



Demo: GitOps-Based Automation for Distributed NFs Reconfiguration in Cloud-Native O-RAN

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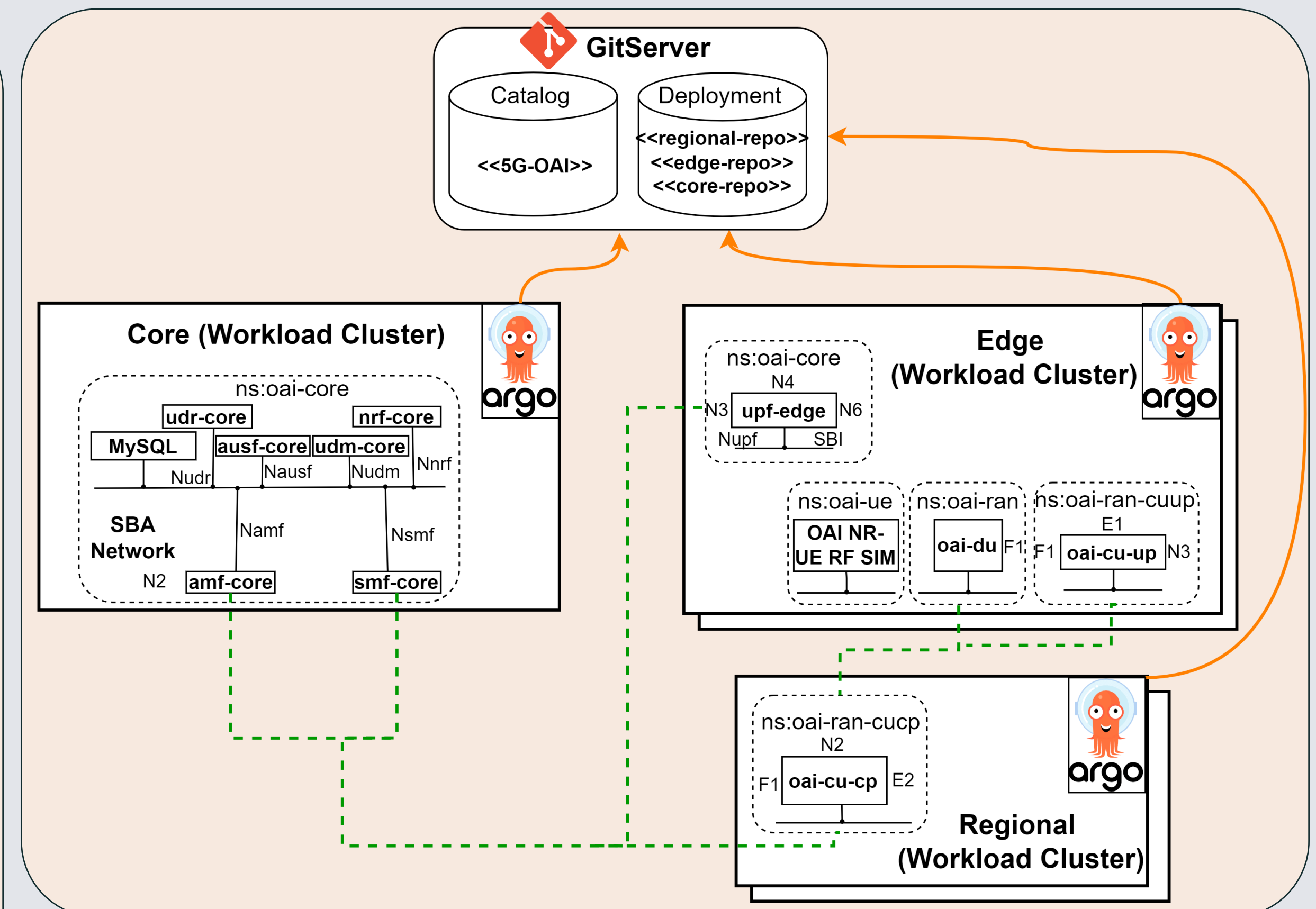
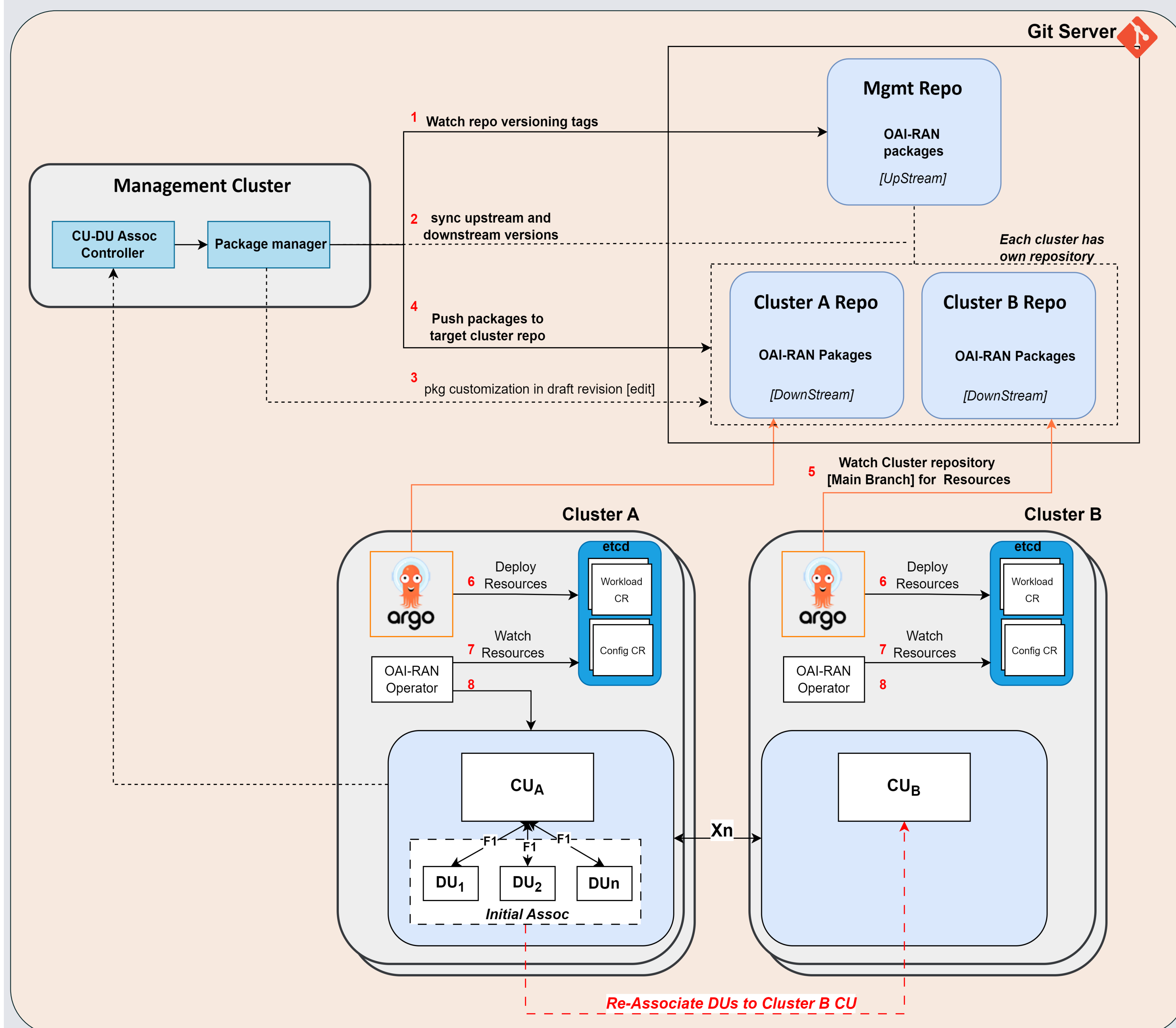
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Abstract

