Progress®

Supporting PAS for OpenEdge

Roy Ellis and Dan Mitchell

ellis@progress.com

dmitchel@progress.com

Agenda

- Progress Application Server (PAS) for OpenEdge Architecture
- Diagnosing Problems
- Fixing Problems
- Tips and Tricks

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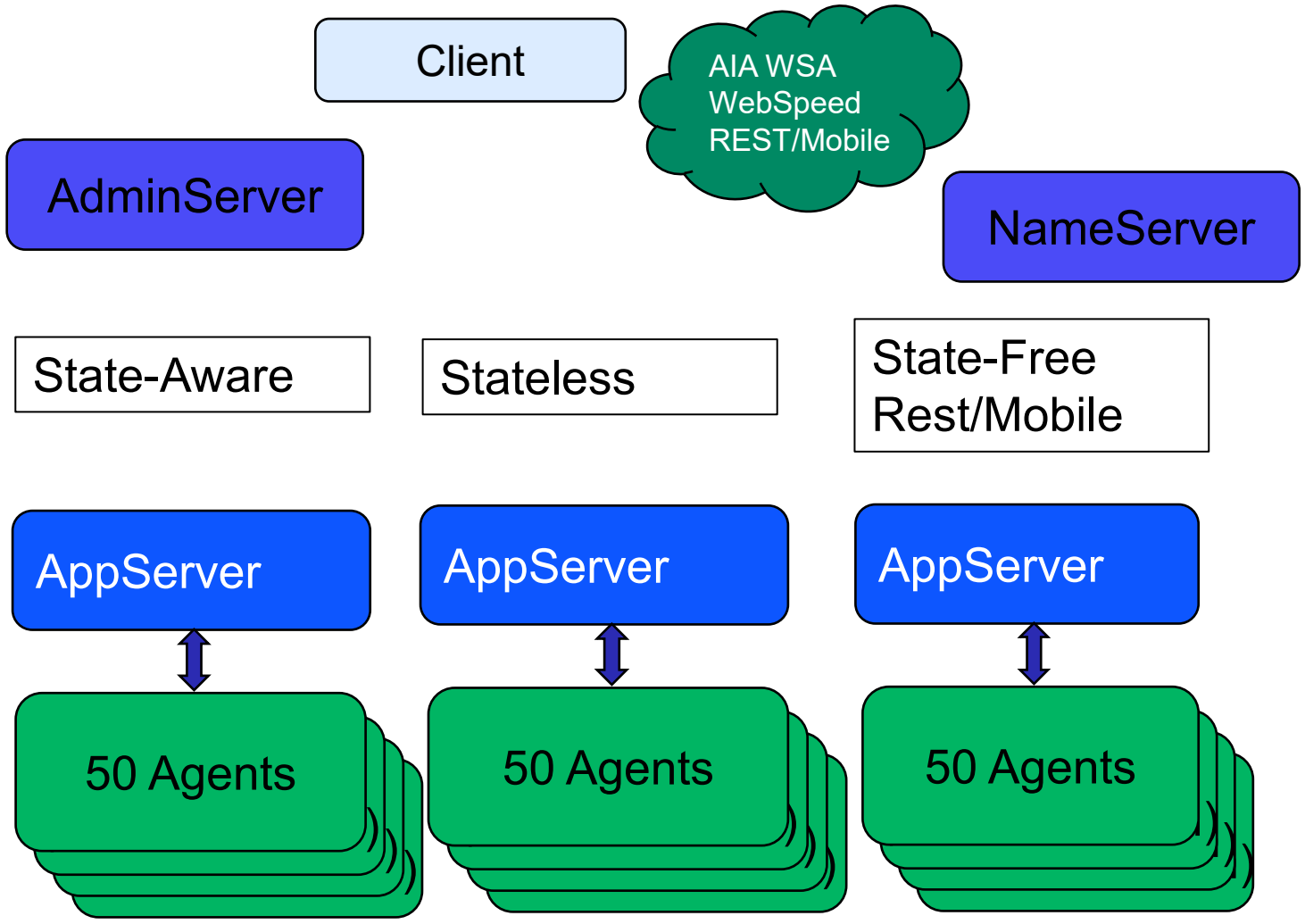
PAS for OpenEdge Architecture

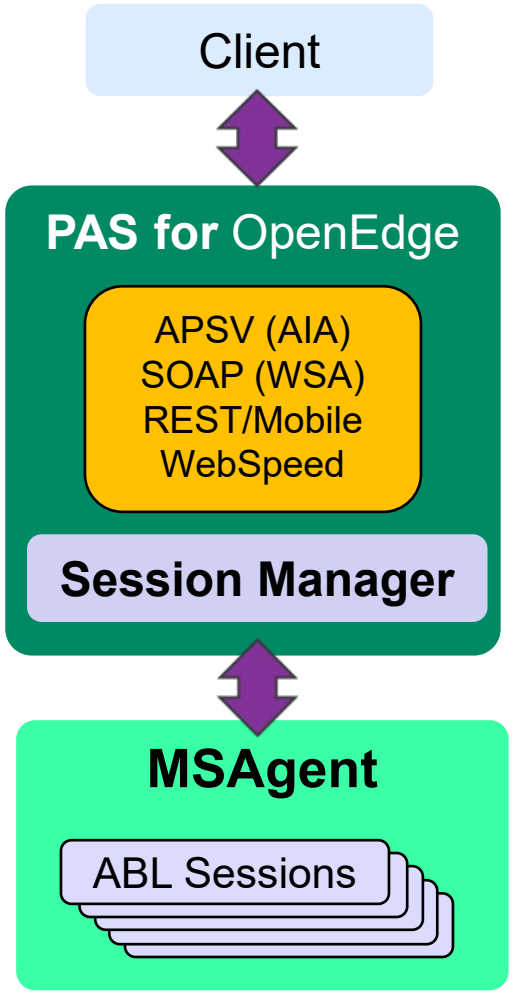
“PAS for OpenEdge is _NOT_ the Classic AppServer”

