

Arrowhead Bootstrapping

Systems for Device Provisioning and Monitoring

Three New Arrowhead Systems

1. *Device* Bootstrapping and Monitoring
2. *Cloud* Bootstrapping and Monitoring
3. *Cloud* Management

1. Device Bootstrapping and Monitoring

A. Bootstrapping

- Allows for any **process** to be started on its device.
- Can receive arbitrary **files**, such as binaries and configurations, and organize them as startable processes.
- A process can be **started** by providing its name, command line arguments and environment variables.
- The system could eventually become a replacement for *systemd* or *init* on Linux systems.

1. Device Bootstrapping and Monitoring

B. Monitoring

- Provides hardware and OS **information** via a service, both static information such as versions and dynamic information such as CPU and RAM usage.
- Will provide *Monitorable* service as defined by Xarepo.
- Also provide details about running processes and systems.

2. Cloud Bootstrapping and Monitoring

A. Bootstrapping

- Allows for any process to be ***started on the devices connected to it***, each running the Device Bootstrapping and Monitoring system.
- Maintains its own file repository and can **transfer files** to its devices when requested to install systems on them.
- **Broadcasts** its existence to allow for newly started devices to find and connect to it automatically.

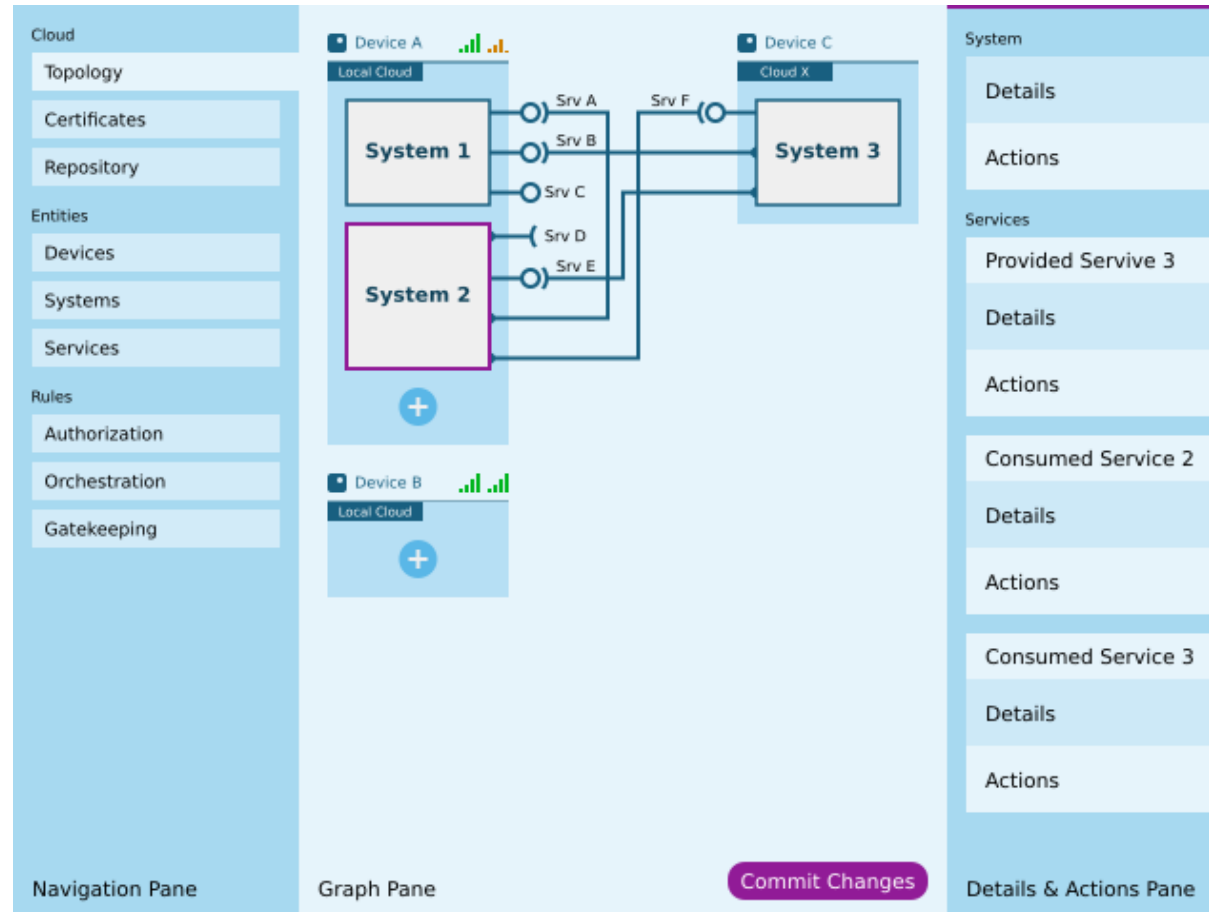
2. Cloud Bootstrapping and Monitoring

B. Monitoring

- **Collects** hardware and OS **information** from all its devices, both static and dynamic, and makes it available to eligible service consumers.
- Can be used to **detect** systems shutting down, devices becoming unavailable, devices running out of disk space, etc.