O-RAN disaggregation introduces flexibility in deploying Central Units (CUs) and Distributed Units (DUs) as independent network functions (NFs) connected via midhaul. In current practice, CU-DU associations are typically static and do not adapt to changing runtime conditions, making it difficult to apply consistent, timely configuration changes when a CU becomes overloaded. This demo showcases a GitOps-based automation framework for dynamic NF reconfiguration in cloud-native O-RAN. By collecting NF telemetry and triggering declarative updates, the system ensures consistent and rapid propagation of configuration changes. We demonstrate CU-DU coordination under compute stress: when a CU instance becomes overloaded, the system automatically initiates reconfiguration of CU and DU reassociation to an alternative CU. During the demo, attendees will observe live telemetry, configuration commits, and protocol traces showing CU-DU reassociation in response to induced load, illustrating a practical realization of automated NF reconfiguration in cloud-native O-RAN.

System Design and Demonstration Setup

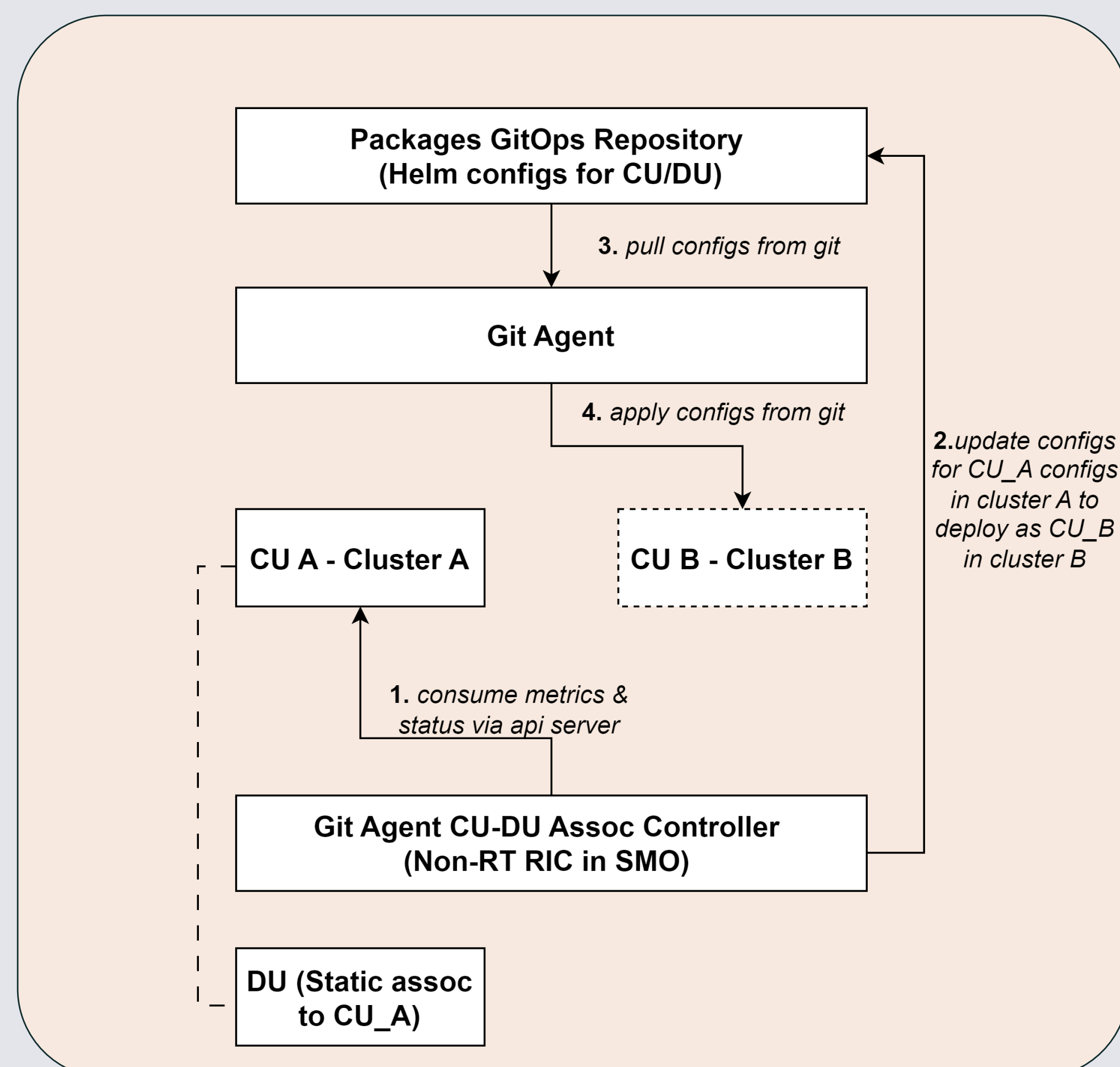


GitOps-based multi-cluster deployment of 5G core and O-RAN NFs with automated synchronization and reconfiguration across Core, Edge, and Regional clusters