Architecture: Sample

Classic AppServer Components



PAS for OpenEdge Components



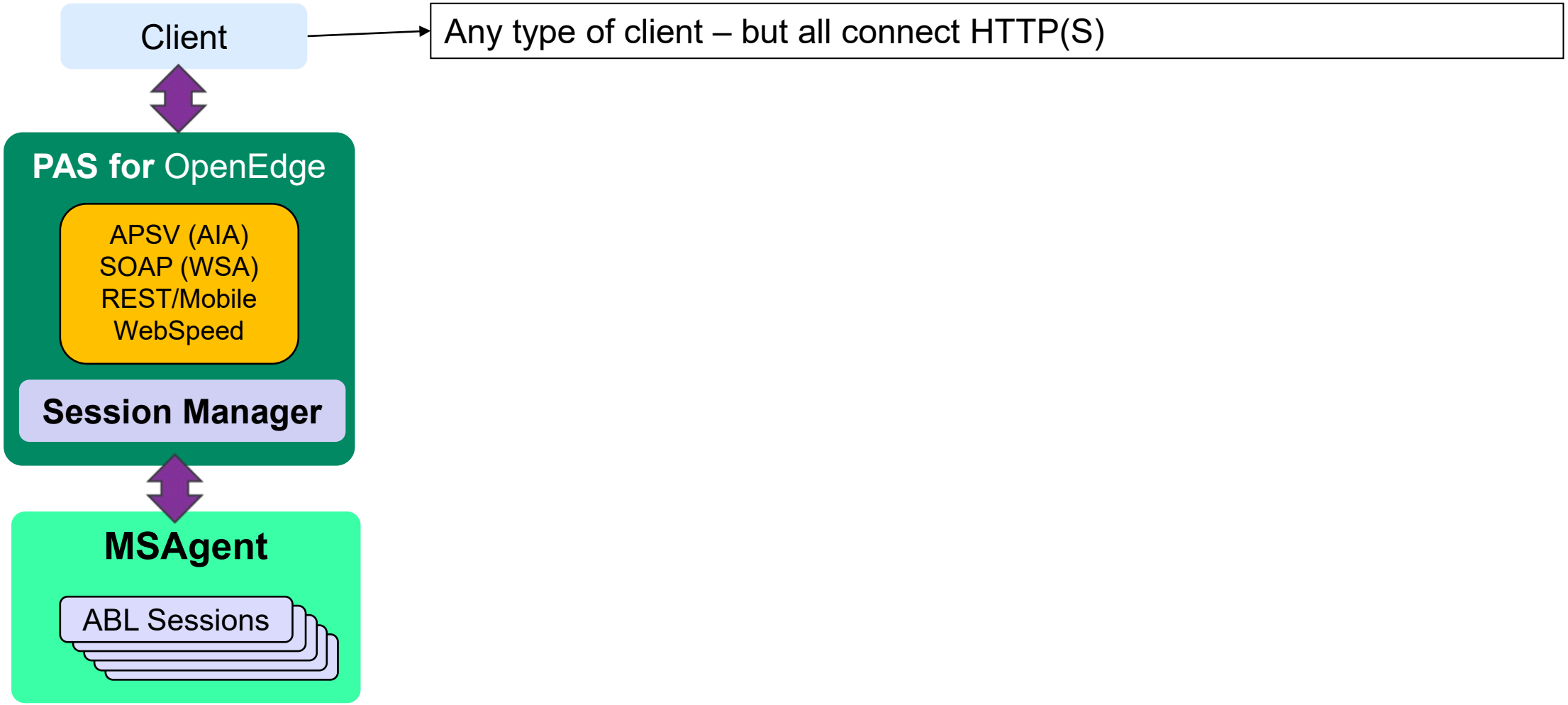
Architecture: Tomcat

- JAVA process
  - If started as windows service: tomcat*.exe
- Handles all web requests
- Spring security built-in
- OpenEdge Application Server is a web application in Tomcat
  - By default its ROOT
  - Can be any application deployed using the “oeabl.war” application

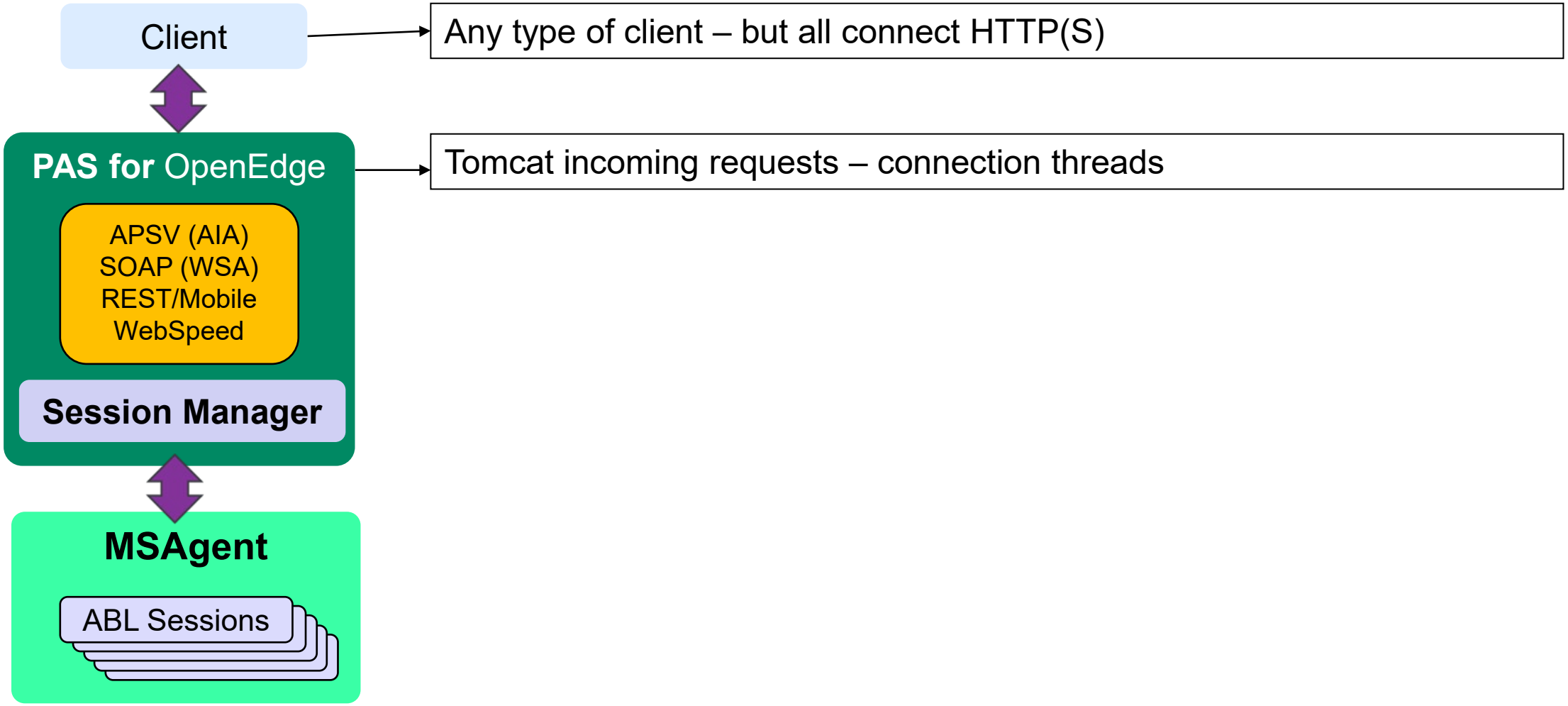
Architecture: Multi-session Agent

- _mproapsv(.exe)
  - “C” program
  - Multiple ABL Sessions in 1 executable
- Multiple client requests at the same time
- Supports both Session-Managed and Session-Free requests simultaneously
- Manages shared memory database connections
- Uses fewer system resources

