Java on IBM Cloud

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After you complete this unit, you should understand:

- IBM® Bluemix™—the IBM Cloud platform
- Cloud Foundry and Bluemix architecture
- Java™ and Liberty buildpacks
- Tools for Java developers

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Bluemix: IBM Cloud platform

Build, run, scale, manage, integrate, and secure applications in the cloud

Developer experience

- Rapidly deploy and scale applications in any language.
- Compose applications quickly with useful APIs and services and avoid tedious backend configuration.
- Realize fast time-to-value with simplicity, flexibility, and clear documentation.

Built on a foundation of **open technology.**

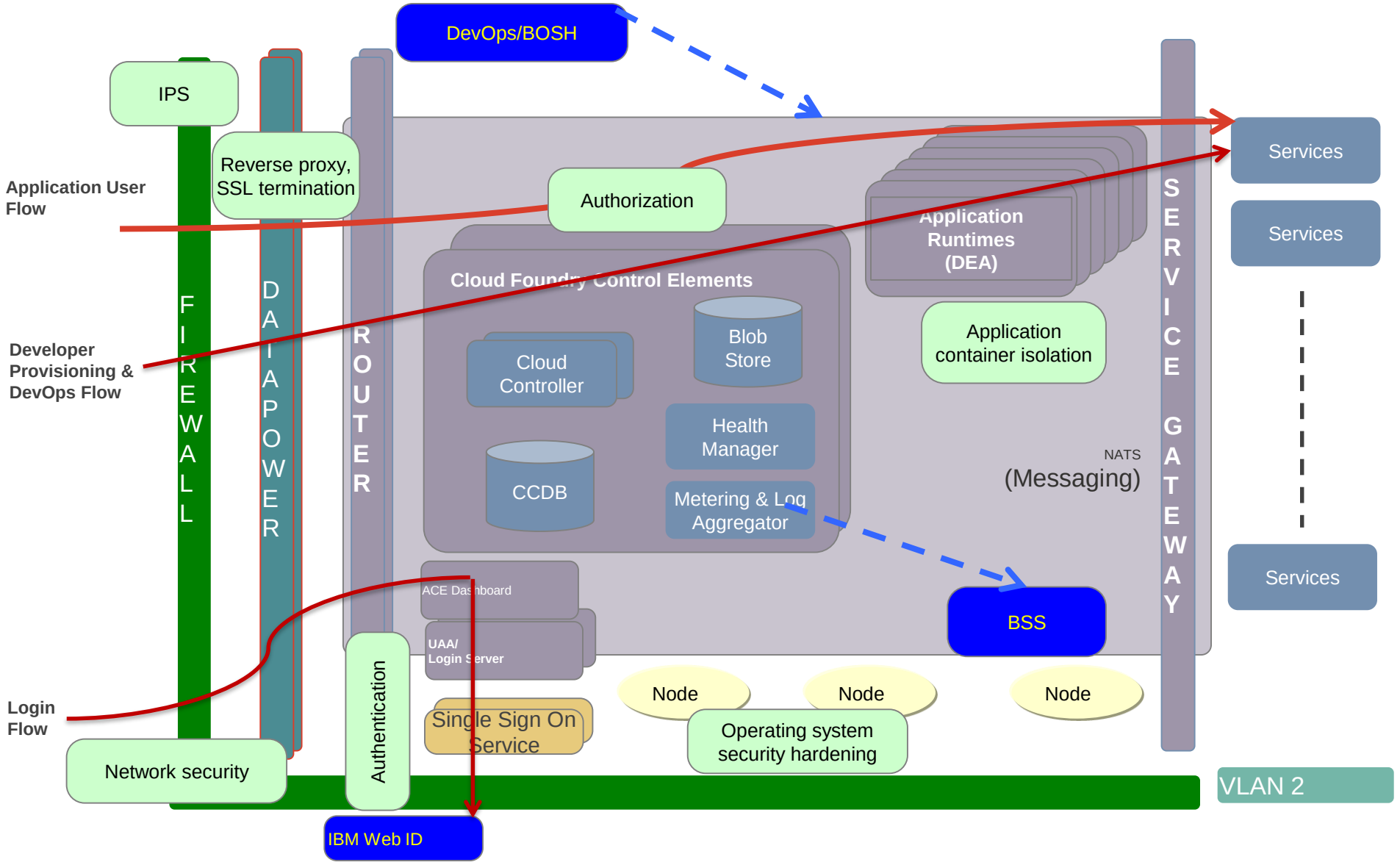
Enterprise capability

- Securely integrate with existing on-premises data and systems.
- Choose from flexible deployment models.
- Manage the full application life cycle with DevOps.
- Develop and deploy on a platform built on a foundation of open technology.

Bluemix service categories

- DevOps
- Big Data
- Mobile
- Watson
- Business Analytics
- Database
- Web and Application
- Security
- Internet of Things
- Cloud Integration

Bluemix platform architecture



Operational Security Services (IBM Endpoint Manager, QRadar, Nessus, User Access Management)

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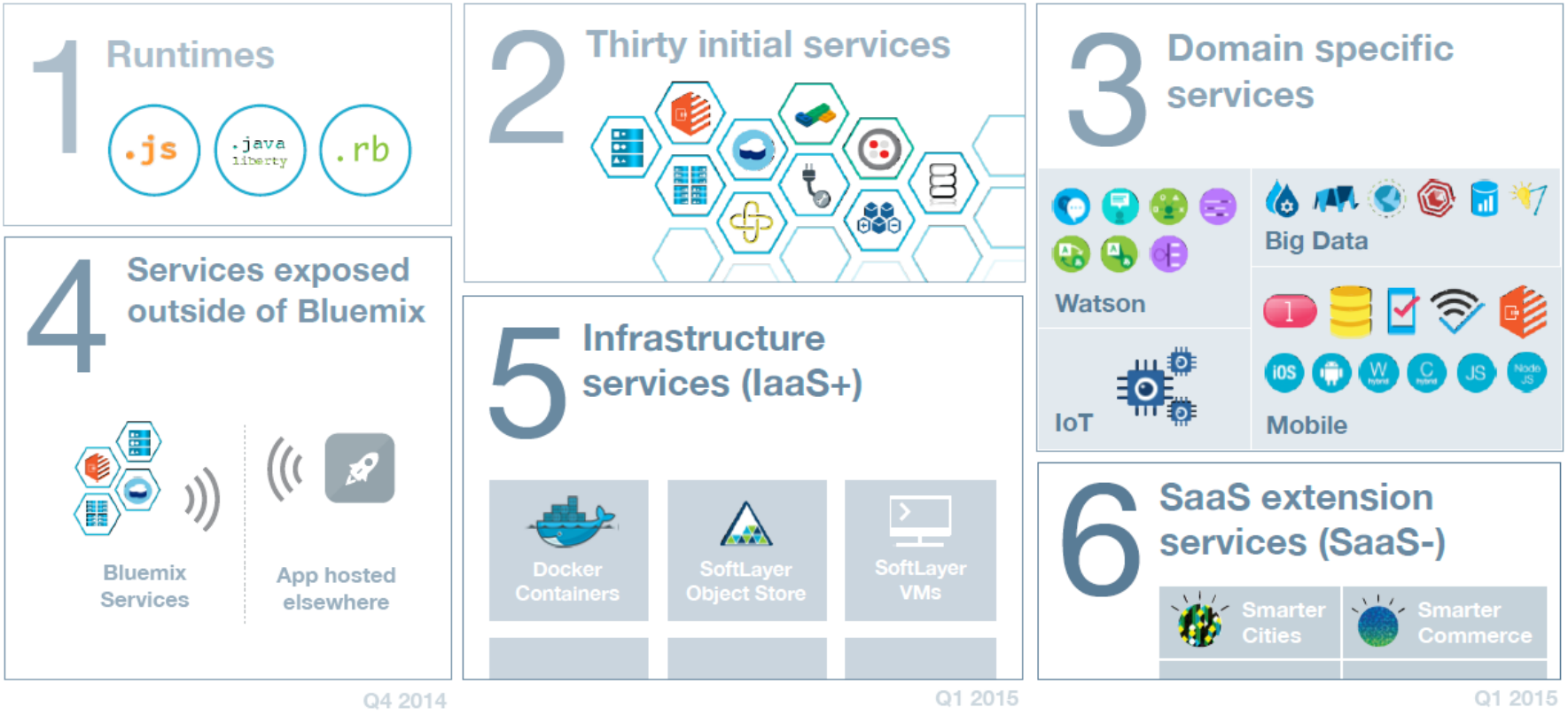
The evolving Bluemix platform

