



Horizontal scaling PASOE

CASE STUDY:
ProMark & Progress

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ProMark: DevOps Manager – ProMark: Director of Engineering - Progress: Customer Solutions Architect

Wednesday 2nd October

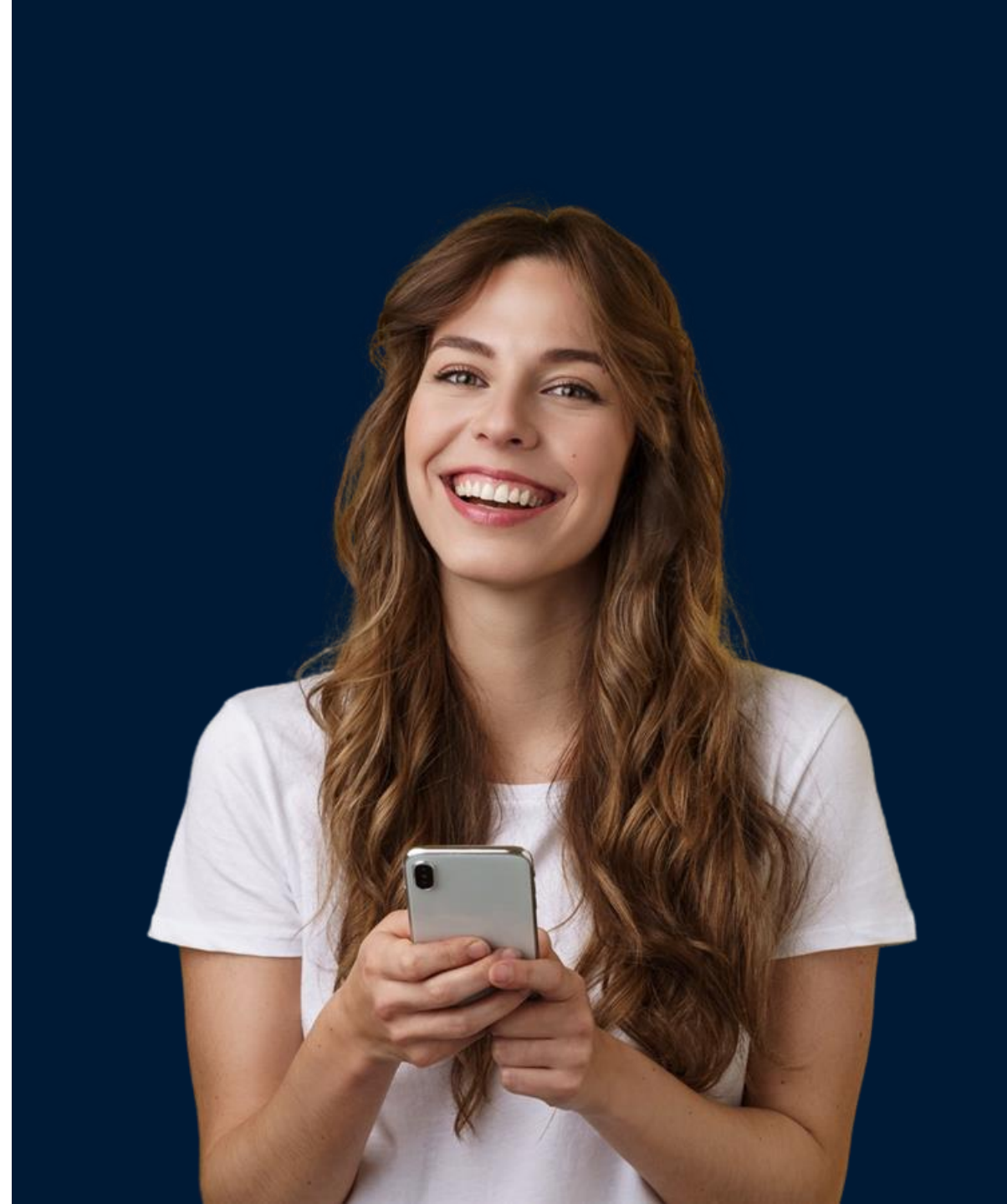


Customer Garage is an invitation only direct engagement between technical Progress Software engineers and a customer or partner. It is designed to ensure we address our customers and partners requirements and assists with adoption of new technology in Areas such as: Cloud adoption

What is a project garage?



