JS7 JobScheduler Architecture

System Architecture:

Systems, Components, Platforms

Information for Interested Parties

Software- und Organisations-Service

JS7 JobScheduler

- System Architecture
  - System Architecture
  - Components and Connections
  - Secure Network Connections
  - Supported Platforms
- Cloud Setup
  - JOC Cockpit and Controller High Availability
  - Agent High Availability
  - Hybrid Use of Agents
- On Premises Setup
  - Standalone Server
  - Controller High Availability
  - Controller and JOC Cockpit High Availability
  - Multi-Client Capability
  - Agent High Availability

System Architecture

JOC Cockpit

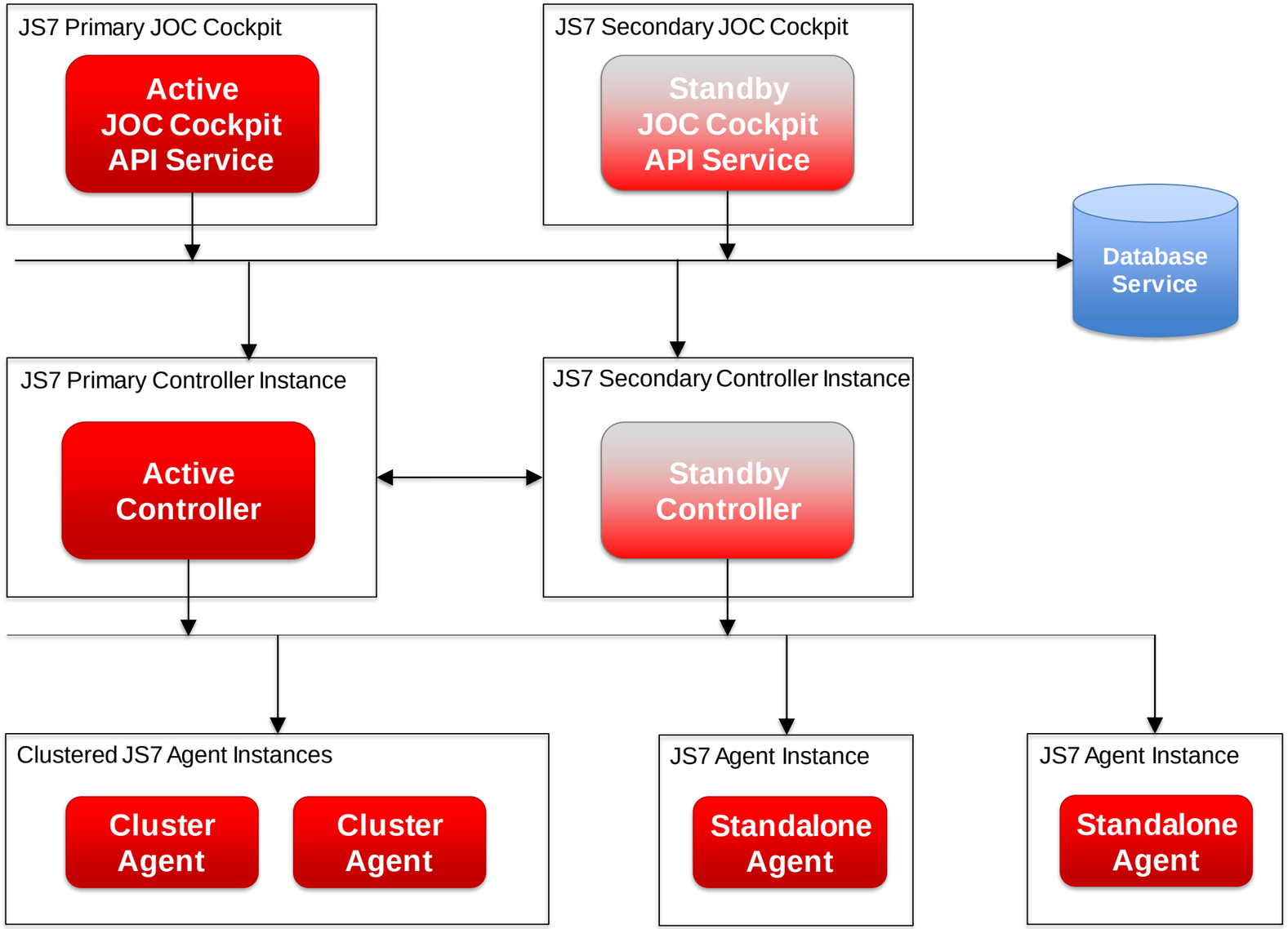
- JOC Cockpit is operated as a passive cluster or standalone and serves the User Interface and REST API Service
- Makes use of a database for persistence and for restart capabilities

Controller / Agents

- A Controller operated as a passive cluster or stand-alone orchestrates Agents
- Agents receive workflow configurations from a Controller, start workflows autonomously and report back execution results
- Agents are operated as a cluster or standalone

Connections

- Communication between components within the indicated direction of network connections



