

OAP Concept Note

Simplified Docker-based Package and Deployment method for Bahmni, in an OpenHIE architecture

Prepared by

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Concept Note Overview

The goal is to improve the package and deployment process of Bahmni¹ to ease its deployment as a Point of Service (POS) Component within an OpenHIE architecture². This will be achieved through leveraging the Docker containerization strategy and developing an interactive, guided step-by-step process that extends the current Docker³ deployment method to add OpenHIE-specific configuration options.

Executive Summary

IntelliSOFT will use the investment from Digital Square to facilitate the resources needed towards shipping the proposed solution to the community. This will generally cover the development and administrative costs related to the project.

The Simplified Docker-based Package and Deployment method for Bahmni, aims to reduce the cost and skills required for software developers in deploying Bahmni as a POS system to the OpenHIE architecture. This aligns Bahmni to the DevOps guidelines and containerizations specified in the Instant OpenHIE.

With the above set goals, there are several low-level tasks that will be outlined in a detailed work plan. The goal will be achieved once all the related tasks are completed according to the set standards and quality assurance.

IntelliSOFT will make use of the expertise and experience acquired while working on past projects to ensure that the set goals of the proposed solution are met. Guided by the Principles of Digital Development⁴, IntelliSOFT will deliver a world-class product.

Project Team

****IntelliSOFT is not part of a consortium team.***

IntelliSOFT Consulting Limited is a local Kenyan company with +10 years of experience in the development, implementation, and use of Information, Communications, and Technology (ICT) in the health sector. As a technology firm, IntelliSOFT has deliberately focused on designing, developing, implementing, supporting and maintaining digital health solutions, particularly in Low to Middle-Income Countries. IntelliSOFT Consulting

¹ <https://www.bahmni.org/>

² <https://ohie.org/architecture/>

³ <https://www.docker.com/>

⁴ <https://digitalprinciples.org/>

specializes in supporting the realization and continuous optimization of business performance and productivity (including health outcomes) through effective implementation of technology-agnostic digital health solutions appropriately optimized for the implementation context. We do this through the appropriate application of technology and data standards throughout the software development process of our digital health solutions. Our current primary focus is data systems for research for health and patient and population management.

Project Description

Problem statement

Currently, Bahmni relies on two methods of package management i.e. Redhat Package Management (RPM)⁵, which is the recommended method, and Docker. However, none of these methods supports quick deployment of Bahmni in an Health information Exchange(HIE) architecture as per the vision of the Instant OpenHIE project. The two methods currently do not support the packaging and deployment of Bahmni in an OpenHIE architecture.

One of the goals of the Instant OpenHIE project is to reduce the costs and skills required for software developers to deploy an OpenHIE architecture. As such, IntelliSOFT proposes to extend Bahmni's Docker deployment method to allow for ease of its deployment as a Point of Service (POS) Component within an OpenHIE architecture using a wizard-based command-line interface.

In addition to simplifying the deployment process, this will allow for setting up of additional OpenHIE-specific configuration options using a guided step-by-step process. In doing so, we will align Bahmni to the DevOps guidelines and containerization deployment that is illustrated through use within the Instant OpenHIE project.

Technical approach

Our approach will involve extending Bahmni's Docker deployment method to allow for the setting of additional OpenHIE-specific configurations. The additional configurations will allow Bahmni to plug into an OpenHIE architecture. These additional configurations will be optional depending on whether or not Bahmni is being deployed as a standalone or part of an HIE setup.

To simplify the deployment process we will build an interactive wizard-based command-line interface that will guide the process of deploying Bahmni. The wizard will rely on preset configurations that can be customized by an implementation to suit different use cases.

Monitoring and Evaluation approach

Upon further analysis of the project's technical Monitoring and Evaluation(M&E) capacity, IntelliSOFT will develop a contextualised M&E plan detailing the various M&E activities that ensure the project stays on course.

⁵ https://access.redhat.com/documentation/en-us/red_hat_enterprise_linux/5/html/deployment_guide/ch-rpm

Project monitoring and evaluation will be continuous and iterative throughout the implementation to leverage on the ‘fail fast’ approach⁶ that enables adopting corrective measures as relevant. We will monitor project activities, risks, assumptions and dependencies, project costs, and stakeholders collaboration and communication. Project evaluation will be done at different stages of the project to ascertain the project deliverables.

Project Deliverables

IntelliSOFT will provide the following deliverables:

1. Regular Status reports - These reports will document updates of the activity plans to be submitted regularly at agreed-upon intervals.
2. interim report - This report will have a summary of the project and a brief description of the progress at an agreed-upon interval through the project execution.
3. Final project report - This report will provide a detailed description of the final results of the project and will be presented during the closure of the project.

Project Activity Timeline

Activity	1	2	3	4	5	6
Pre-implementation: - Project kick-off preparations & Work Plan Development - Requirements elicitation - System Design (This will be iterative and continuous)						
Development and testing: - Setting up the development and testing environments. - Extend Bahmni's Docker deployment method - Build an interactive wizard-based command-line interface - Testing and debugging						
Implementation & Deployment: - User acceptance testing						
Support & Project Closure - Continuous improvement of the application based on feedback - Support, Maintenance & Troubleshooting - Project Closure & Hand Over						

Risk Mitigation

One potential risk is missing out on capturing certain scenarios and components for specific Bahmni implementations. To mitigate this risk, we will work with stakeholders to come up with a use case and demonstrate that case. We will then draw lessons that can be used to support other implementations.

⁶ <https://dzone.com/articles/fail-fast-principle-in-software-development>