ProMark



ProMark is an international people-to-people business



40+
years of experience

85+
ProMark team members

20+
countries with customers

300,000+
daily ProMark users

45,000+
annual development hours

ProMark & Progress

- ISV delivering the Workforce Management solution **ProMark**
- Progress ISV Titanium Partner
 - Partner since 1995
- Key Progress technologies
 - Progress OpenEdge
 - Progress Telerik



The complete SaaS Workforce Management solution built to maximise employee engagement, productivity and profitability

- The ProMark Workforce Management solution

- ProMark offers a full scale WFM platform to **Enterprises** and **Midmarket**
- ProMark has **launched a modern native cloud platform** and is successfully winning new customers and migrating existing OnPrem customers

Scalable & Secure platform

REST API's via role-based security model

Operations Data store Analytics Data store

MS Azure infrastructure & Container based services via Kubernetes

Azure Docker Kubernetes

ISO 27001 Certified ISAE 3000 Certified

Open business platform via API's

Time & Attendance

Deviations
Attendance
Notifications
Mileage and per diem

Absence Management

Holiday management
Sickness absence management

Scheduling

Staff rostering & Self-service
Shift scheduling
Labour forecasting
Unscheduled work
Automated scheduling (AI)

Task Management

Standard project registration
Adv. project registration
Job/Shopfloor Registration

User experience

Web Portal Mobile Apps Terminals Data collection options System & UX integrations Insights

Integrations

Partner Certified connectors incl. SAP & MS App store offerings
50+ standard connectors to key HR, Payroll and ERP systems

