

Getting Started Reference

Novell® PlateSpin® Orchestrate

2.0

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About This Guide

This *Getting Started Reference* provides a basic introduction to PlateSpin® Orchestrate 2.0 from Novell® components and what's new in the product since its last release.

- ♦ [Chapter 1, “Overview,” on page 9](#)
- ♦ [Chapter 2, “Understanding Basic Functionality,” on page 15](#)

Audience

The contents of this guide are of interest to the following individuals:

VM Administrator: A PlateSpin Orchestrate virtual machine (VM) Administrator manages the life cycle of the VMs in the enterprise, including creating, starting, stopping, migrating, and deleting VMs. For more information about the Orchestrate VM Client tasks and tools used by the VM Administrator, see the [PlateSpin Orchestrate 2.0 VM Client Guide and Reference](#). For more information about the Orchestrate Development Client tasks and tools used by the VM Administrator, see the [PlateSpin Orchestrate 2.0 Virtual Machine Management Guide](#).

Orchestrate Administrator: A PlateSpin Orchestrate Administrator deploys jobs, manages users, and monitors distributed computing resources. Administrators can also create and set policies for automating the usage of these computing resources. For more information about the Development Client tasks and tools used by the Orchestrate Administrator, see the [PlateSpin Orchestrate 2.0 Administrator Reference](#).

User: The end user of PlateSpin Orchestrate, also called a “Job Manager,” runs and manages jobs that have been created by a Job Developer and deployed by the administrator. It is also possible that the end user could be a developer who has created applications to run on distributed computing resources. For more information about the tasks and tools used by the Job Manager, see the [PlateSpin Orchestrate 2.0 Job Manager Guide](#).

Job Developer: The developer has control of a self-contained development system where he or she creates jobs and policies and tests them in a laboratory environment. When the jobs are tested and proven to function as intended, the developer delivers them to the PlateSpin Orchestrate administrator. For more information about the tasks and tools used by the Job Developer, see the [PlateSpin Orchestrate 2.0 Developer Guide and Reference](#).

Prerequisite Skills

As data center managers or IT or operations administrators, it is assumed that users of the product have the following background:

- ♦ General understanding of network operating environments and systems architecture.
- ♦ Knowledge of basic UNIX* shell commands and text editors.

Feedback

We want to hear your comments and suggestions about this manual and the other documentation included with this product. Please use the User Comments feature at the bottom of each page of the online documentation, or go to www.novell.com/documentation/feedback.html (<http://www.novell.com/documentation/feedback.html>) and enter your comments there.

Additional Product Documentation

In addition to this *Getting Started Reference*, PlateSpin Orchestrate 2.0 includes the following additional guides that contain valuable information about the product:

- ♦ *PlateSpin Orchestrate 2.0 Installation and Configuration Guide*
- ♦ *PlateSpin Orchestrate 2.0 Upgrade Guide*
- ♦ *PlateSpin Orchestrate 2.0 VM Client Guide and Reference*
- ♦ *PlateSpin Orchestrate 2.0 Development Client Reference*
- ♦ *PlateSpin Orchestrate 2.0 Virtual Machine Management Guide*
- ♦ *PlateSpin Orchestrate 2.0 Administrator Reference*
- ♦ *PlateSpin Orchestrate 2.0 High Availability Configuration Guide*
- ♦ *PlateSpin Orchestrate 2.0 Command Line Reference*
- ♦ *PlateSpin Orchestrate 2.0 Developer Guide and Reference*
- ♦ *PlateSpin Orchestrate 2.0 Job Manager Guide*

Documentation Updates

This *Getting Started Reference* is updated periodically. To view the most recent version, visit the [PlateSpin Orchestrate 2.0 Web site](http://www.novell.com/documentation/pso_orchestrate20/) (http://www.novell.com/documentation/pso_orchestrate20/) and look for the documentation updates section included at the end of the book.

Documentation Conventions

In Novell documentation, a greater-than symbol (>) is used to separate actions within a step and items in a cross-reference path.

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When a single pathname can be written with a backslash for some platforms or a forward slash for other platforms, the pathname is presented with a backslash. Users of platforms that require a forward slash, such as Linux* or UNIX, should use forward slashes as required by your software.

Overview

1

Welcome to PlateSpin® Orchestrator 2.0 from Novell®. This section of the *Getting Started Guide* includes the general information you need to become acquainted with the product.