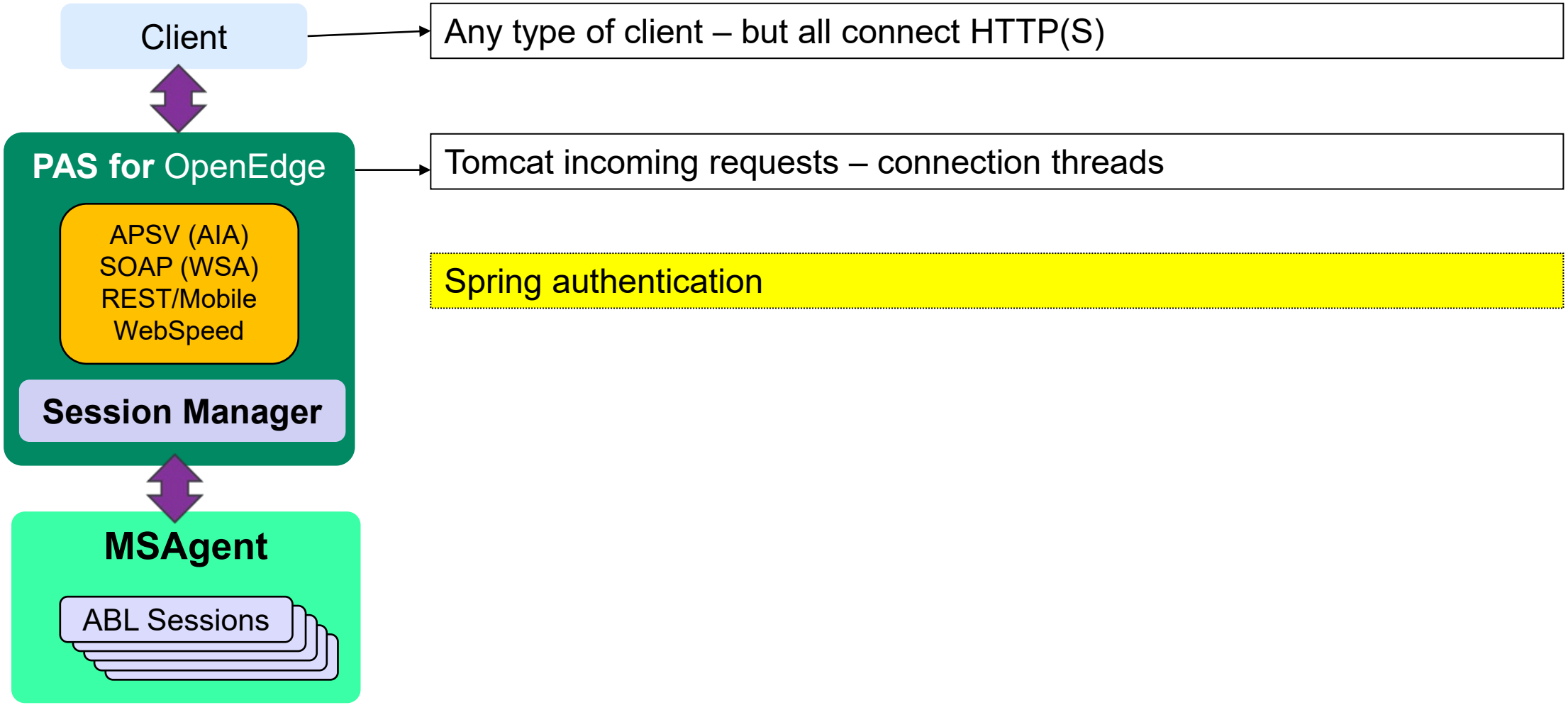
Understanding a Round Trip



Understanding a Round Trip



Understanding a Round Trip



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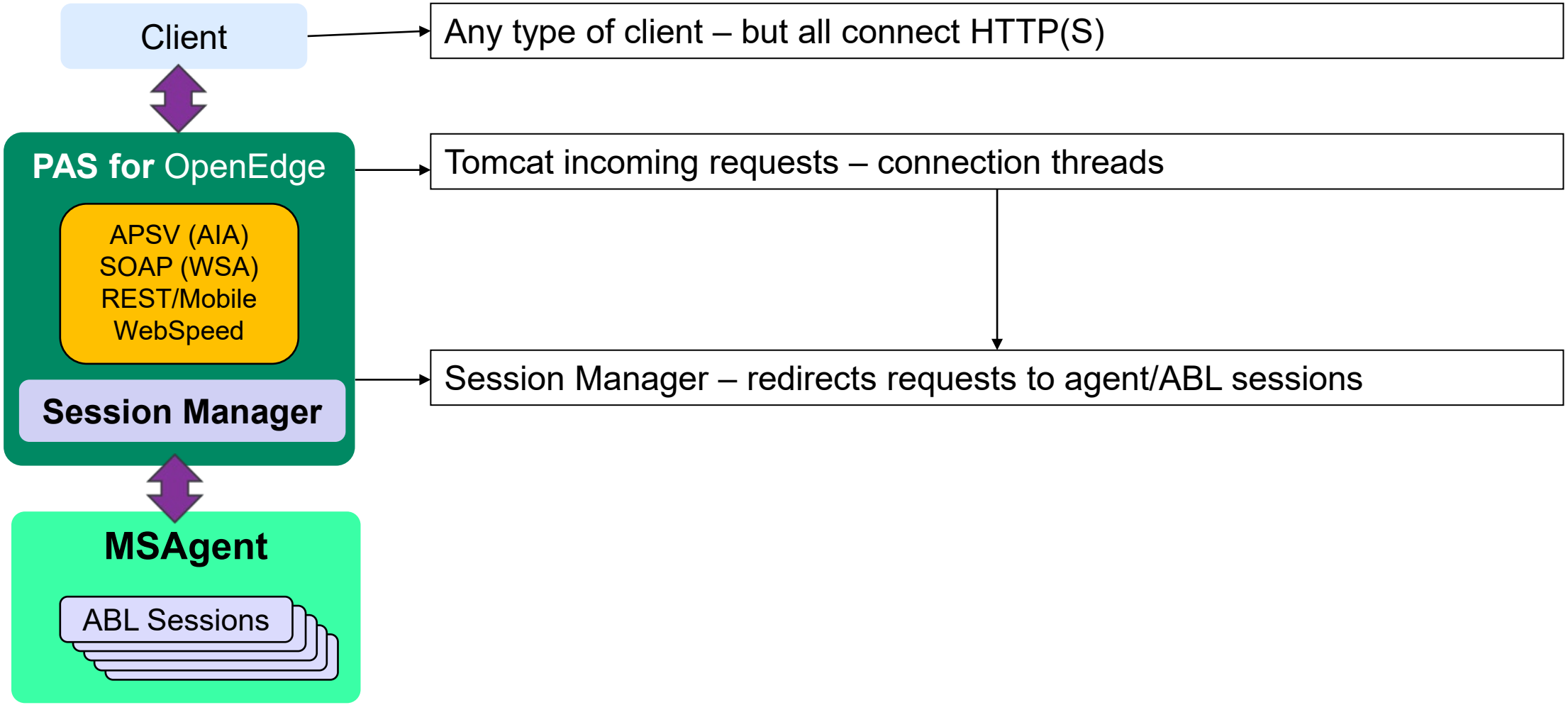

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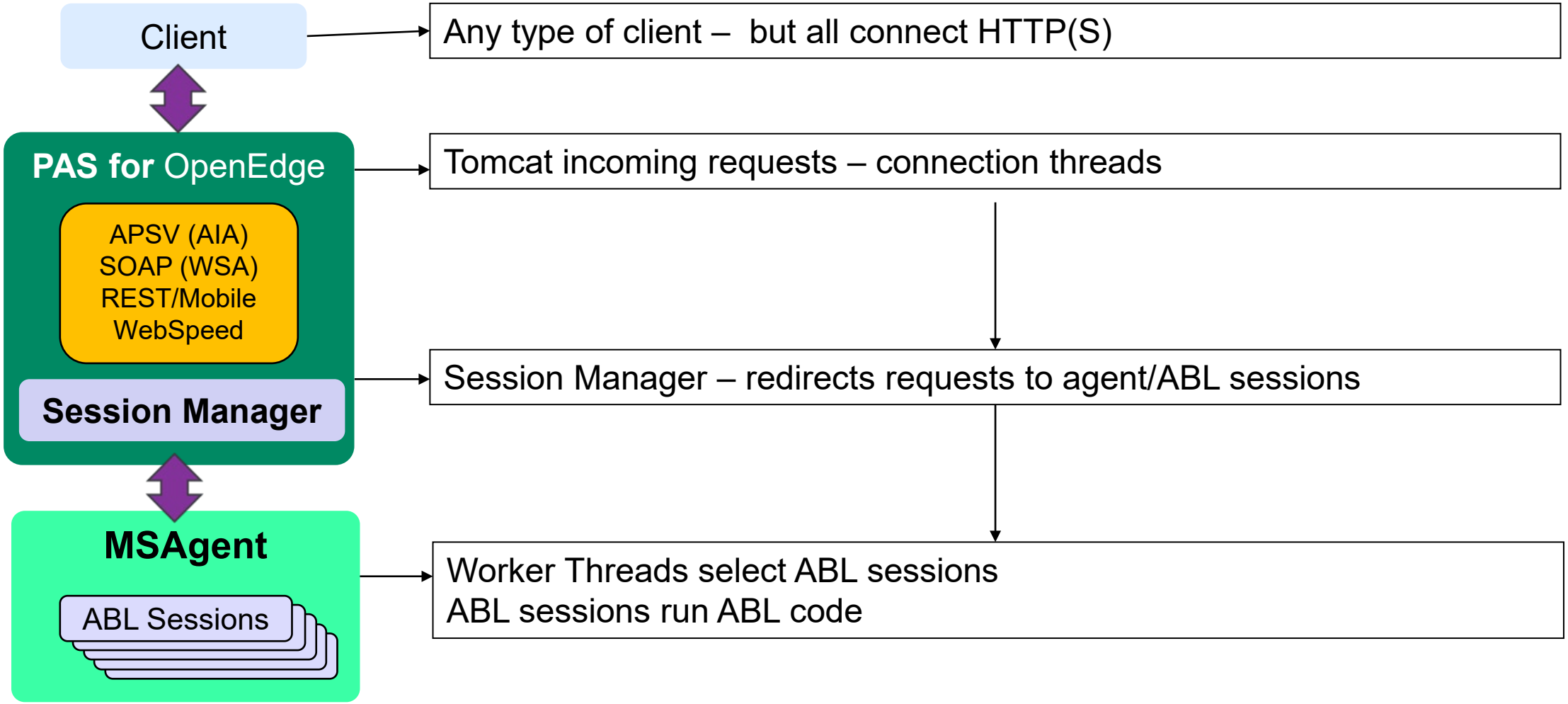
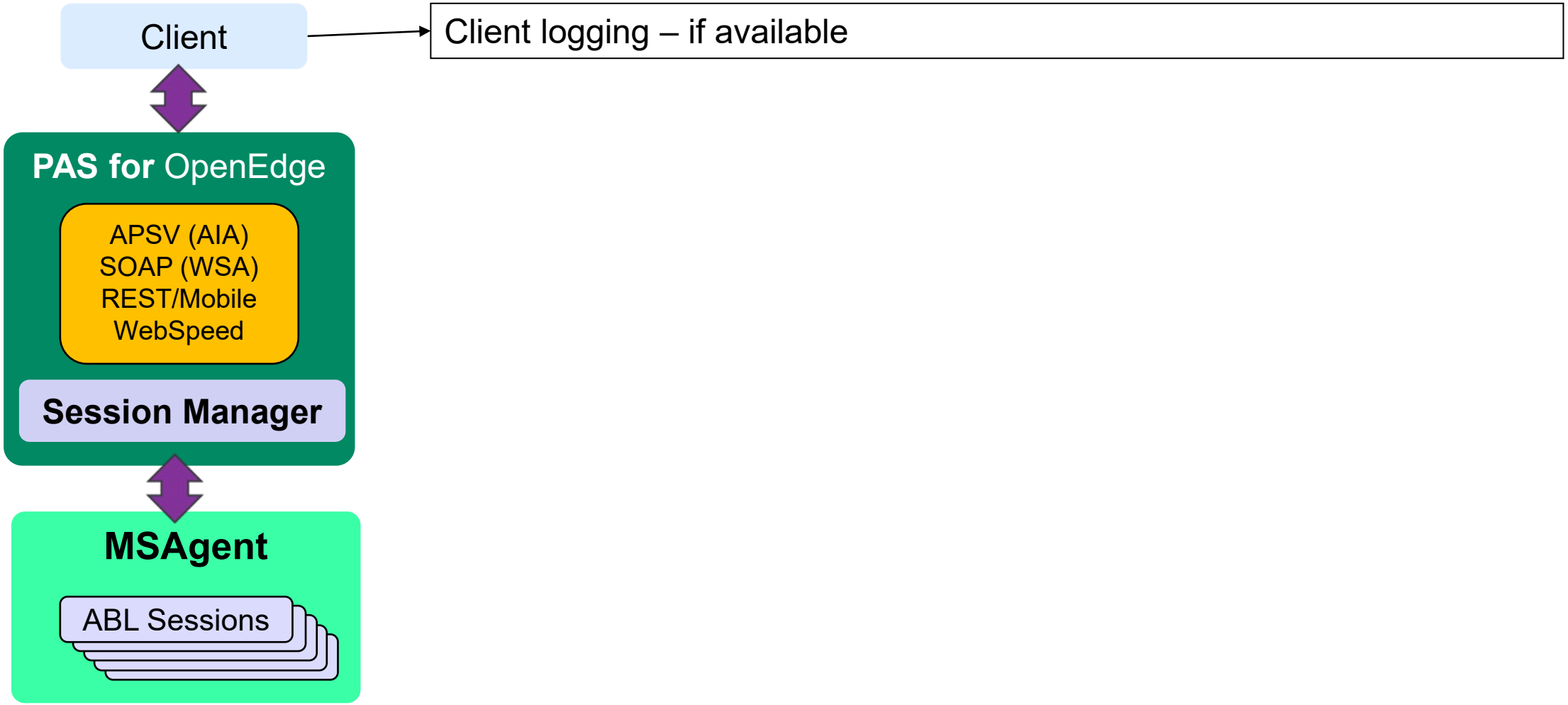