➤ Declarative GitOps Workflow CU-DU Association

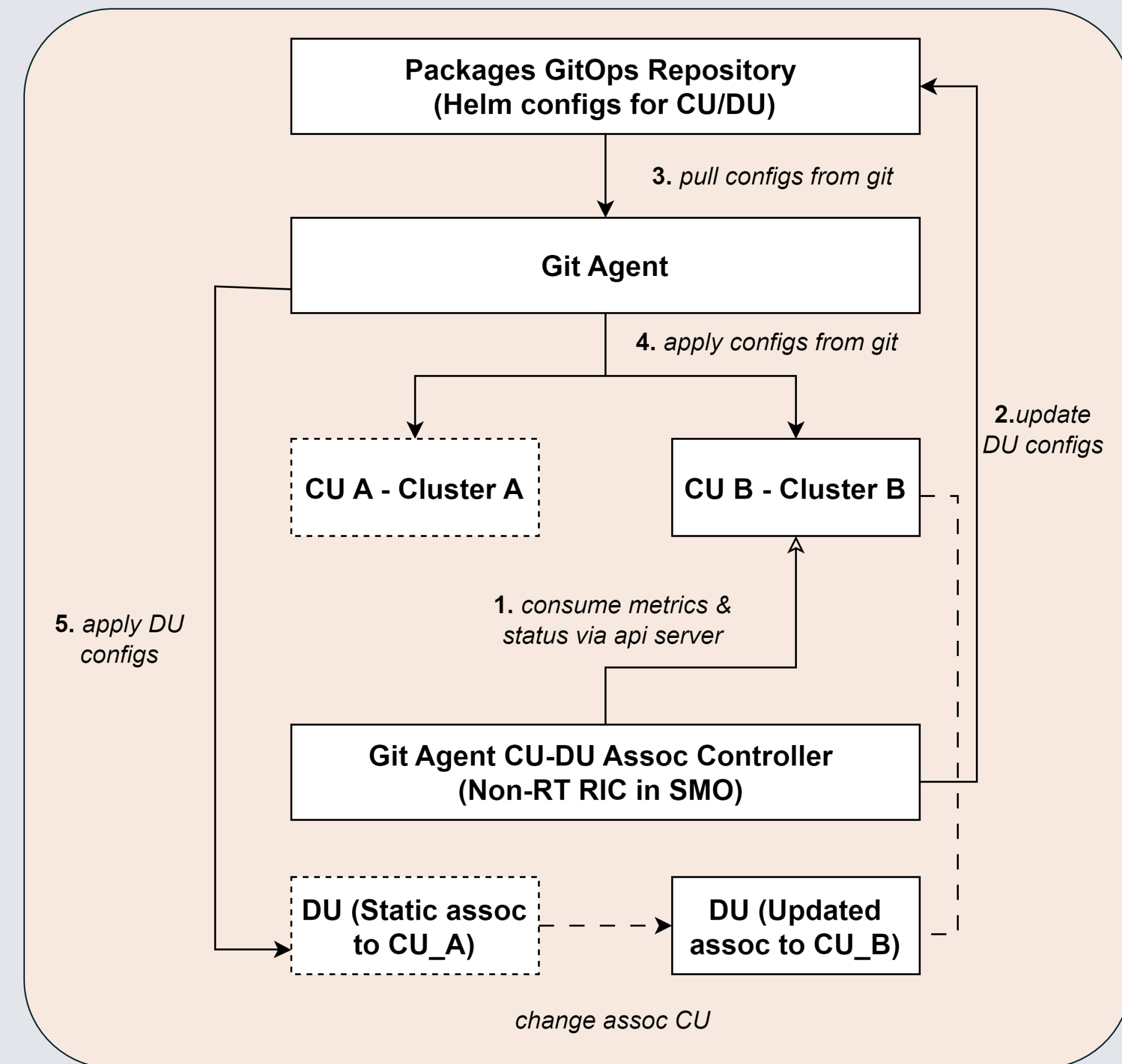
- Git as source of truth for CU/DU configs
- Mgmt cluster pushes declarative packages downstream
- ArgoCD syncs repos with cluster state
- CU-DU associations updated via Git commits → automatic reassociation

CU Reconfiguration Procedure (phase I)



CU_A is reconfigured with updated configs from Git, effectively becoming CU_B.

DU-CU Reassociation Procedure (phase II)



DU configs are updated in Git, and Argo applies the changes to shift DU association from CU_A to CU_B.

Conclusion

This demo highlights a GitOps-driven framework for automated DU-CU coordination in cloud-native O-RAN. Declarative GitOps workflows enable consistent CU reconfiguration and DU reassociation directly from version-controlled updates, ensuring transparency, low latency, and reliable midhaul adaptation. The approach demonstrates how GitOps moves RAN control beyond static associations toward adaptive and resilient operations.

Acknowledgement

This work was supported in part by the Institute of Information and Communications Technology Planning and Evaluation (IITP) grant funded by Korean Government (MSIT) (Development of Fast and Automatic Service recovery and Transition software in Hybrid Cloud Environment and High Performance 6G Cross Cloud Infrastructure Technology) under Grant RS-2020-II200946, and Grant RS-2024-00398379