Progress®

Monitoring Progress Application Server (PAS) for OpenEdge

Roy Ellis

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Agenda

- Classic AppServer Monitoring
- JMX
- OEJMX
- REST API
- Need to add oemanager script!
- Health Scanner
- Recommendations

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Classic AppServer Monitoring

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asbman -query

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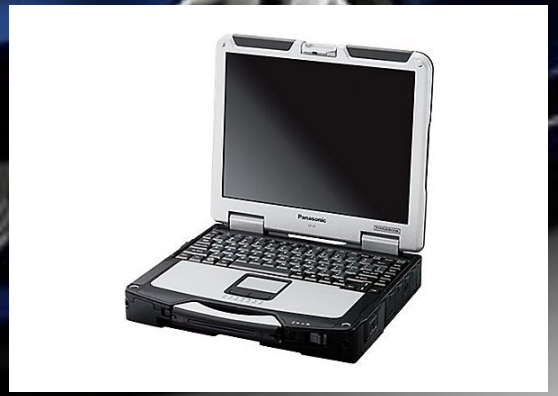
JMX supports

- OEJMX
- REST API
- HealthScanner



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Classic AppServer Monitoring

The Classic monitoring asbman –i(-name) asbroker1 –q(-query)

```
Broker Name               : asbroker1
Operating Mode            : State-reset
Broker Status             :  ACTIVE
Broker Port               : 3090
Broker PID                : 28482
Active Servers            : 7
Busy Servers              : 1
Locked Servers            : 0
Available Servers         : 6
Active Clients (now, peak)     : (1, 21)
Client Queue Depth (cur, max)  : (1, 21)
Total Requests            : 1449080
Rq Wait (max, avg)             : (100 ms, 2 ms)
Rq Duration (max, avg)         : (1200 ms, 30 ms)
```


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Classic AppServer Monitoring

Agent information

PID	State	Port	nRq	nRcvd	nSent	Started	Last Change
09170	AVAILABLE	19101	144908	144908	144908	09-Apr-2022 06:18	12-Apr-2022 14:27
02158	AVAILABLE	19102	046299	046299	046299	11-Apr-2022 11:59	12-Apr-2022 14:27
02161	AVAILABLE	19103	046274	046274	046274	11-Apr-2022 11:59	12-Apr-2022 14:27
28412	AVAILABLE	19104	018443	018443	018443	12-Apr-2022 06:58	12-Apr-2022 14:27
28415	AVAILABLE	19105	018507	018507	018507	12-Apr-2022 06:58	12-Apr-2022 14:27
28418	AVAILABLE	19106	018434	018434	018434	12-Apr-2022 06:58	12-Apr-2022 14:27
28421	BUSY	19107	018330	018330	018330	12-Apr-2022 06:58	12-Apr-2022 14:27

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JMX

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Java Management eXtensions – JMX

- JMX is a Java technology that supplies tools for managing and monitoring applications, system objects, devices (such as printers) and service-oriented networks.
- Those resources are represented by objects called MBeans (for Managed Bean)
- In the API, classes can be dynamically loaded and instantiated
- Tomcat supports JMX
- PAS for OpenEdge supports JMX
- ***Always on***

(source for the first 3 bullets – Wikipedia.com)

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OEJMX

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OEJMX script

- OEJMX.sh(.bat) resides in the PAS for OpenEdge instance directory in “bin”
- It reads a file (default extension .qry) that directs the specific JMX APIs to execute
- The OEJMX script launches a JVM which connects to Tomcat/PAS for OpenEdge JVM running for that instance
- Queries the JVM and writes and output file (by default in the instance-dir/temp directory)

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OEJMX script

- Pros
  - Secure, can only be run on machine where PAS for OpenEdge is running
  - Scriptable
  - Can gather many different metrics in a single query

- Cons
  - Slow, must launch JVM and connect to PAS for OpenEdge JVM
    - Should not be run in quick succession
  - Sometimes need to make several calls to gather data
  - Creating the .qry scripts takes some getting used to

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OEJMX script

getSessions.qry
{"O":"PASOE:type=OEManager,name=SessionManager","M":["getMetrics","oepas1"]}

oejmx.bat -Q jmxqueries\getSessions.qry

Query: Line 1. PASOE:type=OEManager,name=SessionManager, getMetrics(oepas1)
Result:
{"getMetrics":{"maxConcurrentClients":"1","concurrentConnectedClients":"0","numReserveABLSessionTimeouts":"0","writeErrors":"0","reads":"30","numReserveABLSessionWaits":"0","startTime":"2023-07-21T06:28:29.358-04:00","requests":"10","type":"OE_BROKER","writes":"20","readErrors":"0","accessTime":"2023-11-09T13:19:08.089-05:00"}}

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oejmx.bat -Q jmxqueries\getAgents.qry

Query: Line 1. PASOE:type=OEManager,name=AgentManager, getAgents(oepas1)
Result:
{"getAgents":{"agents":[{"agentId":"u9oyMfogQ1SnTC_XaqwyUA","pid":"1692","state":"AVAILABLE"}]}}