Components

Components and Connections

JOC Cockpit / API Service

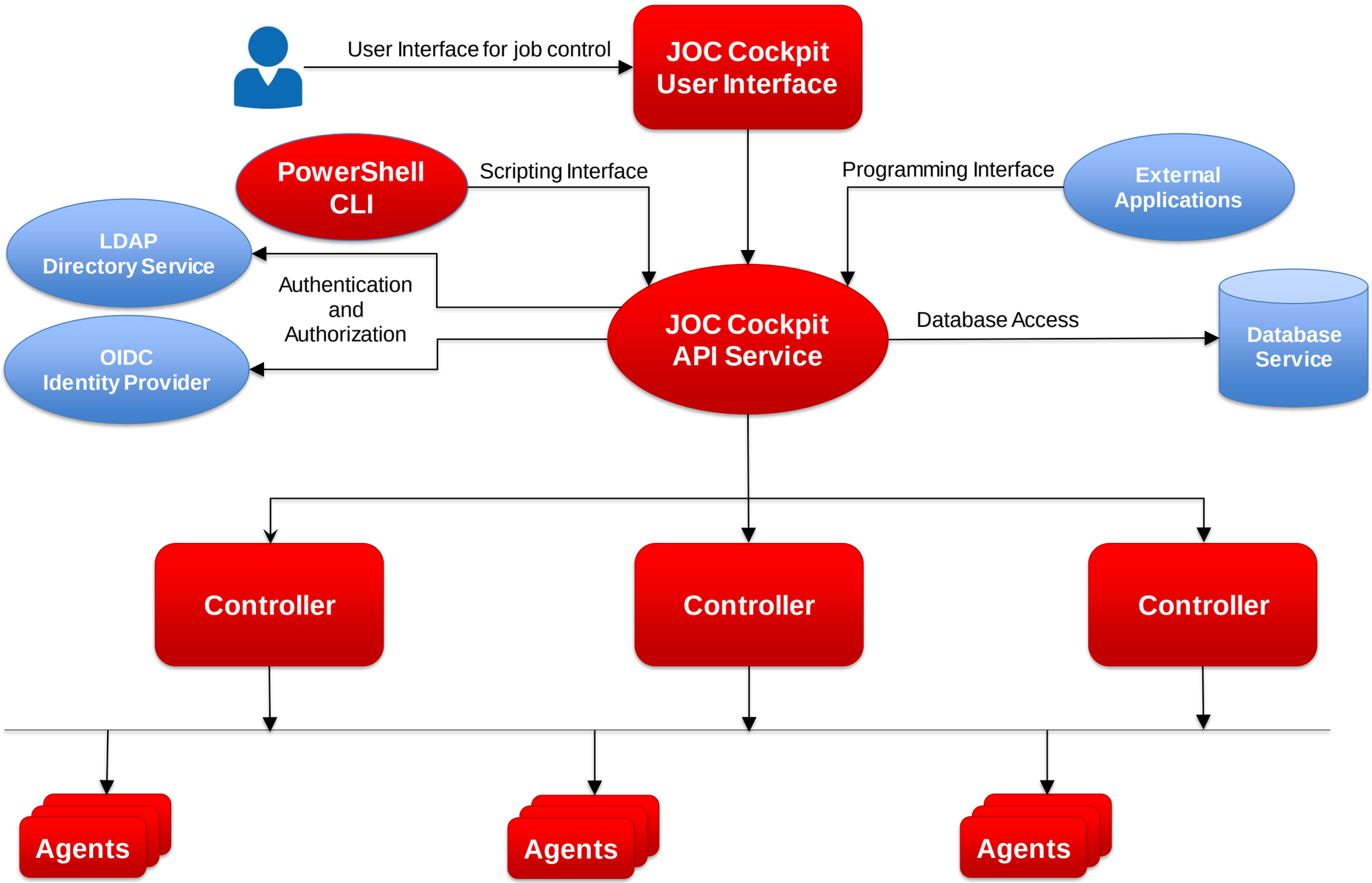
- The User Interface offers job management and control
- Users access JOC Cockpit from their browsers
- Access is subject to authentication and authorization optionally with LDAP, OIDC Identity Providers

Interfaces

- The PowerShell Command Line Interface and External Applications use the REST API Service for access to JOC Cockpit and Controller
- Authorization is available by permissions/roles (RBAC)

Controller / Agent

- The Controller holds the workflow configuration and orchestrates Agents
- Agents are deployed on top of any platform running the programs, scripts, services scheduled for execution



Network Connections

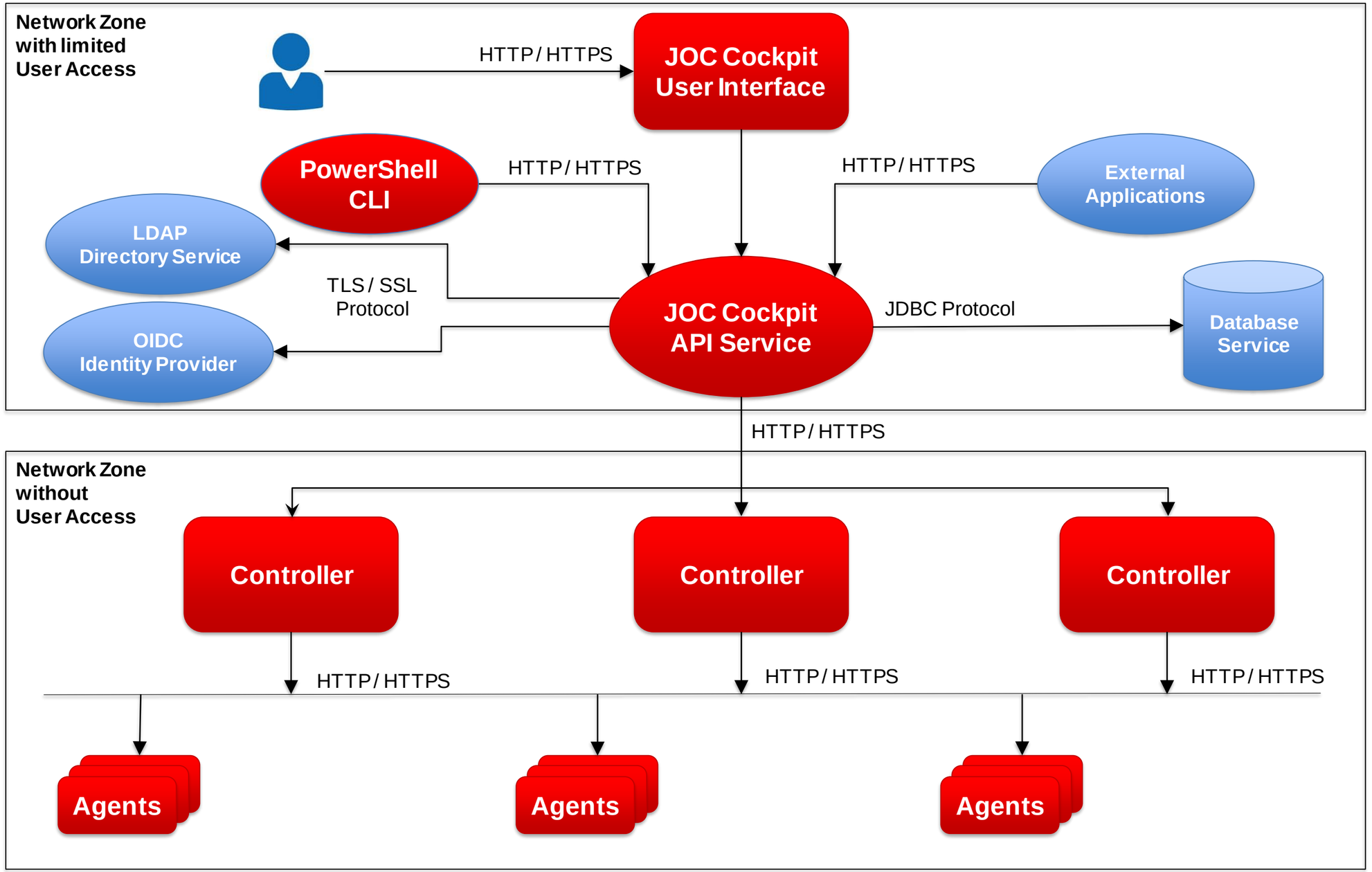
Secure Network Connections

Network Zone with restricted User Access

- Use of HTTPS for any connection to JOC Cockpit
- Access to JOC Cockpit requires authentication
- Access to JOC Cockpit is authenticated by the API Service using TLS/SSL

