



# ENTERPRISE SYSTEMS INTEGRATION

ACIT4850 – FALL 2023



# AGENDA

- Quick Review
- Quiz I
- Assignment I Preview
- Lab Requirements
- Lab
  - Demo your Lab I (if you haven't already)
  - Start on Lab 2

# REVIEW TOPICS

- Definitions
- On Premise vs Cloud
- Tool Assessment Criteria
- JIRA/Confluence Installations

# QUIZ I

- On the Learning Hub (Activities -> Quizzes -> Quiz I)
- Open book, you have 15 minutes to complete it
- Each student's quiz is slightly different

# ASSIGNMENT I PREVIEW

## Assignment I – Tool Evaluations

- Posted to D2L this upcoming weekend
- To be done individually
- There will be several options you can choose from, each for a different category of tool with:
  - Requirements of the tool for the particular application
  - Three to four products to evaluate
- You will prepare an assessment of each of the products and a detailed comparison (without yet installing them). Based on your assessment, you will recommend two of the three choices to further assess.
- Your assessment will be done on your Confluence deployment (from this week's lab), exported as PDF and submitted to D2L
- It will be due during Week 5 of the term

## Enterprise Software Development Environment

### Shared Tools

Source  
Code Mgmt

Work  
Management

Knowledge  
Base

Orchestration

Artefacts

Test and  
Analysis

### IT Shared Services

Active  
Directory

Software  
Product 1

Product CI/CD Pipeline

Test

Staging

Production.

Users (i.e.,  
Customers)

Software  
Product 2

Product CI/CD Pipeline

Test

Staging

Production

Users (i.e.,  
Customers)

...

Software  
Product N

Product CI/CD Pipeline

Test

Staging

Production

Users (i.e.,  
Customers)

## Operations

Monitoring and  
Reporting

Shared Services

...

# THE ROADMAP (AKA COURSE SCHEDULE)

Week	Topics	Notes
1	<ul style="list-style-type: none"> <li>Components of an Enterprise Development Environment</li> <li>Software Source Code Management</li> </ul>	Lab 1
2	<ul style="list-style-type: none"> <li>Work Management and Knowledge Base Tools</li> </ul>	Lab 2, Quiz 1
3	<ul style="list-style-type: none"> <li>Tool Selection – Requirements</li> <li>Integration and Security</li> </ul>	Lab 3, Quiz 2
4	<ul style="list-style-type: none"> <li>Tool Selection – Stakeholders/Process</li> <li>Continuous Integration (CI) Tool</li> <li>CI Tool Setup</li> </ul>	Lab 4, Quiz 3, Assignment 1 Due
5	<ul style="list-style-type: none"> <li>CI Pipelines – Python</li> </ul>	Lab 5, Quiz 4
6	<ul style="list-style-type: none"> <li>CI Pipelines – Shared Libraries</li> </ul>	Lab 6, Quiz 5
7	<ul style="list-style-type: none"> <li>CI Pipelines – Java and Static Code Analysis</li> </ul> <p><i>Note: At home lab for Monday set</i></p>	Lab 7, Quiz 6 (Sets A and B)
8	<ul style="list-style-type: none"> <li>Midterm</li> </ul>	Midterm Review Quiz
9	<ul style="list-style-type: none"> <li>CI Pipelines – Alternate Tools</li> </ul>	Lab 8, Quiz 6 (Set C), Quiz 7
10	<ul style="list-style-type: none"> <li>Spring Break</li> </ul>	
11	<ul style="list-style-type: none"> <li>CI Pipelines – Artifact Management (Java)</li> </ul>	Lab 9, Quiz 8, Assignment 2 Due
12	<ul style="list-style-type: none"> <li>Continuous Delivery (CD)</li> <li>CD Pipelines - Containerization</li> </ul>	Lab 10, Quiz 9
13	<ul style="list-style-type: none"> <li>CD Pipelines – Deployment</li> <li>Developer Workflows</li> </ul> <p><i>Note: At home lab for Monday Set</i></p>	Lab 11, Quiz 10 (Sets A and B)
14	<ul style="list-style-type: none"> <li>Microservices Pipelines</li> <li>Final Exam Preview</li> </ul>	Quiz 10 (Set C), Assignment 3 Due
15	<b>Final Exam</b>	