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OEJMX script

getAgentMetrics.qry
{"O":"PASOE:type=OEManager,name=AgentManager","M":["getSessionMetrics",”1692"]}

oejmx.bat -Q jmxqueries\getAgentMetrics.qry

Query: Line 1. PASOE:type=OEManager,name=AgentManager, getSessionMetrics(1692)
Result: {"getSessionMetrics":{"AgentSession":[

{"SessionState":"IDLE","ConnectionId":"org.codehaus.jettison.json.JSONObject$Null","SessionMemory":869908,"EndTime":"org.codehaus.jettison.json.JSONObject$Null","ThreadId":-1,"SessionExternalState":0,"StartTime":"2019-12-15T16:16:00.268","SessionId":4},

{"SessionState":"ACTIVE","ConnectionId":"org.codehaus.jettison.json.JSONObject$Null","SessionMemory":3613499,"EndTime":"org.codehaus.jettison.json.JSONObject$Null","ThreadId":4,"SessionExternalState":0,"StartTime":"2019-12-15T16:16:00.268","SessionId":7}]}}

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OEJMX script

getRequests.qry
{"O":"PASOE:type=OEManager,name=AgentManager","M":["getRequestMetrics","17642"]}

oejmx.bat -Q jmxqueries\getAgentMetrics.qry

Query: Line 1. PASOE:type=OEManager,name=AgentManager, getRequestMetrics(17642)
Result:
{"getRequestMetrics":{"AgentRequest":[{"RequestNum":11,"RequestProcName":"Progress.Web.InternalWebHandler:HandleRequest","RequestLen":8,"ConnectionId":23,"EndTime":"2023-11-09T13:53:05.237+05:00","requestID":"ROOT:w:00000091","BrokerSessionId":"gysK3F9lRlqzWPVr4vUoSw","StartTime":"2023-11-09T13:53:05.229+05:00","SessionId":4,"RequestStatus":0},

{"RequestNum":12,"RequestProcName":"Progress.Web.InternalWebHandler:HandleRequest","RequestLen":4,"ConnectionId":23,"EndTime":"2023-11-09T13:53:08.795+05:00","requestID":"ROOT:w:00000096","BrokerSessionId":"gysK3F9lRlqzWPVr4vUoSw","StartTime":"2023-11-09T13:53:08.791+05:00","SessionId":4,"RequestStatus":0},

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JSON Formatter


```
{
        "operation": "GET SESSION-MGR METRICS",
        "outcome": "SUCCESS",
        "result": {
                "requests": 500,
                "writeErrors": 0,
                "reads": 2000,
                "concurrentConnectedClients": 0,
                "writes": 2000,
                "maxConcurrentClients": 4,
                "readErrors": 0,
                "numReserveABLSessionTimeouts": 0,
                "numReserveABLSessionWaits": 0,
                "type": "OE_BROKER",
                "startTime": "2022-08-17T17:04:39.969-04:00",
                "accessTime": "2022-08-17T17:09:15.648-04:00"
},
        "errmsg": "",
        "versionStr": "v11.7.16 ( 2022-08-12 )",
        "versionNo": 1
}
```


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Rest API

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REST API calls

- REST based API calls to the JMX

- Pros
  - Can be accessed remotely but can be limited to localhost (or specific hosts)
  - Very fast
  - Easy to use
  - System agnostic
  - Swagger documents

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REST API calls

- Cons
  - Can be accessed remotely – so considered a security risk
  - Can only gather a single metric per call
  - Must install the REST API manager application (oemanager.war)

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REST API calls

http://oelxc76dev07:8080/oemanager/applications/oepas1/metrics

{"operation": "GET SESSION-MGR METRICS","outcome": "SUCCESS","result": {"requests": 500,"writeErrors": 0,"reads": 2000,"concurrentConnectedClients": 0,"writes": 2000,"maxConcurrentClients": 4,"readErrors": 0,"numReserveABLSessionTimeouts": 0,"numReserveABLSessionWaits": 0,"type": "OE_BROKER","startTime": "2022-08-17T17:04:39.969-04:00","accessTime": "2022-08-17T17:09:15.648-04:00"},"errmsg": "","versionStr": "v11.7.16 (2022-08-12)","versionNo": 1}

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REST API calls

http://oelxc76dev07:8080/oemanager/applications/oepas1/agents

{"operation": "GET AGENTS","outcome": "SUCCESS","result": {"agents": [{"agentId": "xPG7sVBMRO-GLLVsdiG2HA","pid": "29402","state": "AVAILABLE"}]},"errmsg": "","versionStr": "v11.7.16 (2022-08-12)","versionNo": 1}

