Liferay
Boot Camp
Summer Edition

Liferay as Digital Experience Platform in the context of Microservices

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Presentation topics

Presentation topics

1. Overview on Microservices
2. Liferay as Microservices Platform
3. Digital Experience Platform
4. Headless CMS open to Microservices

Overview on Microservices

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1. The architectural approach
2. An already known approach
3. From SOA architecture to Microservices
4. The advantages of a Microservices architecture
5. Disadvantages of the Microservices architecture

The architectural approach

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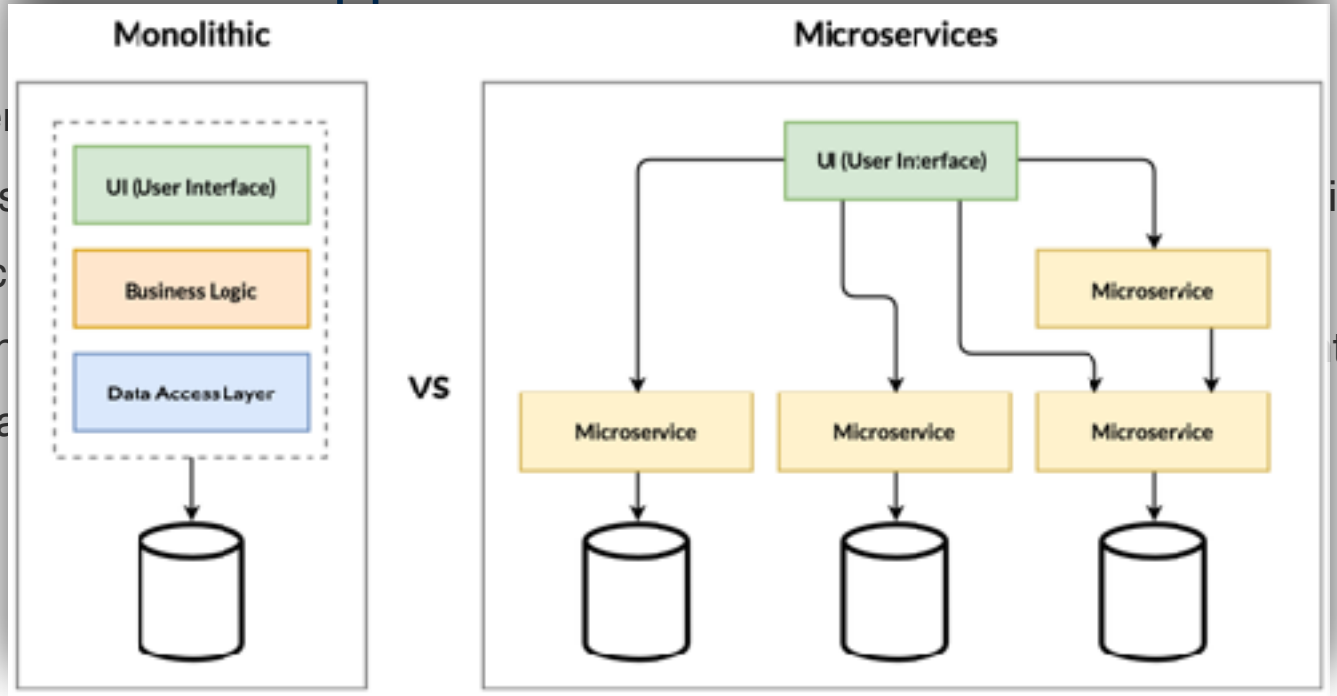

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4. To deploy microservices and take advantage of this approach, you need to adapt the basic elements of a Service-Oriented Architecture (SOA)

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2. In the early days of application development, even a minimal change to an existing app required a complete update and a quality assurance cycle (QA) of its own, which risked slowing down the work of various secondary teams. This approach is often referred to as "monolithic" because the whole app's source code was compiled into a single deployment unit (for example, with the extension .war or .ear). If updates to part of the app caused errors, it was necessary to disconnect everything, step back and correct. This approach is still applicable to small applications, but growing companies cannot afford downtime

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3. And here comes the SOA (Service-Oriented Architecture) architecture, in which the apps are structured in reusable services that communicate with each other via an Enterprise Service Bus (ESB)

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2. Overall, this suite of services integrated through an ESB constitutes an application

3. In addition, this method allows you to compile, test and modify multiple services simultaneously, freeing IT teams from monolithic development cycles. However, since ESB represents a single point of failure for the whole system, it could pose an obstacle for the whole organization

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5. In combination with the API and DevOps teams, containerized microservices form the basis of cloud-native applications.

