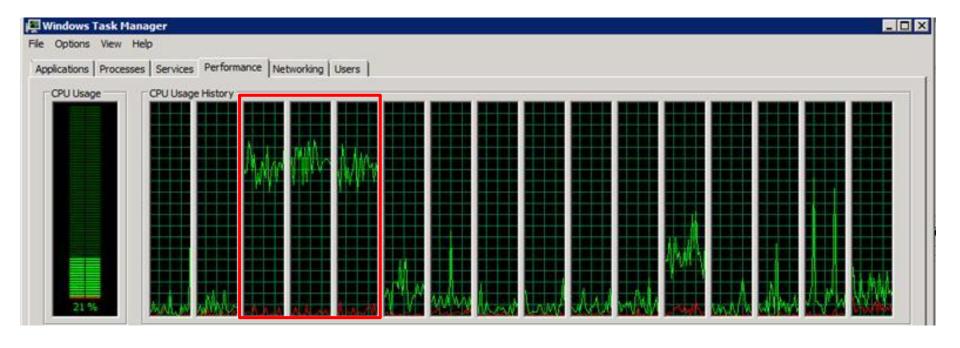
Response Processing: Threads

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

Response Processing: Threads









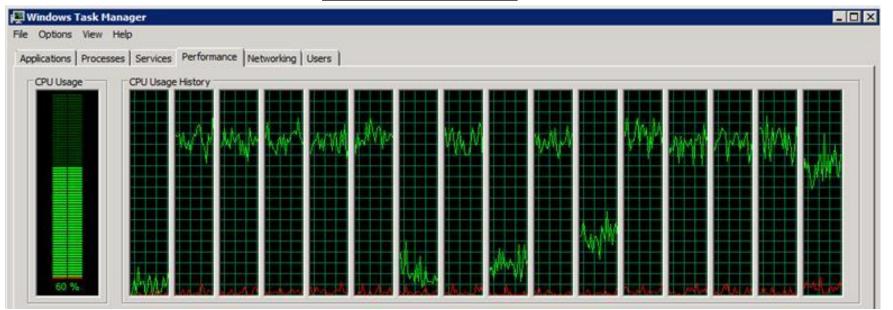
- Increase thread count
 - Add incrementally