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REST API calls

http://oelxc76dev07:8080/oemanager/applications/oepas1/agents/29402/sessions

{"operation": "","outcome": "SUCCESS","result": {"AgentSession": [{"SessionId": 4,"SessionState": "IDLE","StartTime": "2022-08-17T17:06:33.512","EndTime": null,"ThreadId": -1,"ConnectionId": null,"SessionExternalState": 0,"SessionMemory": 805071},{"SessionId": 7,"SessionState": "IDLE","StartTime": "2022-08-17T17:06:33.512","EndTime": null,"ThreadId": -1,"ConnectionId": null,"SessionExternalState": 0,"SessionMemory": 804959},{"SessionId": 8,"SessionState": "IDLE","StartTime": "2022-08-17T17:06:33.512","EndTime": null,"ThreadId": -1,"ConnectionId": -1,"SessionExternalState": 0,"SessionMemory": 805123},

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REST API calls

http://oelxc76dev07:8080/oemanager/applications/oepas1/agents/29402/requests

{"RequestProcName":"sports2kserver.p","SessionId":9,"ConnectionId":47,"StartTime":"2022-08-17T17:06:53.377","EndTime":"2022-08-17T17:06:53.380","RequestNum":92},

{"RequestProcName":"sports2kserver.p","SessionId":9,"ConnectionId":47,"StartTime":"2022-08-17T17:06:53.390","EndTime":"2022-08-17T17:06:53.392","RequestNum":93},

{"RequestProcName":"sports2kserver.p","SessionId":9,"ConnectionId":47,"StartTime":"2022-08-17T17:06:53.402","EndTime":"2022-08-17T17:06:53.404","RequestNum":94

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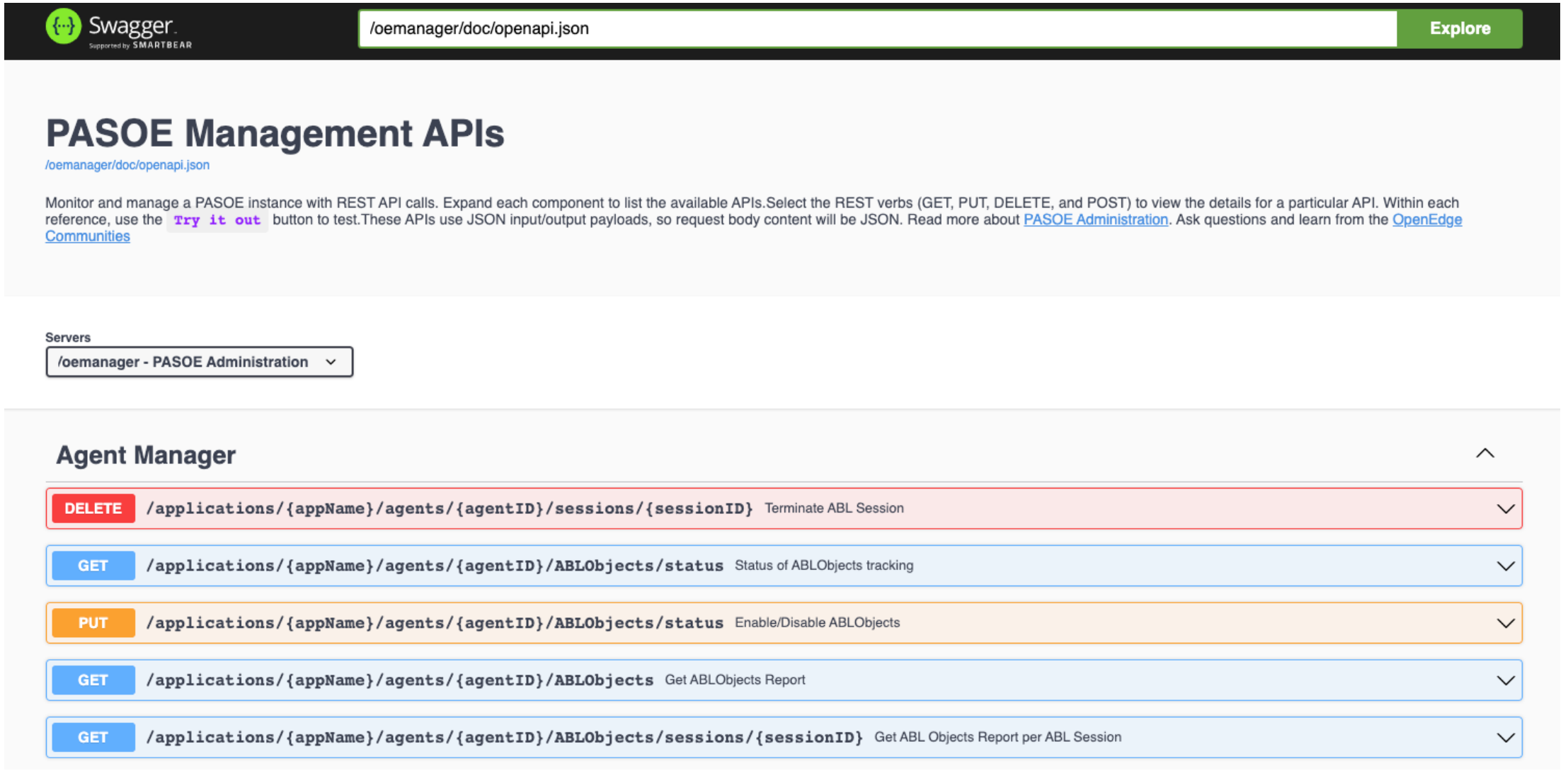
REST API calls



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Rest API Add Ons

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Progress Iceberg

https://github.com/progress/iceberg/tree/main

A collection of code, utilities, and guides from real-world customer engagements.

