FI-Ops

Easing your operations

# Infrastructure Toolbox

CREATE-NET

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# Agenda

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- What is the Infrastructure Toolbox?
- Main requirements
- Installation
- Infrastructure Toolbox  architecture
- Current state
- Release plan

# What is the Infrastructure Toolbox?

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- Infrastructure Toolbox (ITBox) is a tool to support deployment of cloud infrastructure based on OpenStack. It provides a web interface through which it is possible to configure and install Openstack services and GEs on bare-metal server.
  - Operating system (Ubuntu 12.04 LTS)
  - OpenStack Grizzly
  - DCRM GE (FI-WARE)
  - IdM GE (FI-WARE)
  - Monitoring adapters
- It is based on Fuel (3.2.1) by Mirantis released under Apache 2.0 license.

# Main requirements

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- Discover servers that are a part of the node.
- Assign role to discovered servers, install and configure them with appropriate software modules
  - Ubuntu 12.0 LTS, OpenStack modules
- DCRM GE, Monitoring and Adapters GE.
- Verify the deployment and test connection to the federation.
- Recommend  a deployment model based on servers' capacities (e.g. # cores, RAM, storage volumes).

# Installation

- ITBox is distributed as an ISO which contains an installer for ITBox Master Server. The ISO can be installed indifferently, using a virtualization software package, such as VirtualBox, or a bare-metal server. The first solution is suggested for testing scopes, whereas the second solution is suggested for production environment. Suggested minimum hardware requirements for installation in:

**testing environment**

- Dual-core CPU
- 2+ GB RAM
- 1 gigabit network port
- HDD 80 GB with dynamic disk expansion

**production environment**

- Quad-core CPU
- 4+ GB RAM
- 1 gigabit network port
- HDD 128+ GB
- A gigabit ethernet switch (e.g. HP3800)

# Example Deployment

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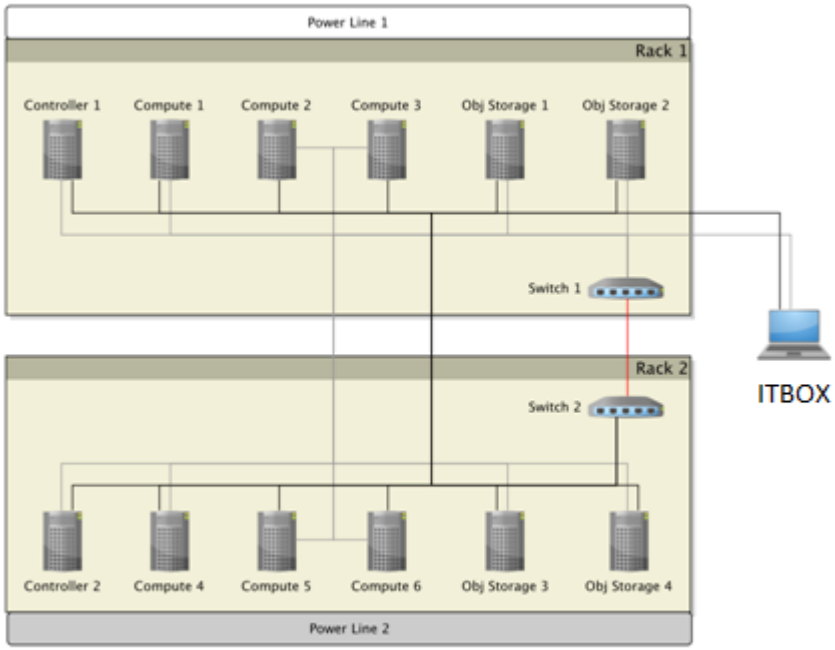
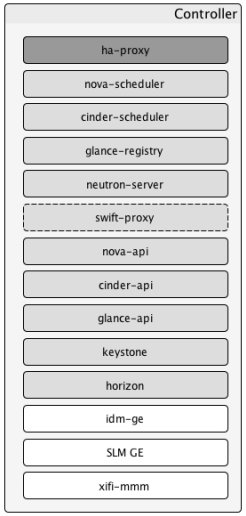
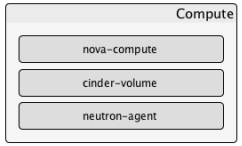
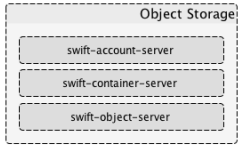
- Physical Deployment
- Service Deployment