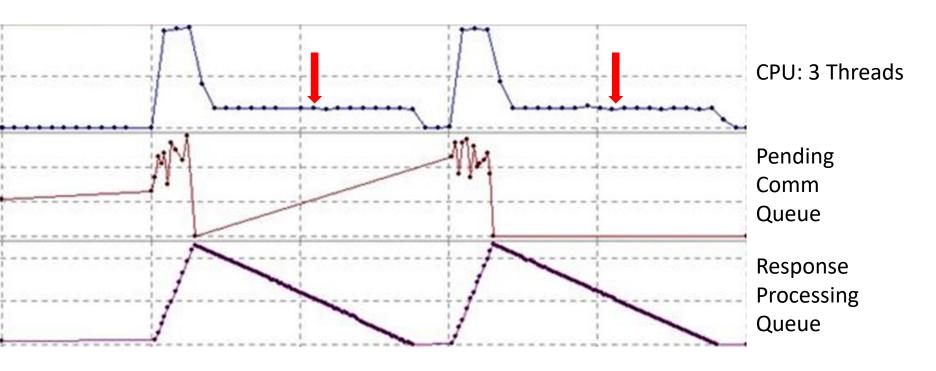


Identifying Bottlenecks

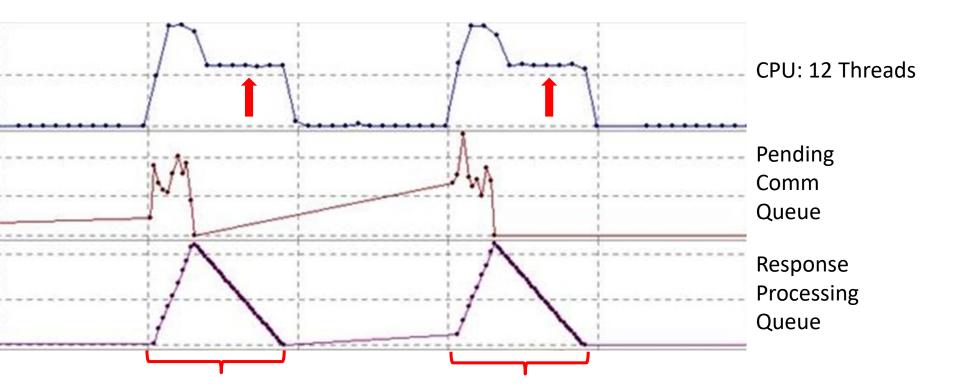
Increase thread count

12 Threads Configured











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

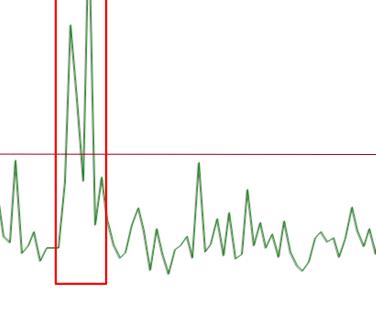
- Data retention?
 - At least a year

51 Weatherford Presentation Name

CygNet Service Monitor (SVCMON)