Analytics

Reporting
Business intelligence

Customer Success Plans

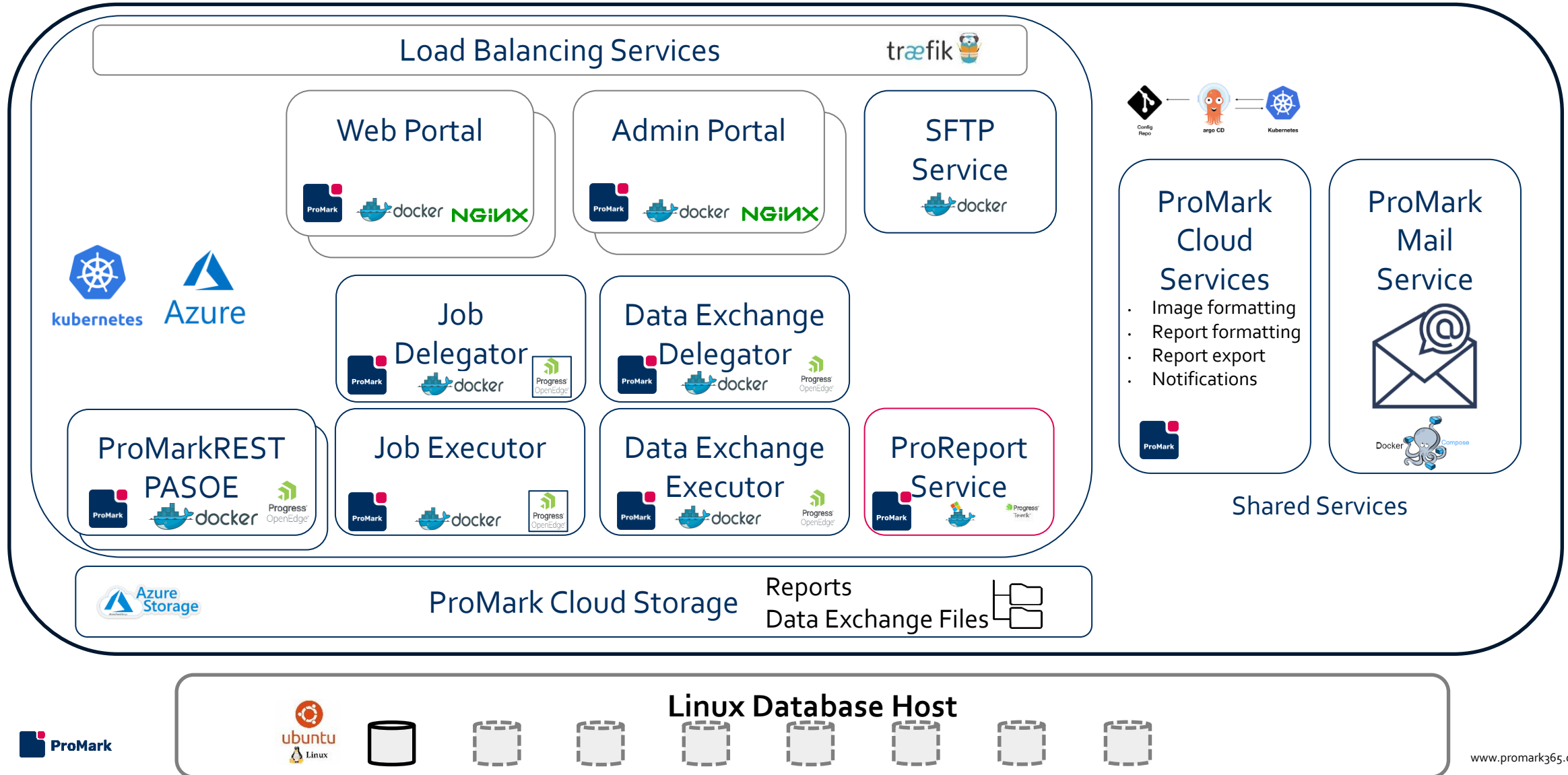
Standard, Premium & Signature

Scaling ProMark Native Cloud

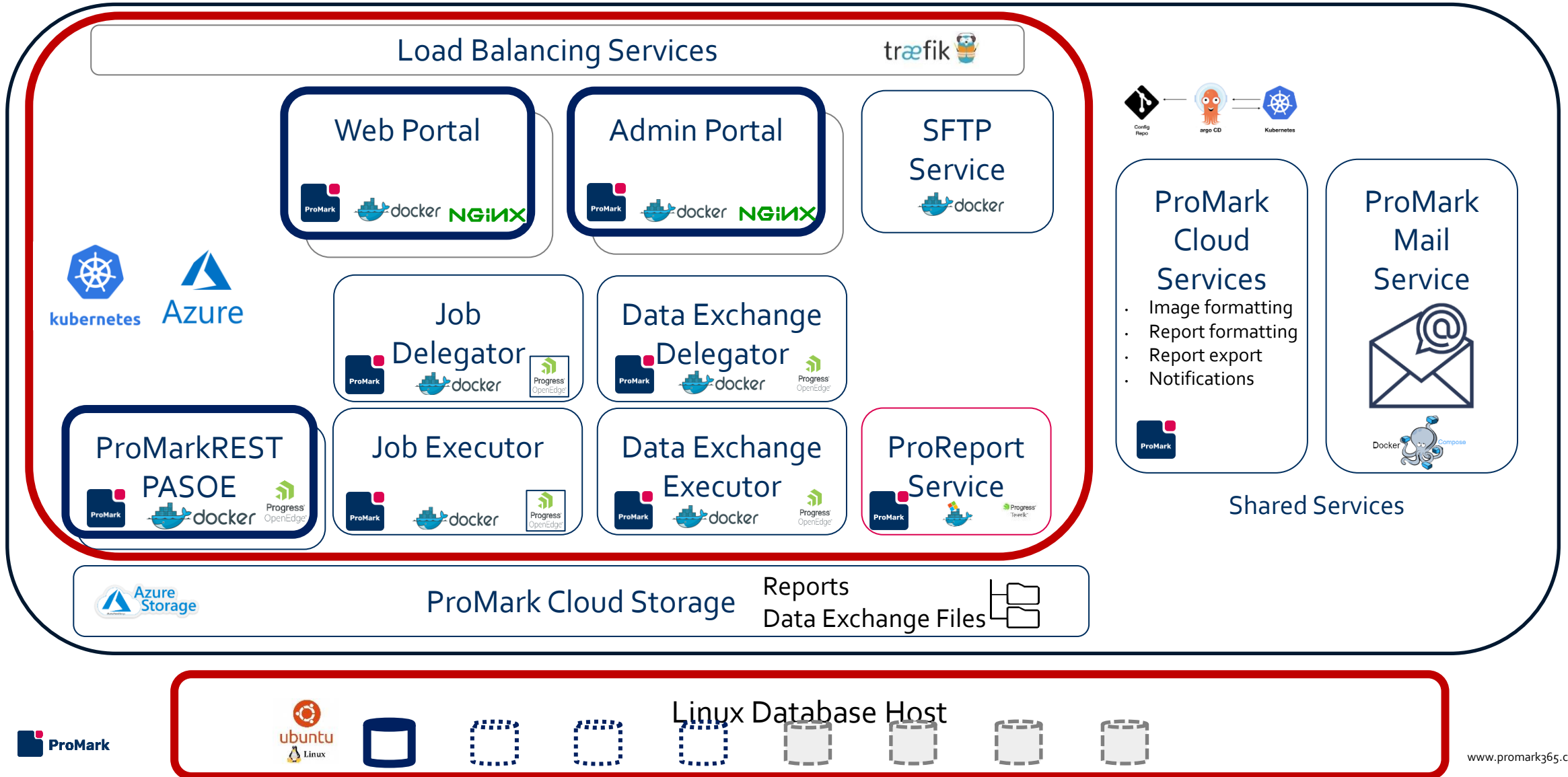
Current deployment model

- Individual deployments per customer (full stack in Azure Kubernetes)
- Deployed and updated via GitOps (ArgoCD)
- Application stack
 - ABL Delegators (batch clients) & Executors (PASOE), OpenEdge database
 - Fully containerized on AKS (Azure Kubernetes Services)
 - Databases on Linux servers (in the same Proximity Placement Group)