# Architecture of the ITBox

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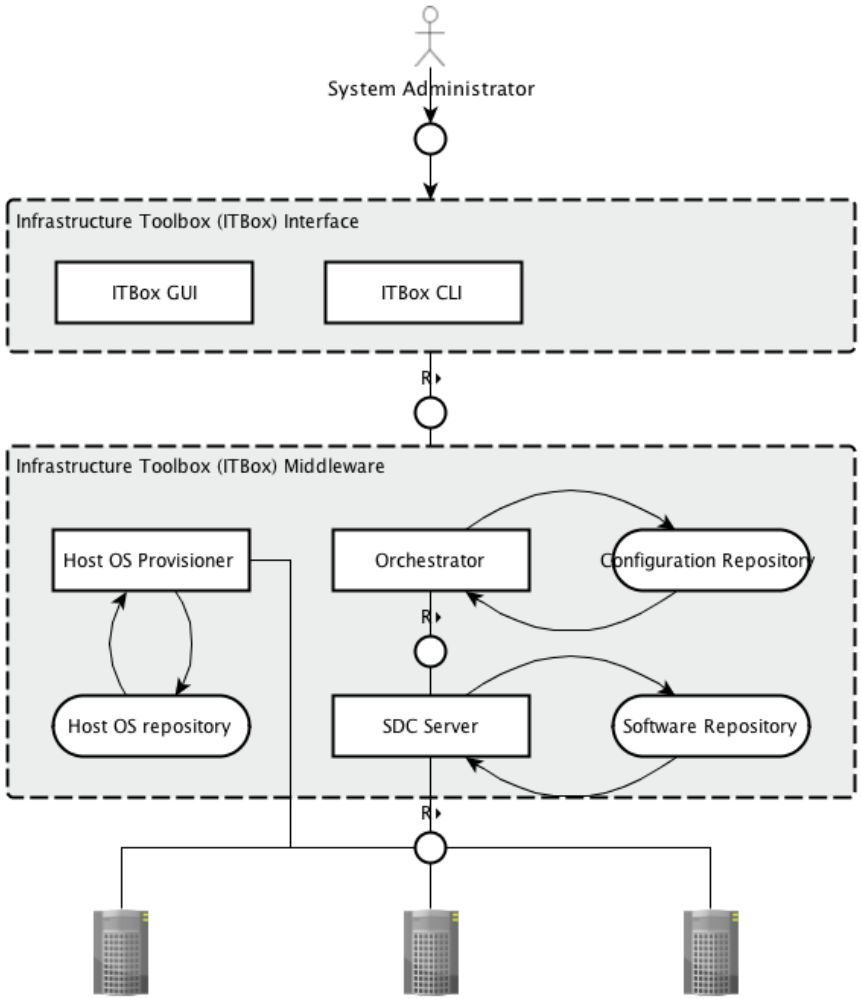