Alarm

Catch abnormalities



Clean up logs

Quickly spot abnormal behavior

Easily identify relevant content



Working with Logs

```
4/1/2017 10:33:45.899 | 12788 | EXCEPTION(V): SWANK_C:TF F TankData(0): RegNum: 20.3.19, size of 0 bytes is invalid (-2147483638), RegisterMag.cpp line 264 (class CRegisterFromDeviceMag). Handled: RegisterMag.cpp line 270 | VsiException.cpp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:33:45.899 | 12788 | EXCEPTION(V): SWANK_C:TF F TankData(0): RegNum: 20.3.21, size of 0 bytes is invalid (-2147483638), RegisterMag.cpp line 264 (class CRegisterFromDeviceMag). Handled: RegisterMag.cpp line 270 | VsiException.cpp | 628 | nlOG_EXCEPTIONS
4/1/2017 10:33:45.899 | 12788 | EXCEPTION(V): SWANK_C:TF F TankData(0): RegNum: 20.3.24, size of 0 bytes is invalid (-2147483638), RegisterMag.cpp line 264 (class CRegisterFromDeviceMag). Handled: RegisterMag.cpp line 270 | VaiException.cpp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:33:45.899 | 12788 | EXCEPTION(V): SWANK_C:TF F TankData(0): RegNum: 20.3.25, size of 0 bytes is invalid (-2147483638), RegisterMag.opp line 264 (class CRegisterFromDeviceMag). Handled: RegisterMag.opp line 270 | VaiException.opp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:33:45.899 | 12788 | EXCEPTION(V): SWANK_C:TF F TankData(0): RegNum: 20.3.27, size of 0 bytes is invalid (-2147483638), RegisterMag.cpp line 264 (class CRegisterFremDeviceMag). Handled: RegisterMag.cpp line 270 | VaiException.cpp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:33:45.899 | 12788 | EXCEPTION(V): SWANK_C:TF F TankData(0): RegNum: 20.3.30, size of 0 bytes is invalid (-2147483638), RegisterMag.cpp line 264 (class CRegisterFromDeviceMag). Handled: RegisterMag.cpp line 270 | VaiException.cpp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:33:45.899 | 12788 | EXCEPTION(V): SWANK_C:TF F TankData(0): RegNum: 20.3.31, size of 0 bytes is invalid (-2147483638), RegisterMag.cpp line 264 (class CRegisterFromDeviceMag). Handled: RegisterMag.cpp line 270 | VaiException.cpp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:33:45.899 | 12788 | EXCEPTION(V): SWANK_C:TF F TankData(0): RegNum: 20.3.33, size of 0 bytes is invalid (-2147483638), RegisterMag.cpp line 264 (class CRegisterFromDeviceMag). Handled: RegisterMag.cpp line 270 | VaiException.cpp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:33:45.899 | 12788 | EXCEPTION(V): SWANK_C:TF F TankData(0): RegNum: 20.12.0, size of 0 bytes is invalid (-2147483638), RegisterMag.opp line 264 (class CRegisterFeromDeviceMag). Handled: RegisterMag.opp line 270 | VaiException.opp | 628 | nLOS_EXCEPTIONS
4/1/2017 10:33:45.899 | 12788 | EXCEPTION(V): SWANK C:TF F TankData(0): RegNum: 20.12.2, size of 0 bytes is invalid (-2147483638), RegisterMag.cop line 264 (class CRegisterFromDeviceMag). Handled: RegisterMag.cop line 270 | VaiException.cop | 628 | nLOG EXCEPTIONS
4/1/2017 10:33:45.899 | 12788 | EXCEPTION(V): SWANK_C:TF F TankData(0): RegisterMag.cpp line 270 | VaiException.cpp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:33:45.899 | 12788 | EXCEPTION(V): SWANK C:TF F TankData(0): RegNum: 20.12.6, size of 0 bytes is invalid (-2147483638), RegisterMag.cop line 264 (class CRegisterFomDeviceMag), Handled: RegisterMag.cop line 270 | VaiException.cop | 628 | nLOG EXCEPTIONS
4/1/2017 10:33:45.915 | 12788 | EXCEPTION(V): SWANK C:TF F TankData(0): ReqNum: 20.12.8, size of 0 bytes is invalid (-2147483638), ReqisterMag.cpp line 264 (class CReqisterFromDeviceMag). Handled: ReqisterMag.cpp line 270 | VaiException.cpp | 628 | nLOG EXCEPTIONS
4/1/2017 10:33:45:915 | 12788 | EXCEPTION(V): SWANK_C:TF F TankData(0): RegNum: 20.12.10, size of 0 bytes is invalid (-2147483638), RegisterMag.cpp line 264 (class CRegisterFromDeviceMag). Handled: RegisterMag.cpp line 270 | VaiException.cpp | 628 | nlOG_EXCEPTIONS