- ♦ [Section 1.1, “Product Rebranding,” on page 9](#)
- ♦ [Section 1.2, “Introduction to PlateSpin Orchestrator,” on page 10](#)
- ♦ [Section 1.3, “PlateSpin Orchestrator Documentation,” on page 12](#)

1.1 Product Rebranding

ZENworks® Orchestrator has been repositioned under the Novell PlateSpin brand of Data Center Management products. PlateSpin Orchestrator 2.0 is an upgrade for ZENworks Orchestrator 1.3.

The table below maps the older ZENworks brand component naming to the newer PlateSpin brand component naming.

Table 1-1 Comparing 1.3 Brand Naming to 2.0 Brand Naming

Version 1.3 Names and Terms	Version 2.0 Names and Terms
Novell ZENworks Orchestrator 1.3	PlateSpin Orchestrator 2.0 from Novell
Orchestrator Server	Orchestrator Server
Orchestrator Agent	Orchestrator Agent
Orchestrator Console	Orchestrator Development Client
Virtual Machine Management Interface or VM GUI	Orchestrator VM Client
Orchestrator User Portal	Orchestrator User Portal
Orchestrator VM Builder	Orchestrator VM Builder
Orchestrator Monitoring Server	Orchestrator Monitoring Service

NOTE: The VM Warehouse component of ZENworks Orchestrator 1.3 is not included in PlateSpin Orchestrator 2.0.

Some aspects of ZENworks branding have not been fully transitioned to the PlateSpin name. For example, there is some residual naming apparent in file names, file paths, command line tools, and other parts of the product without high visibility. This naming residue should not interfere with your use of the product.

1.2 Introduction to PlateSpin Orchestrate

The following sections contain information to help introduce you to PlateSpin Orchestrate:

- ♦ [Section 1.2.1, “What Is PlateSpin Orchestrate?,” on page 10](#)
- ♦ [Section 1.2.2, “How Do I Obtain and License PlateSpin Orchestrate?,” on page 11](#)

1.2.1 What Is PlateSpin Orchestrate?

PlateSpin Orchestrate 2.0 uses its functional components to:

- ♦ Perform high-performance task breakdown across multiple machines (resources) in a data center
- ♦ Provide distributed, CRON-style job scheduling
- ♦ Provide a messaging system between the PlateSpin Orchestrate Server and the managed machines

The PlateSpin Orchestrate system consists of a central server (the Orchestrate Server), agents capable of executing work on each managed resource, and an optional client application (the PlateSpin Orchestrate Development Client) that can be used to drive and monitor the PlateSpin Orchestrate system. Work is described to the system in the form of a “job.” A job is written in an embedded Python* script and deployed to and managed by the server. When a job is run, constraint-based placement (a kind of rules engine) directs the work to suitable and available resources. The job might partially execute on the managed systems and can further execute any process as the desired user on the managed system.

The Orchestrate VM Client adds increased functionality to PlateSpin Orchestrate. This client helps administrators, IT operators, and job developers improve and expand the performance of the data center by automating provisioning and by using Virtual Machines (VMs) as resources in the data center computing environment. Better managed VMs can help control associated data center costs by addressing several data center issues, including cooling, space, power usage, and efficient hardware usage. For more information about the VM Client, see the *PlateSpin Orchestrate 2.0 VM Client Guide and Reference*.

Key Product Features

PlateSpin Orchestrate includes these core features:

- ♦ Creation and management of virtual environments
- ♦ Powerful automation and scheduling engine
- ♦ Support for most commonly used hypervisors
- ♦ Open API promotes extensibility

New in This Release

Some of the new features in PlateSpin Orchestrate 2.0 include:

