

Running containerised image processing workflows from XNAT using hybrid cloud and on-premises computing resources

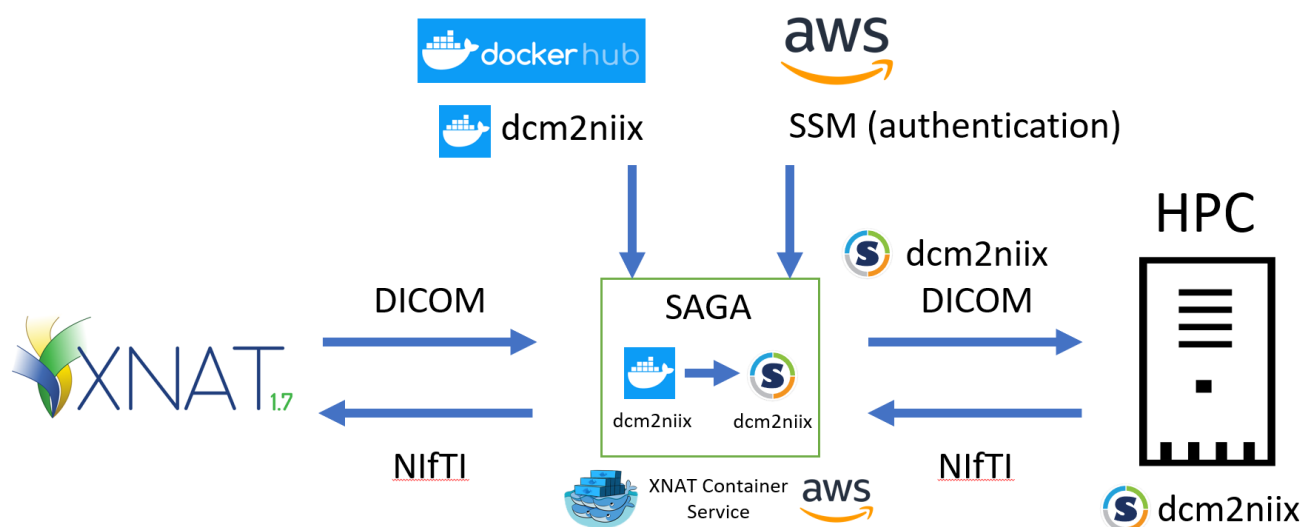
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As part of our Imaging Data Service, we have implemented containerised workflows in XNAT [1], leveraging both commercial cloud and our high-performance computing (HPC) service. This allows us to run arbitrary, reproducible workflows in a controlled manner. We will discuss how we integrated the XNAT Container Service plugin [2] with our HPC service using RADICAL-SAGA [3], which provides a Python API that manages compute jobs and data transfer between the XNAT container service and our HPC service. To date, we have created a proof-of-concept workflow that converts DICOM data to NIFTI format using `dcm2niix` [4] in a Singularity container [5].

This proof-of-concept workflow allows researchers to convert DICOM data to the NIFTI format without having to know how to run `dcm2niix` on a command line or HPC platform. We believe this idea should be easily generalizable to any containerisable pipeline by swapping out the DICOM to NIFTI container with other containers. Our end goal is to provide researchers with a set of efficient and reliable data processing containers, allowing researchers to perform routine data processing from the XNAT web portal without having to learn to use complex research computing resources.



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