Please refer to the License and Notice files which apply to all repository content.

Purpose: To provide expanded tooling which has been successfully utilized in PAS for OpenEdge operation.
Audience: Developers and DevOps/ITOps members who administer PAS for OpenEdge server instances.

PROJECT: Iceberg

"Taking you below the surface"

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OEMANAGER.sh/.bat

- New in 12.8 (sneak preview)
- Meant to mimic “asbman –query” but better
- ./oemanager.sh(bat) status

```
[PCTRun] Utility Runtime: 12.8.0.0.1184.ALPHA
[PCTRun] Report Executed: 2023-11-09T14:27:54.421-05:00
[PCTRun]  PASOE Instance: http://localhost:8080
[PCTRun]
[PCTRun] ABL Application Information [oepas1 - v12.8.0 ( 2023-11-08 )]
[PCTRun]     WebApp: ROOT
[PCTRun]       APSV: ENABLED
[PCTRun]       SOAP: ENABLED
[PCTRun]       REST: ENABLED
[PCTRun]        WEB: ENABLED
```


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OEMANAGER.sh/.bat

```
[PCTRun] Manager Properties
[PCTRun]          Maximum Agents:          2
[PCTRun]          Minimum Agents:          1
[PCTRun]          Initial Agents:          1
[PCTRun]    Max. Connections/Agent:        200
[PCTRun]    Max. ABLSessions/Agent:        200
[PCTRun]       Idle Conn. Timeout:     300,000 ms (00:00:05:00.000)
[PCTRun]     Idle Session Timeout:   1,800,000 ms (00:00:30:00.000)
[PCTRun]       Idle Agent Timeout:   1,800,000 ms (00:00:30:00.000)
[PCTRun]    Idle Resource Timeout:           0 ms (00:00:00:00.000)
[PCTRun]       Conn. Wait Timeout:       3,000 ms (00:00:00:03.000)
[PCTRun]     Request Wait Timeout:      15,000 ms (00:00:00:15.000)
[PCTRun]    Initial Sessions/Agent:          2
[PCTRun]    Min. Avail. Sess/Agent:          1
```

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OEMANAGER.sh/.bat

```
[PCTRun] > Agent PID 747126: AVAILABLE
[PCTRun]     Est. Agent Lifetime: 00:00:04:46.145
[PCTRun]     DynMax ABL Sessions:         200
[PCTRun]      Total ABL Sessions:           2
[PCTRun]      Avail ABL Sessions:           2
[PCTRun]        Open Connections:           1
[PCTRun]         Overhead Memory: 13,982 KB
[PCTRun]
[PCTRun]     SESSION ID      STATE          STARTED                      LIFETIME         SESS. MEMORY
ACTIVE MEM.   REQUESTS      BOUND/ACTIVE CLIENT SESSION
[PCTRun]              4    IDLE           11/09/2023 14:27:54.883+05:00   00:00:04:46.145      12,924 KB
13,088 KB         22        -
[PCTRun]              7    IDLE           11/09/2023 14:27:54.883+05:00   00:00:04:46.145        630 KB
630 KB          0        -
```

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OEMANAGER.sh/.bat

```
[PCTRun]       Active Agent-Sessions: 0 of 2 (0% Busy)
[PCTRun]     Utilized Agent-Sessions: 1 of 2 (>801 KB)
[PCTRun]       Approx. Agent Memory: 27,700 KB
[PCTRun]
[PCTRun] Session Manager Metrics (Count+Time)
[PCTRun]          # Requests to Session:          22
[PCTRun]          # Agent Responses Read:          66 (0 Errors)
[PCTRun]     Agent Read Time (Mn, Mx, Av): 00:00:00:00.000 / 00:00:00:00.000 / 00:00:00:00.000
[PCTRun]       # Agent Requests Written:          44 (0 Errors)
[PCTRun]     Concurrent Connected Clients:          0 (Max: 1)
[PCTRun]     Tot. Reserve ABLSession Wait: 00:00:00:00.001
[PCTRun]      # Reserve ABLSession Waits:          0
[PCTRun]     Avg. Reserve ABLSession Wait: 00:00:00:00.000
[PCTRun]     Max. Reserve ABLSession Wait: 00:00:00:00.001
[PCTRun]     # Reserve ABLSession Timeout:          0
```