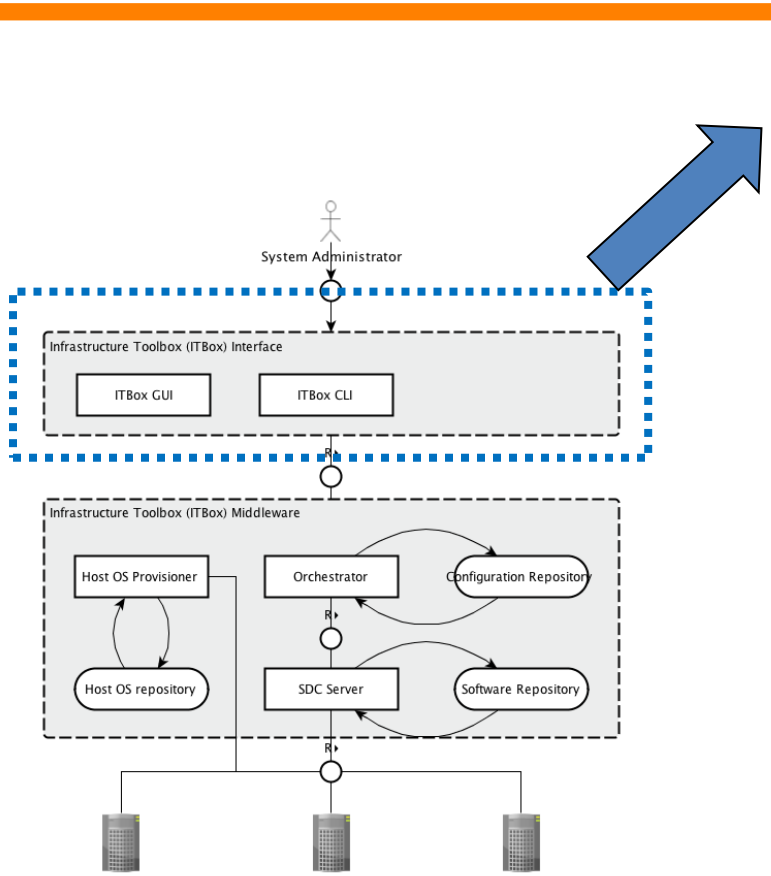
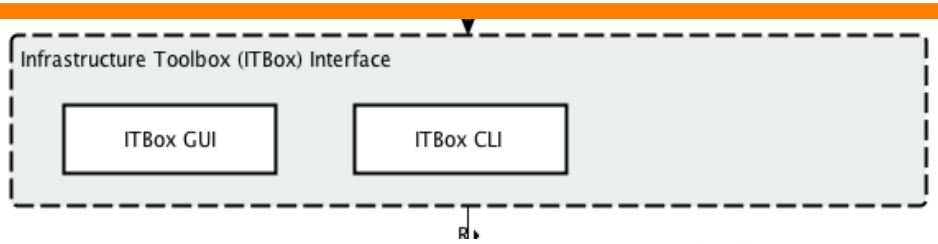


