AUTHORIZED DOCUMENTATION

Installation Guide

Novell® Teaming

2.1

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Contents

About This Guide 11

Part I Product Overview 13

1 What Is Novell Teaming? 15

1.1 Teaming Capabilities . . . 15
1.1.1 Content Consumers . . . 15
1.1.2 Content Providers . . . 15
1.1.3 Administrators . . . 16
1.2 Teaming Components . . . 16
1.2.1 Teaming Software . . . 16
1.2.2 Teaming Database . . . 17
1.2.3 Teaming File Repository . . . 17
1.2.4 Lucene Index . . . 17
1.3 Teaming Configurations . . . 17

2 Teaming System Requirements 19

2.1 Teaming Server Requirements . . . 19
2.2 Teaming User Requirements . . . 20
2.3 Mobile Device Requirements . . . 21
2.3.1 Supported Mobile Devices . . . 21
2.3.2 Device Browser Requirements . . . 21
2.4 Supported Environments . . . 21
2.4.1 File Viewer Support . . . 22
2.4.2 IPV6 Support . . . 22
2.4.3 Clustering Support . . . 22
2.4.4 Xen Virtualization Support . . . 22
2.4.5 VMware Support . . . 23
2.4.6 Single Sign-On Support . . . 23
2.4.7 Linux File System Support . . . 23
2.5 Recommended Hardware Configurations . . . 23

Part II Basic Installation 25

3 Planning a Basic Teaming Installation 27

3.1 What Is a Basic Teaming Installation? . . . 27
3.2 Selecting the Operating Environment for Your Teaming Server . . . 28
3.2.1 Teaming Server Platform . . . 28
3.2.2 Teaming Server Architecture . . . 29
3.2.3 Teaming Server Memory . . . 29
3.2.4 Teaming Installation Locations . . . 30
3.2.5 TrueType Font Location (Linux Only) . . . 31
3.3 Selecting a Java Development Kit . . . 31
3.4 Gathering Network Information for Your Teaming Site . . . 32
3.4.1 Host Identification . . . 32
3.4.2 Port Numbers . . . 32

3.5 Planning the Teaming Database 34
3.5.1 Database Type 34
3.5.2 Database Setup Method 35
3.5.3 Database Location 35
3.5.4 Database Credentials 36
3.5.5 Database Encryption Algorithm 37
3.6 Gathering Outbound E-Mail Information 37
3.6.1 Outbound E-Mail Protocol 37
3.6.2 Outbound E-Mail Host 38
3.6.3 Outbound E-Mail Authentication 39
3.6.4 Outbound E-Mail Send Restriction 39
3.7 Enabling Inbound E-Mail 39
3.7.1 Internal Mail Host for Inbound E-Mail 40
3.7.2 Inbound E-Mail Port Number 40
3.7.3 Inbound E-Mail IP Address 40
3.7.4 Inbound E-Mail Security 41
3.8 Planning Site Security 41
3.8.1 Teaming Site Administrator Password 41
3.8.2 Linux User ID for Teaming 41
3.9 Gathering Directory Services Information 42
3.9.1 LDAP Directory Service 42
3.9.2 LDAP Connections 42
3.9.3 LDAP Synchronization Options 45
3.10 Accommodating Multiple Languages 47

4 Setting Up a Basic Teaming Site 49

4.1 Linux: Setting Up a Basic Teaming Site 49
4.1.1 Performing Pre-Installation Tasks on Linux 49
4.1.2 Running the Linux Teaming Installation Program 50
4.1.3 Configuring Teaming to Start Automatically on Reboot 53
4.1.4 Setting Up Port Forwarding 53
4.1.5 Starting Teaming on Linux 55
4.1.6 Checking the Status of the Teaming Server 56
4.1.7 Restarting Teaming 56
4.1.8 Stopping Teaming 56
4.1.9 Uninstalling Teaming 57
4.2 Windows: Setting Up a Basic Teaming Site 57
4.2.1 Performing Pre-Installation Tasks on Windows 57
4.2.2 Running the Windows Teaming Installation Program 58
4.2.3 Running Teaming as a Windows Service 59
4.2.4 Running Teaming as a Windows Application 61
4.2.5 Uninstalling Teaming 61