The advantages of a Microservices architecture

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Based on a distributed architecture, microservices allow for more efficient development and routines. The ability to develop multiple microservices simultaneously allows multiple developers to work on the same app simultaneously, reducing development time.

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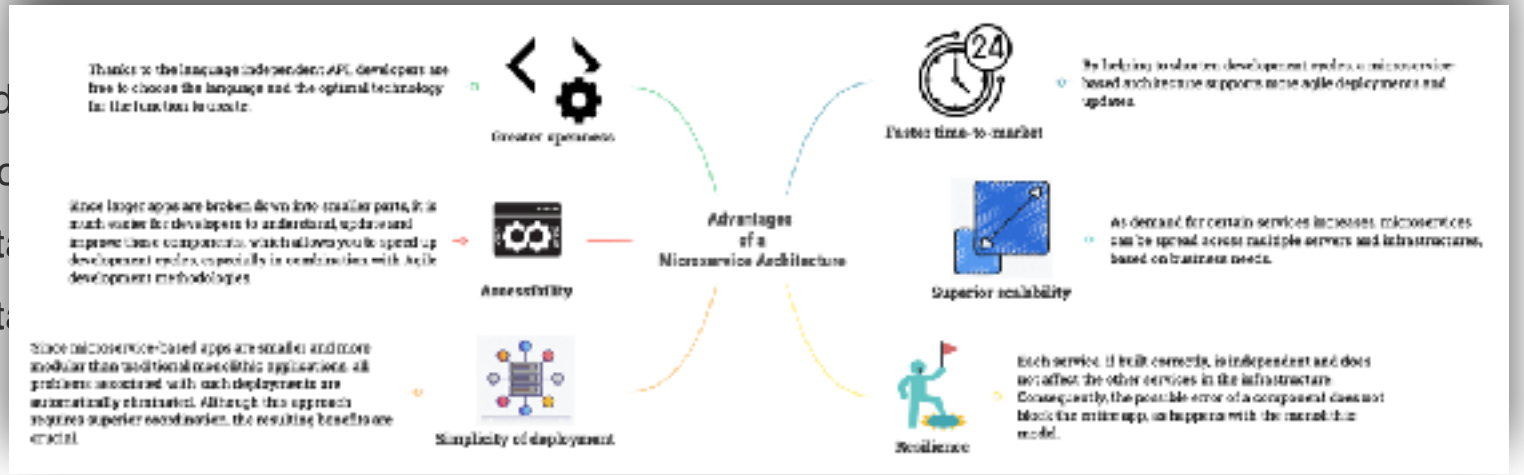

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3. Partitioning an application into independent services also means that there are multiple moving parts to maintain. This is clearly quite evident in this type of system but there are consequently new factors to consider.