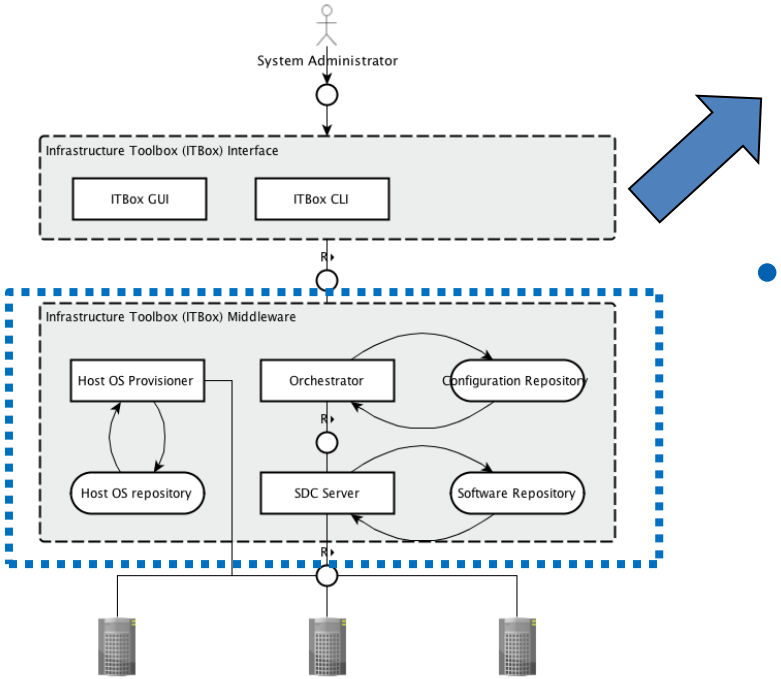
# ITBox Interface

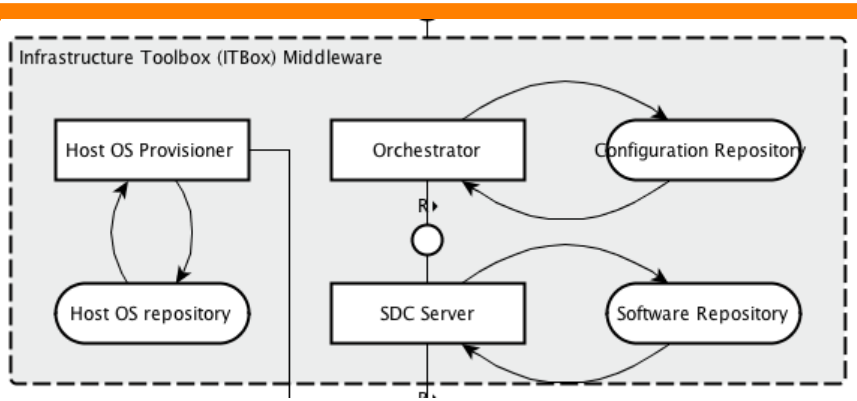



- ITBox Interface provides infrastructure administrators with interfaces to run set-up and installation of a new XIFI node
  - GUI: web based interface
  - CLI: shell based interface

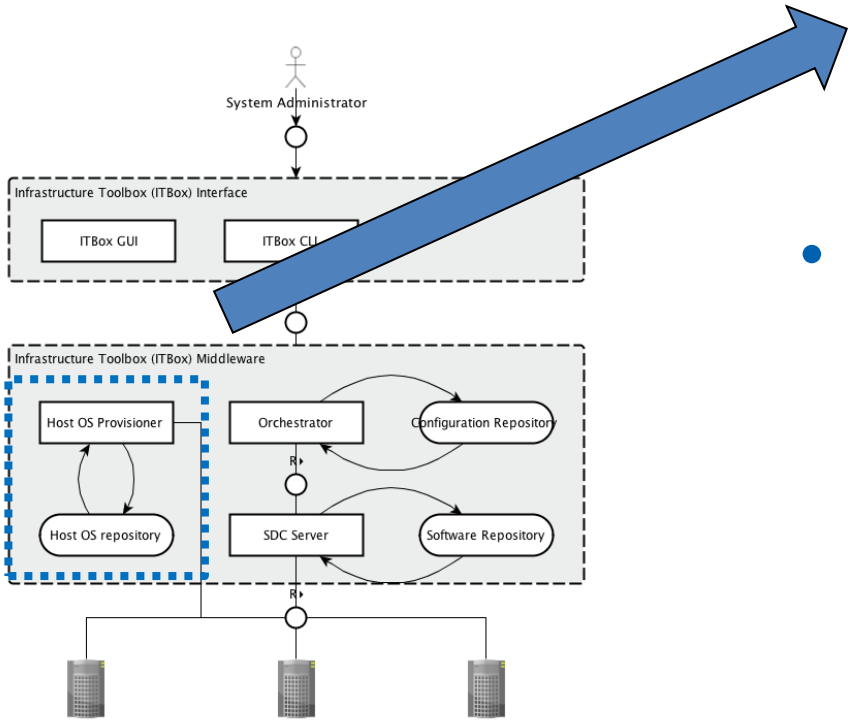
# ITBox Middleware

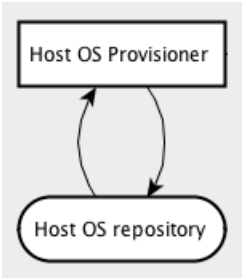



- ITBox middleware provides services that run the actual provision and deployment of OS and services in the bare-metal infrastructure.