4/1/2017 10:33:53.415 | 13684 | EXCEPTION(V): THOM_FITF F TankDataW(0): Deid: DIOl expected 4 bytes, seg size is 1 bytes, Skipping Deid (-2147483638), RegisterHeg.copp line 658 (class CRegisterFromDeviceMag). Handled: RegisterHeg.cop line 270 | VsiException.copp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:33:53.415 | 13684 | EXCEPTION(V): THOM F:TF F TankDataW(0): Deid: DIO2 expected 4 bytes, req size is 1 bytes, Skipping Deid (-2147483638), ReqisterMag.cpp line 658 (class CReqisterFromDeviceMag). Handled: ReqisterMag.cpp line 270 | VsiException.cpp | 628 | nLO2_EXCEPTIONS
4/1/2017 10:33:53.415 | 13684 | EXCEPTION(V): THOM F.TF F TankDataW(0): Deid: DIO3 expected 4 bytes, reg size is 1 bytes, Skipping Deid (-2147483638), RegisterMag.opp line 658 (class CRegisterFromDeviceMag). Handled: RegisterMag.opp line 270 | VaiException.opp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:33:53.415 | 13684 | EXCEPTION(V): THOM_F.TF F TankDataW(0): Deid: DIO4 expected 4 bytes, reg size is 1 bytes, Skipping Deid (-2147483638), RegisterNeg.cpp line 658 (class CRegisterFromDeviceMag). Handled: RegisterNeg.cpp line 270 | VsiException.cpp | 628 | nLOS_EXCEPTIONS
4/1/2017 10:33:53.415 | 13684 | EXCEPTION(V): THOM F-TF F TankDataW(0): Deid: DIOS expected 4 bytes, reg size is 1 bytes, Skipping Deid (-2147483638), RegisterMag.cpp line 658 (class CRegisterFromDeviceMag). Handled: RegisterMag.cpp line 270 | VsiException.cpp | 628 | nLOG EXCEPTIONS
4/1/2017 10:33:53.415 | 13684 | EXCEPTION(V): THOM_F:TF F TankDataW(0): Deid: DIO6 expected 4 bytes, reg size is 1 bytes, Skipping Deid (-2147483638), RegisterMag.cpp line 658 (class CRegisterFromDeviceMag). Handled: RegisterMag.cpp line 270 | VsiException.cpp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:33:53.415 | 13684 | EXCEPTION(V): THOM_F:TF F TankDataW(0): Deid: DIO7 expected 4 bytes, reg size is 1 bytes, Skipping Deid (-2147483638), RegisterMag.cpp line 658 (class CRegisterFromDeviceMag). Handled: RegisterMag.cpp line 270 | VsiException.cpp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:33:53.415 | 13684 | EXCEPTION(V): THOM_F:TF F TankDataW(0): Deid: DIOS expected 4 bytes, reg size is 1 bytes, Skipping Deid (-2147483638), RegisterMag.cpp line 658 (class CRegisterFromDeviceMag). Handled: RegisterMag.cpp line 270 | VsiException.cpp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:33:53.415 | 13684 | EXCEPTION(V): THOM_FITF F TankDataW(0): Deid: DIOS expected 4 bytes, reg size is 1 bytes, Skipping Deid (-2147483638), RegisterHead.org. Class CRegisterFromDeviceMag). Handled: RegisterHead.org. Plane 270 | VsiException.org. | 628 | nLOS_EXCEPTIONS
4/1/2017 10:33:53.415 | 13684 | EXCEPTION(V): THOM_F:TF F TankDataW(0): Deid: DIIO expected 4 bytes, reg size is 1 bytes, Skipping Deid (-2147483638), RegisterMag.cpp line 658 (class CRegisterFromDeviceMag). Handled: RegisterMag.cpp line 270 | VsiException.cpp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:33:53.415 | 13684 | EXCEPTION(V): THOM F.TF F TankDataW(0): Deid: DIll expected 4 bytes, reg size is 1 bytes, Skipping Deid (-2147483638), RegisterMag.cpp line 658 (class CRegisterFromDeviceMag). Handled: RegisterMag.cpp line 270 | VsiException.cpp | 628 | nLOS_EXCEPTIONS
4/1/2017 10:33:53.415 | 13684 | EXCEPTION(V): THOM_F.TF F TankDataW(0): Deid: DII2 expected 4 bytes, reg size is 1 bytes, Skipping Deid (-2147483638), RegisterNeg.cpp line 658 (class CRegisterFromDeviceMag). Handled: RegisterNeg.cpp line 270 | VsiException.cpp | 628 | nLOS_EXCEPTIONS
4/1/2017 10:33:53.431 | 13684 | EXCEPTION(V): THOM_F:TF F TankDataW(0): Daid: TnkComLoss expected 4 bytes, req size is 2 bytes, Skipping Deid (~2147483638), ReqisterFromDeviceMasy). Handled: ReqisterMag.cpp line 270 | VsiException.cpp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:33:53.431 | 13684 | EXCEPTION(V): THOM F.TF F TankDataW(0): Deid: HISD expected 4 bytes, reg size is 2 bytes, Skipping Deid (-2147483638), RegisterMag.cpp line 658 (class CRegisterFromDeviceMag). Handled: RegisterMag.cpp line 270 | VaiException.cpp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:34:13.727 | 13100 | EXCEPTION(C): Out of memory. (CMemoryException) Handled: UiaDeviceManagerBase.cpp line 994 | VaiException.cpp | 750 | nLOG EXCEPTIONS