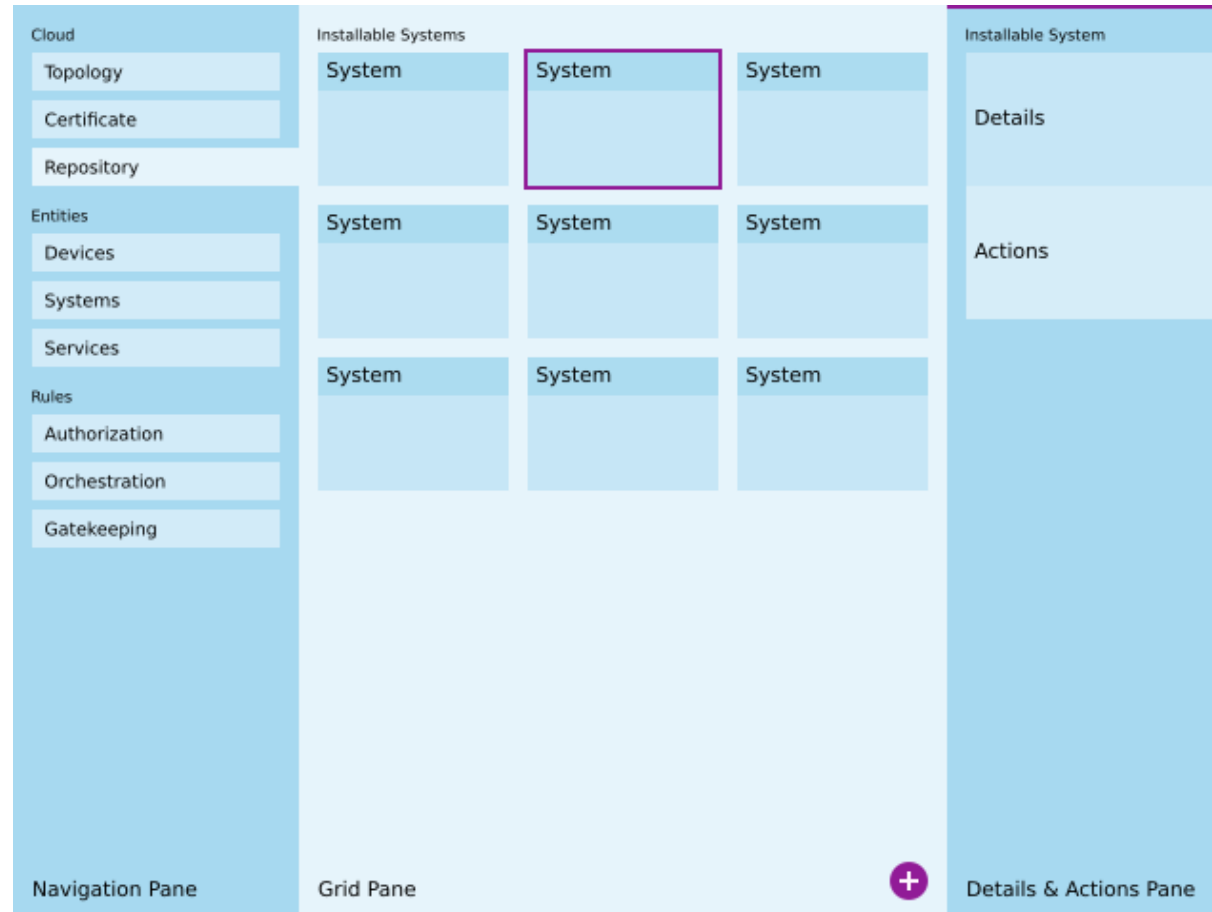
3. Cloud Management

Topology



3. Cloud Management

Repository



3. Cloud Management

Rules

Cloud Management Navigation Cloud Topology Certificate Repository Entities Devices Systems Services Rules Authorization Orchestration Gatekeeping Navigation Pane	Authorization Rules				
	System	May consume	Service	Of	System
	System	May consume	Service	Of	System
	System	May consume	Service	Of	System
	System	May consume	Service	Of	System
List Pane					

X. Unresolved Issues

Bootstrapping

- How to ensure the bootstrapping procedure is secure?
Custom bootstrapping certificates? Bootstrapping tokens?
- Is there an overlap with the on-boarding procedure?

Graphical User Interface

- What should be possible to manage via the GUI?
- How to handle/import SysML models?
- How should the GUI be organized? Topology only?



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