Network Zone without User Access

- Controller and Agent instances can be operated in a network zone without user access
- Controller instances are accessed exclusively by the JOC Cockpit API Service
- Agent instances are accessed exclusively by Controller instances
- Use of HTTPS for connections with client and server authentication certificates (mutual TLS authentication)



Platforms

Supported Platforms

JOC Cockpit / API Service

- The JOC Cockpit and API Service are available for Container platforms, Linux and Windows

Controller / Agent

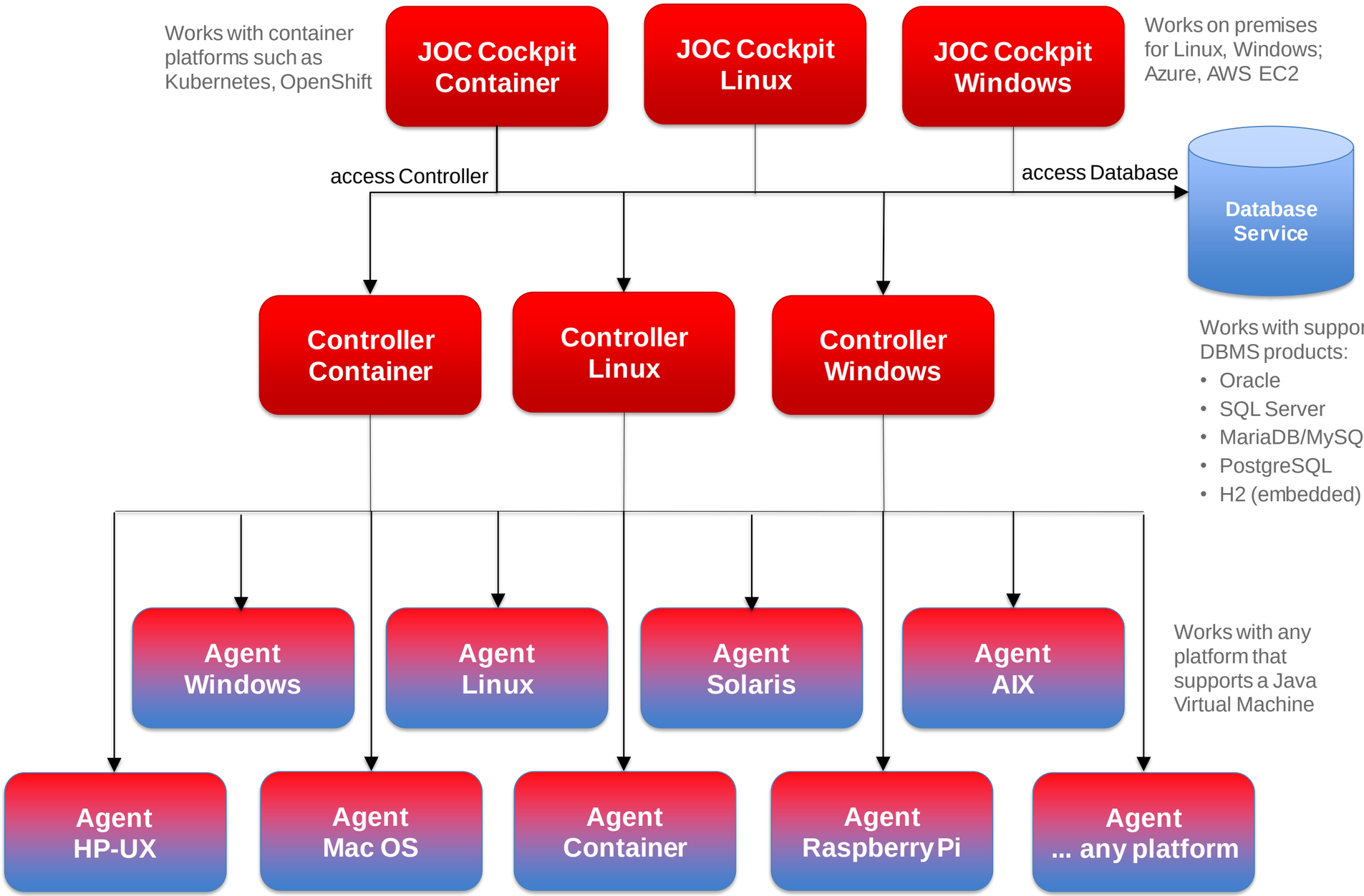
- The Controller is available for Container platforms, Linux and Windows
- Agents are available for any platform that supports a Java Virtual Machine including Containers

Database Service

- JOC Cockpit API Service makes use of a database service from any platform

Workflows

- Execution with Agents from any supported platform
- This includes mixed use of Agent platforms for parallel / sequental job execution



Software- und Organisations-Service

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  - Components and Connections
  - Secure Network Connections
  - Supported Platforms

- Cloud Setup
  - Controller and JOC Cockpit High Availability
  - Agent High Availability
  - Hybrid Use of Agents

- On Premises Setup
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Cloud Setup: JOC Cockpit, Controller High Availability

Cloud Setup: JOC Cockpit Cluster, Controller Cluster, Database Service Cluster

JOC Cockpit / API Service

- JOC Cockpit is the User Interface for workflow management and control
- A number of JOC Cockpit instances can be operated as a passive cluster
- Each JOC Cockpit instance has access to the Active and Standby Controller