# NEW LAB REQUIREMENTS

- **REQ1050** – The Enterprise Development Environment shall have a Work Management capability. The Work Management tool will be JIRA. Note: An evaluation license will be used for JIRA.
- **REQ1060** – The Work Management capability shall support Kanban and Scrum based work management. Note: JIRA Software has the concept of a Kanban and Scrum boards.
- **REQ1070** – The Enterprise Development Environment shall have a Knowledge Base capability. The Knowledge Management tool will be Confluence. Note: An evaluation license will be used for Confluence
- **REQ1080** – The Knowledge base capability shall allow logical groupings of online documentation by team and department. Note: Confluence has the concept of a Space to logically group content. Each Space can have separate users, permissions and theme.
- **REQ1090** – The Enterprise Development Environment shall use MySQL as the preferred database for tool installations.
- **Note:** We will not integrate JIRA and Confluence with Azure Active Directory at this time due to time constraints. We may implement this as a future improvement.



# WORK MANAGEMENT

- **REQ1050** – *The Enterprise Development Environment shall have a Work Management capability. The Work Management tool will be JIRA. Note: An evaluation license will be used for JIRA.*
- **REQ1060** – *The Work Management capability shall support Kanban and Scrum based work management. Note: JIRA Software has the concept of a Kanban and Scrum boards.*

You will be installing **JIRA Software**, which provides Agile work management capabilities including Kanban and Scrum boards.

# KNOWLEDGE BASE

- **REQ1070** – *The Enterprise Development Environment shall have a Knowledge Base capability. The Knowledge Management tool will be Confluence. Note: An evaluation license will be used for Confluence*
- **REQ1080** – *The Knowledge base capability shall allow logical groupings of online documentation by team and department. Note: Confluence has the concept of a Space to logically group content. Each Space can have separate users, permissions and theme.*

You will be installing Confluence, which has a similar installation to JIRA.

You will be using Confluence for Assignment I so it is important to get this installation working.

# DATABASE AND SINGLE SIGN-ON

- **REQ1090** – *The Enterprise Development Environment shall use MySQL as the preferred database for tool installations.*
- **Note:** *We will not integrate JIRA and Confluence with Azure Active Directory at this time due to time constraints.*

Both JIRA and Confluence support multiple databases. Since you already have experience with MySQL, we will use this as the DB.

The installation for JIRA/Confluence is more complex than GitLab, so we will not be integrating with Azure Active Directory for this lab.