5 Adding Users to Your Teaming Site 63

5.1 Accessing Your Basic Teaming Site as the Site Administrator 63
5.2 Creating a User 64
5.3 Adding Teaming Users from Your LDAP Directory 65

6 Updating Your Teaming License 69

7 What's Next 71

8 Basic Teaming Installation Summary Sheet 73

Part III Advanced Installation and Reconfiguration 79

9 Planning an Advanced Teaming Installation 81

9.1 What Is an Advanced Installation? . . . 81
9.2 Distributing Different Data Types to Different Locations . . . 81
9.3 Using Advanced Network Information Settings . . . 83
9.3.1 Changing the Teaming Session Timeout . . . 83
9.3.2 Providing a Secure Keystore File . . . 83
9.4 Configuring Web Services . . . 84
9.5 Changing Your Lucene Index Server Configuration . . . 84
9.5.1 Understanding Indexing . . . 85
9.5.2 Changing Lucene Configuration Settings . . . 85
9.5.3 Running the Lucene Index Server in Its Own JVM . . . 86
9.5.4 Running the Lucene Index Server on a Remote Server . . . 86
9.5.5 Running Multiple Lucene Index Servers . . . 86
9.6 Managing RSS Feeds . . . 86
9.6.1 Configuring RSS Feeds . . . 87
9.6.2 Disabling RSS Feeds . . . 87
9.7 Configuring Presence . . . 87
9.8 Configuring Single Sign-On with Novell Access Manager . . . 88
9.9 Configuring Mirrored Folder Resource Drivers . . . 89
9.9.1 File System Type . . . 89
9.9.2 File System Directory . . . 90
9.9.3 File System Access . . . 90
9.9.4 Mirrored Folder Setup . . . 90
9.10 Installing the Teaming Software in a Clustered Environment . . . 91

10 Performing an Advanced Teaming Installation 93

11 Setting Configuration Options after Installation 95

12 Advanced Teaming Installation Summary Sheet 97

Part IV Multi-Server Configurations and Clustering 101

13 Creating the Teaming Database on a Remote Server 103

13.1 Preparing to Manually Create a Database . . . 103
13.2 Creating a MySQL Database . . . 104
13.3 Creating a Microsoft SQL Database . . . 105
13.4 Creating an Oracle Database . . . 105
13.5 Installing Teaming with a Remote Database . . . 107

14 Moving the Lucene Index Server to a Remote Server 109

14.1 Installing the Lucene Software . . . 109
14.2 Updating Your Teaming Site . . . 110
14.3 Managing a Remote Lucene Index Server . . . 111
14.3.1 Linux: Managing a Remote Lucene Index Server . . . 111
14.3.2 Windows: Managing a Remote Lucene Index Server . . . 111

15 Running Teaming on Multiple Servers 113

15.1 Planning a Multi-Server Teaming Configuration . . . 113
15.1.1 Lucene Index Server Considerations . . . 113
15.1.2 Teaming File Repository Considerations . . . 113
15.2 Installing the Teaming Software on Multiple Servers . . . 113
15.3 Configuring a Web Application to Provide High Availability Functionality for Your Teaming Site 114
15.3.1 Configuring Tomcat and Apache as a Load Balancer . . . 115
15.3.2 Configuring Linux Virtual Server as a Load Balancer . . . 116
15.3.3 Configuring Ehcache for Multiple Clusters . . . 116

16 Running Multiple Lucene Index Servers 119

16.1 Planning a High Availability Lucene Configuration . . . 119
16.2 Setting Up a High Availability Lucene Configuration . . . 120
16.2.1 Changing from a Local Lucene Index Server . . . 120
16.2.2 Changing from a Single Remote Lucene Index Server . . . 123
16.2.3 Expanding an Existing High Availability Lucene Configuration . . . 126
16.2.4 Changing Your Lucene Configuration without Teaming Site Down Time . . . 128
16.3 Testing Your Lucene High Availability Configuration . . . 132
16.3.1 Configuring Teaming to Log Lucene Node Activity . . . 132
16.3.2 Observing Lucene Node Activity . . . 133
16.4 Synchronizing a High Availability Lucene Configuration . . . 134