ProMark Native Cloud Container Architecture per Customer



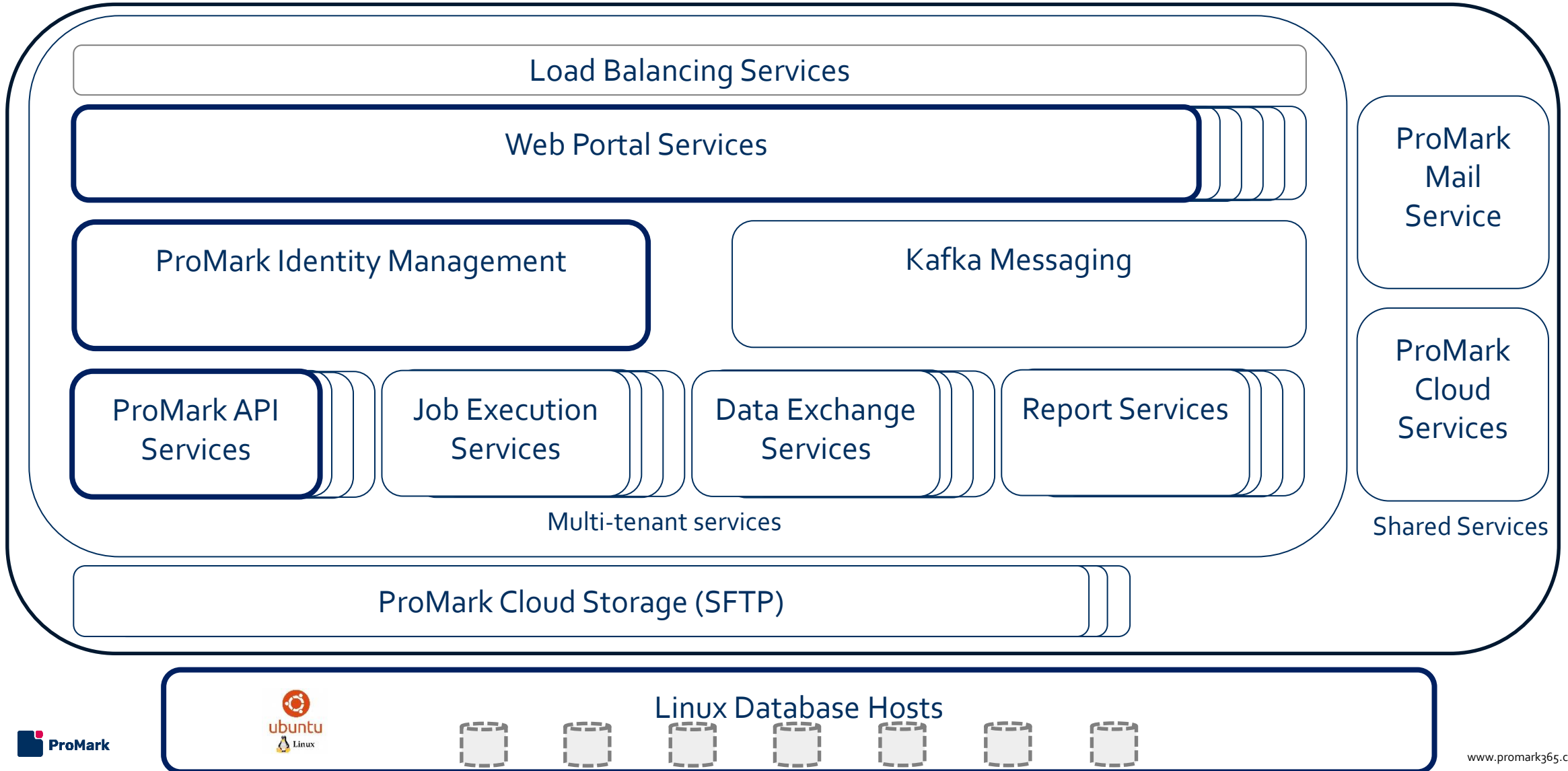
ProMark Native Cloud Container Architecture per Customer



Scalability goals - technical

- Maintain easy of management
- Improve vertical scaling and gain horizontal scaling
- Maintain isolated tenant data for security reasons
- Enable true multi-tenancy on the application level

ProMark Native Cloud Architecture – Future Scalability



Scalability goals - business

- Optimize cost per tenant (key metric)
- Deliver a true multi-tenant SaaS platform (key metric)
- Significantly improve new customer onboarding
- Turn ProMark in a true ARR based business

Putting It Together

Pre-requisites

- Standardized schema and code base.
- DevOps automation
(GitOps any changes go through source control, even configs!)
- Stateless PASOE