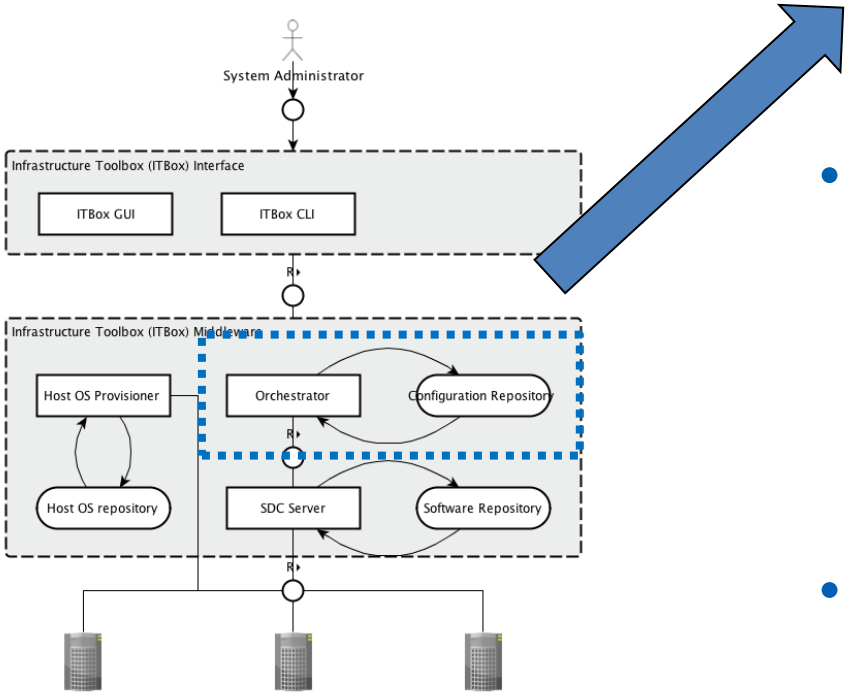
# ITBox Middleware

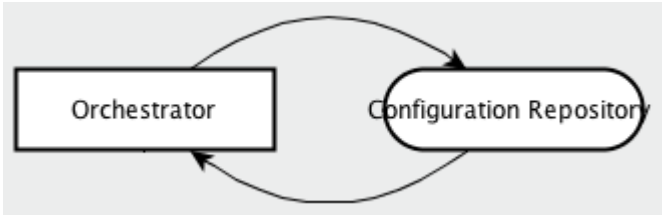



- A server that installs, via network, OS on node discovered via PXE. It has a repository of Host OS that can be provisioned on the bare-metal servers.