- ♦ New Provisioning Adapters
 - ♦ VMware* ESX
 - ♦ No requirement for customers to run VMware Virtual Center (VMware ESXi requires Virtual Center)
 - ♦ VMware ESX management is more powerful
 - ♦ Microsoft* Windows* Server 2008 with the Hyper-V role enabled
- ♦ Easy to use new VM management GUI (VM Client)
 - ♦ Exposes only VM-related operations (that is, VM creation and management)
 - ♦ Incorporates many of the VM functions that were previously done in the ZENworks Orchestrator Console 1.3
- ♦ Authentication using LDAP
 - ♦ Active Directory* support (in addition to “generic” LDAP)
 - ♦ Administrator privilege based on LDAP group membership
- ♦ Enhanced monitoring for disk and net I/O, CPU, and RAM
 - ♦ Monitoring of physical and virtual resources
- ♦ Event triggering facility
 - ♦ Events can start jobs or alert existing jobs
- ♦ Integration of N_Port ID Virtualization (NPIV) for the XEN 30 hypervisor on SUSE® Linux Enterprise Server (SLES) 10 SP2
 - ♦ VMs use virtual worldwide port numbers on the SAN
 - ♦ SAN zoning/LUN masking can be done through this port number
 - ♦ VMs can migrate freely without losing access to zoned storage
- ♦ Support for Orchestrate Agent installed on SLES 10 SP2 and Windows Server* 2008 (32-bit and 64-bit)
- ♦ Support for installation inside virtual machines
 - ♦ Initially one (Xen* virtual machine)

1.2.2 How Do I Obtain and License PlateSpin Orchestrate?

To download the product for evaluation or purchase, contact an authorized Novell Sales representative or a Certified Novell Partner.

You can evaluate the product before purchase by downloading a trial key, which controls the number of users and managed nodes you can configure. The trial key also sets an expiration date. The trial key is available on the product download site.

For fully supported functionality, PlateSpin Orchestrate requires a purchased license key. Contact your Novell Sales Representative or a Certified Novell Partner for purchase information.

Upgrading the Server from a Trial License to a Purchased License

If you are operating PlateSpin Orchestrate with a trial license key, use the following steps to upgrade to a license key you purchased from Novell:

- 1 Stop the PlateSpin Orchestrate Server.
- 2 Copy the purchased license file (`key.txt`) to the `/opt/novell/zenworks/zos/server/license` directory, overwriting the old license key.
- 3 Restart the Orchestrate Server.

1.3 PlateSpin Orchestrate Documentation

Before developing, deploying, and managing the PlateSpin Orchestrate jobs explained in this document, you should have a thorough understanding of how to deploy and manage all product components. These administrative tasks are explained in the following documents in both PDF and HTML formats:

- ♦ [Section 1.3.1, “PlateSpin Orchestrate Installation and Configuration Guide,” on page 12](#)
- ♦ [Section 1.3.2, “PlateSpin Orchestrate Upgrade Guide,” on page 12](#)
- ♦ [Section 1.3.3, “PlateSpin Orchestrate High Availability Configuration Guide,” on page 13](#)
- ♦ [Section 1.3.4, “PlateSpin Orchestrate VM Client Administration Guide,” on page 13](#)
- ♦ [Section 1.3.5, “PlateSpin Orchestrate Administration Guide,” on page 13](#)
- ♦ [Section 1.3.6, “PlateSpin Orchestrate Development Client Reference,” on page 13](#)
- ♦ [Section 1.3.7, “PlateSpin Orchestrate Command Line Reference,” on page 13](#)
- ♦ [Section 1.3.8, “PlateSpin Orchestrate Job Manager Guide,” on page 13](#)
- ♦ [Section 1.3.9, “PlateSpin Orchestrate Job Developer Guide and Reference,” on page 14](#)

1.3.1 PlateSpin Orchestrate Installation and Configuration Guide

The *PlateSpin Orchestrate 2.0 Installation and Configuration Guide* introduces the fundamentals of PlateSpin Orchestrate. It includes a walkthrough of the basic product installation and configuration. The following content is included:

- ♦ Planning the installation
- ♦ Installation and configuration steps
- ♦ Trial use of the basic product

1.3.2 PlateSpin Orchestrate Upgrade Guide

The *PlateSpin Orchestrate 2.0 Upgrade Guide* provides details about the process of upgrading ZENworks Orchestrator 1.3 to PlateSpin Orchestrate 2.0. The guide provides an introductory overview of the requirements for upgrading and explains which components are compatible.

1.3.3 PlateSpin Orchestrate High Availability Configuration Guide

Provides information for installing and configuring PlateSpin Orchestrate in a high availability environment. The guide provides information about the components and configuration steps necessary for preparing this environment, including instructions for configuring the PlateSpin Orchestrate Server in a cluster. The guide also provides some information regarding the behaviors you can expect from PlateSpin Orchestrate in various failover scenarios.