Diagnostic Tools

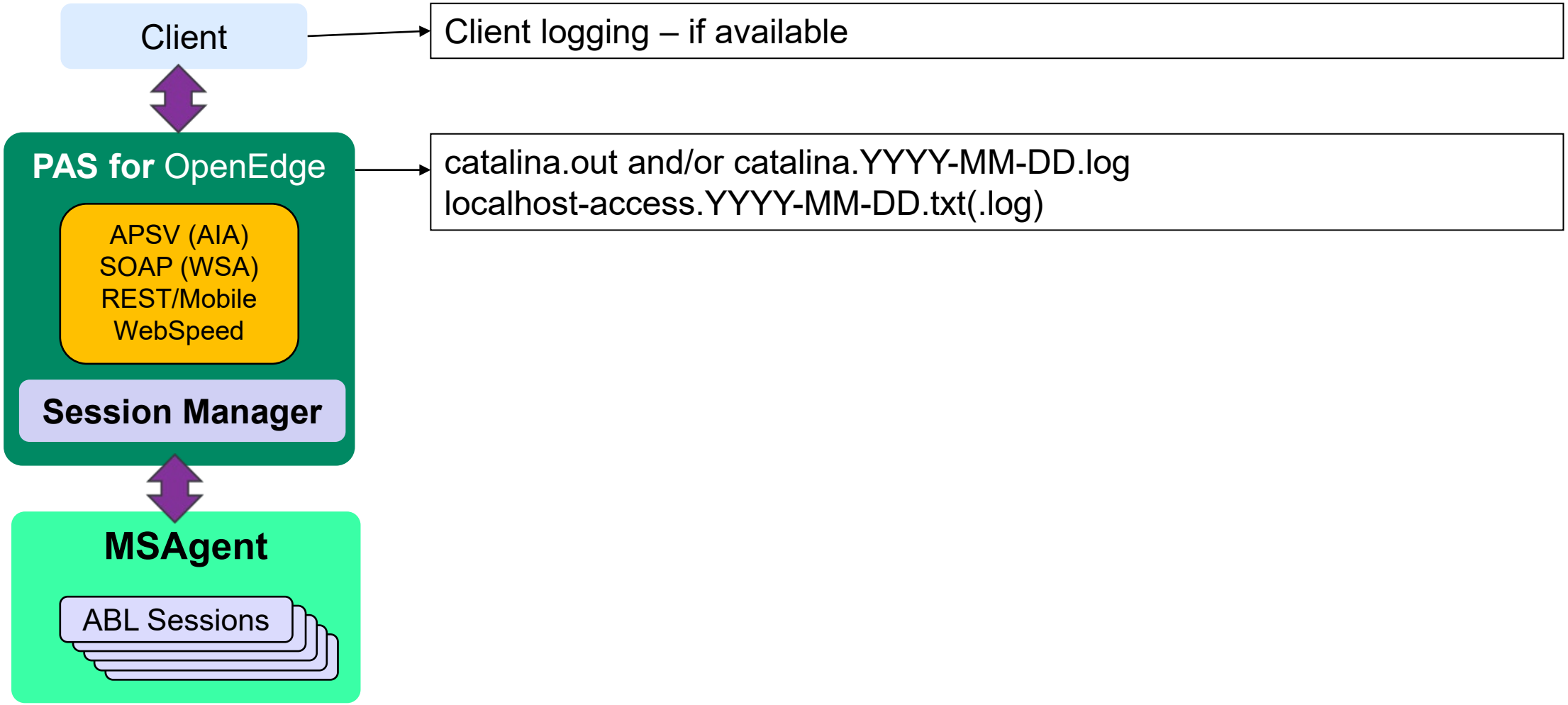
Diagnostic Tools

- Log Files
- Monitoring
- O/S Tools

Understanding a Round Trip – Log Files



Understanding a Round Trip – Log Files