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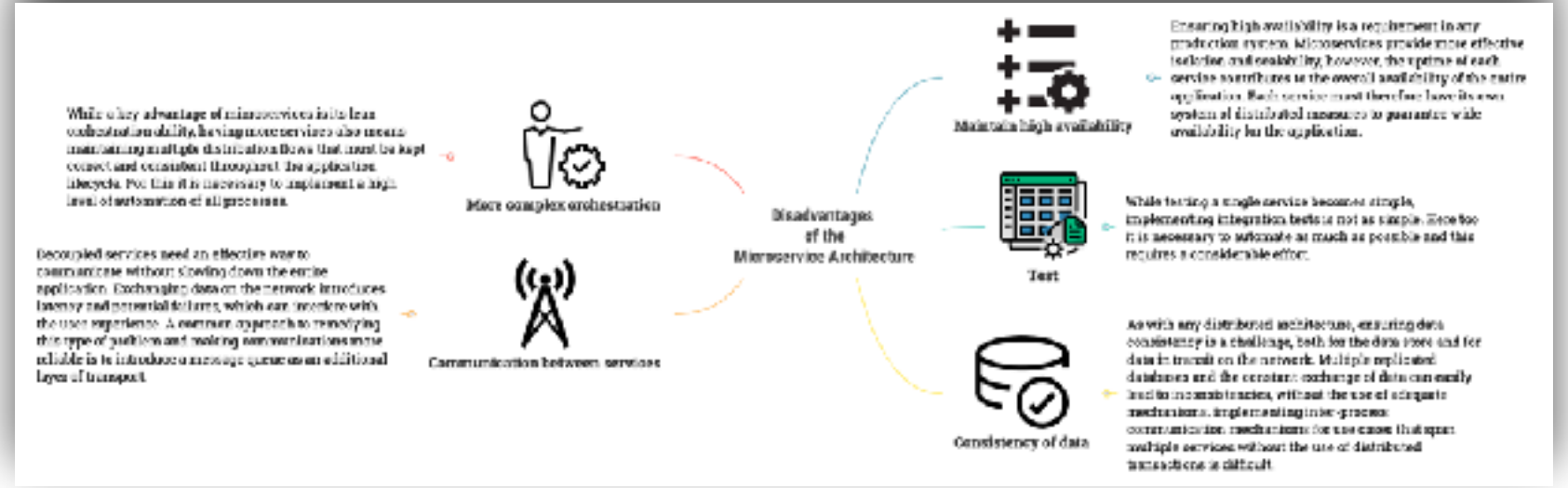

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Liferay as Microservices Platform

Liferay as Microservices Platform

1. The Platform
2. OSGi *μ*Services
3. Deploy to Container Platform

The Platform

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4. Opportunity for iterative modularization

The Platform

“

[…] you shouldn’t start with a microservices architectures. Instead begin with a monolith, keep it modular, and split it into microservices once the monolith become a problem.

”

Martin Fowler (2014)

https://martinfowler.com/articles/microservices.html

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1. Allow **independence** of development, deploy and evolution
2. **Combine** together the components that already exist
3. **Reuse** and facilitate the **customization**

OSGi *μ*Services

“

What I am promoting is the idea of *μ*Services, the concepts of an OSGi service as a design primitive.

”

Peter Kriens (2010)

https://blog.osgi.org/2010/03/services.html

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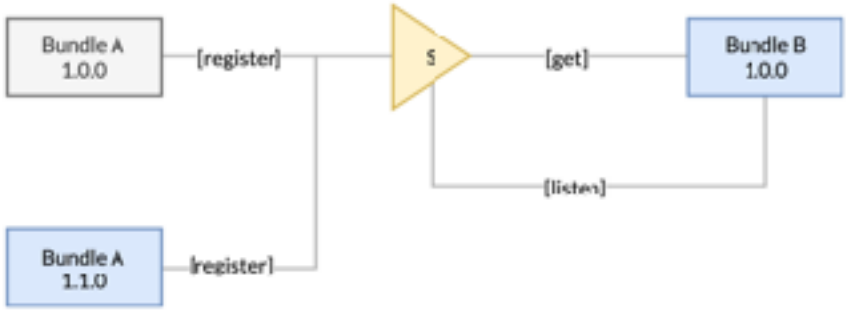

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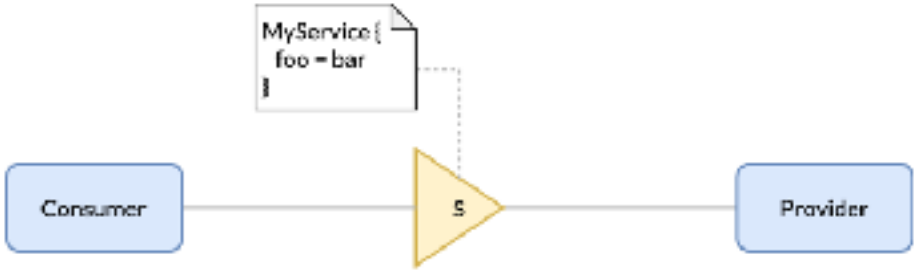

OSGi μServices

Microservice according to Fowler	OSGi μServices
single application as a suite of small services	✔
running in its own process	✘
communicating with lightweight mechanisms	✔
built around business capabilities	✔
independently deployable	✔
minimum of centralized management	✔
may be written in different programming languages	✔
use different data storage technologies	✔

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OSGi Remote Services!