1.3.4 PlateSpin Orchestrate VM Client Administration Guide

The *PlateSpin Orchestrate 2.0 VM Client Guide and Reference* provides in-depth information on the PlateSpin Orchestrate VM Client management interface, which is built on an Eclipse-based rich client platform. VM Client uses a graphical user interface (GUI) to help you create, store, edit, and use VMs. This interface can be installed on both Windows and Linux administration devices.

1.3.5 PlateSpin Orchestrate Administration Guide

The *PlateSpin Orchestrate 2.0 Administrator Reference* provides in-depth information on the PlateSpin Orchestrate Console, which is a thin-client browser console, and the PlateSpin Orchestrate user grid command line management and deployment tool. It is anticipated that developers will typically develop jobs using the zos command line tool, while higher level system administrators will use the ZENworks GUI-based interfaces to submit, deploy and run jobs and manage network resources.

1.3.6 PlateSpin Orchestrate Development Client Reference

The *PlateSpin Orchestrate 2.0 Job Manager Guide* provides in-depth information on the PlateSpin Orchestrate Development Client, which is a thick-client browser console.

1.3.7 PlateSpin Orchestrate Command Line Reference

The *PlateSpin Orchestrate 2.0 Command Line Reference* provides in-depth information on zosadmin, which is the PlateSpin Orchestrate administrator grid command-line management and deployment tool, and on zos, which is the the PlateSpin Orchestrate job manager command-line management and deployment tool.

1.3.8 PlateSpin Orchestrate Job Manager Guide

The *PlateSpin Orchestrate 2.0 Job Manager Guide* provides basic information on how to deploy and manage specific, basic jobs on the PlateSpin Orchestrate Server by using the resources available in the data center. Job managers typically have limited rights and responsibilities and are not expected to know the intricacies of PlateSpin Orchestrate or to understand how to create the jobs themselves. Instead, they deploy and manage jobs through a thin-client interface called the PlateSpin Orchestrate User Portal.

1.3.9 PlateSpin Orchestrate Job Developer Guide and Reference

The *PlateSpin Orchestrate 2.0 Developer Guide and Reference* explains the PlateSpin Orchestrate SDK operation and job construction.

Understanding Basic Functionality

2

This section provides further information about some important administrator tasks that use the Development Client in PlateSpin® Orchestrate 2.0 from Novell®. You can investigate these tasks further after you have successfully deployed and run your first job.

The section includes the following information:

- ♦ [Section 2.1, “Basic PlateSpin Orchestrate Server, VM Client, and Development Client Terms and Concepts,” on page 15](#)
- ♦ [Section 2.2, “System Architecture,” on page 16](#)
- ♦ [Section 2.3, “How Do I Interact with PlateSpin Orchestrate?,” on page 18](#)
- ♦ [Section 2.4, “How PlateSpin Orchestrate Components Communicate,” on page 20](#)

2.1 Basic PlateSpin Orchestrate Server, VM Client, and Development Client Terms and Concepts

This section includes the following information:

- ♦ [Section 2.1.1, “The Grid,” on page 15](#)
- ♦ [Section 2.1.2, “Users,” on page 15](#)
- ♦ [Section 2.1.3, “Resources Running the PlateSpin Orchestrate Agent,” on page 16](#)
- ♦ [Section 2.1.4, “Jobs,” on page 16](#)
- ♦ [Section 2.1.5, “Typical Use of the Grid,” on page 16](#)

2.1.1 The Grid

When you configure the PlateSpin Orchestrate Server and its agents, you create an entity called a compute grid. This grid consists of the objects in your network or data center that PlateSpin Orchestrate is responsible for monitoring and managing, including [Users](#), [Resources](#), and [Jobs](#).

2.1.2 Users

For PlateSpin Orchestrate, a user is an individual who authenticates to the Orchestrate Server for the purpose of managing (that is, running, monitoring, canceling, pausing, stopping, or starting) a deployed job, or a user who authenticates through the Orchestrate VM Client to manage virtual machines. The PlateSpin Orchestrate administrator can use the Orchestrate Development Client to identify users who are running jobs and to monitor the jobs that are currently running or that have run during the current server session.

2.1.3 Resources Running the PlateSpin Orchestrate Agent

For PlateSpin Orchestrate, a resource is a computing node somewhere in your network (that is, your grid or data center network), which has a PlateSpin Orchestrate Agent installed on it. When the Orchestrate Agent is installed on a resource, communication between the agent and the PlateSpin Orchestrate Server is established and the computing resource can be discovered and can begin performing jobs that are assigned to it by the Orchestrate Server.