17 Running Multiple Database Servers 135

Part V Update 137

18 What's New in Novell Teaming 2.*x* 139

18.1 Teaming 2.*x* User Enhancements . . . 139
18.2 Teaming 2.*x* Installation Enhancements . . . 139
18.3 Teaming 2.*x* Administration Enhancements . . . 139

19 Updating from Novell Teaming 2.0 to Novell Teaming 2.1 141

19.1 Understanding the Update Process from 2.0 to 2.1 . . . 141
19.2 Updating a Single-Server Teaming System from 2.0 to 2.1 . . . 141
19.2.1 Updating an Oracle Database from 2.0 to 2.1 . . . 142
19.3 Updating a Multiple-Server Teaming System from 2.0 to 2.1 . . . 143
19.3.1 Manual Teaming Database Update . . . 143
19.3.2 Manual Lucene Index Server Update . . . 144
19.4 Performing Post-Update Tasks . . . 145

20 Updating from Novell Teaming 1.0 to Novell Teaming 2.1 147

20.1 Understanding the Update Process . . . 147
20.2 Preparing Your Teaming System for Updating from 1.0 to 2.1 . . . 147
20.2.1 Updating Your Operating Environment . . . 148
20.2.2 Backing Up Your Teaming 1.0 Data . . . 148
20.2.3 Planning and Performing Your Update to Teaming 2.1 . . . 149
20.2.4 Entry Type Repair for Imported Files in Your Teaming 2.1 Site . . . 149
20.3 Updating a Single-Server Teaming System from 1.0 to 2.1 . . . 150
20.3.1 Updating an Oracle Database from 1.0 to 2.1 . . . 151
20.4 Updating a Multiple-Server Teaming System from 1.0 to 2.1 . . . 152
20.4.1 Manual Teaming Database Update . . . 152
20.4.2 Manual Lucene Index Server Update . . . 153
20.5 Performing Post-Update Tasks . . . 155

21 Updating from Kablink Teaming 1.0 to Novell Teaming 2.1 157

22 Changing from Kablink Teaming 2.1 to Novell Teaming 2.1 159

23 Migrating Existing Novell Teaming Data into a New Teaming 2.1 System 161

23.1 Linux Migration with a MySQL Database . . . 161
23.1.1 Preparing the Target Linux Server . . . 161
23.1.2 Preparing the Source Linux Server . . . 162
23.1.3 Transferring Data from the Source Server to the Target Server . . . 162
23.1.4 Importing the Teaming Database to the Target Server . . . 163
23.1.5 Updating the Teaming Database on the Target Server . . . 163
23.1.6 Updating the Zone Name from Teaming 1.0 to Teaming 2.1 (Conditional) . . . 164
23.1.7 Finalizing Your New Teaming 2.1 Site . . . 164
23.2 Windows Migration with an MS SQL Database . . . 165
23.2.1 Preparing the Target Windows Server . . . 165
23.2.2 Preparing the Source Windows Server . . . 165
23.2.3 Transferring Data from the Source Server to the Target Server . . . 166
23.2.4 Importing the Teaming Database to the Target Server . . . 167
23.2.5 Updating the Teaming Database on the Target Server . . . 167
23.2.6 Updating the Zone Name from Teaming 1.0 to Teaming 2.1 (Conditional) . . . 168
23.2.7 Finalizing Your New Teaming 2.1 Site . . . 168

24 Migrating from SiteScape Forum or Other Collaboration Software 169

Part VI Appendixes 171

A Teaming System Requirements Assistance 173

A.1 Java Development Kit . . . 173
A.1.1 Sun JDK on Linux . . . 173
A.1.2 IBM JDK on Linux . . . 174
A.1.3 Sun JDK on Windows . . . 175
A.2 MySQL Database Server . . . 175
A.2.1 MySQL on Linux . . . 175
A.2.2 MySQL on Windows . . . 177

B Third-Party Materials **179**

B.1 ANTLR 3 License 179
B.2 Colt License Agreement 180
B.3 Dom4j License 180
B.4 iCal4j License 181
B.5 ICU4J license (ICU4J 1.3.1 and later) 181
B.6 JAXEN License 182
B.7 Jung 183

About This Guide

The *Novell Teaming 2.1 Installation Guide* covers the installation and configuration of the Novell® Teaming software. The guide is divided into the following sections:

- Part I, “Product Overview,” on page 13
- Part II, “Basic Installation,” on page 25
- Part III, “Advanced Installation and Reconfiguration,” on page 79
- Part IV, “Multi-Server Configurations and Clustering,” on page 101
- Part V, “Update,” on page 137
- Part VI, “Appendixes,” on page 171

Audience

This guide is intended for Novell Teaming administrators.