How

Identity Management

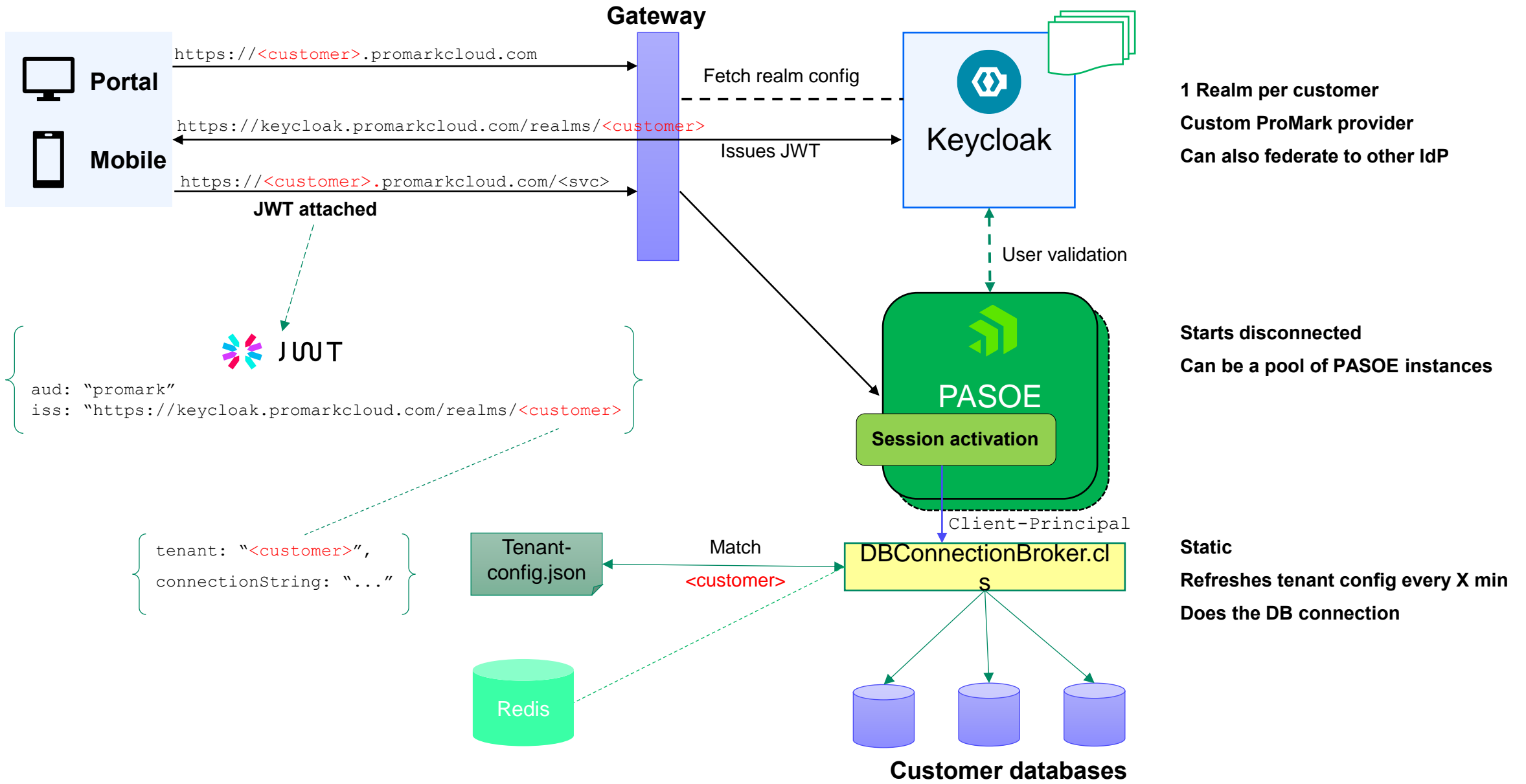
- Keycloak – centralized identity provider (this is where it starts)
- Validate your domain
- Multiple authentication methods for a given realm

Tenancy

- It all boils down to the client principal !!!
 - JWT token is mapped into the CPO
- Connection data is maintained in JSON (cached into a static class, redis database connection in future)

PASOE

- No database connection at startup
- In Session Activation procedure, connect to tenant database on every request



Metrics - before

Environment

- OE 12.2
- Development license (limited to 5 con)
- Single DB (not connected at startup)

Test setup

Virtual users
20 VU

Duration
10 minutes

Start time
Feb 12, 14:22:23 (GMT+2)

End time
Feb 12, 14:32:39 (GMT+2)