2.1.4 Jobs

For PlateSpin Orchestrate, a job is remotely executable logic that can run on some or all of the resources in the Orchestrate grid. Job logic is written in Python, and can include instructions and policies that dictate how, when, and where that job runs. In addition, the job can embed instructions that dictate processes or applications that the resource needs to launch.

A Job Developer uses Python in a prepackaged Job Definition Language (JDL) editor to create or modify a job. When the job is ready, the administrator of the PlateSpin Orchestrate system uses the Orchestrate Server functionality to deploy it and to allocate appropriate resources to run it, based on its parameters and associated policies.

2.1.5 Typical Use of the Grid

In general, the everyday use of the grid and its components follows this sequence:

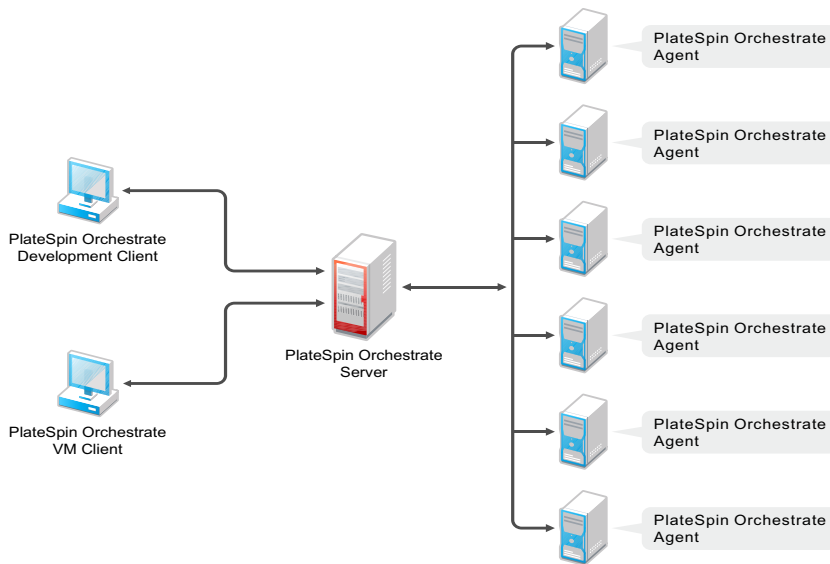
1. Jobs are created using JDL. A job might also optionally reference one or more policies (defined in XML).
2. The Orchestrate Server is started. It discovers all the available computing resources.
3. The administrator logs in to the Orchestrate Server and deploys jobs that users can run. The administrator might also create user logins.
4. Users log in to the Orchestrate Server run jobs.
5. When a user selects a job to run, he or she runs the job based on selected options; for example, he or she might select when to run the job, how many computing resources the job should run on, the type of computing resources to be used, and so on.
6. Users monitor and control their own jobs by using certain functions, such as canceling a job, pausing a job, or even changing the priority of a job if they have rights to do so.
7. Administrators can monitor and control all of the running jobs. They can dynamically change how a job runs, they can change job priorities, and so on.
8. Steps 5, 6, and 7 can be repeated as long as the Orchestrate Server is running.

2.2 System Architecture

PlateSpin Orchestrate is built as an enterprise server with capabilities to support extremely large computing environments. It includes all the services required to provide an enhanced grid computing application server environment.

A simple view of the PlateSpin Orchestrate system architecture is shown below, showing the PlateSpin Orchestrate software components:

Figure 2-1 *PlateSpin Orchestrate Software Architecture*



The PlateSpin Orchestrate Server

The PlateSpin Orchestrate Server is the gateway between enterprise applications and resource servers. The server has two primary functions:

- ♦ To manage the resource servers
- ♦ To manage jobs to run on the computing resource

In the first function, the server manages the computing resources by collecting, maintaining, and updating their status availability, service cost, and other facts. Changes to the computing resources can be made by the administrator.

The second function of the server is to run remote applications—called jobs—on the computing resources. The Orchestrate Server uses a policy-based broker and scheduler to decide when and how a job should run on the computing resources. The decisions are based on many controlled factors, including the number of computing resources, their cost, and a variety of other factors as specified by the policy constraints set up by the server administrator. The Orchestrate Server runs the job and provides all the job's output responses back to the user. The server provides failover capabilities to allow jobs to continue if computing resources and network conditions degrade.