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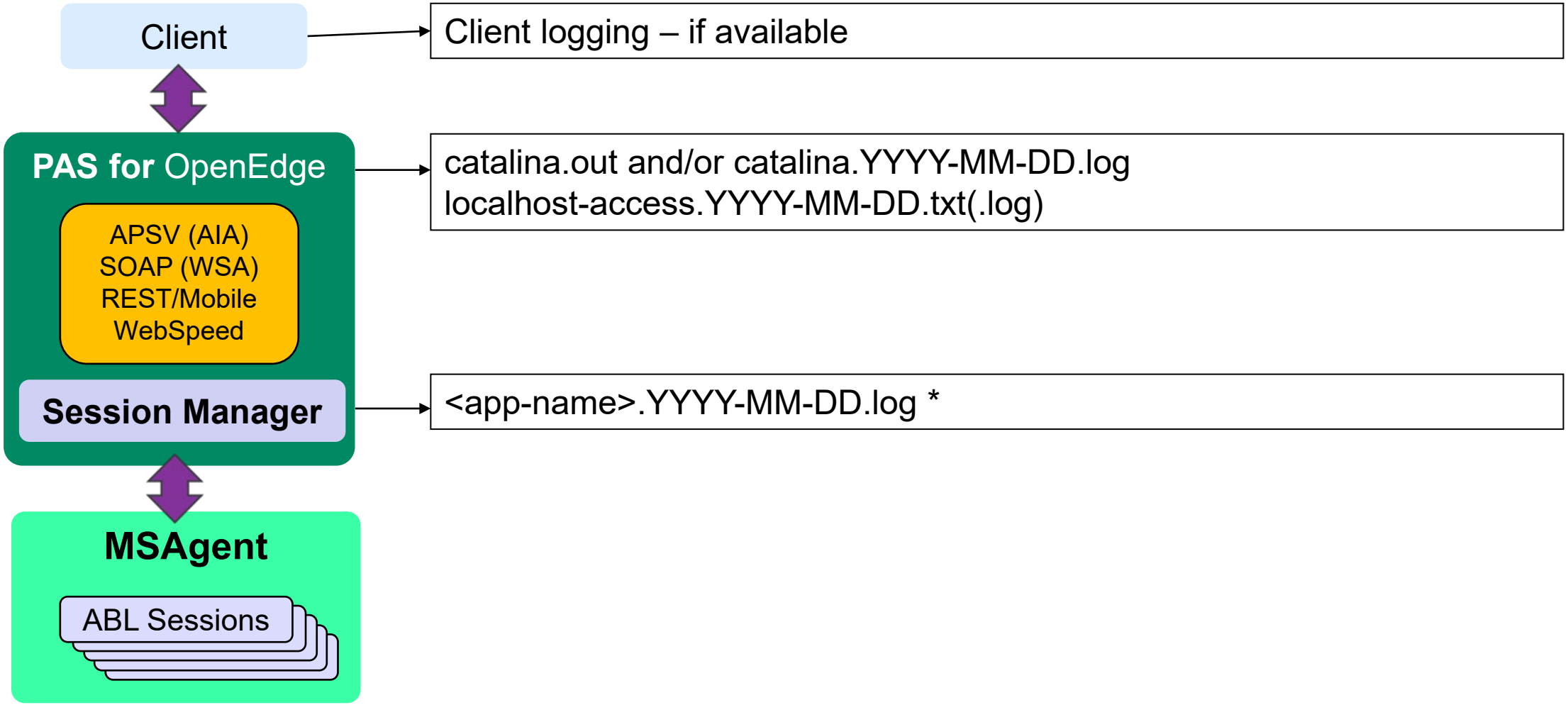
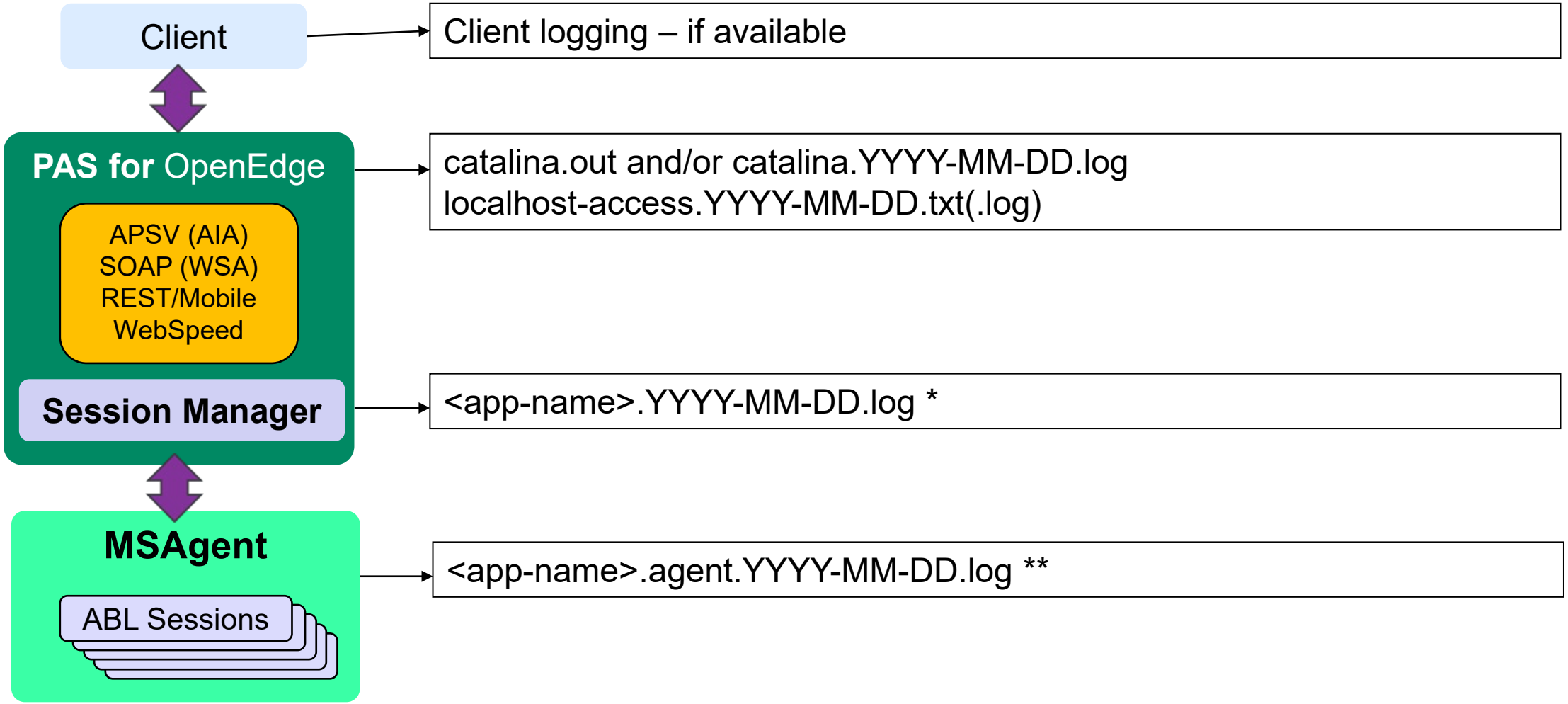
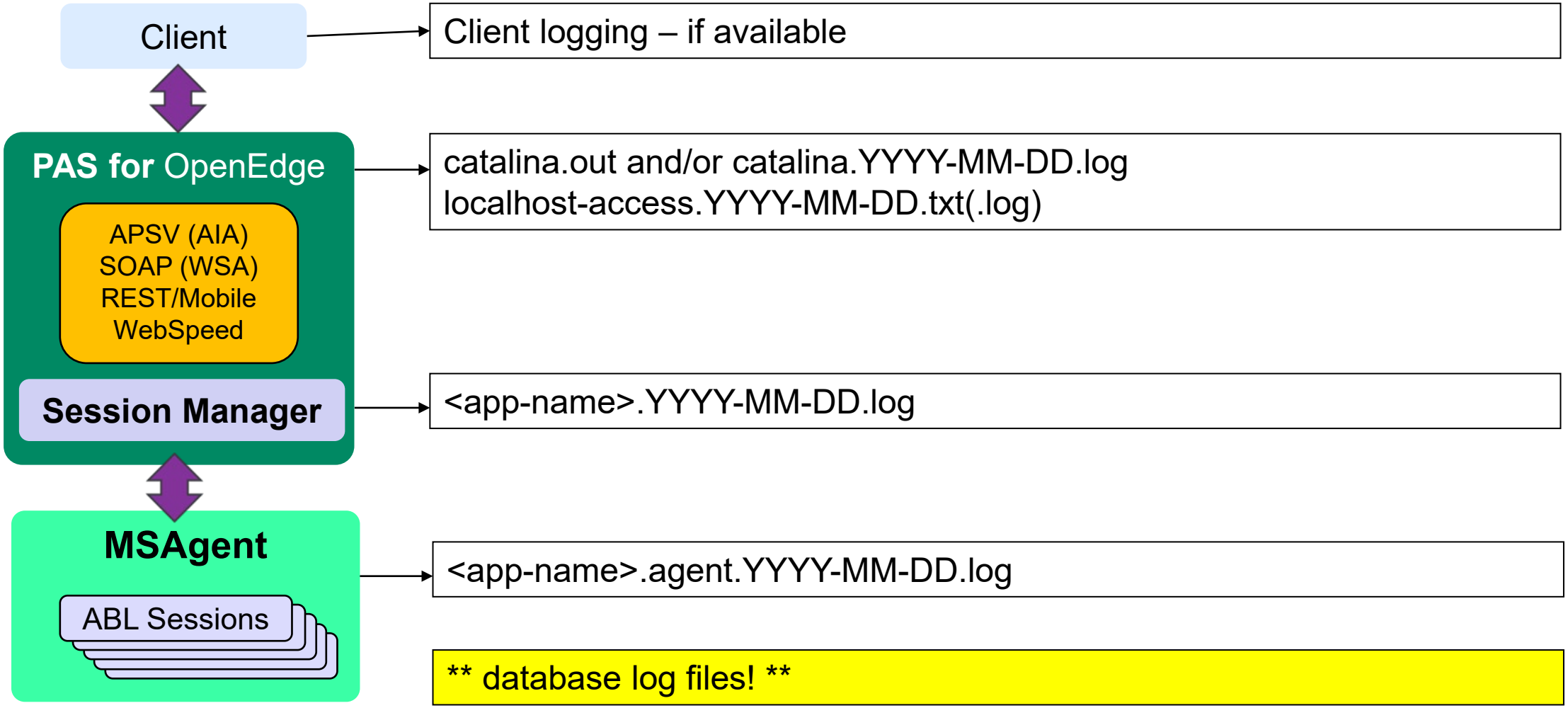