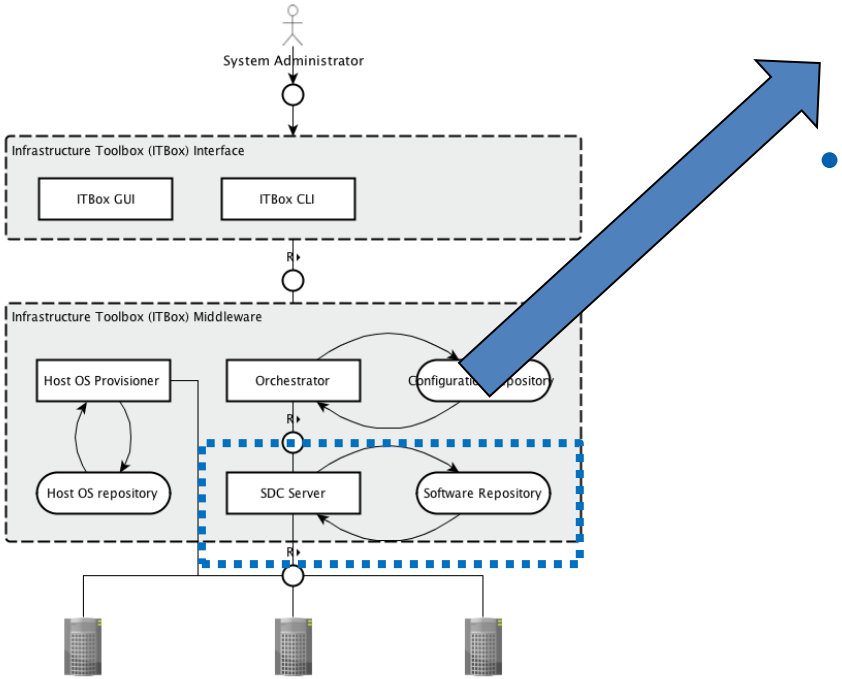
# ITBox Middleware

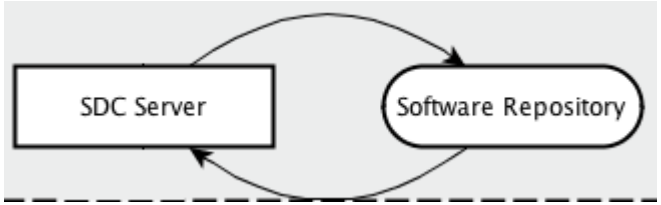



- Orchestrator coordinates the deployment of services on the different servers according to the configuration passed by the ITBox Interface.
- It's necessary to ensure proper set-up and configuration of the XIFI node.

# ITBox Middleware




- Software Deployment and Configuration (SDC) provides access to packages and scripts for the installation of services on a single node.

# Current status

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- Version 1.1.4.0
  - DCRM (multi-node)
  - Nagios
- Version 1.2.4.0
  - DCRM multi-node in HA
  - Installation in HA using 2 controllers (It requires a manual configuration of the Galera Arbitrator)
  - OpenstackDataCollector (multi-node and multi-node in HA)
  - ContextBroker
- Version 1.2.4.1 (maintenance version)
  - ContextBroker: fixed symbolic link creation when the user deploys again after a failure;
  - Nagios: fixed glance-registry service registration.
- Version 1.2.4.2 (maintenance version)
  - Nagios: improvements on services monitoring.

# ToDo list

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- Current developing
  - Keystone Proxy
  - Cloud Portal
  - Monitoring: NGSI Adapter
- Next developments
  - Second external network
  - Galera arbitrator
  - Update to OpenStack Mirantis 4.1 – Havana
  - Object Storage (Swift)

# Release plan

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Version 1.1.4.0

**2014 - March**

- Ubuntu 12.04
- DCRM in multi-node deployment
- Nagios

2014 - March

2014 - April

2014 - July

2014 - September

2014 - October

2014 - December

# Release plan

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## Version 1.2.4.0

### 2014 - April

- DCRM multi-node in HA
- Installation with 2 controllers*
- OpenstackDataCollector (both multi-node and multi-node in HA)
- ContextBroker

* It requires a manual configuration of the Galera Arbitrator

- 2014 - March
- 2014 - April
- 2014 - July
- 2014 - September
- 2014 - October
- 2014 - December

# Release plan

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## Version 1.3.4.0

**2014 - July**

- Keystone Proxy
- Cloud Portal
- NGSI Adapter
- NAM (Network Active Monitoring)

2014 - March

2014 - April

2014 - July

2014 - September

2014 - October

2014 - December

# Release plan

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## Version 2.1.4.0

**2014 - September**

- Update to OpenStack Mirantis 4.1 – Havana

2014 - March

2014 - April

2014 - July

2014 - September

2014 - October

2014 - December

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## Version 2.2.4.0

### 2014 - October

- Galera Arbitrator
- Second external network

2014 - March

2014 - April

2014 - July

2014 - September

2014 - October

2014 - December

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## Version 2.3.4.0

### 2014 - December

- Object Storage (Swift)
- Recommender for matching servers with roles according to their capacity

2014 - March
2014 - April
2014 - July
2014 - September
2014 - October
2014 - December