Load profile
Peak

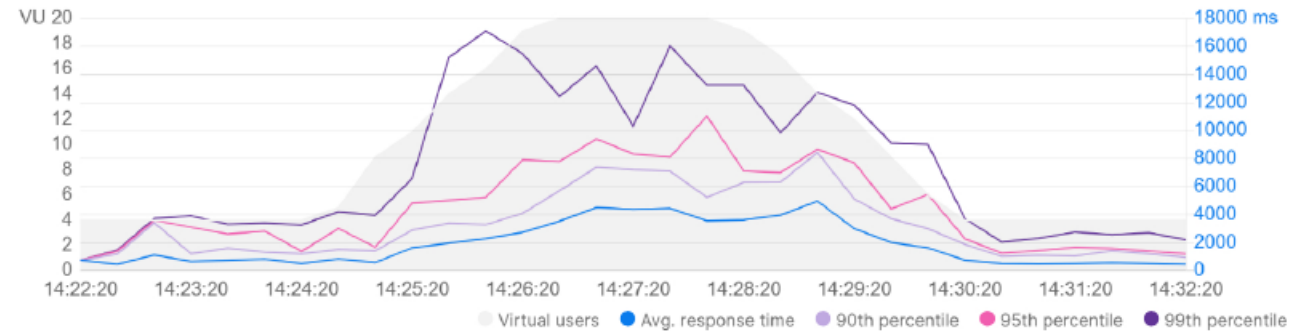
Environment
progarage.promarkcloud.com

**P(90) = 6.5
s**

Total requests sent 2,433	Throughput 3.95 requests/second	Average response time 2,011 ms	Error rate 0.00 %
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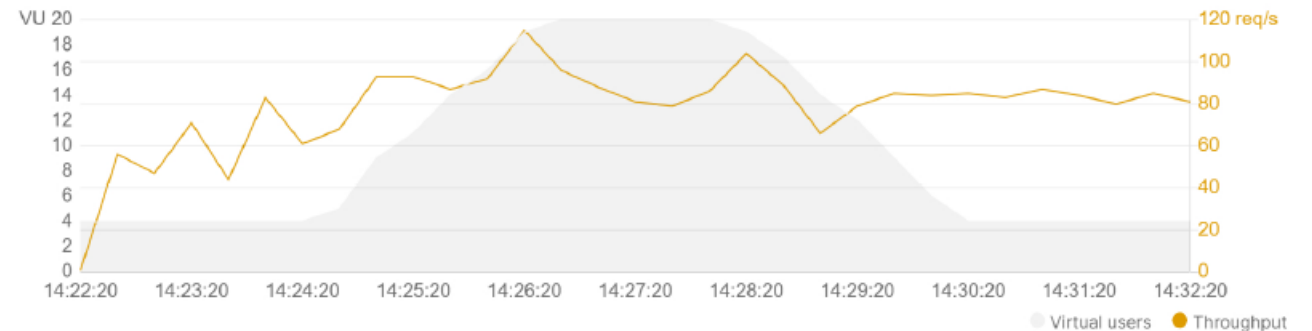
1.1 Response time

Response time trends during the test duration.



1.2 Throughput

Rate of requests sent per second during the test duration.



Metrics - after

Environment

- OE 12.8
- Development license (limited to 5 con)
- Multi-tenant application (5 DBs)
 - Random connection

Test setup

Virtual users
20 VU

Duration
60 minutes

Start time
Jun 3, 13:02:32 (GMT+3)

End time
Jun 3, 14:02:44 (GMT+3)

Load profile
Peak

Environment
progarage-oe128.promarkcloud.com

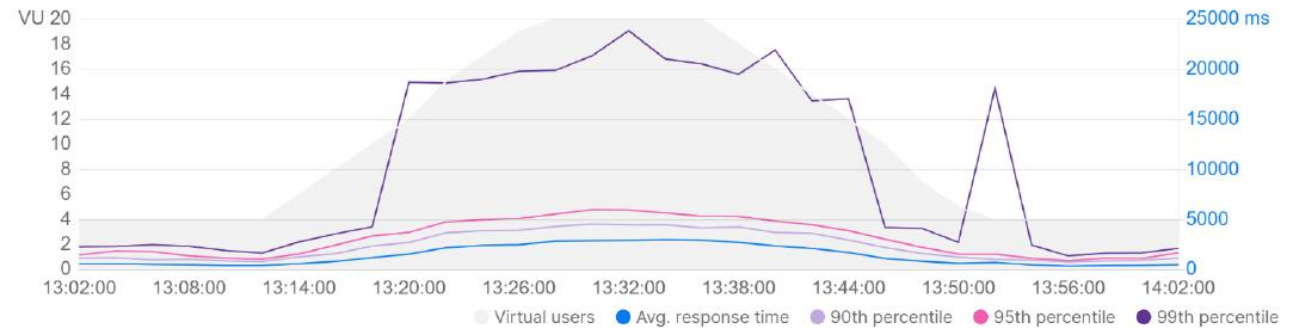
P(90) = 5.0
S

1. Summary

Total requests sent 14,195	Throughput 3.93 requests/second	Average response time 1,657 ms	Error rate 0.00 %
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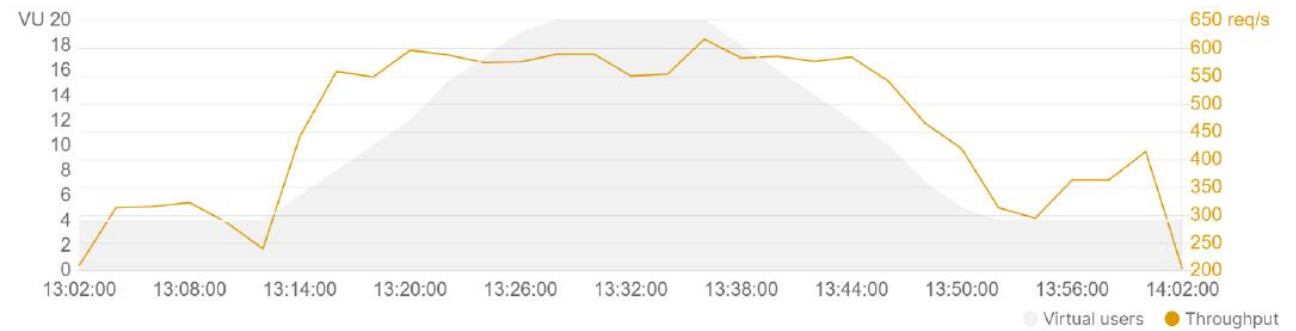
1.1 Response time

Response time trends during the test duration.