Controller Cluster

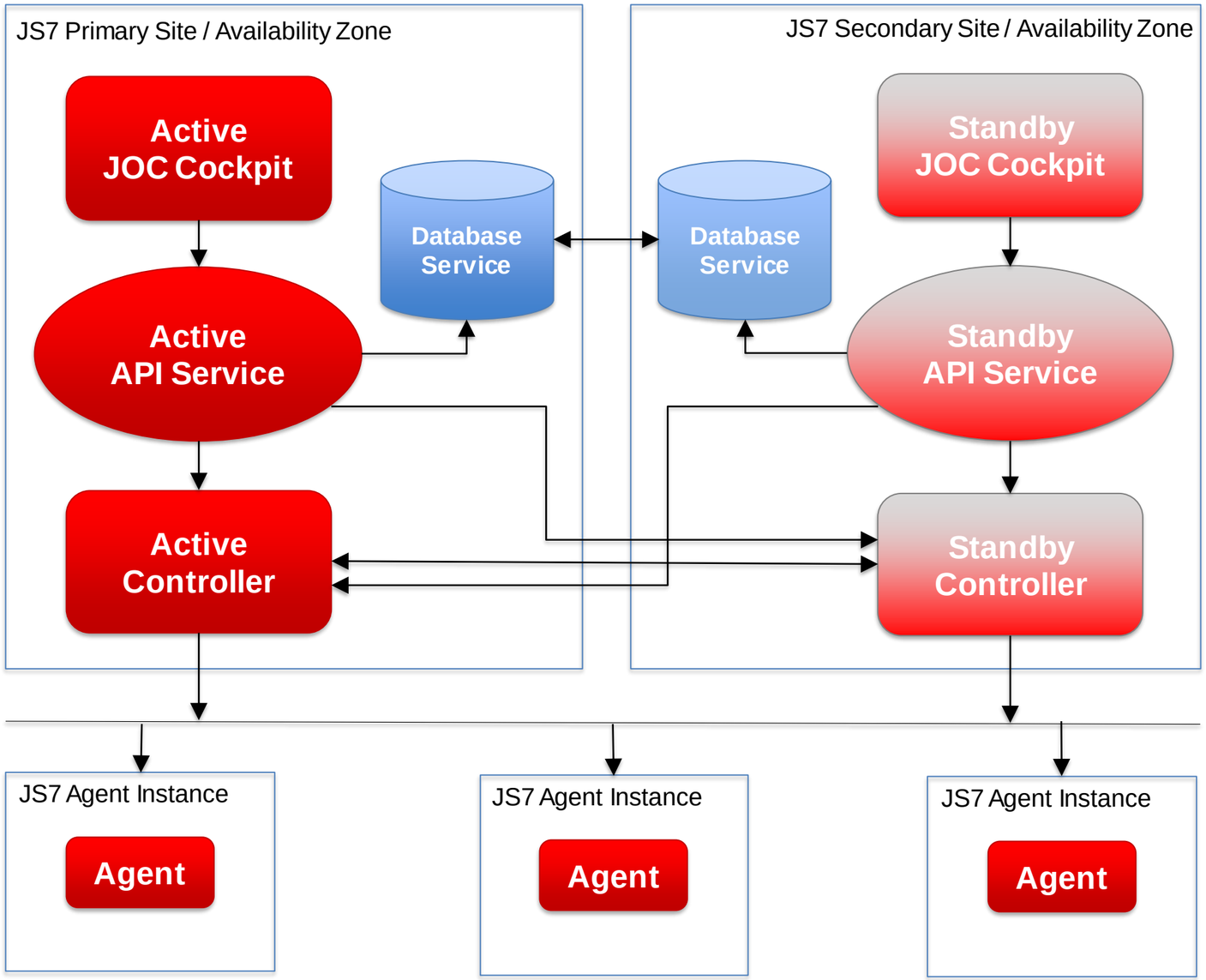
- Active / Standby Controller implement a passive cluster for automated fail-over

Agent

- Agents are deployed to any platforms and are accessed by the Active and Standby Controller instances

Database Service

- JOC Cockpit makes use of a database for persistence and for restart capabilities



Cloud Setup: Agent High Availability

Cloud Setup: JOC Cockpit Cluster, Controller Cluster, Agent Cluster

JOC Cockpit / API Service

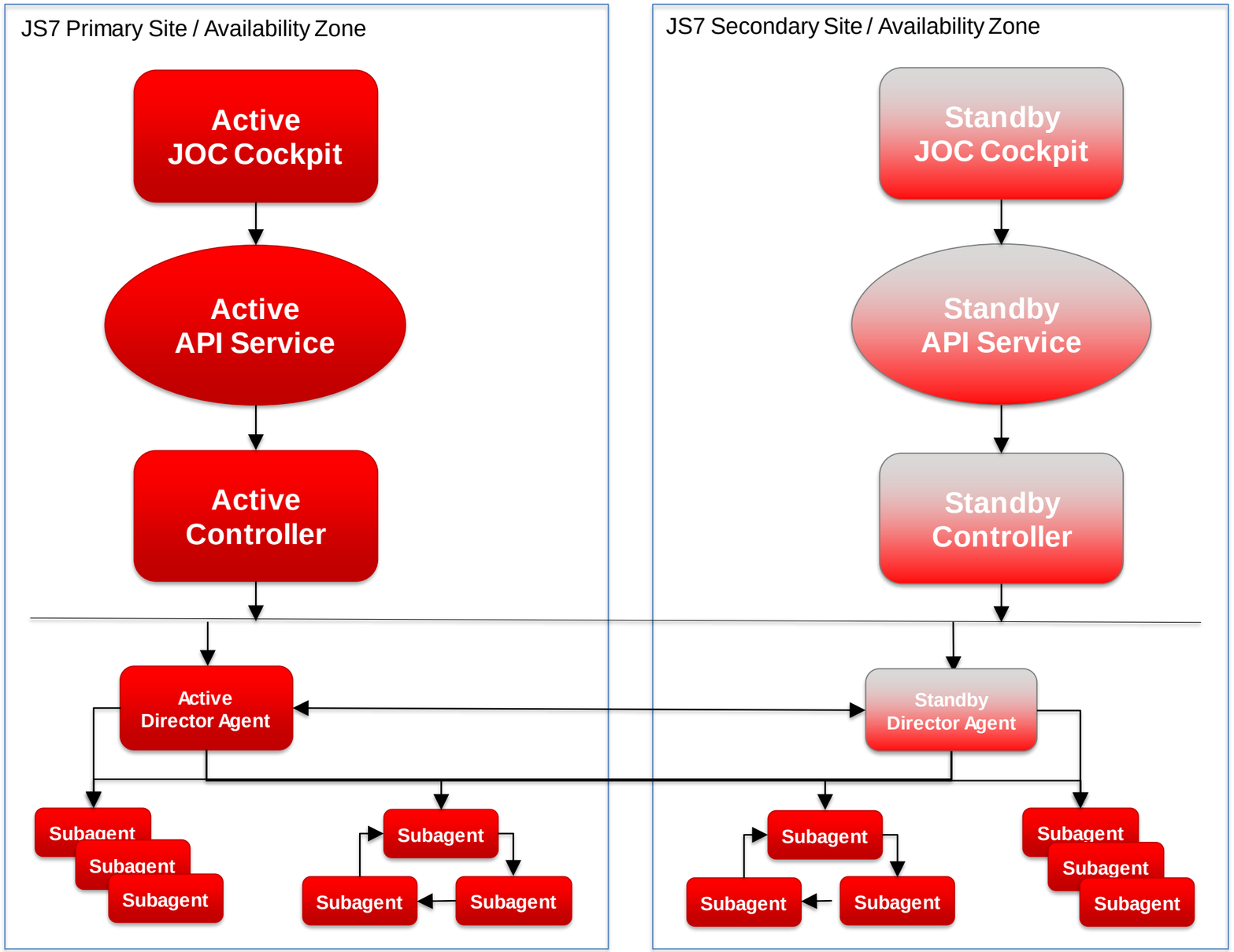
- JOC Cockpit is the User Interface for workflow management and control