Bringing a full range of developer services into Bluemix



Services | Integration | Portability

Flexible Deployment Models

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Java and Liberty buildpacks

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Liberty versus Java buildpack

	Liberty buildpack	Java buildpack
Application server	WebSphere Liberty profile – Full Java EE 7 support	Apache Tomcat 8 – Servlet 3.1, JSP 2.3, EL 3.0, WebSocket 1.1
Java runtime	IBM JRE or OpenJDK	OpenJDK
Supported Java web applications	WAR, EAR, server directory or package	WAR
Configuration	Configuration can be provided with application or through environment variables	Must fork to customize configurations for many scenarios
Service integration	Auto-configuration for 14 services	Auto-configuration for 5 services
Support	IBM supported	Community supported
Performance	Better performance (push time, memory footprint, throughput, scaling time)	
Developer aids	Remote debugging and incremental update support, health center access, shell access	

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Easier configuration with Liberty buildpack

What it takes to make the following configuration change:

Configuration	with Liberty buildpack	with Java buildpack
JRE overlay	Repush: include overlay files in the app package	Fork the buildpack
Server customization	Repush: use the server package	Fork the buildpack
JVM options	Repush or restart	Repush

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Tools for Java developers

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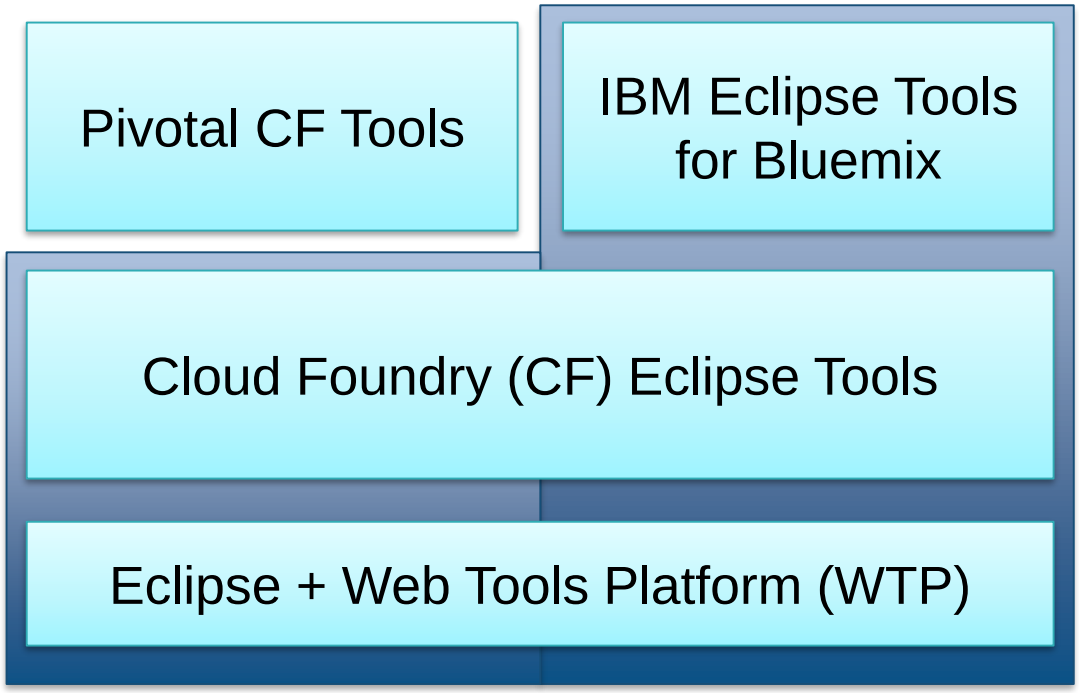
Tools at a glance