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OSGi *μ*Services

OSGi μServices

The best of both worlds

- Independent deployment, iterative development
- Fault tolerant – but no full isolation
- No network latencies, reduced call stack
- More freedom to choose technology stack
- Less demanding for operations
- Established monitoring and deployment strategies

Deploy to Container Platform

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- Liferay has long embraced and works constantly to support the technology of containers.
- Liferay has integrated the development environment with tools that facilitate the IT team for creating docker images and this is enabling for a context of DevOps.
- Directly from the Liferay Workspace we are able to create our docker image that contains the Liferay platform and the additional modules that we have developed and that we want to release.

Deploy to Container Platform

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Liferay provides Docker images for:

- Liferay Portal
- Liferay DXP
- Liferay Commerce
- Liferay Portal Snapshots

You can pull Liferay's Docker images from Docker Hub and manage them yourself. Liferay Workspace, however, provides an easy way to integrate Docker development into your existing development workflow with preconfigured Gradle tasks.

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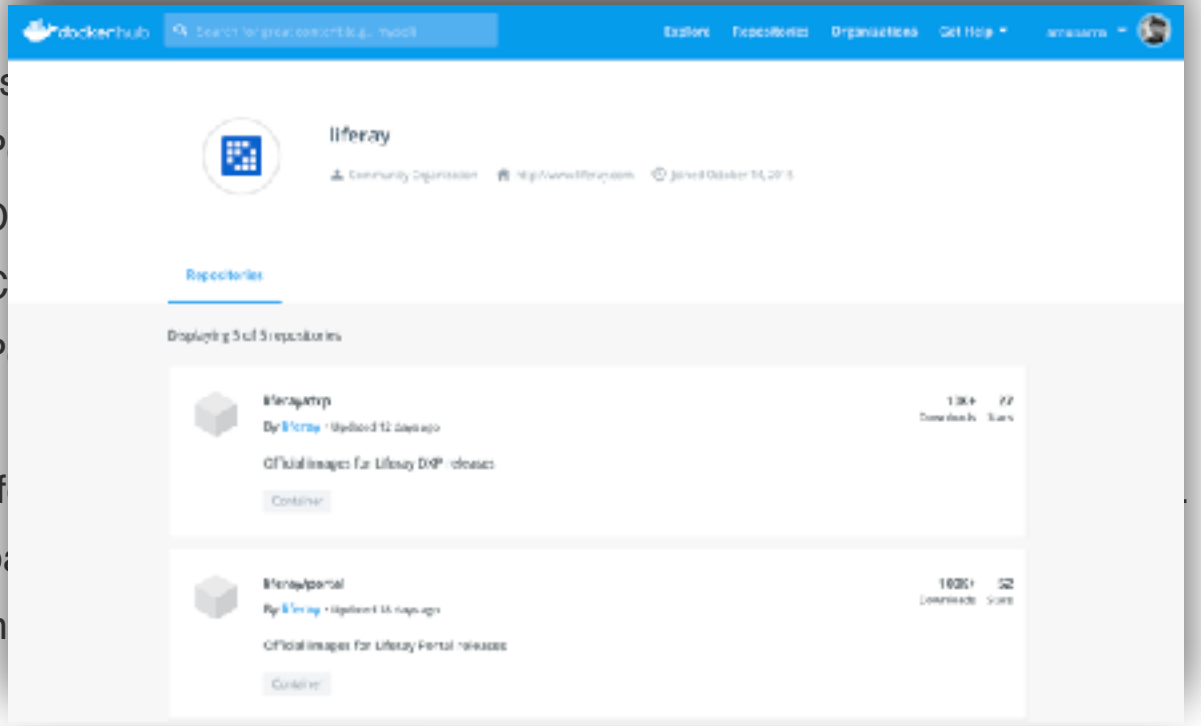