Controller Cluster

- Active / Standby Controller implement a passive cluster for automated fail-over

Agent Cluster

- A Director Agent holds the active role and orchestrates Subagents for job execution
- Fixed-priority mode includes to execute jobs with the first Subagent, only if unavailale the next Subagent is used
- Round-robin mode includes to execute each next job on the next Subagent



Cloud Setup: Hybrid Use of Agents

Cloud Setup: Hybrid Use of Agents

JOC Cockpit / API Service

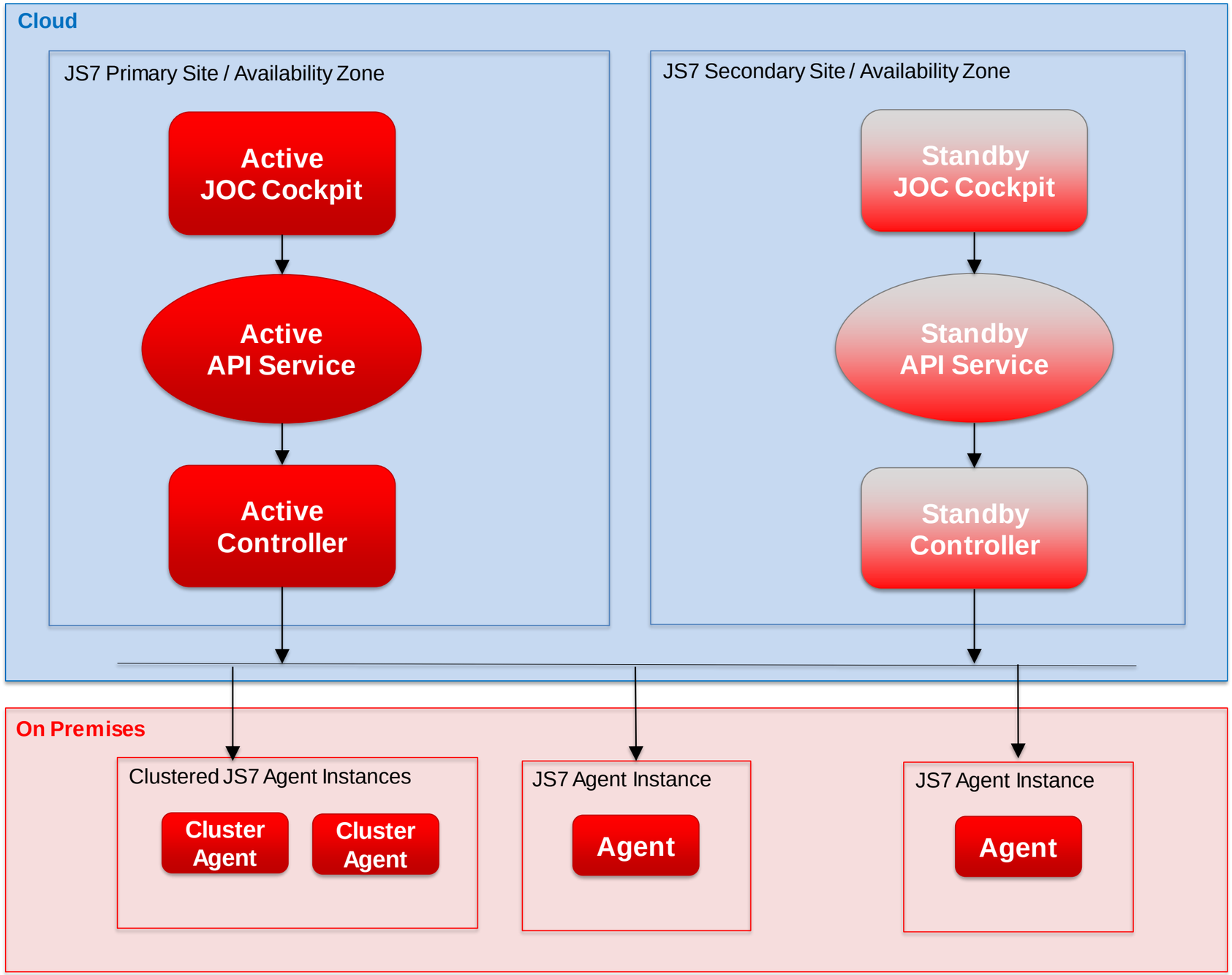
- JOC Cockpit is the User Interface for workflow management and control

Controller Cluster

- Active and Standby Controller implement a passive cluster for automated fail-over

Agents

- Any number of Cluster Agents and Standalone Agents can be operated on any platform used on premises
- Users set up a Virtual Private Cloud to allow the indicated connections
- Agents operated from cloud platforms and Agents operated on premises can be used in parallel



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On Premises Setup: Standalone Server

On Premises: Standalone Server for User Interface, Controller and Database Service

JOC Cockpit / API Service

- JOC Cockpit is the User Interface for workflow management and control
- Users access the JOC Cockpit from their browser