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 and enter your comments there.

Documentation Updates

For the most recent version of the *Novell Teaming 2.1 Installation Guide* and other documentation, visit the Novell Teaming 2.1 Documentation Web site (http://www.novell.com/documentation/teaming21).

Additional Documentation

You can find more information in the Novell Teaming documentation, which is accessible from links within Novell Teaming:

- Novell Teaming Help system
- *Novell Teaming Quick Start*
- *Novell Teaming User Guide*
- *Novell Teaming Advanced User Guide*
- *Novell Teaming Administration Guide*
- *Novell Teaming Developer Guide*

To access the Novell Teaming Help system, log in to the Teaming site, then click the *Help* icon (question mark), then click a yellow Help spot for context-sensitive help.

To access the Novell Teaming guides from within Teaming, click the *Help* icon (question mark), then click *Teaming Manuals*.

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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.

Product Overview

- Chapter 1, “What Is Novell Teaming?,” on page 15
- Chapter 2, “Teaming System Requirements,” on page 19

What Is Novell Teaming?

1

Novell® Teaming is an enterprise collaboration tool designed to increase individual productivity, team effectiveness, and organizational success by providing the right set of tools to the right people.

- Section 1.1, “Teaming Capabilities,” on page 15
- Section 1.2, “Teaming Components,” on page 16
- Section 1.3, “Teaming Configurations,” on page 17

1.1 Teaming Capabilities

Novell Teaming users fall into three basic groups:

- Section 1.1.1, “Content Consumers,” on page 15
- Section 1.1.2, “Content Providers,” on page 15
- Section 1.1.3, “Administrators,” on page 16

1.1.1 Content Consumers

Content consumers use Novell Teaming to work with important information that pertains to them. Content consumers:

- Maintain their personal workspaces, including setting up a personal blog, calendar, file folder, guestbook, photo album, and task folder
- Participate in team workspaces set up for content providers, in order to better collaborate with colleagues and facilitate their work assignments
- Search the Teaming site for people, places, and other information that pertains to their personal work assignments
- Identify subject-matter experts to assist them in their personal work assignments

The typical tasks performed by content consumers are covered in the *Novell Teaming 2.1 User Guide*.

In many cases, content consumers quickly become content providers as well.

1.1.2 Content Providers

Content providers use Novell Teaming to create and manage teams, customize the Teaming environment, and import data into the Teaming site for use by other Teaming users. Content providers:

- Create and manage team workspaces and folders
- Control user access to their team workspaces
- Establish unique branding for workspaces and folders to clearly differentiate them from other places on the Teaming site

- Create landing pages for workspaces that consolidate the most information workspace information into a single page
- Customize data entry forms for gathering information from users
- Create workflows to automate otherwise time-consuming manual processes

The typical tasks performed by content providers are covered in the *Novell Teaming 2.1 User Guide*.

1.1.3 Administrators

A Novell Teaming administrator is responsible for installing the Teaming software and setting up the Teaming site. This *Novell 2.1 Installation Guide* provides instructions for Teaming software installation. After installation, the Teaming site administrator can:

- Set up user access to the Teaming site
- Create initial workspaces and populate them with information that is of interest to Teaming users
- Control user access to workspaces and folders
- Configure e-mail integration, so that Teaming users can receive notifications of updated information on the Teaming site and post to the Teaming site using e-mail messages
- Set up mirrored folders to make large sets of data that are already available on disk more easily available through the Teaming site
- Set up software extensions (add-ons) that enhance the power and usefulness of the Teaming site
- Set up remote applications that deliver data from a remote location, such as a remote database, for easy access on your Teaming site
- Manage users, workspaces, and folders as the Teaming site grows and evolves
- Perform regular backups to safeguard the data stored in the Teaming site

The typical tasks performed by Teaming site administrators are covered in the *Novell Teaming 2.1 Administration Guide*.