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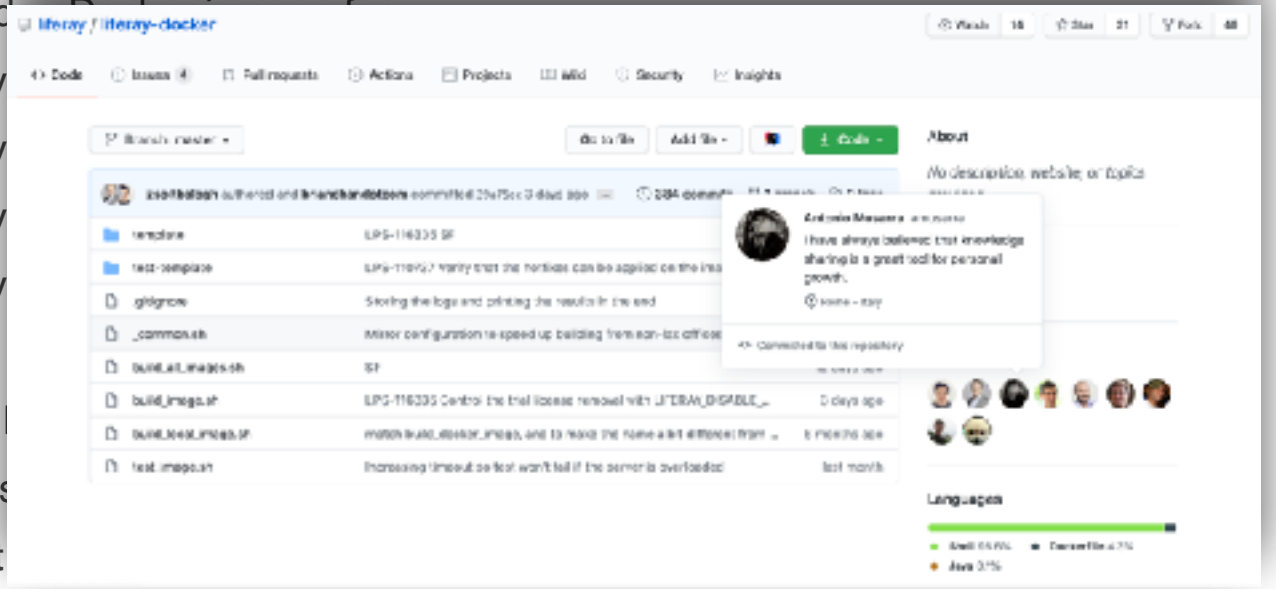