## OTHER APPLICABLE REQUIREMENTS (I.E., SECURITY)

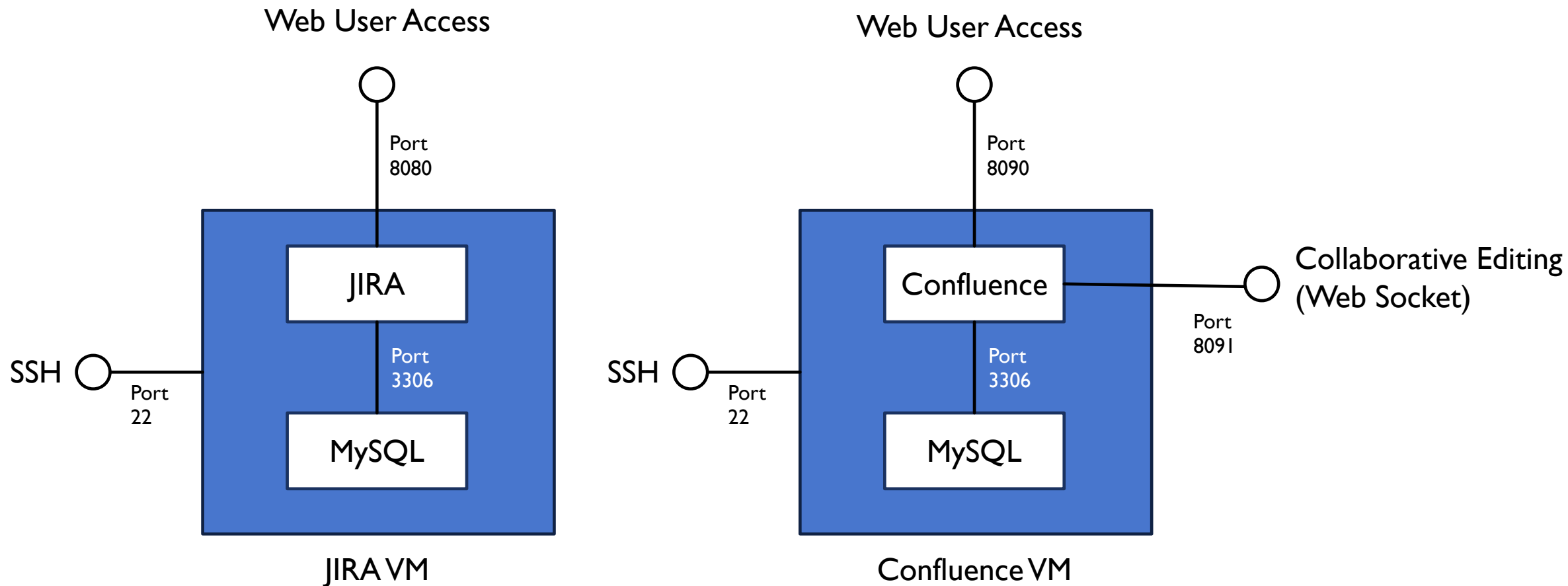
**SEC1010** – *All password credentials will be stored in a password safe.*

Both JIRA and Confluence have two key passwords – that of the database root user and the JIRA/Confluence admin user.

**SEC1020** – *All web applications and API endpoints shall be encrypted (i.e., https endpoints). Note: Self-signed certificates are sufficient for the prototype environment.*

Endpoints will NOT be encrypted this lab. We will address that next lab.

# JIRA AND CONFLUENCE INSTALLATIONS



# GOAL OF THIS LAB

- JIRA and Confluence are important tools in a software development environment to manage and document the work.
- For our class, they are not as important for integration with the DevOps pipelines. However, they are a good examples of moderately complex manual software installations.
- For the applications we build in our DevOps pipelines, we want to try to achieve more automated deployments to avoid the issues with manual steps.

**The goal of this lab is to “feel the pain” of the IT operations team when manually deploying new software.**

# BEST PRACTICES FOR MANUAL SOFTWARE INSTALLATIONS

- Keep track of what you did, just so you can look back if you run in to problems
  - In Linux, the history command shows the previous commands you entered as well
- Make sure you're running commands as the correct user (as per the product installation instructions). Otherwise permissions can be affected causing problems later.
- If you need to modify a configuration file, make a backup first (so you can compare if you have problems)
- If you run into an error, Googling the error is your first step. Usually the community sites for the product have the best suggestions.
  - If there is no fix, or the fixes you found don't work, you'll need to make a judgement call on whether you search further or start over again.
- Alternately, if you don't have a specific error but are having a problem then check the logs to see if there is some information there. It is best to start at the end of a log file and work backwards.
  - The `tail -f <log filename>` (to follow) or `tail -100 <log filename>` (to see the last 100 lines) is good for this

# SOME USEFUL TIPS FOR CONFLUENCE AND JIRA

## Confluence

- Lookup “Confluence Start Stop” to find a page describing how to properly start and stop Confluence
- Confluence has two key folders:
  - Installation directory - typically /opt/atlassian/confluence
  - Home directory – defined in <Install Dir>/confluence/WEB-INF/classes/confluence-init.properties

## JIRA

- Lookup “Jira Start Stop” to find a page describing how to properly start and stop JIRA
- JIRA’s installation folder should also be /opt/atlassian/jira

## Logs

- The first place to look for logs is in the installation directory. There should be a logs folder, and the catalina.log file is the first one to check



# TODAY'S LAB

1. Demo Lab 1 Before the End of Class
2. Start on Lab 2
  1. One partner installs JIRA, the other partner installs Confluence on the same environment
  2. If you are working on your own, install Confluence only
  3. You will be marked individually
  4. Demo is due in class next week.