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OEMANAGER.sh/.bat

```
  [PCTRun]
  [PCTRun] Client HTTP Sessions: 1
  [PCTRun]    STATE    SESS STATE  BOUND    LAST ACCESS / STARTED          ELAPSED TIME
SESSION MODEL   ADAPTER   SESSION ID                                    REQUEST ID
  [PCTRun]
  [PCTRun]    READY    RESERVED   NO       2023-11-09T14:32:35.691-0500   00:00:00:05.371
SESSION_FREE             pF8m-HB_RVCTec5XJ6K_4Q
  [PCTRun]

BUILD SUCCESSFUL
Total time: 0 seconds
```


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HealthScanner

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Health Scanner

- Designed for Load Balancing infrastructures
- Allows you to remove an ailing VM from a load balanced array before it is unresponsive
- Secondarily it can report system information not just the health of PAS for OpenEdge and the VM

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Health Scanner

http://oelxc76dev07:8899/health

Returns 200 or 500

http://oelxc76dev07:8899/health?view=summary

{"health": **0**,"timestamp": "2022-08-19T14:06:12.233681Z","interval": **60}**

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ELB

Health Check

Launch Group

PASOE

PASOE

PASOE

HTTP 200

HTTP 500

HTTP 200

Auto Scale

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Health Scanner

- Pros
  - Great for over all health of your PAS for OpenEdge machine
  - Great for automatic Load Balancing integration
  - Gathers system information as well as PAS for OpenEdge health
  - Can be accessed remotely or by script (can disable remote access)

- Cons
  - Does not give the same detailed information as OEJMX nor REST API
  - Must be enabled, both to gather information and to allow remote access
  - Only in 12.0+ releases (not in 11.7)

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Health Scanner

http://oelxc76dev07:8899/health?view=details

{"name": "PASOE HealthScanner","color": "#F63538","timestamp": "2022-08-19T14:07:12.237416Z","result": {"health": 0,"value": 0,"marginal": true,"critical": true,"ignore": false,"failOnCritical": true,"failedBy": "OS Health"},"config": {"calculation": "sum of probes(health * weight) / sum of probes(weight)","critical": 0.6,"probeID": 1,"name": "PASOE HealthScanner","marginal": 0.7,"description": "Composite weighted health of PAS for OpenEdge server metrics","weight": 1,"className": "com.progress.appserv.services.health.probe.CompositeHealthProbe","enabled": true,"failOnCritical": false},+

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Health Scanner

http://oelxc76dev07:8899/health?view=dataset

{"HealthData": [{"probeid": 1,"health": 0,"marginal": true,"critical": true,"ignore": false,"failOnCritical": true,"failedBy": "OS Health","value": "0.0","lastpoll": "2022-08-19T14:10:12.252503Z"},{"probeid": 2,"health": 0,"marginal": true,"critical": true, "ignore": false,"failOnCritical": false,"failedBy": null,"value": "0.0","lastpoll": "2022-08-19T14:10:12.252503Z"},+

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Health Scanner

linuxx86_64:122$ bin/oehealth.sh
{"Health":0.0}

linuxx86_64:122$ bin/oehealth.sh -D
{"getView":{"name":"PASOE HealthScanner","color":"#F63538","timestamp":"2022-08-19T14:14:12.266009Z","result":{"health":0.0,"value":0.0,"marginal":true,"critical":true,"ignore":false,"failOnCritical":true,"failedBy":"OS Health"},"config":{"calculation":"sum of probes(health ablapps bin common conf hcapps instances.unix instances.windows logs openedge temp webapps work weight) / sum of probes(weight)","critical":0.6,"probeID":1,"name":"PASOE HealthScanner","marginal":0.7,"description":"Composite weighted health of PAS for OpenEdge server metrics","weight":1.0,”+