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```
50      #
51      # This property is available for backwards compatibility. Please set the
52      # property "liferay.home" instead.
53      #
54      # Env: LIFERAY_RESOURCE_PERIOD_REPOSITORIES_PERIOD_ROOT
55      #
56      resource.repositories.root=${default.liferay.home}
57
58  ##
59  ## Portal Context
60  ##
61
62      #
63      # Set the application server's protocol. Lucene will use it to load the
64      # index from the cluster when the hostname and port are not detected on the
65      # first request. Note that this property refers to the application server's
66      # protocol, and not the web server's as specified in the property
67      # "web.server.protocol".
68      #
69      # Env: LIFERAY_PORTAL_PERIOD_INSTANCE_PERIOD_PROTOCOL
70      #
71      portal.instance.protocol=
72      #portal.instance.protocol=http
73      #portal.instance.protocol=https
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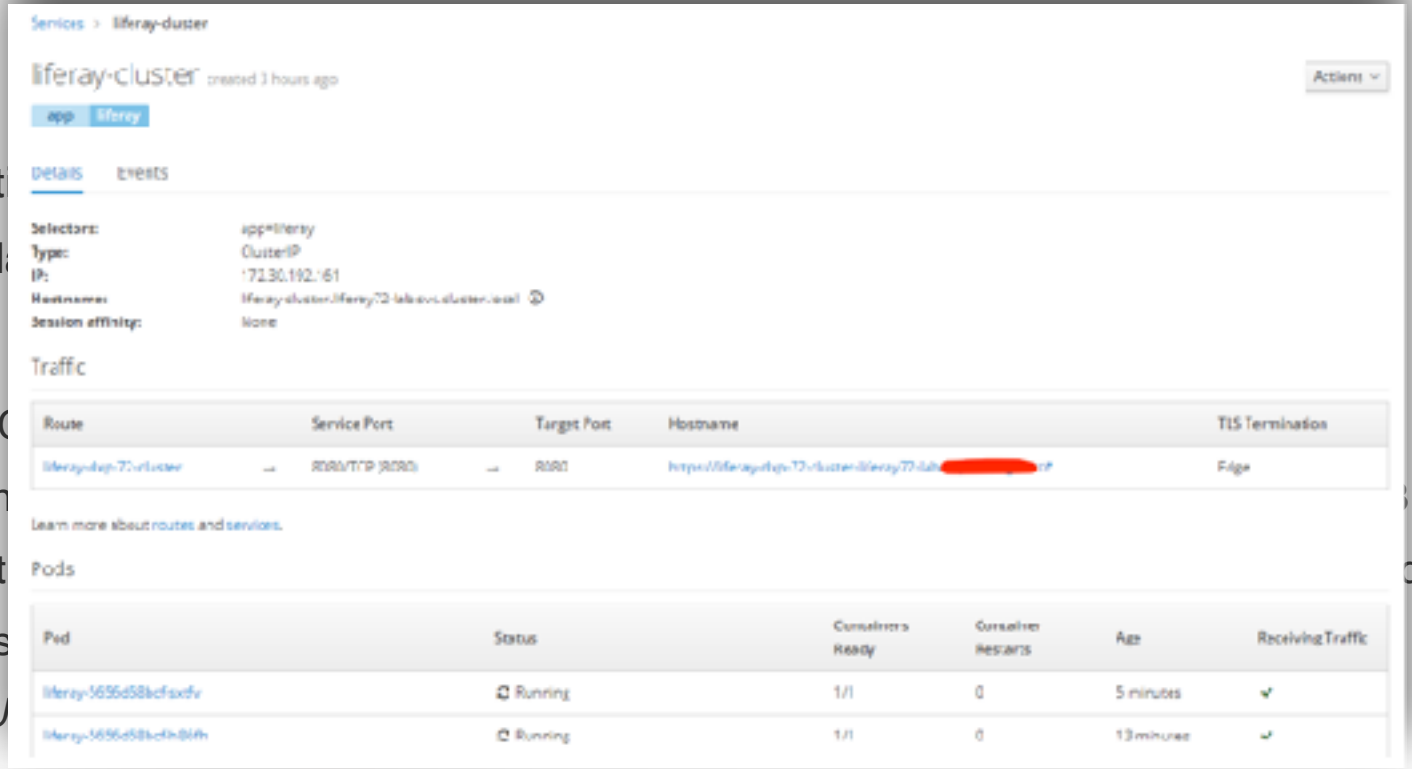

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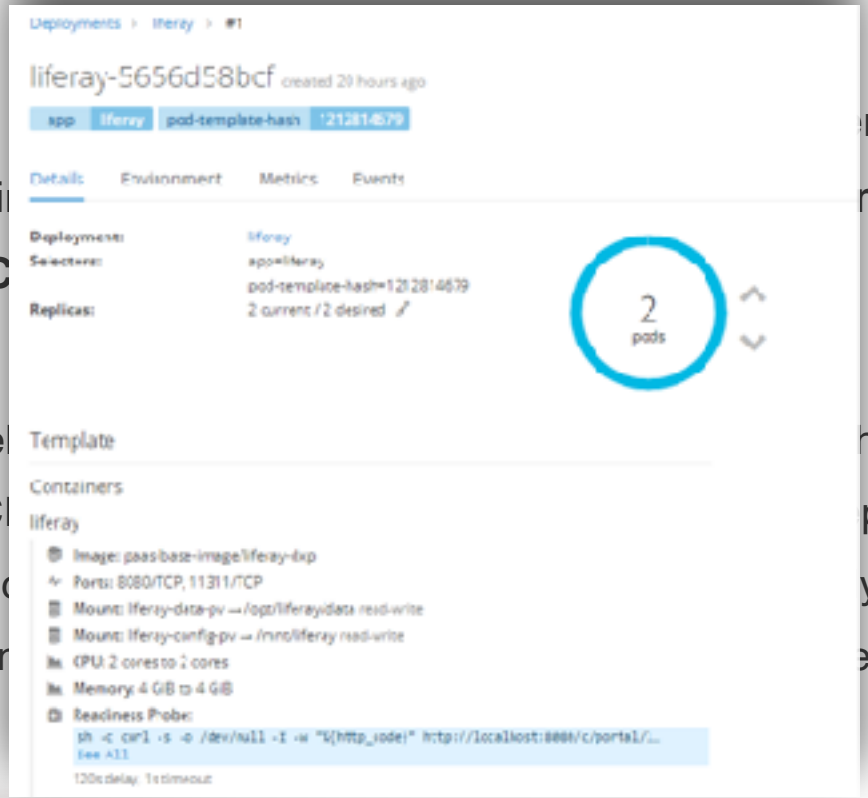