The PlateSpin Orchestrate Agent

The PlateSpin Orchestrate Agent is installed on all computing resources that are to be managed. It runs jobs under the management of the Orchestrate Server.

The PlateSpin Orchestrate Development Client and Other Client Tools

The PlateSpin Orchestrate Clients let a computing resource administrator troubleshoot, initiate, change, or shut down server functions for PlateSpin Orchestrate and its computing resources. The clients also monitor all managed computing resource job activity and provide facilities to manage application jobs. When you install the Clients on a computing resource, you are installing the following tools:

- ♦ zos command line interface
- ♦ zosadmin command line interface
- ♦ PlateSpin Orchestrate Development Client
- ♦ Java* SDK (toolkit)

NOTE: The PlateSpin Orchestrate VM Client is installed separately.

The PlateSpin Orchestrate Development Client is a graphical user interface running on Java. It provides a way for the PlateSpin Orchestrate administrator to troubleshoot and to initiate, change, or shut down the functioning of the Orchestrate Server and its resources. It also functions as a monitor of all PlateSpin Orchestrate job activity, and it provides an interface for managing PlateSpin Orchestrate jobs. For more information about the Orchestrate Development Client, see the *PlateSpin Orchestrate 2.0 Development Client Reference*.

For more information about the client tools, see [Section 2.3, “How Do I Interact with PlateSpin Orchestrate?”](#) on page 18. For more information about the toolkit, see “Using the PlateSpin Orchestrate Client SDK” in the *PlateSpin Orchestrate 2.0 Developer Guide and Reference*.

The PlateSpin Orchestrate VM Client

PlateSpin Orchestrate VM Client is a user interface for managing the life cycle of the virtual machines (VMs) in your enterprise, including creating, starting, stopping, migrating, and deleting VMs. For information about installing the Orchestrate VM Client, see “[Installing the Orchestrate VM Client](#)” in the *PlateSpin Orchestrate 2.0 Installation and Configuration Guide*.

The PlateSpin Orchestrate User Portal

The PlateSpin Orchestrate User Portal a

web-based user interface for managing jobs. It provides end users with the ability to start and monitor jobs on managed computing resources. For more information about the User Portal, see “[Using the PlateSpin Orchestrate User Portal](#)” in the *PlateSpin Orchestrate 2.0 Job Manager Guide*.

2.3 How Do I Interact with PlateSpin Orchestrate?

Administrators and users perform their activities by using their own graphical tool or command line interface tools. In general, the same functions are available in either the graphical or the command line tools. The toolset is summarized in the chart below.

Table 2-1 Summary of the PlateSpin Orchestrate Toolset

Role	Tool Type	Description	Common Function
Administrator	Graphical Interface	The PlateSpin Orchestrate Development Client	<ul style="list-style-type: none"> ♦ Stops or starts the Orchestrate Server(s)
	Command Line Interface	Sample command line for help: <code>zosadmin command --help</code>	<ul style="list-style-type: none"> ♦ Deploys jobs. ♦ Manages Group and Policy associations. ♦ Monitors jobs. ♦ Helps troubleshoot jobs/policies. ♦ Monitors computing resource usage. ♦ Creates and manages user accounts.
	Graphical Interface	The PlateSpin Orchestrate VM Client	<ul style="list-style-type: none"> ♦ Discovers host servers in the Orchestrate grid ♦ Discovers existing VMs ♦ Creates, edits, installs, and deletes VMs ♦ Manages VM repositories ♦ Stops, starts, pauses, or suspends VMs ♦ Migrates or moves VMs ♦ Installs the Orchestrate Agent on VMs ♦ Creates and clones VM templates ♦ Provides group management of VMs, host servers, storage locations, and templates ♦ Resyncs state of VMs and hosts with Orchestrate Server ♦ Provides access to VM and Host consoles ♦ Shows details of VM and host configurations ♦ Provides error log and progress views

Role	Tool Type	Description	Common Function
User	Graphical Interface	The Orchestrate User Portal	<ul style="list-style-type: none"> ◆ Displays deployed jobs. ◆ Displays available computing resources.
	Command Line Interface	Sample command line for help: <code>zos command --help</code>	<ul style="list-style-type: none"> ◆ Runs jobs. ◆ Monitors running jobs. ◆ Manages the user's own jobs. That is, a user can cancel, pause, restart, and change job priority.

Other functions can also be performed by using either the graphical or command line tools. The sections that follow show examples of performing these functions from either interface, when applicable.