1.2 Teaming Components

A Novell Teaming site consists of four major components:

- Section 1.2.1, “Teaming Software,” on page 16
- Section 1.2.2, “Teaming Database,” on page 17
- Section 1.2.3, “Teaming File Repository,” on page 17
- Section 1.2.4, “Lucene Index,” on page 17

1.2.1 Teaming Software

The Novell Teaming software is a customized version of Apache* Tomcat. This software provides all the Web-based functionality you use as you access the Teaming site through your Web browser.

1.2.2 Teaming Database

The Novell Teaming database is used for storing information about the Teaming site and its users:

- Structural information about workspaces, folders, and entries (for example, their location in the workspace tree)
- Identification information about workspaces, folders, and entries (for example, titles, descriptions, dates of creation/modification, and users associated with creation/modification)
- User profile information (for example, full name, phone number, and e-mail address)

The Teaming database disk space requirements are relatively modest, because it is not used for storing files.

1.2.3 Teaming File Repository

The Novell Teaming file repository holds all files that are imported into Teaming, information related to the imported files, such as thumbnails and HTML renderings, and the search engine index.

The Teaming file repository disk space requirements depend on the size of the Teaming site. For a large Teaming site, disk space requirements can be substantial.

1.2.4 Lucene Index

The Lucene* Index Server is a high-performance Java* search engine. The Lucene index contains pointers to the actual data stored in the Novell Teaming file repository. The index enables the Lucene search engine to perform very fast searches through large quantities of Teaming data.

1.3 Teaming Configurations

You can configure Novell Teaming to run on a single server or multiple servers, depending on the size and needs of your Teaming site.

Configuration	Description
Single Server	By default, the Novell Teaming Installation program installs all Teaming components on the same server.
Remote Database Server	For better performance and scalability, you can install the Teaming database on a remote server
Remote Lucene Index Server	For better performance and scalability, you can install the Lucene index on a remote server
Multiple Teaming Servers	By running Novell Teaming on multiple servers, you can achieve high availability functionality, including failover and load balancing, depending on how you configure your servers.
Multiple Remote Lucene Servers	Your Novell Teaming site depends on the Lucene Index Server for full functionality. Running multiple Lucene Index Servers provides high availability functionality, so that if one Lucene Index Server goes down, Teaming users can still access the Teaming site because other Lucene Index Servers are still available.

Configuration	Description
Multiple Remote Database Servers	The three databases supported by Teaming each have their own approach to clustering the database server. Information about clustering database servers is available on the Internet.

For more information, see Part IV, “Multi-Server Configurations and Clustering,” on page 101.

Teaming System Requirements

2

You, as a Novell® Teaming site administrator, must ensure that your system meets Teaming system requirements, so that your Teaming site can be set up successfully. After your Teaming site is set up, you must ensure that users' browsers and office applications meet Teaming user requirements, so that users can access the Teaming site successfully.

- Section 2.1, "Teaming Server Requirements," on page 19
- Section 2.2, "Teaming User Requirements," on page 20
- Section 2.3, "Mobile Device Requirements," on page 21
- Section 2.4, "Supported Environments," on page 21
- Section 2.5, "Recommended Hardware Configurations," on page 23

For the latest system requirements details, see the Novell Teaming 2.1 Readme (http://www.novell.com/documentation/teaming21/team21_readme_novell/data/team21_readme_novell.html).