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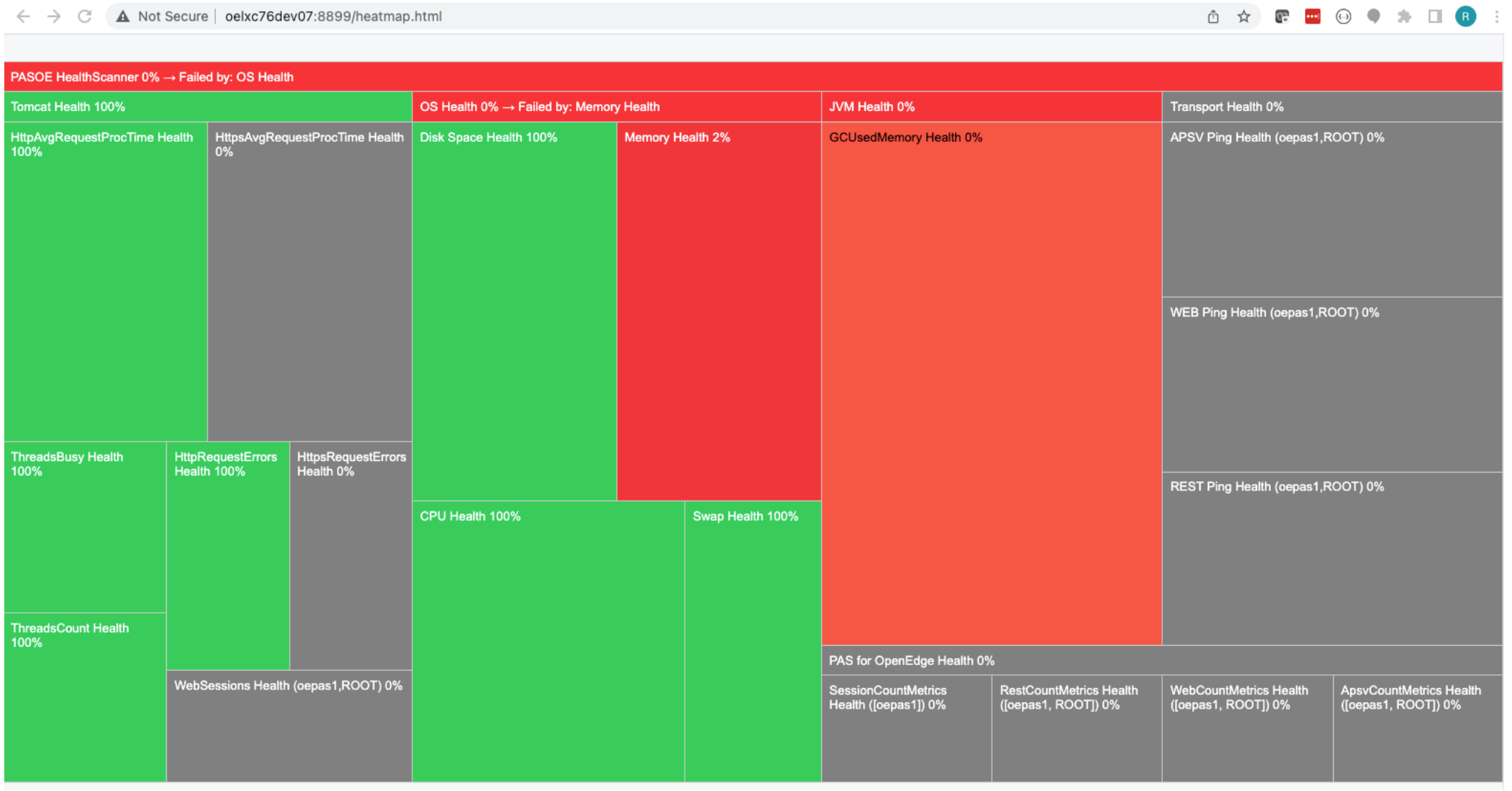
Health Scanner



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OEMANAGER Script – 12.8

- cd <path-to-instance>/<instance-name>/bin
- ./oemanager
  - If run in another directory it will fail with can’t find oemanager.xml
  - ./oemanager –help

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Recommendations

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Recommendations

- REST API
  - When you want fast requests
  - When you are making many requests in a short period of time
  - When you are looking to alert on issues

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Recommendations

- OEJMX
  - When you want to gather many metrics at once
  - When you are querying less frequently
  - You don’t want to install the manager or oemanager applications

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Recommendations

- Health Scanner
  - If you are load balancing (or not)
  - If you want to the know system information not just PAS for OpenEdge
  - When you want to trend data (view=dataset)

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Recommendations

- What should I monitor?
  - PAS for OpenEdge accepting requests
    - http(s)://host:port/rest/_oepingService/_oeping

    https://docs.progress.com/bundle/pas-for-openedge-management/page/ABL-application-PING-service.html
  - Tomcat incoming thread pool
    - http(s)://host:port/manager/status
  - Current and max sessions in Session Manager
    - http(s)://host:port/oemanager/applications/metrics
  - Current agent sessions
    - http(s)://host:port/oemanager/applications/agents/<agent-id>/sessions

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Recommendations

- What should I monitor?
  - Current agent sessions memory
    - http(s)://host:port/oemanager/applications/agents/<agent-id>/sessions
  - System health
    - System tools
      - Top, vmstat, iostat, task manager
    - Health Scanner (12.0)

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Eating our own dog food

- ProMonitor, part of the MDBA Service
- Web-based dashboard for viewing
- PAS for OpenEdge monitoring released today!