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4. A Digital Experience Platform is harder to scale up for internet-scale applications, and it is harder to handle traffic bursts.

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4. Better metrics. A Digital Experience Platform often provides engagement metrics that help businesses understand which content is performing well and which isn't so they can make informed decisions about what pages and messaging are resonating with customers.

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1. Collaboration is key to creating modern digital experiences. Business users in marketing and other departments need to be empowered to modify content and messaging on the fly with minimal intervention from IT. A Digital Experience Platform allows developers to create pre-set content fragments that business users can reuse at will across sites and pages.

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2. Headless and even decoupled capabilities for organizations with robust front-end development teams that wish to create their own presentation layers.

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2. It is true that a digital experience platform is a monolith from the distribution point of view but Liferay is internally modular. By the way, you can successfully containerize Liferay.

Digital Experience Platform

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3. Yes, a Digital Experience Platform is heavier compared to JavaScript front-ends with RESTful microservice APIs, but it also comes with significant, out-of-the-box functionality that can be used to create personalized, collaborative experiences for your users.
4. Yes, a Digital Experience Platform is harder to scale up for internet-scale applications and traffic bursts compared to JavaScript front-ends and microservices. However, Digital Experience Platforms scale just fine for 99% (or higher) of use cases, many with millions of users and over a hundred million page hits a month.

Headless CMS open to Microservices

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- Publication workflow
- Content delivery
- Analysis and monitoring

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Headless CMS focuses just on content creation and publication workflow. It is your application's responsibility to get the content and display it in appropriate way based on your users' needs, devices they use, and channels they operate on.

Liferay as a Headless platform

Liferay as a Headless platform

More flexibility and control

Liferay's foundations as a development platform continue to evolve with the addition of headless APIs for out-of-the-box services. Developers now have unparalleled flexibility to integrate Liferay into all systems, whether it's collecting data in Liferay or bringing Liferay into an existing ecosystem.

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Support for Headless CMS and Commerce

Liferay supports APIs in all of our content and commerce features, allowing you to create a fluid front end for the entire Customer Journey.