4/1/2017 10:34:25.165 | 13684 | EXCEPTION(V): MILLER Y:TF F TankDataW(0): Deid: DIO1 expected 4 bytes, reg size is 1 bytes, Skipping Deid (-2147483638), RegisterMag.cpp line 658 (class CRegisterFromDeviceMag). Handled: RegisterMag.cpp line 270 | VsiException.cpp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:34:25.165 | 13684 | EXCEPTION(V): MILLER Y:TF F TankDataW(0): Deid: DIO2 expected 4 bytes, reg size is 1 bytes, Skipping Deid (-2147483638), RegisterMag.cop line 658 (class CRegisterFromDeviceMag), Handled: RegisterMag.cop line 270 | VaiException.cop | 628 | mLOG EXCEPTIONS
4/1/2017 10:34:25.181 | 13684 | EXCEPTION(V): MILLER Y:TF F TankDataW(0): Deid: DIO3 expected 4 bytes, req size is 1 bytes, Skipping Deid (-2147483638), ReqisterMag.cpp line 658 (class CRegisterFromDeviceMag). Handled: ReqisterMag.cpp line 270 | VaiException.cpp | 628 | nLOG EXCEPTIONS
4/1/2017 10:34:25.181 | 13684 | EXCEPTION(V): MILLER Y:TF F TankDataW(0): Deid: DIO4 expected 4 bytes, reg size is 1 bytes, Skipping Deid (-2147483638), RegisterMag.cpp line 658 (class CRegisterFromDeviceMag). Handled: RegisterMag.cpp line 270 | VsiException.cpp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:34:25.181 | 13684 | EXCEPTION(V): MILLER_Y:TF F TankDataW(0): Deid: DIOS expected 4 bytes, reg size is 1 bytes, Skipping Deid (-2147483638), RegisterWag.cpp line 658 (class CRegisterFromDeviceWag). Handled: RegisterWag.cpp line 270 | VsiException.cpp | 628 | nLOS_EXCEPTIONS
4/1/2017 10:34:25.181 | 13684 | EXCEPTION(V): MILLER Y:TF F TankDataW(0): Deid: DIO6 expected 4 bytes, req size is 1 bytes, Skipping Deid (-2147483638), RegisterMag.cpp line 658 (class CRegisterFromDeviceMag). Handled: RegisterMag.cpp line 270 | VaiException.cpp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:34:25.181 | 13684 | EXCEPTION(V): MILLER Y:TF F TankDataW(0): Deid: DIO7 expected 4 bytes, reg size is 1 bytes, Skipping Deid (-2147483638), RegisterHag.copp line 658 (class CRegisterFromDeviceMag). Handlad: RegisterWag.copp line 270 | VsiException.copp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:34:25.181 | 13684 | EXCEPTION(V): MILLER_Y:TF F TankDataW(0): Deid: DIO8 expected 4 bytes, reg size is 1 bytes, Skipping Deid (-2147483638), RegisterHag.cpp line 658 (class CRegisterFromDeviceNag). Handlad: RegisterHag.cpp line 270 | VsiException.cpp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:34:25.181 | 13684 | EXCEPTION(V): MILLER Y:TF F TankDataW(0): Daid: DIO9 expected 4 bytes, reg size is 1 bytes, Skipping Daid (-2147483638), RegisterHag.cop line 658 (class CRegisterFromDeviceNag). Handled: RegisterWag.cop line 270 | VsiException.cop | 628 | nLOG_EXCEPTIONS
4/1/2017 10:34:25.181 | 13684 | EXCEPTION(V): MILLER_Y:TF F TankDataW(0): Deid: DI10 expected 4 bytes, reg size is 1 bytes, Skipping Deid (-2147483638), RegisterMag.cpp line 658 (class CRegisterFromDeviceMag). Handled: RegisterMag.cpp line 270 | VsiException.cpp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:34:25.181 | 13684 | EXCEPTION(V): MILLER_Y:TF F TankDataW(0): Daid: DIll expected 4 bytes, reg size is 1 bytes, Skipping Daid (-2147483638), Register-Wag.cpp line 658 (class CRegister-FromDeviceWag). Handled: Register-Wag.cpp line 270 | VsiException.cpp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:34:25.181 | 13684 | EXCEPTION(V): MILLER Y:TF F TankDataW(0): Deid: DII2 expected 4 bytes, reg size is 1 bytes, Skipping Deid (-2147483638), RegisterHag.cop line 658 (class CRegisterFromDeviceMag). Handled: RegisterHag.cop line 270 | VsiException.cop | 628 | nLOG_EXCEPTIONS