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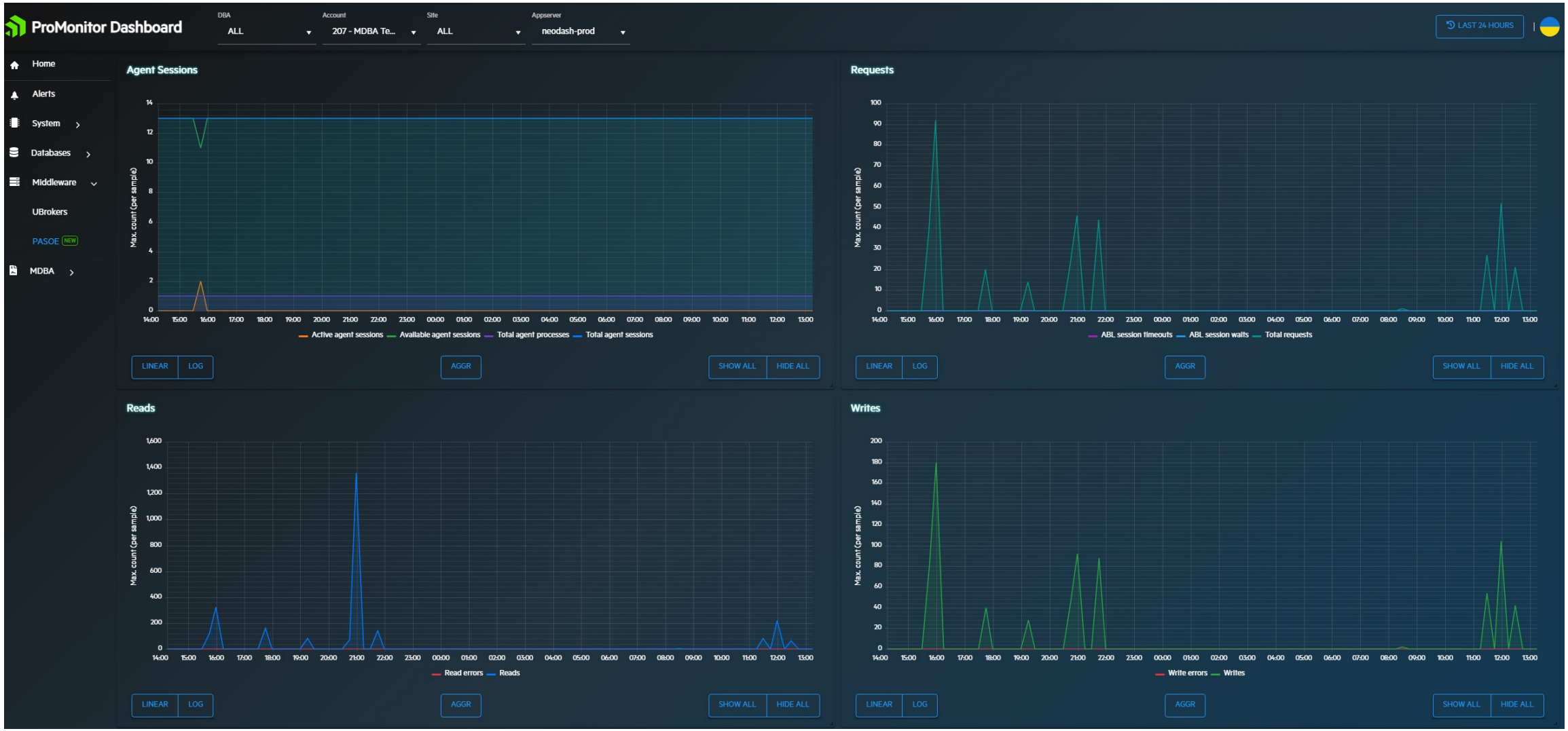

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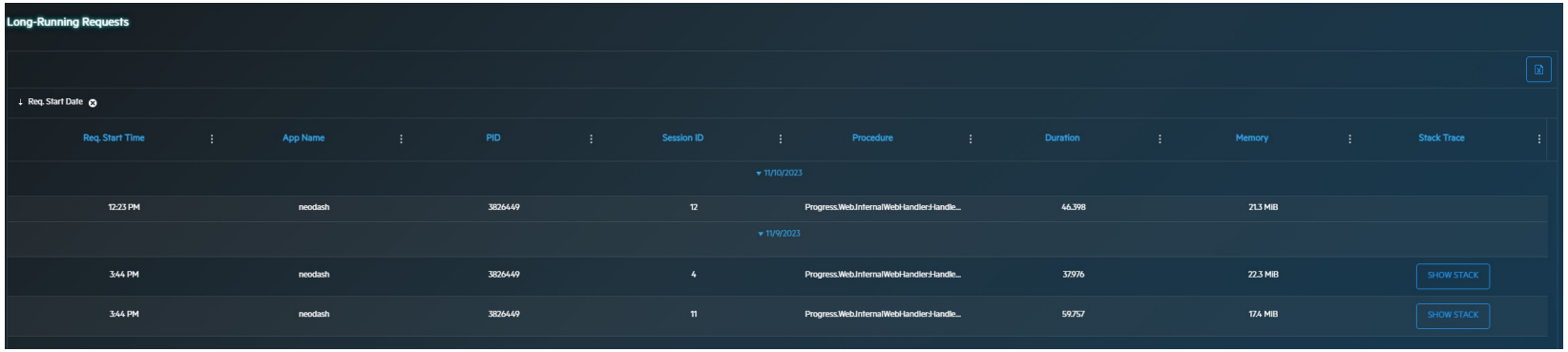