Understanding a Round Trip – Log Files



Understanding a Round Trip – Log Files



Log Files

Log Files

catalina.out and catalina.YYYY.MM.DD.log

Expect to see:

- JAVA error
  - like “out of memory”
- Stuck Valves
  - any process running longer than expected
- Startup/shutdown – pass or fail

Log Files

catalina.out and catalina.YYYY.MM.DD.log

2019-10-24T14:39:01.474-04:00 INFO [main] o.a.c.h.Http11NioProtocol - Starting ProtocolHandler ["http-nio-12200"]

Date 2019-10-24

Time – to the millisecond 14:39:01.474

GMT offset -04:00

Log Files

catalina.out and catalina.YYYY.MM.DD.log

2019-10-24T14:39:01.474-04:00 INFO [main] o.a.c.h.Http11NioProtocol - Starting ProtocolHandler ["http-nio-12200"]

Message Level INFO

INFO, WARN, ERROR, DEBUG, TRACE

Message came from this code [main] o.a.c.h.Http11NioProtocol

org/apache/coyote/http11/Http11NioProtocol

Log Files

catalina.out and catalina.YYYY.MM.DD.log

2019-10-24T14:39:01.474-04:00 INFO [main] o.a.c.h.Http11NioProtocol - Starting ProtocolHandler ["http-nio-12200"]

Message Starting ProtocolHandler ["http-nio-12200"]

Log Files

- localhost-access.YYYY-MM-DD.log
- Expect to see:
  - All requests to Tomcat/PAS for OpenEdge
  - Return Codes
    - 200, 401, 503
  - RequestID
  - Time to respond to request
  - Where the request came from

Log Files

localhost-access.YYYY-MM-DD.log

10.133.67.167 - anonymousUser [2019-10-30T13:52:25.073-04:00] "GET /web/ping HTTP/1.1" 200 1304 ROOT:w:0000001f

---

IP Address 10.133.67.167

User name anonymousUser

Log Files

localhost-access.YYYY-MM-DD.log

10.133.67.167 - anonymousUser [2019-10-30T13:52:25.073-04:00] "GET /web/ping HTTP/1.1" 200 1304 ROOT:w:0000001f

---

Date 2019-10-30

Time 13:52:25.073

GMT offset -04:00

Log Files

localhost-access.YYYY-MM-DD.log

10.133.67.167 - anonymousUser [2019-10-30T13:52:25.073-04:00] "GET /web/ping HTTP/1.1“ 200 1304 ROOT:w:0000001f

---

Request URI "GET /web/ping HTTP/1.1“

Return Value 200

Log Files

localhost-access.YYYY-MM-DD.log

10.133.67.167 - anonymousUser [2019-10-30T13:52:25.073-04:00] "GET /web/ping HTTP/1.1“ 200 1304 ROOT:w:0000001f

---

Roundtrip time for request 1304

Request ID ROOT:w:0000001f * Default 12.0+ / Avail 11.7.3+

Log Files

oepas1.2019-10-28.log

Expect to see:

- Messages from the session manager
- No Sessions Available
- Errors
  - State errors
  - Communication errors

Log Files

oepas1.2019-10-28.log

2019-10-28T14:24:18.124-04:00 WARN [Catalina-utility-1] - c.p.appserv.IdleResourceWatchdog - Idle resource watchdog disabled

---

Date 2019-10-28

Time 14:24:18.124

GMT offset -04:00

Log Files

oepas1.2019-10-28.log

2019-10-28T14:24:18.124-04:00 WARN [Catalina-utility-1] - c.p.appserv.IdleResourceWatchdog - Idle resource watchdog disabled

---

Message Level WARN

INFO, WARN, ERROR, DEBUG, TRACE

Message came from this code

[Catalina-utility-1] - c.p.appserv.IdleResourceWatchdog

com/progress/appserv/IdleResourceWatchdog

Log Files

oepas1.2019-10-28.log

2019-10-28T14:24:18.124-04:00 WARN [Catalina-utility-1] - c.p.appserv.IdleResourceWatchdog - Idle resource watchdog disabled

---

Message Idle resource watchdog disabled

Log Files

oepas1.agent.2019-10-31.log

Expect to see:

- Messages from the Agent and ABL Sessions
- ABL errors
- Database connection messages/errors

500 errors in the localhost-access.date.log or at the client usually mean application errors in the *.agent.date.log file

Log Files

oepas1.agent.2019-10-31.log

2019-10-31T13:33:39.641-0400 116056 116063 2 AS-7 ROOT:w:00000001 4GLTRACE Invoke Debug in OpenEdge.Logging.Logger "Request for path "/web/ping" using template "" and handler "OpenEdge.Web.CompatibilityHandler"" [HandleRequest - OpenEdge.Web.InternalWebRouter @ 72]

Agent PID 116056

Worker Thread 116063 (O/S thread-id ignore for debugging)

Log Files

oepas1.agent.2019-10-31.log

2019-10-31T13:33:39.641-0400 116056 116063 2 AS-7 ROOT:w:00000001 4GLTRACE Invoke Debug in OpenEdge.Logging.Logger "Request for path "/web/ping" using template "" and handler "OpenEdge.Web.CompatibilityHandler"" [HandleRequest - OpenEdge.Web.InternalWebRouter @ 72]

Logging level 2

ABL Session ID AS-7

Log Files

oepas1.agent.2019-10-31.log

2019-10-31T13:33:39.641-0400 116056 116063 2 AS-7 ROOT:w:00000001 4GLTRACE Invoke Debug in OpenEdge.Logging.Logger "Request for path "/web/ping" using template "" and handler "OpenEdge.Web.CompatibilityHandler"" [HandleRequest - OpenEdge.Web.InternalWebRouter @ 72]

Request ID ROOT:w:00000001

Log Entry Type 4GLTRACE

Log Files

oepas1.agent.2019-10-31.log

2019-10-31T13:33:39.641-0400 116056 116063 2 AS-7 ROOT:w:00000001
4GLTRACE Invoke Debug in OpenEdge.Logging.Logger "Request for path "/web/ping" using template "" and handler "OpenEdge.Web.CompatibilityHandler"" [HandleRequest - OpenEdge.Web.InternalWebRouter @ 72]

Message see Above

Error Number (######)

Log Files

<database-name>.lg.

[2024/10/15@16:52:51.619-0400] P-2562850 T-2562855 I PASOESSN2: (17961) User 2 set tty to AS-7.

[2024/10/15@16:52:51.620-0400] P-2562850 T-2562855 I PASOESSN2: (7129) Usr 2 set name to ellis.

Database User User 2 Usr 2

PASOE ABL Session AS-7

Diagnostic Tools – Not a Log File!