Liferay as a Headless platform

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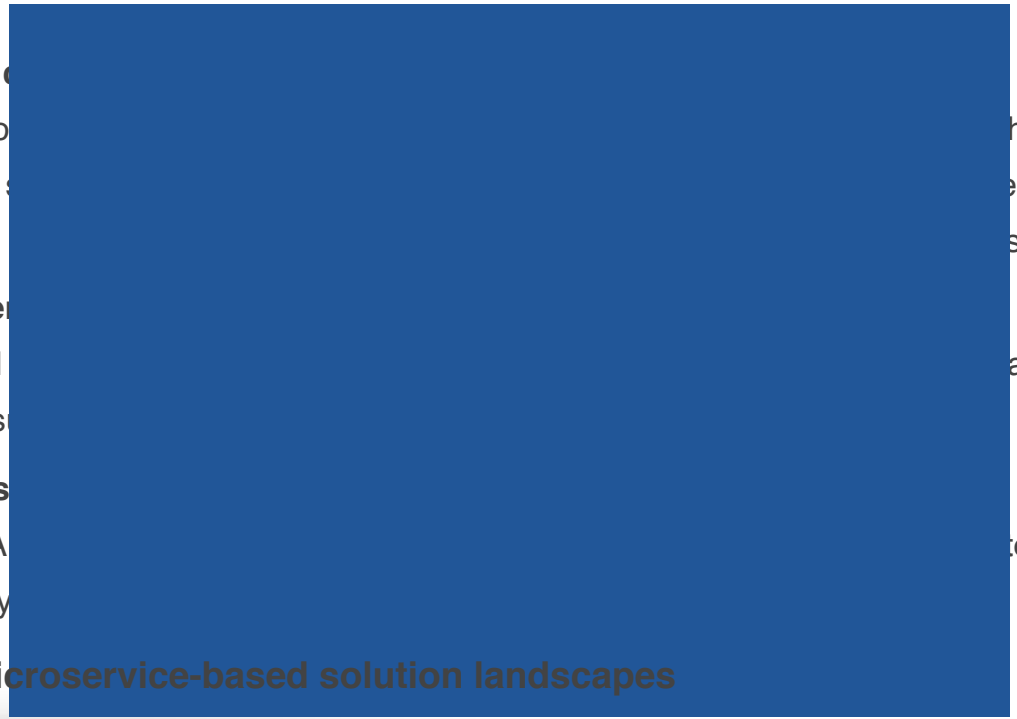
Nicely fits into microservice-based solution landscapes



A Headless API example using Gatsby

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Chris Mount on Liferay's blog has published two articles dealing with this topic.

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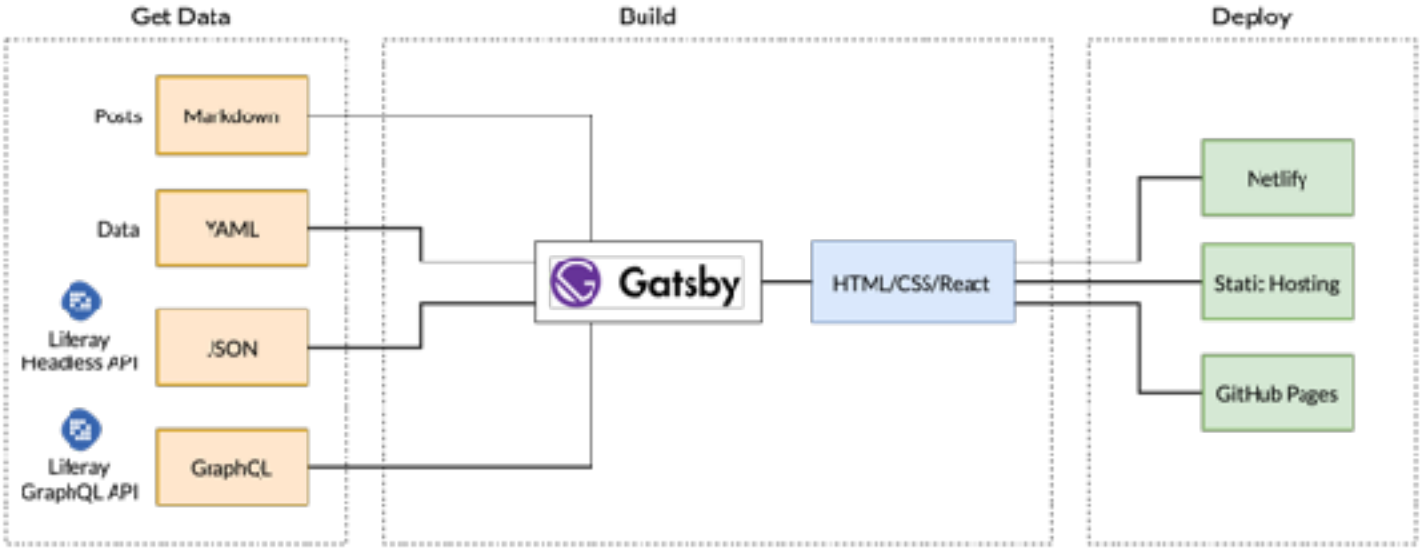

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Thank you ☺