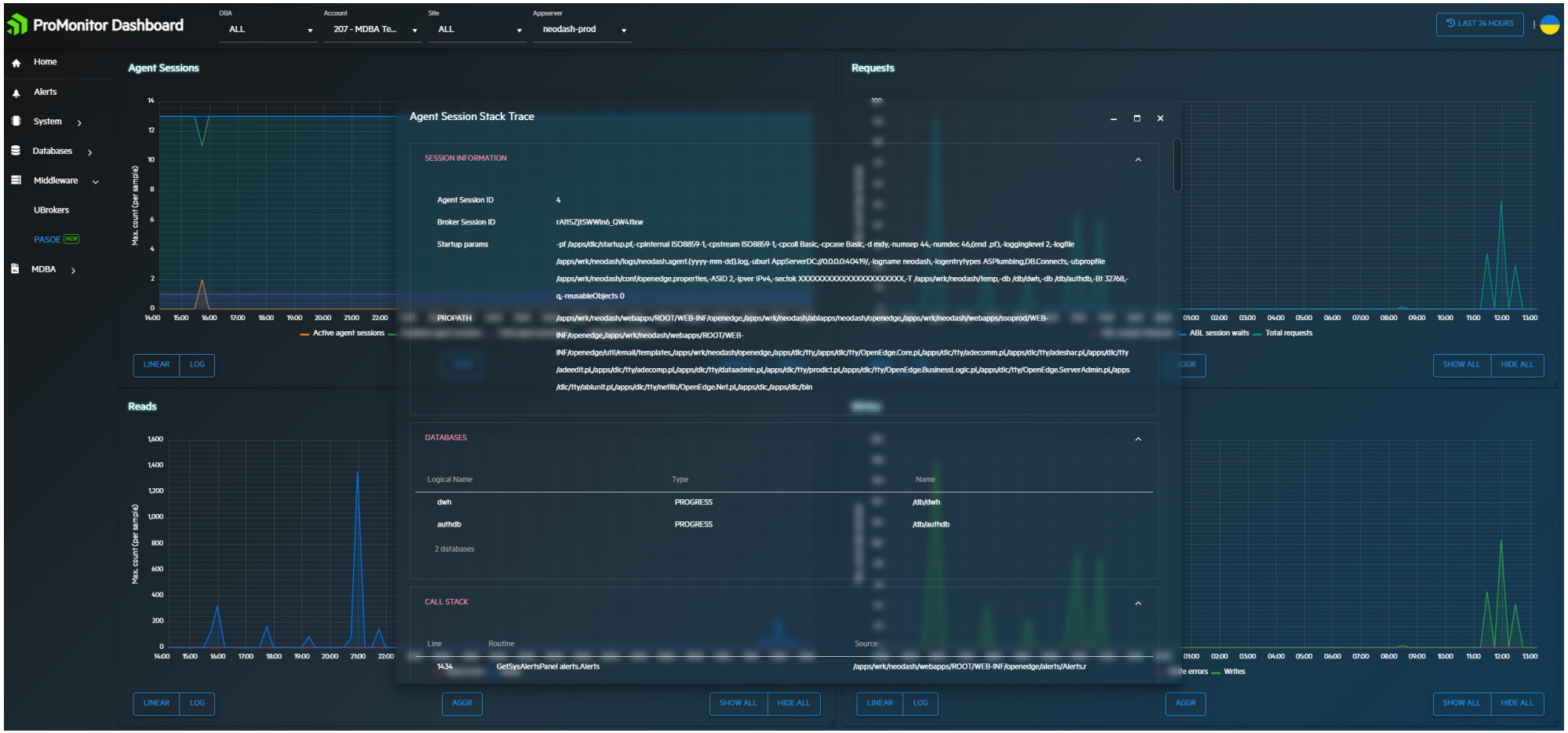

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References

- Use OEJMX to manage and monitor an instance
  - https://docs.progress.com/bundle/openedge-new-info-1174/page/Use-OEJMX-to-manage-and-monitor-an-instance.html
- REST API Reference for oemanager.war
  - https://docs.progress.com/bundle/pas-for-openedge-administration-117/page/REST-API-Reference-for-oemanager.war.html
- HealthScanner
  - https://docs.progress.com/bundle/openedge-whats-new/page/HealthScanner.html

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Summary

- Better than Classic
- Many monitoring tools
- May want to use a combination
- Monitor!

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Customer Validation Program

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Join the CVP

OpenEdge Customer Validation Program

Actively influence the developer experience and future enhancements of Progress OpenEdge!

Get Access to:

- Roadmap surveys
- Usability reviews
- Pre-release software
- Virtual open houses
- Quarterly objectives
- Sprint reviews

https://www.progress.com/openedge/customer-validation-program

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Questions?

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