Controller

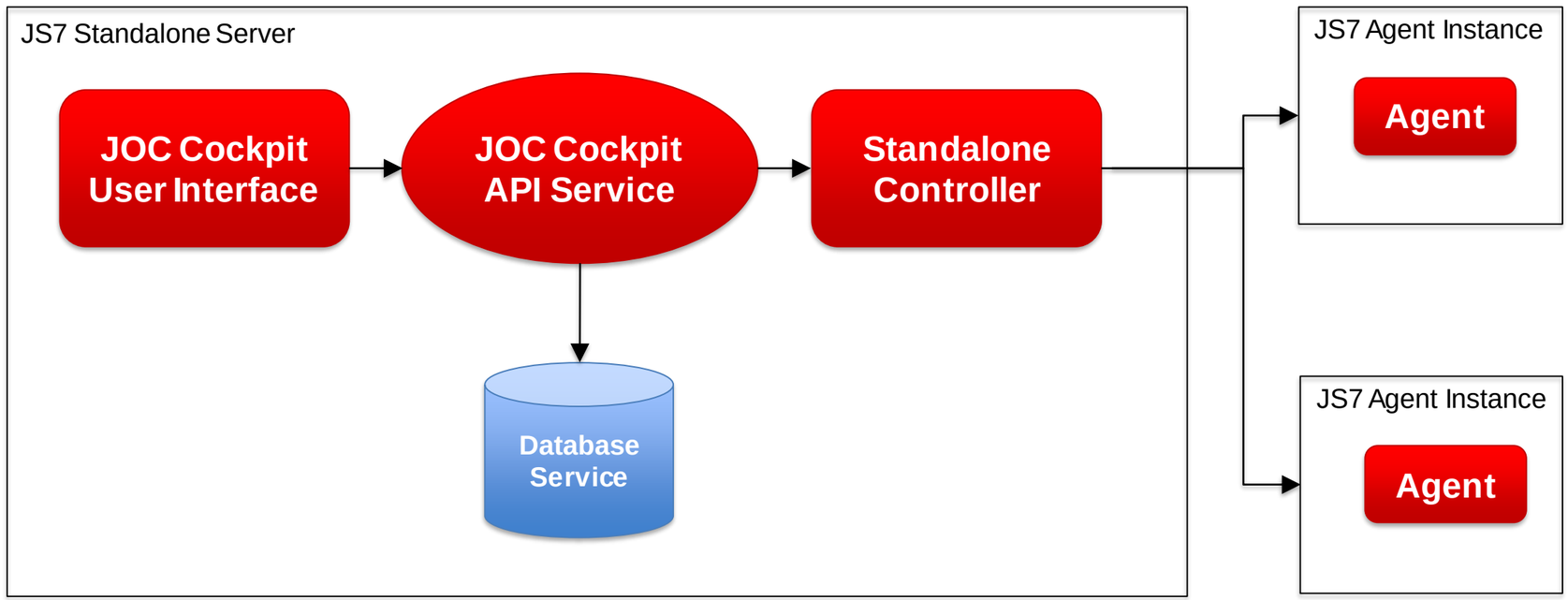
- The Controller orchestrates Agents for execution of workflows and jobs

Agent

- Agents are deployed on top of platforms running the programs, scripts, services scheduled for execution

Database Service

- The database stores the inventory and history of workflow execution



On Premises Setup: Controller High Availability

On Premises: Standalone Interface Server, Controller Cluster, Database Server

JOC Cockpit / API Service

- JOC Cockpit is the User Interface for workflow management and control
- The Controller cluster is managed by JOC Cockpit

Controller Cluster

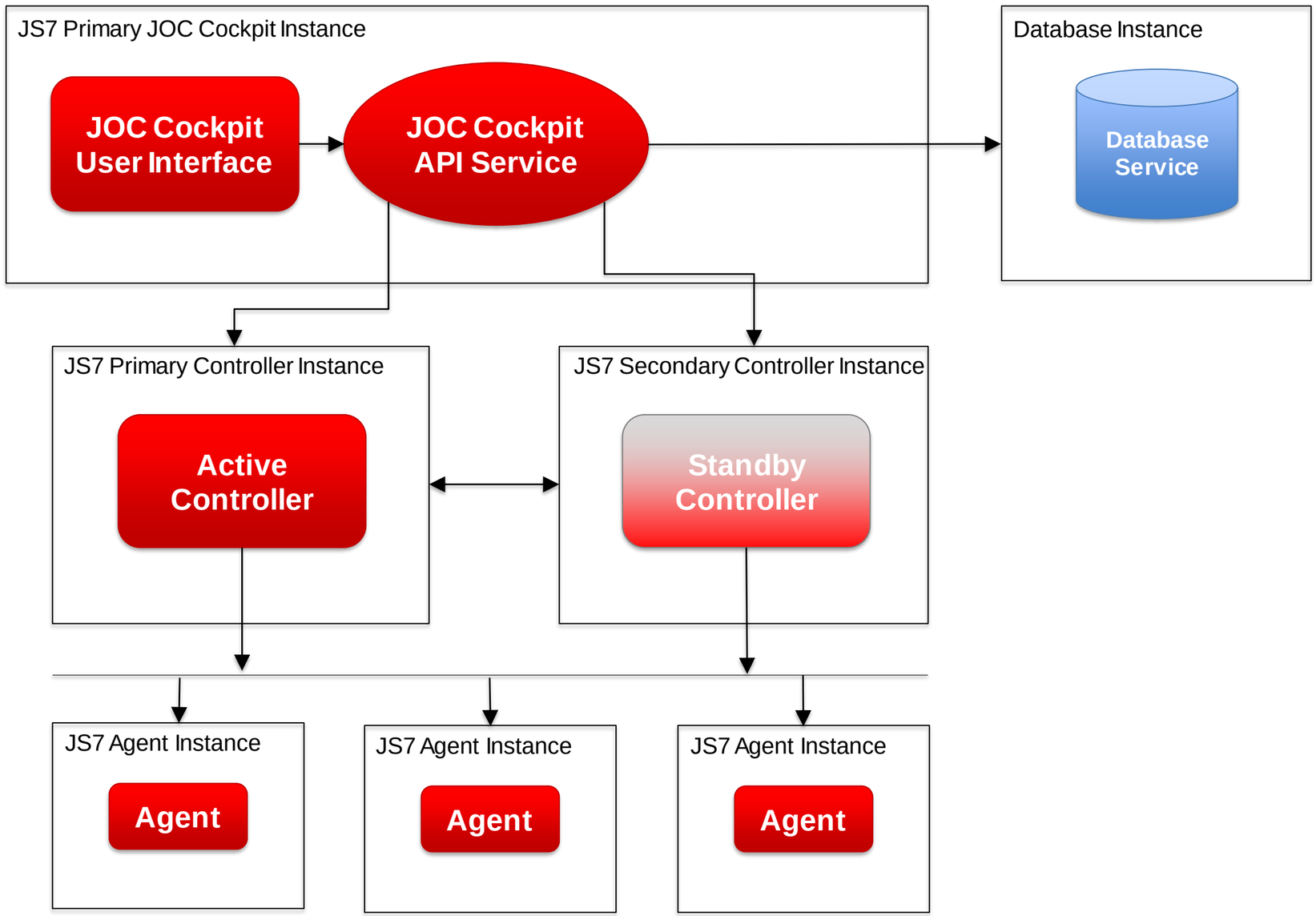
- Active and Standby Controller act as a cluster to synchronize status information for automated fail-over
- Active and Standby Controller are accessed by the JOC Cockpit API Service

Agent

- Agents are deployed on top of any platforms and are accessed by Active and Standby Controllers

Database Service

- JOC Cockpit makes use of a database for persistence and for restart capabilities