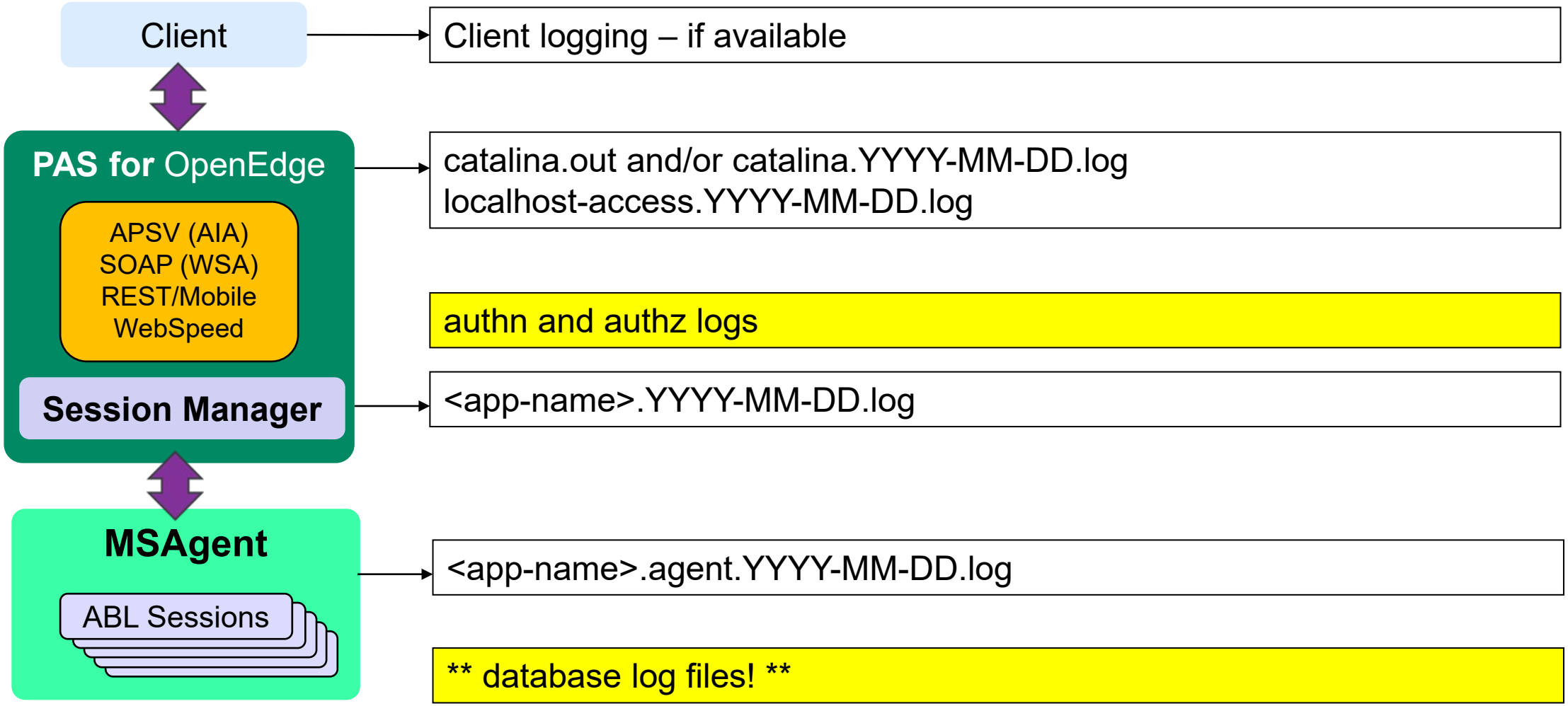
promon <dbname> → 1 → 1

```
Usr     Name   Domain      Type      Wait   Table  Dbkey  Trans     PID       ....      .   .   .   .  Login Time
  1     ellis      -4   SELF/PASA  --  0      0      0  2562850  2562853      0       0   0   0   0  0 10/15/24 16:52
  2     ellis      -4   SELF/PASN  -- 0       0      0  2562850  2562855      0       0   0   0   0  0 10/15/24 16:52
  3     ellis      -4   SELF/PASN  -- 0       0      0  2562850  2562858      0       0   1   0   0  0 10/15/24 16:52

-------------------------------------------------------------------------------

Database UserName                2
```

Tracing the request

Log File / promon	RequestID	ABL Session ID	Database User ID
localhost-access.YYYY-MM-DD.log	ROOT:w:0000001f		
oepas1.2019-10-28.log	ROOT:w:0000001f		
oepas1.agent.2019-10-31.log	ROOT:w:0000001f	AS-7	
sports2000.lg		AS-7	User 2/Usr 2
promon sports2000			Usr 2

Understanding a Round Trip – Log Files



Diagnostic Tools – More Log Files

- Authentication log
  - <instance-name>_authn.<YYYY.MM.DD>.log
- Authorization log
  - <instance-name>_authz.<YYYY.MM.DD>.log
- Database
  - All databases the PAS for OpenEdge agent is connected to

Diagnostic Tools – More Log Files

- Tomcat manager application log
  - Messages and errors using tomcat manager (http://host:port/manager)
- OEManager application log (OEManager REST API)
  - Message and errors using oemanager (https://host:port/oemanager/…)
- Localhost log
  - Tomcat virtual host log – not important unless virtual hosts enabled
- Host-manager log
  - Tomcat host-manager application log – not important unless deployed

Diagnostic Tools – More Log Files

- Default Log
  - default.YYYY.MM.DD.log
  - where JAVA errors are written
- Exceptions log
  - exp.log
  - where JAVA exceptions are written

Diagnostic Tools - Deferred Logging

- Advantages:
  - Don’t need to enable verbose logging while debugging an intermittent problem
  - Can be enabled without stopping PAS for OpenEdge (if allowRuntimeUpdates=1)
- Disadvantage?
  - More memory in Session Manager to save the deferred logging data

Diagnostic Tools - Enabling Deferred Logging

- **Using oeprop.sh(.bat)**

oeprop +AppServer.SessMgr.<appname>.defrdLogNumLines=500
oeprop +AppServer.SessMgr.<appname>.defrdLoggingLevel=4
oeprop +AppServer.SessMgr.<appname>.defrdLogEntryTypes=4GLTrace

- **Manually modify the openedge.properties**

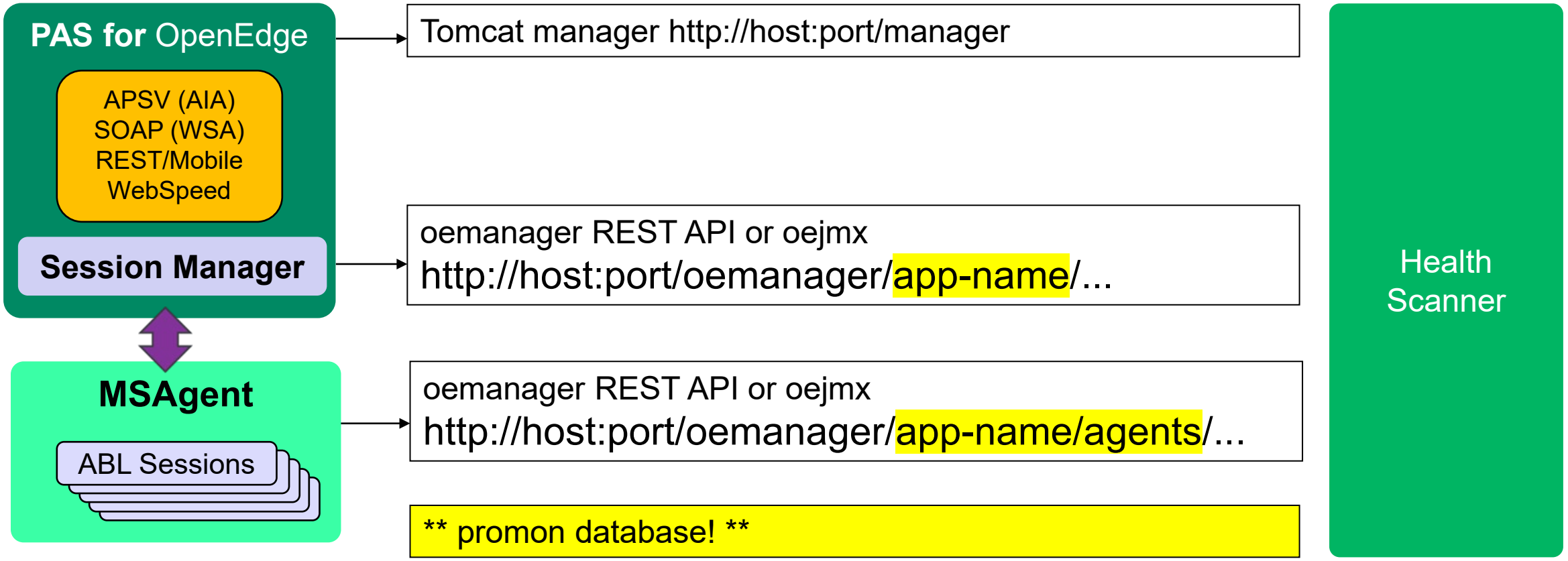
[AppServer.SessMgr.<appname>]
    defrdLogNumLines=500
    defrdLoggingLevel=4
    defrdLogEntryTypes=4GLTrace