2.1 Teaming Server Requirements

- Hardware for the Novell Teaming server:
  - 32-bit/x86 processor or 64-bit/x86 processor
  - Minimum 2 GHz processor
  - Multi-CPU systems preferred
  - Adequate server memory:
    - At least 3 GB RAM for a 32-bit processor
    - At least 4 GB RAM for a 64-bit processor

    See Section 2.5, "Recommended Hardware Configurations," on page 23 and Section 3.2.3, "Teaming Server Memory," on page 29
- Any of the following supported server operating systems for the Teaming server:
  - Novell® Open Enterprise Server (OES) 2 Linux, plus the latest Support Pack
  - SUSE® Linux Enterprise Server (SLES) 10 or SLES 11, plus the latest Support Pack

    NOTE: The X Window System is required by the Teaming Installation program. It is not required when running Teaming after installation.
  - Windows* Server* 2003 or Windows Server 2008, plus the latest Service Pack
- Database server:
  - Linux:
    - MySQL* 5.0.26 or later server and client, or MySQL 5.1 server and client

      NOTE: MySQL 5.0.26 is included with SLES 10 SP1 and OES 2 Linux. MySQL 5.0.67 is included with SLES 11.
    - Oracle* 10g or Oracle 11g

- Windows:
  - MySQL 5.0.26 or later server and tools, or MySQL 5.1 server and tools
  - Microsoft* SQL Server* 2005 or SQL Server 2008, plus the latest Service Pack
  - Oracle 10g or Oracle 11g

  More information about MySQL is available in MySQL Database Server in Appendix A, "Teaming System Requirements Assistance," on page 173.

- Tomcat 6.0.18

  NOTE: Tomcat 6.0.18 is included with Teaming on Linux and Windows.

- Java Developer Kit (JDK*):
  - Sun* JDK 5.0 or JDK 6.0
  - IBM* JDK 5.0 or JDK 6.0

    Java scripting must be enabled for proper Teaming site functionality.

    More information about JDKs is available in Java Development Kit in Appendix A, "Teaming System Requirements Assistance," on page 173.

- Directory service:
  - Linux: Novell eDirectory™ 8.8 or later, plus the latest Support Pack

    For information about eDirectory, see the Novell eDirectory 8.8 Documentation Web site (http://www.novell.com/documentation/edir88).
  - Windows: Microsoft Active Directory*, plus the latest Service Pack, or Novell eDirectory 8.8 or later, plus the latest Support Pack

    For information about Active Directory, see Windows Server 2003 Active Directory (http://www.microsoft.com/windowsserver2003/technologies/directory/activedirectory) or Windows Server 2008 Active Directory (http://www.microsoft.com/windowsserver2008/en/us/active-directory.aspx).

- Adequate server disk space:
  - Teaming software: Approximately 250 MB
  - Database server software: Approximately 250 MB
  - Teaming file repository: Depends on the anticipated size of the Teaming site
  - Database content: Substantially less than the Teaming file repository

    See Section 3.5, "Planning the Teaming Database," on page 34 to plan for the disk space needs of your Teaming site.

NOTE: Teaming 1.0 was integrated with the Liferay* portal, but the Teaming 2.*x* releases are not. If you are updating from Teaming 1.0 to Teaming 2.1, the Installation program backs up your existing Liferay data and reconfigures your Teaming site to run without integration with Liferay.

2.2 Teaming User Requirements

- Web browser:
  - Linux: Mozilla* Firefox*

- Windows: Microsoft Internet Explorer* 6.0 or later; Mozilla Firefox
- Mac: Safari* 3 or later; Mozilla Firefox

- Office applications:
  - Linux: OpenOffice.org* 3.1.1 or later
  - Windows: Microsoft Office 2007; OpenOffice.org 3.1.1 or later
  - Mac: OpenOffice.org 3.1.1 or later
- Collaboration clients:
  - Linux:
    - GroupWise® 8 with the latest Support Pack
  - Windows:
    - GroupWise 8 with the latest Support Pack
    - Outlook 2007 with iCal support enabled
    - Notes 7 with iCal support enabled

2.3 Mobile Device Requirements

- Section 2.3.1, "Supported Mobile Devices," on page 21
- Section 2.3.2, "Device Browser Requirements," on page 21

2.3.1 Supported Mobile Devices

The Novell Teaming mobile interface is supported on the following mobile devices:

- iPhone*
- BlackBerry*

NOTE: The BlackBerry Curve* has issues with JavaScript*, so it does not work with the Teaming mobile interface. For more information, see "Your BlackBerry Curve Does Not Work with the Mobile Interface" in "Troubleshooting" in the *Novell Teaming 2.1 User Guide*.

- Any other mobile device that provides an HTTP/HTML-based interface

Ensure that your device's browser meets the requirements that are discussed in Section 2.3.2, "Device Browser Requirements," on page 21.