On Premises Setup: Controller, JOC Cockpit High Availability

On Premises: JOC Cockpit Cluster, Controller Cluster, Database Server

JOC Cockpit / API Service

- JOC Cockpit is the User Interface for workflow management and control
- A number of JOC Cockpit instances can be operated as a passive cluster
- Each JOC Cockpit instance has access to the Active and Standby Controller

Controller Cluster

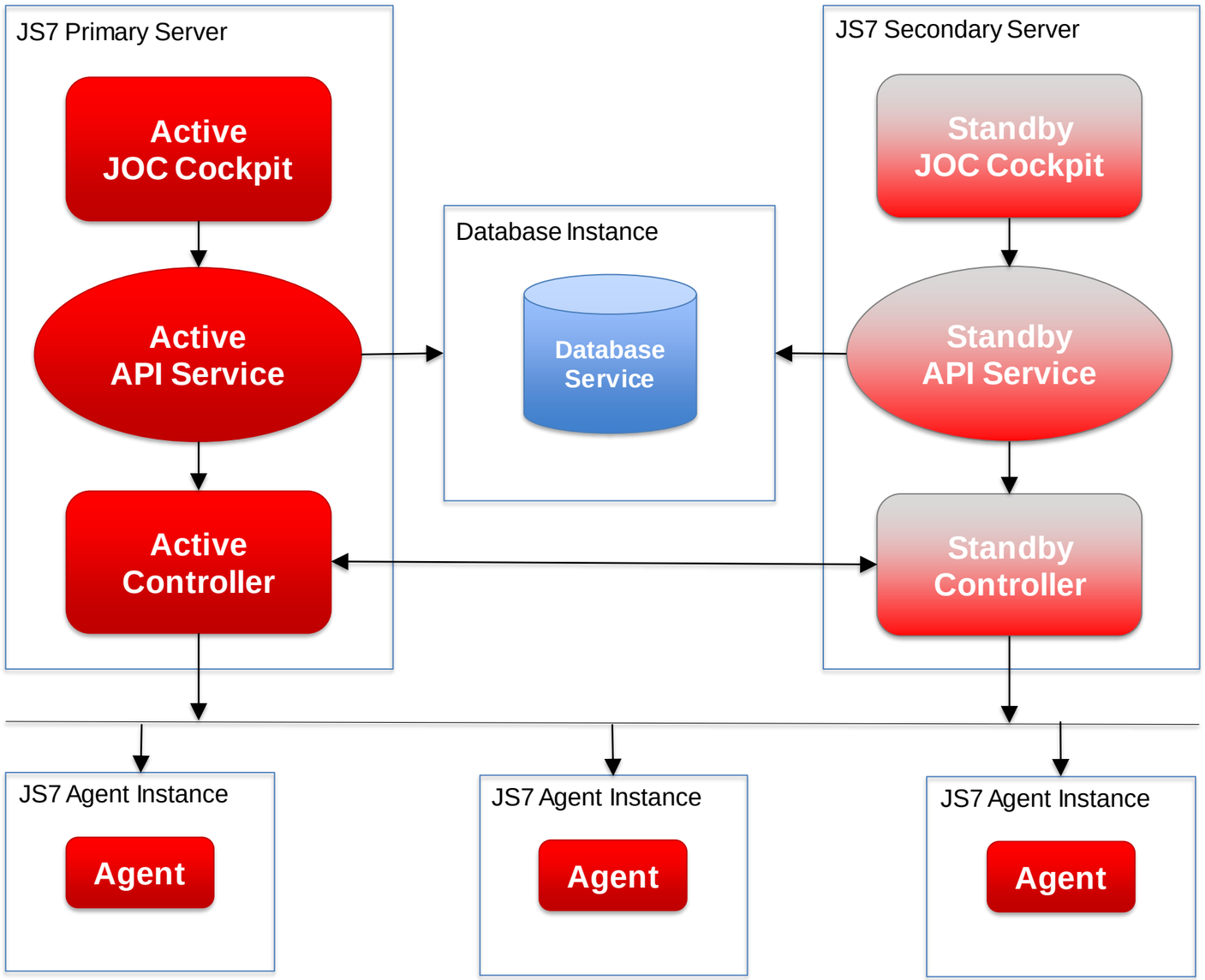
- Active / Standby Controller implement a passive cluster with automated fail-over

Agent

- Agents are deployed on top of any platform and are accessed by the Active and Standby Controller

Database Service

- JOC Cockpit makes use of a database for persistence and for restart capabilities



On Premises Setup: Multi-Client Capability

On Premises: Multi-Controller Instances

JOC Cockpit / API Service

- JOC Cockpit is the User Interface for workflow management and control
- Users can manage a number of Controllers in JOC Cockpit

Controller

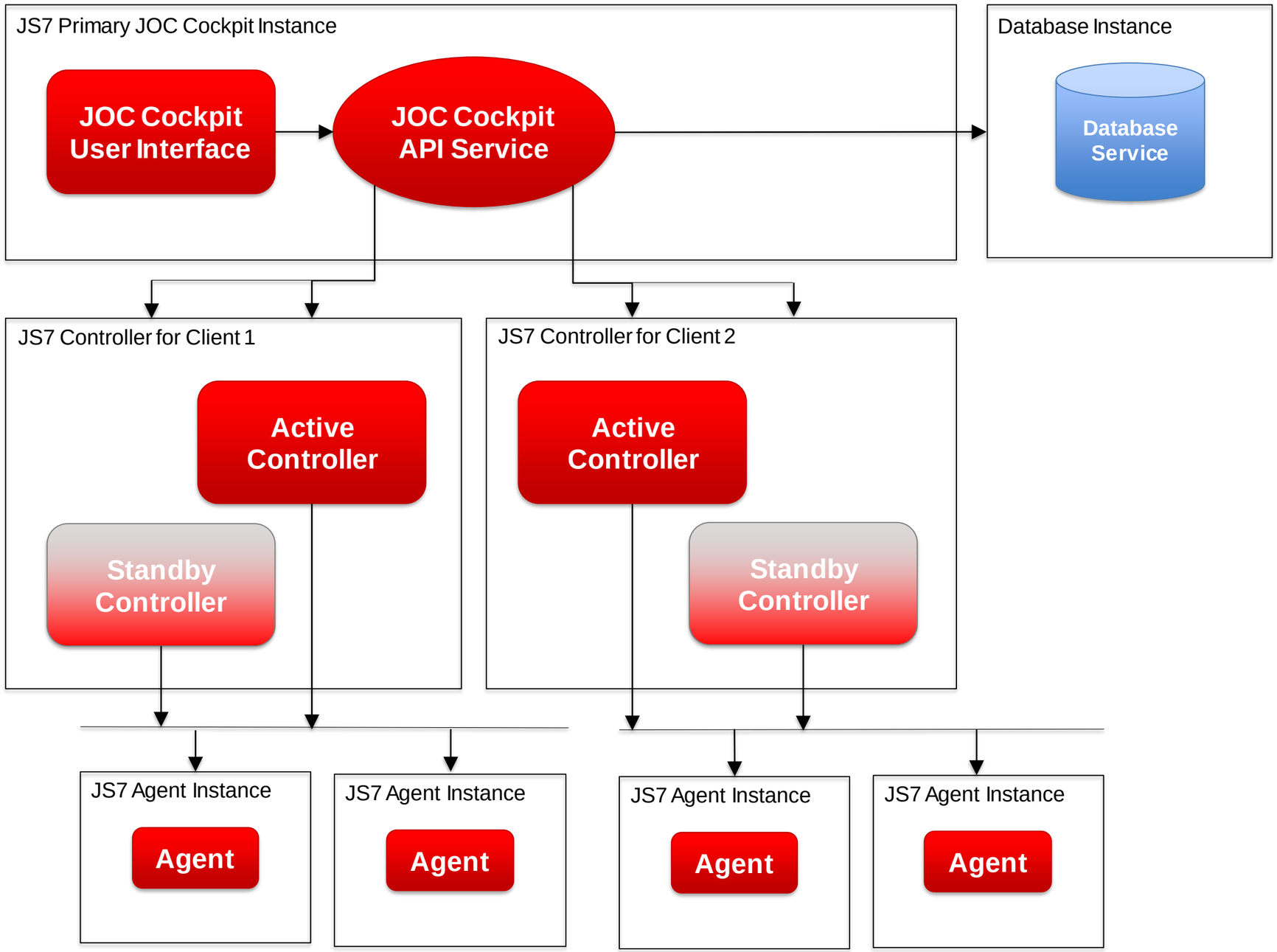
- Controllers are operated independently per Client
- Controllers can be operated as a cluster and standalone