IBM contributes to all 3 layers: WTP, CF Eclipse Tools, and IBM Eclipse Tools for Bluemix

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Eclipse tools for Bluemix

- Eclipse is IDE of choice
- Develop, build, and deploy apps to cloud quickly and easily
- Currently target IBM supported (Tier 1) runtimes
  - Liberty for Java
  - Node.js

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Powerful and versatile DevOps tools

- Ops tools for the server lifecycle:
  - Create, start, stop, restart, and remove
- Ops tools for the lifecycle of applications
  - Deploy, remove, update, and restart
- Dev tools that support developers
  - Compose applications by creating and binding services
  - Run, debug, and profile
  - Tune
- Local and remote support

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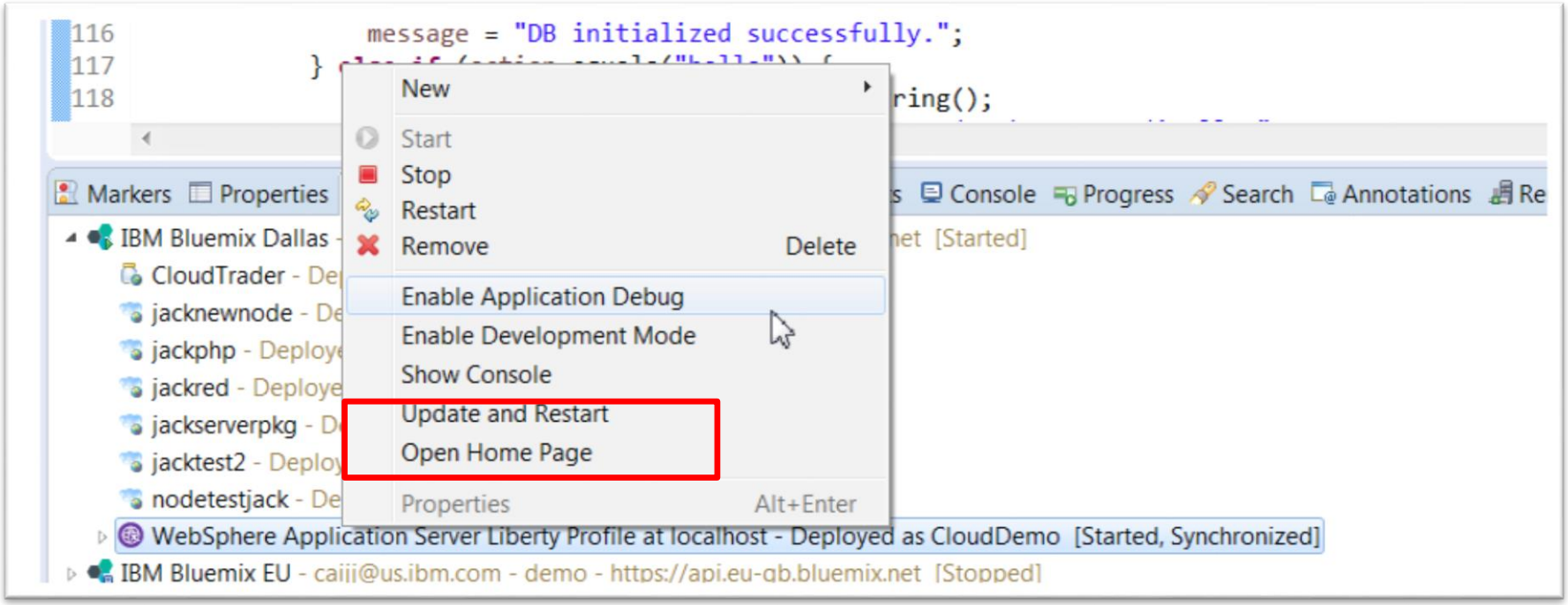
Development & Debug Mode