Diagnostic Tools - Enabling Deferred Logging

```
001920 2 AS-7 ROOT:a:00000184 AS Application Server disconne
001920 2 AS-7 ROOT:a:00000186 AS Application Server connecte
001920 2 AS-7 ROOT:a:00000188 AS Application Server disconne
001920 2 AS-7 ROOT:a:0000018a AS Application Server connecte
001920 2 AS-7 ROOT:a:0000018c AS Application Server disconne
001920 2 AS-7 ROOT:a:0000018e AS Application Server connecte
001920 2 AS-7 ROOT:a:00000190 AS Application Server disconne
005140 1 AS-Admin mtapsv:-:? MSAS Flushing deferred log ...
005140 2 DFRD -:-:- DFRD Deferred log start
005140 2 Dfrd -:-:- DFRD-0 seq=0 : 2019-09-26T14:40:43.869-(
005140 2 Dfrd -:-:- DFRD-0 seq=1 : 2019-09-26T14:40:43.869-(
005140 2 Dfrd -:-:- DFRD-0 seq=2 : 2019-09-26T14:40:43.869-(
005140 2 Dfrd -:-:- DFRD-0 seq=3 : 2019-09-26T14:40:43.869-(
005140 2 Dfrd -:-:- DFRD-0 seq=4 : 2019-09-26T14:40:43.869-(
005140 2 Dfrd -:-:- DFRD-0 seq=5 : 2019-09-26T14:40:43.870-(
005140 2 Dfrd -:-:- DFRD-1 seq=6 : 2019-09-26T14:40:43.881-(
005140 2 Dfrd -:-:- DFRD-1 seq=7 : 2019-09-26T14:40:43.881-(
005140 2 Dfrd -:-:- DFRD-1 seq=8 : 2019-09-26T14:40:43.882-(
005140 2 Dfrd -:-:- DFRD-2 seq=9 : 2019-09-26T14:40:43.885-(
005140 2 Dfrd -:-:- DFRD-2 seq=10 : 2019-09-26T14:40:43.885-
005140 2 Dfrd -:-:- DFRD-2 seq=11 : 2019-09-26T14:40:43.940-
```

Monitoring

Understanding a Round Trip – Monitoring Tools



Monitoring

- **Tomcat Manager** – REST API for Tomcat metrics
- **OE Manager** – REST API for PAS for OpenEdge metrics
  - Has Swagger documentation and ”Try Me” feature
- **OEJMX** – Command-line Java process for both Tomcat and PASOE metrics
- New 12.8 – **oemanager** script to gather PASOE metrics from command-line
  - “like asbman –query” but better
- **HealthScanner** – created for Load Balancing health
  - A “holistic” monitoring tool of the system, Tomcat, and PASOE

O/S Utilities

- vmstat
  - Memory on Unix system, including swap
- iostat
  - Disk usage information
- top
  - Processes, memory, swap, system and process level
- Task manager (Windows)
- Process Explorer (Windows from sysinternals)

Fixing Problems

Fixing Problems

- Memory
  - Growing msagent
  - Growing tomcat executable
- Terminating an ABL session
- Stopping a misbehaving agent
  - Manually starting an agent

Memory

Memory: MSAgent

- Memory usage will appear to be multiplied
  - Multiple ABL sessions in one executable
  - Agents are _not_ routinely “trimmed” like in Classic AppServer/WebSpeed
- A memory leak will also be multiplied
  - 1 gig leak per agent a day on classic
  - 100 gig leak one msagent a day on PAS for OpenEdge

Memory: MSAgent

- Tools to help you find memory leaks
  - ABL Objects REST API
  - Dump an ABL session stack (like progetstack) via the oemanager REST API
  - ABL leakchecker.p for dynamic objects

ABLObject Tracking REST API

- Allows you enable or disable ABL Object tracking (PUT)
  - http://localhost:8810/oemanager/applications/oepas1/agents/22484/ABLObjects/status
- Check if ABL Object tracking is enabled (GET)
  - http://localhost:8810/oemanager/applications/oepas1/agents/22484/ABLObjects/status
- Then you can retrieve the ABL Object report (GET)
  - http://localhost:8810/oemanager/applications/oepas1/agents/22484/ABLObjectReport
- Can be run on a production machine without stopping or starting the PAS for OpenEdge instance

Memory: Reclaiming System Memory

- First try removing high memory Agent sessions
  - curl -v -X DELETE -u tomcat:tomcat http(s)://host:port/oemanager/applications/agents/agentId/sessions/sessionId
- If that doesn’t work, you can “stop” an Agent

Memory: Reclaiming System Memory

- Manually “start” a new agent
  - POST //*host_name*:*port*/oemanager/applications/*App_name*/addAgent
- Stop agent
  - DELETE http://*host_name*:*port*/oemanager/applications/*App_name*/agents/*agentID*?waitToFinish=*time-in-milliseconds*&waitAfterStop=*time-in-milliseconds*
    - waitToFinish – time to wait for all requests to complete
    - waitAfterStop – time after waitToFinish before terminating agent
- https://documentation.progress.com/output/oe117sp/index.html

Memory: Reclaiming System Memory

- Surprise!
- oom_kill
  - Linux
  - Kills the largest memory using process when memory threatened
  - MSAgent was being killed!
  - Check the systems log

Memory: Tomcat

- OpenClient connections
  - Be sure to release and dispose of OpenClient connections
  - Previously dotNet and JAVA connect to the UBroker
    - UBroker would clean up abandoned connections
  - .Net and JAVA now connecting to the PAS for OpenEdge web server
    - Web server leaves the connections open for another request
  - We have seen tomcat thread leaks because OpenClients are not closing their connections
  - https://knowledgebase.progress.com/articles/Article/NET-Open-Client-disconnect-messages-not-received-by-PASOE

Tips and Tricks

Top Ten Questions to Ask…

- Log files
  - all of them in the instance “log” directory and all database logs
- Configuration files
  - openedge.properties
- Protrace or core files
- What changed?

Top Ten Questions to Ask…

- Application configuration?
  - Load balancing?
  - Shared memory or network database connection
- Operating environment?
  - On premise, cloud or hybrid
- System logs
- System resources at time of problem (CPU, Memory, Swap, Disk I/O)
  - Linux is always gathering system information, you may be able to get history

Helpful Hints

- Don’t “kill” the agent
  - Use stop agent after manually starting another or having a spare ready to go
  - Don’t use the “refresh” command
- Run client server to databases if you want 24X7 and fault tolerance
  - A crashing agent can cause a database shutdown because of a dead-lock

Helpful Hints

- Test from the command line
  - This will rule out problems with OEE/OEM, PDSOE, user permissions, …
- Use tcman/pasman clean (-A)
  - When debugging an issue, clean the log files between restarts
  - If you want to archive the current logs use -A

Helpful Hints

- Set up monitoring!
  - Use OpenEdge Management
  - Or use a third-party tool, most will work with OEJMX and REST API
- Use load balancing
  - For several reasons: Failover, continuous operations, upgrade and update application
  - Sticky session must be set for APSV transport

Miscellaneous Tricks

- Google searches
- Kbases, articles, documentation
  - openedge oemanager rest api
- Documentation in the new Content Portal
  - site:docs.progress.com oemanager rest api
- Progress Community forums
  - https://community.progress.com/

Summary

- Make the time to understand PAS for OpenEdge
- Get familiar with the log files
- Test and look for memory issues
- Enable Deferred Logging
- Set up monitoring for PAS for OpenEdge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