1.2 Throughput

Rate of requests sent per second during the test duration.



Metrics - after

Environment

- OE 12.8
- Production license
- **Multi-tenant application (5 DBs)**
 - Random connection

Test setup

Virtual users
20 VU

Duration
60 minutes

Start time
Sep 16, 15:36:35 (GMT+3)

End time
Sep 16, 16:36:40 (GMT+3)

Load profile
Peak

Environment
progarage-oe128.promarkcloud.com

**P(90) = 1.7
s**

1. Summary

Total requests sent
57,662

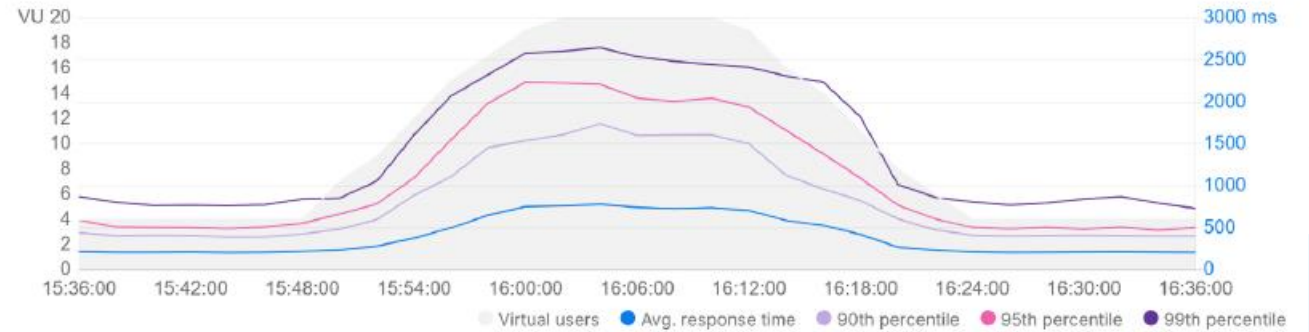
Throughput
15.99 requests/second

Average response time
463 ms

Error rate
0.00 %

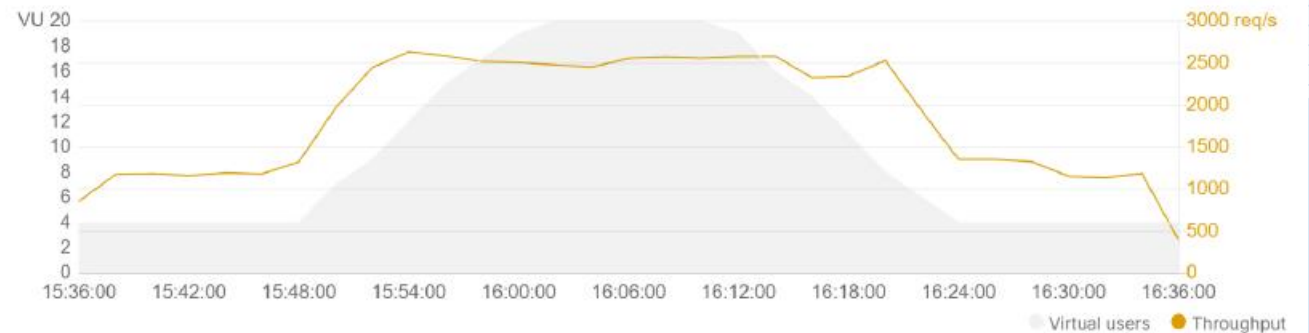
1.1 Response time

Response time trends during the test duration.



1.2 Throughput

Rate of requests sent per second during the test duration.



In Summary

- OpenEdge12.8
- Multiple agents available to various clients
- No multi-tenancy on database level, only on application level
 - Source code is the same for everyone
 - Database connection is different for everyone
- Switching 'tenant' on the fly
- Horizontal scalability at the PASOE layer
 - Kubernetes PASOE pods to serve as many different customers as possible
 - Utilize built in k8s horizontal scalability

The logo icon for Progress consists of three green, stylized, overlapping chevron-like shapes pointing to the right, arranged in a slightly offset, stacked manner.

Progress[®]

The logo icon for ProMark features a dark blue square with rounded corners. A small red square is positioned in the top-right corner of the blue square, partially overlapping it.