- Special modes of application instance
- Allows dev operations
  - Remote debugging
  - Incremental update



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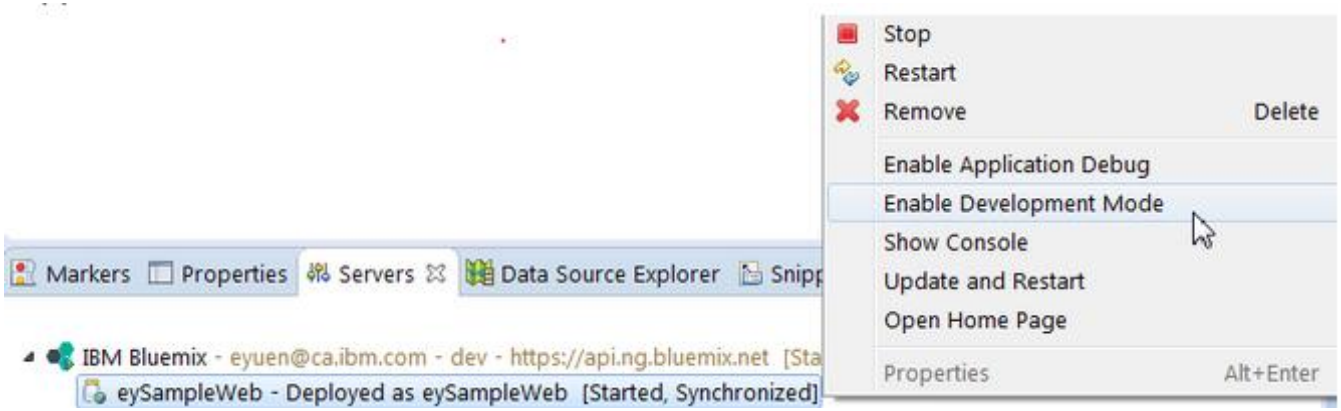
Incremental publish of apps

- Enable Development Mode



- Enabling Development Mode provides access to:
  - Push incremental file updates
  - Run additional tools inside an app container such as the SSH web console