# ITBox release life cycle

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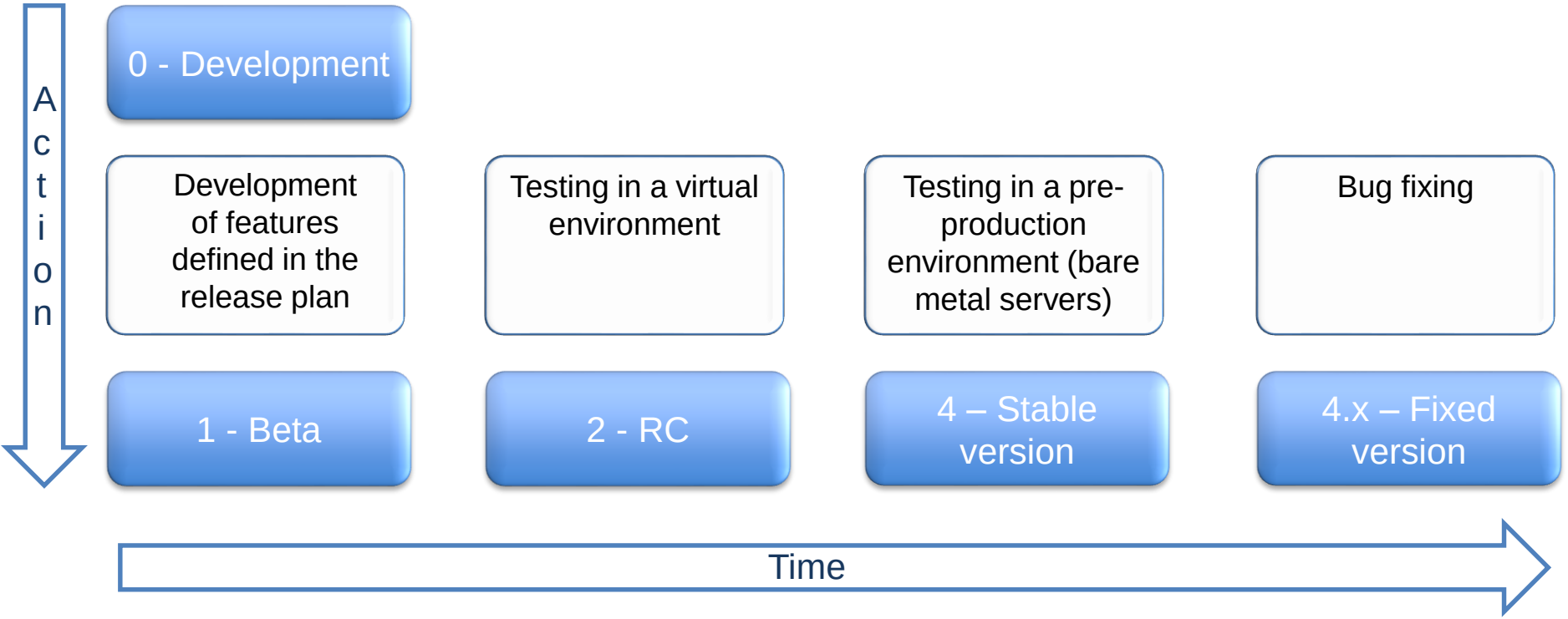


- <Version>.<Development stage>.<Bug fixing>
  - The number of version refers to the release plan
  - E.g. 1.1.4.0: <1.1>.<4>. <0>

# ITBox architecture at a glance

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- **It is mainly composed of the following five modules:**
  - ITBox-web : a web based interface with simplified functionalities for set-up and installation.
  - ITBox-puppet: it contains all puppet scripts.
  - ITBox-main: it is the main repository with ISO build scripts.
  - ITBox-astute: it is the orchestrator which performs provision and deploy.
  - ITBox-ostf: (OpenStack Testing Framework, or Health Check) implements post-deployment verification of OpenStack.

# Source code

- The source code of ITBox can be found on https://github.com/SmartInfrastructures/:

- https://github.com/SmartInfrastructures/itbox-puppet
- https://github.com/SmartInfrastructures/itbox-web
- https://github.com/SmartInfrastructures/itbox-astute
- https://github.com/SmartInfrastructures/itbox-ostf
- https://github.com/SmartInfrastructures/itbox-main

# References

- [1] Component XIFI wiki page (http://wiki.fi-xifi.eu/Xifi:Wp3:Components:InfrastructureToolbox)

# Thank you for your attention!

***Find us at www.fi-xifi.eu***


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