Agent

- Agents are deployed on top of any platform and are accessed by a Controller
- Agents are dedicated to a Controller

Database Service

- JOC Cockpit makes use of a database for persistence and for restart capabilities



On Premises Setup: Agent High Availability

On Premises: Controller Cluster with Agent Cluster and Standalone Agents

Controller

- The Controller connects to an Agent Cluster and to Standalone Agents

Agents

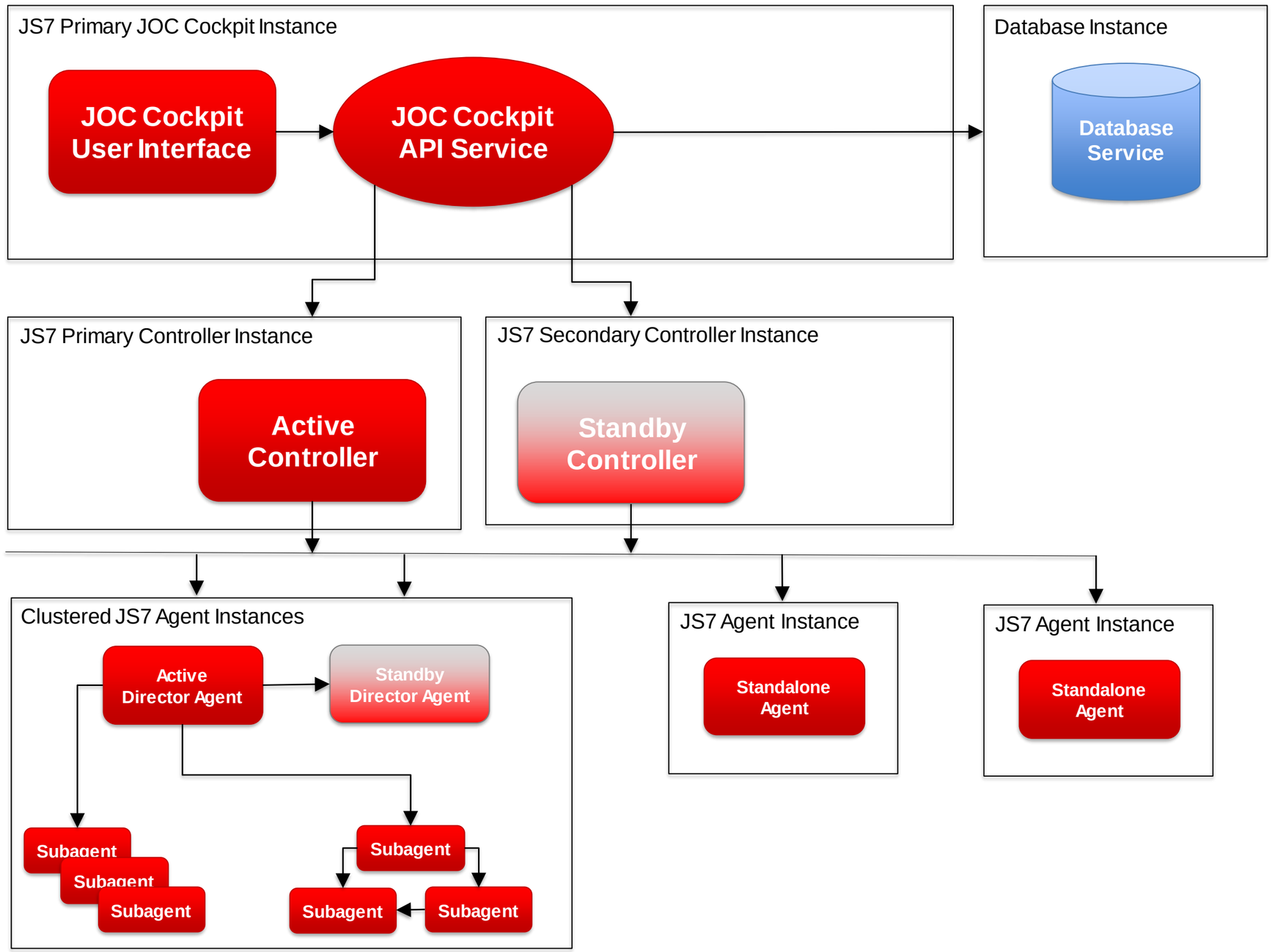
- Agents are deployed on top of any platform and are accessed by a Controller
- Agents are dedicated to a Controller

Agent Cluster

- A Director Agent holds the active role and orchestrates Subagents for job execution
- Fixed-priority mode includes to execute jobs with the first Subagent, only if unavailale the next Subagent is used
- Round-robin mode includes to execute each next job on the next Subagent

Standalone Agents

- Any number of Standalone Agents can be operated on any platform



Questions?

Comments?

Feedback?

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