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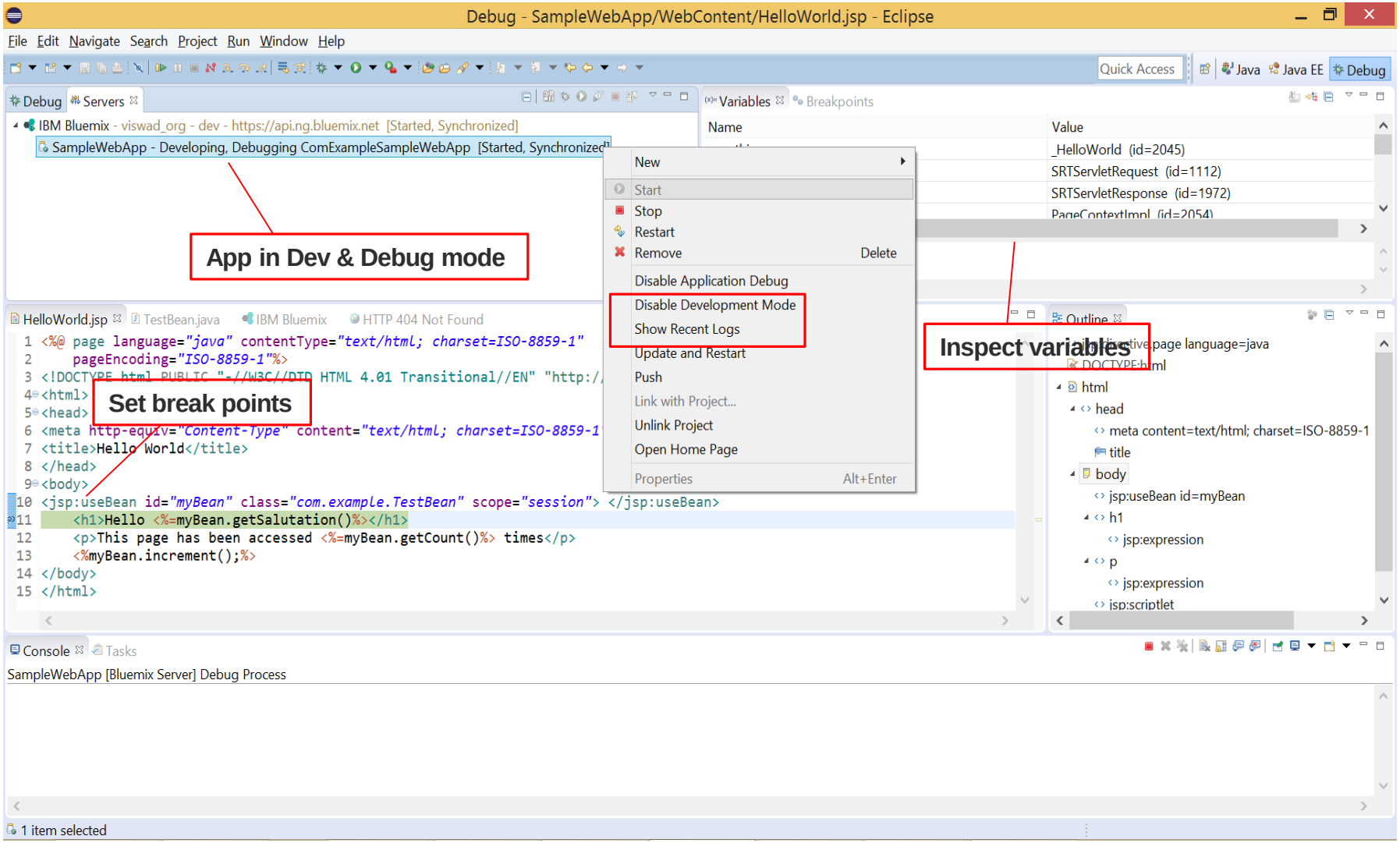
Remotely debug applications



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Recap

- In this session, you learned about :
- IBM Bluemix cloud platform
- Cloud Foundry and Bluemix architecture.
- Java™ and Liberty buildpacks,
- Tooling for Java developers

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Related links

- IBM Cloud
  - http://www.ibm.com/cloud-computing/us/en/
- IBM Cloud: Infrastructure
  - http://www.ibm.com/cloud-computing/us/en/iaas.html
- IBM Cloud: Platform
  - http://www.ibm.com/cloud-computing/us/en/paas.html
- IBM Cloud: Built on Cloud
  - http://www.ibm.com/cloud-computing/us/en/saas.html
- IBM's open cloud architecture
  - http://www.ibm.com/developerworks/cloud/library/cl-open-architecture/
- IBM Bluemix
  - https://www.bluemix.net

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Related links, continued

- IBM Bluemix: Virtual Machines
  - https://www.ng.bluemix.net/docs/virtualmachines/vm_index.html
- IBM Containers
  - https://www.ng.bluemix.net/docs/containers/container_index.html
- Docker
  - https://www.docker.com/
- Cloud Foundry
  - https://www.cloudfoundry.org/

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