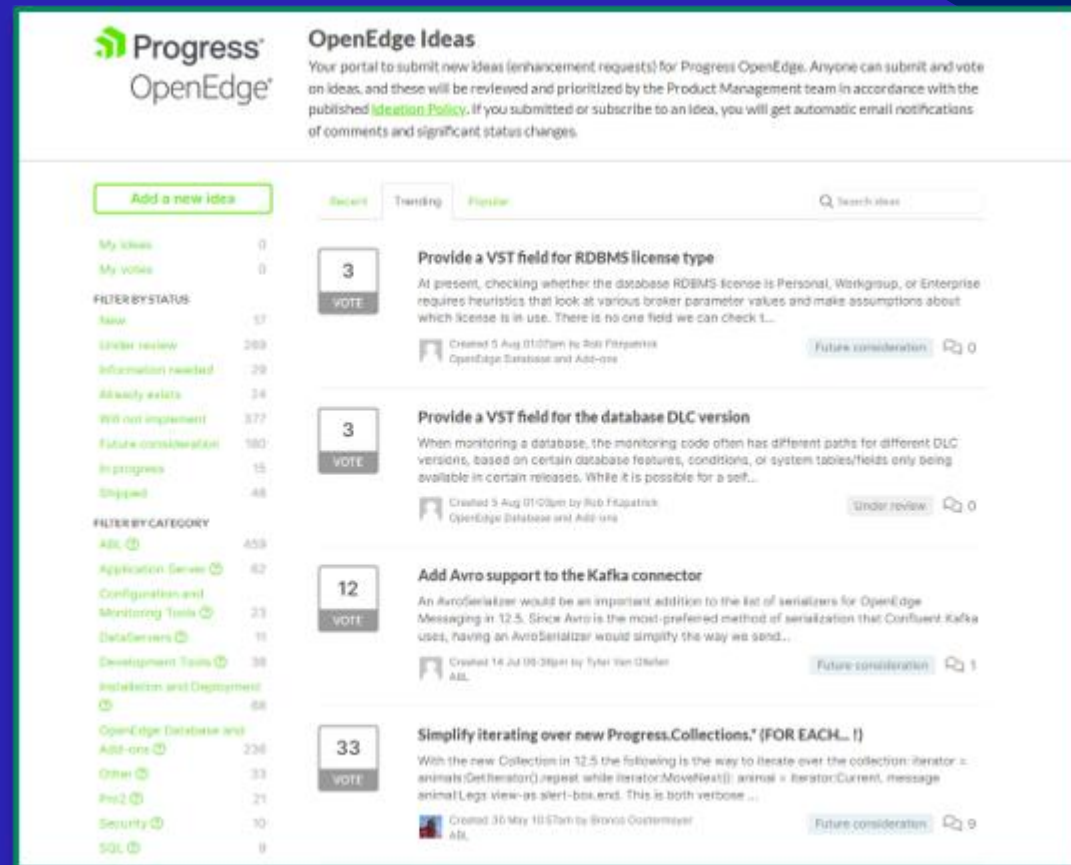
ProMark

Don't See Your Favorite Feature?

Submit and vote on ideas!



<https://openedge.ideas.aha.io/>



Progress OpenEdge OpenEdge Ideas

Your portal to submit new ideas (enhancement requests) for Progress OpenEdge. Anyone can submit and vote on ideas, and these will be reviewed and prioritized by the Product Management team in accordance with the published [Idea Policy](#). If you submitted or subscribe to an idea, you will get automatic email notifications of comments and significant status changes.

[Add a new idea](#)

My ideas: 0
My votes: 0

FILTER BY STATUS

- New: 37
- Under review: 269
- Information needed: 29
- Already exists: 24
- Will not implement: 377
- Future consideration: 180
- In progress: 15
- Shipped: 48

FILTER BY CATEGORY

- ALL: 453
- Application Server: 62
- Configuration and Monitoring Tools: 23
- Data Services: 11
- Development Tools: 38
- Installation and Deployment: 64
- OpenEdge Database and Add-ons: 236
- Other: 33
- Prod: 21
- Security: 10
- SQL: 9

3 VOTE

Provide a VST field for RDBMS license type

At present, checking whether the database RDBMS license is Personal, Workgroup, or Enterprise requires heuristics that look at various broker parameter values and make assumptions about which license is in use. There is no one field we can check L...

Created 5 Aug 01:07pm by Bob Fitzpatrick
OpenEdge Database and Add-ons [Future consideration](#) 0

3 VOTE

Provide a VST field for the database DLC version

When monitoring a database, the monitoring code often has different paths for different DLC versions, based on certain database features, conditions, or system tables/fields only being available in certain releases. While it is possible for a self...

Created 5 Aug 01:07pm by Bob Fitzpatrick
OpenEdge Database and Add-ons [Under review](#) 0

12 VOTE

Add Avro support to the Kafka connector

An AvroSerializer would be an important addition to the list of serializers for OpenEdge Messaging in 12.5. Since Avro is the most-preferred method of serialization that Confluent Kafka uses, having an AvroSerializer would simplify the way we send...

Created 14 Jul 09:38pm by Tyler Van Ooster
ALL [Future consideration](#) 1

33 VOTE

Simplify iterating over new Progress.Collections* (FOR EACH... !)

With the new Collection in 12.5 the following is the way to iterate over the collection: iterator = animals.GetIterator(); repeat while iterator.MoveNext(); animal = iterator.Current; message animal.Legs view-as alert-box end. This is both verbose ...

Created 30 May 10:57am by Brinos Costenmeyer
ALL [Future consideration](#) 9

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>