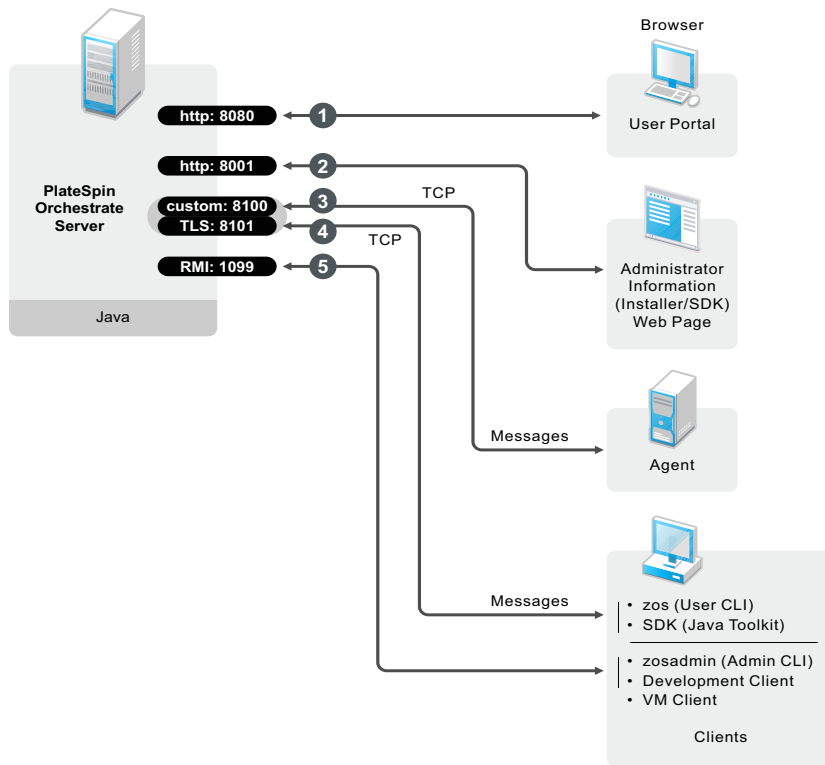
To help you understand how these tools can be used, you can find more information in the following sections:

- ◆ The *PlateSpin Orchestrate 2.0 VM Client Guide and Reference*
- ◆ The *PlateSpin Orchestrate 2.0 Development Client Reference*
- ◆ “The zosadmin Command Line Tool” and “The zos Command Line Tool” in the *PlateSpin Orchestrate 2.0 Command Line Reference*.
- ◆ “Using the PlateSpin Orchestrate User Portal” in the *PlateSpin Orchestrate 2.0 Job Manager Guide*.

2.4 How PlateSpin Orchestrate Components Communicate

The following diagram illustrates how the various components of PlateSpin Orchestrate communicate with the Orchestrate Server. An explanation for each communication link follows the diagram.

Figure 2-2 *Communication Ports Used By the Orchestrate Server*



1. To open the User Portal for managing jobs in a Web browser, enter the URL of the Orchestrate Server followed by the port designated for the User Portal during installation. In a basic installation of PlateSpin Orchestrate, this is port 8080. The URL would therefore be entered as follows:

```
http://DNS_Name_or_IP_Address:8080
```

2. Administrators who want more information about PlateSpin Orchestrate and a method to access or install additional clients or agents can access the Administrator Information page. To do so, open a Web browser and enter the URL to the Orchestrate Server, followed by the port designated for the Web Info page during installation. In a basic installation of PlateSpin Orchestrate, the default is port 8001. The URL would therefore be entered as follows:

```
http://DNS_Name_or_IP_Address:8001
```

3. The Orchestrate Server establishes and maintains contact with an installed Orchestrate Agent on a computing resource through port 8100, using a custom protocol.
4. When a user invokes the `zos` command line interface (available after PlateSpin Orchestrate clients are installed on a machine), or when using the Java toolkit SDK, those client tools communicate with the Orchestrate Server over ports 8100 and 8101.
5. When the administrator invokes the `zosadmin` command line interface (available after PlateSpin Orchestrate clients — including the Orchestrate Development Client — are installed on a machine), or when using the PlateSpin Orchestrate Development Client, those client tools communicate with the Orchestrate Server over port 1099, which uses a Java RMI (Remote Method Invocation) protocol.