4/1/2017 10:34:25.181 | 13684 | EXCEPTION(V): MILLER_Y:TF F TankDataW(0): Deid: ThKComLoss expected 4 bytes, reg size is 2 bytes, Skipping Deid (-2147483638), RegisterMag.cpp line 658 (class CRegisterFromDeviceMag). Handled: RegisterMag.cpp line 270 | VaiException.cpp | 628 | nLOS_EXCEPTIONS
4/1/2017 10:34:25.181 | 13684 | EXCEPTION(V): MILIER Y:TF F TankDataM(O): Deid: HISD expected 4 bytes, reg size is 2 bytes, Skipping Deid (-2147483638), RegisterMag.copp line 658 (class CRegisterFromDeviceMag). Handled: RegisterMag.copp line 270 | VaiException.copp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:34:32.712 | 12788 | EXCEPTION(V): UP 41 PA:TF F TankData(0): Deid: MAIS expected 4 bytes, reg sire is 1 bytes, Skipping Deid (-2147483638), Register-Mag.copp line 658 (class CRegister-FromDeviceMag). Handled: Register-Mag.copp line 270 | VsiException.copp | 628 | nLOG EXCEPTIONS
4/1/2017 10:34:32.727 | 12788 | EXCEPTION(V): UF_41_EA:TF F TankData(0): RegNum: 7.115.0, size of 0 bytes is invalid (-2147483538), RegisterMag.cpp line 264 (class CRegisterFremDeviceMag). Handled: RegisterMag.cpp line 270 | VaiException.cpp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:34:32.727 | 12788 | EXCEPTION(V): UP_41_EA:TF F TankData(0): RegNum: 7.115.1, sire of 0 bytes is invalid (-2147483638), RegisterMag.cpp line 264 (class CRegisterFromDeviceMag). Handled: RegisterMag.cpp line 270 | VsiException.cpp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:34:32.727 | 12788 | EXCEPTION(V): UF 41_EA:TF F TankData(0): RegNum: 7.115.2, size of 0 bytes is invalid (-2147483638), RegisterMag.cpp line 264 (class CRegisterFermDeviceMag). Handled: RegisterMag.cpp line 270 | VaiException.cpp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:34:32.727 | 12788 | EXCEPTION(V): UF 41 FA:TF F TankData(0): ReqNum: 7.115.3, size of 0 bytes is invalid (-2147483638), RegisterMag.cpp line 264 (class CRegisterFromDeviceMag). Handled: RegisterMag.cpp line 270 | VsiException.cpp | 628 | nLOG EXCEPTIONS
4/1/2017 10:34:32.727 | 12788 | EXCEPTION(V): UF 41 BA:TF F TankData(0): RegNum: 7.115.4, size of 0 bytes is invalid (-2147483638), RegisterMag.cpp line 264 (class CRegisterFromDeviceMag). Handled: RegisterMag.cpp line 270 | VaiException.cpp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:34:32.727 | 12788 | EXCEPTION(V): UF 41 FA:TF F TankData(0): RegNum: 7.115.5, sire of 0 bytes is invalid (-2147483638), RegisterMag.cop line 264 (class CRegisterFromDeviceMag). Handled: RegisterMag.cop line 270 | VsiException.cop | 628 | nLOG EXCEPTIONS
4/1/2017 10:34:32.727 | 12788 | EXCEPTION(V): UP_41_PA:TF F TankData(0): RegNum: 7.115.6, sire of 0 bytes is invalid (-2147483638), RegisterMag.cpp line 264 (class CRegisterFromDeviceMag). Handled: RegisterMag.cpp line 270 | VsiException.cpp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:34:32.727 | 12788 | EXCEPTION(V): UP_41_BA:TF F TankData(0): RegisterMag.cpp line 270 | VaiException.cpp | 628 | nLOG_EXCEPTIONS
4/1/2017 10:34:32.727 | 12788 | EXCEPTION(V): UP 41 PA:TF F TankData(0): RegisterMag.cpp line 270 | VaiException.cpp | 628 | nLOG EXCEPTIONS
4/1/2017 10:34:32.727 | 12788 | EXCEPTION(V): UF_41_PA:TF F TankData(0): RegisterMag.cpp line 270 | VaiException.cpp | 628 | nLoG_EXCEPTIONS
4/1/2017 10:34:32.727 | 12788 | EXCEPTION(V): UP 41 PA:TF F TankData(0): RegNum: 9.8.3, size of 0 bytes is invalid (-2147483638), RegisterMag.cpp line 264 (class CRegisterFermDeviceMag). Handled: RegisterMag.cpp line 270 | VaiException.cpp | 628 | nlOo_EXCEPTIONS
4/1/2017 10:34:32.727 | 12788 | EXCEPTION(V): UP_41_RA:TF F TankData(0): RegNum: 9.8.4, size of 0 bytes is invalid (-2147483638), RegisterMag.cpp line 264 (class CRegisterFromDeviceMag). Handled: RegisterMag.cpp line 270 | VaiException.cpp | 628 | niOG_EXCEPTIONS
4/1/2017 10:34:32.727 | 12788 | EXCEPTION(V): UF 41 PA:TF F TankData(0): RegNum: 9.8.6, size of 0 bytes is invalid (-2147483638), RegisterMag.cpp line 264 (class CRegisterFromDeviceMag). Handled: RegisterMag.cpp line 270 | VaiException.cpp | 628 | nLOG_EXCEPTIONS
```