2.3.2 Device Browser Requirements

To use Novell Teaming from a mobile device, your device's browser must support:

- HTML 4
- JavaScript

2.4 Supported Environments

- Section 2.4.1, "File Viewer Support," on page 22
- Section 2.4.2, "IPV6 Support," on page 22

- Section 2.4.3, “Clustering Support,” on page 22
- Section 2.4.4, “Xen Virtualization Support,” on page 22
- Section 2.4.5, “VMware Support,” on page 23
- Section 2.4.6, “Single Sign-On Support,” on page 23
- Section 2.4.7, “Linux File System Support,” on page 23

2.4.1 File Viewer Support

In Novell Teaming, file viewing capabilities are provided by Oracle Outside In viewer technology. See Oracle Outside In Technology 8.3 Supported Formats (http://www.oracle.com/technology/products/content-management/oit/ds_oitFiles.pdf) for a list of the supported file formats. See Oracle Outside In Technology (http://www.oracle.com/technologies/embedded/outside-in.html) for background information about the Oracle viewer technology included in Teaming.

The file viewers also support data indexing by the Lucene Index Server.

2.4.2 IPV6 Support

Novell Teaming supports the IPV6 protocol when it is available on the server. If it is available, Teaming detects it and supports IPV6 by default, along with IPV4.

2.4.3 Clustering Support

You can set up your Novell Teaming site in any of the following clustering environments:

- Novell Cluster Services™ on Linux.

  For information about Novell Cluster Services on Linux, see the Clustering (High Availability) section of the Open Enterprise Server 2 SP1 Documentation Web site (http://www.novell.com/documentation/oes2/cluster-services.html#cluster).

- Microsoft Clustering Services in Windows

  For more information, see Windows 2003 Server Cluster (http://www.microsoft.com/windowsserver2003/enterprise/clustering.mspx) or Windows Server 2008 High Availability (http://www.microsoft.com/windowsserver2008/en/us/high-availability.aspx).

In addition, you can install Teaming components on multiple servers to provide failover support, as described in Part IV, “Multi-Server Configurations and Clustering,” on page 101.

2.4.4 Xen Virtualization Support

You can install Novell Teaming in virtual environments where a software program enables one physical server to function as if it were two or more physical servers. Xen* virtualization technology in Novell Open Enterprise Server (Linux version) and SUSE Linux Enterprise Server is supported. For more information, see:

- Open Enterprise Server 2 Virtualization Documentation Web site (http://www.novell.com/documentation/oes2/virtualization.html#virtualization)
- SLES Virtualization Technology Documentation Web site (http://www.novell.com/documentation/vmserver).

2.4.5 VMware Support

Novell Teaming is supported on the following versions of VMware*:

- VMware Server (formally GSX Server), an enterprise-class virtual infrastructure for x86-based servers
- VMware ESX Server, a data-center-class virtual infrastructure for mission-critical environments

  For more information, see the VMWare Web site (http://www.vmware.com).

2.4.6 Single Sign-On Support

Novell Access Manager can be used to provide single sign-on capabilities for your Teaming site. For setup instructions, see Section 9.8, “Configuring Single Sign-On with Novell Access Manager,” on page 88.

2.4.7 Linux File System Support

For best Novell Teaming performance on Linux, the `ext3` file system is recommended. If you are running OES Linux and need the feature-rich environment of the NSS file system, Teaming is also supported there. The `reiser3` file system is also supported.

2.5 Recommended Hardware Configurations

The hardware configuration that you set up for your Teaming site should be based on the number of active users that the Teaming site must support.

Active Users	Teaming Components	CPU	Memory	Java Heap
10	1 dedicated Teaming server with: ◆ Tomcat ◆ Lucene ◆ SQL	x86	2 GB	1 GB
50	1 dedicated Teaming server with: ◆ Tomcat ◆ Lucene ◆ SQL	x64 dual core	4 GB	2 GB
100	Multiple Teaming servers: ◆ 1 dedicated Tomcat server ◆ 1 dedicated Lucene server ◆ 1 dedicated SQL server	x64 dual core	4 GB	2 GB

Active Users	Teaming Components	CPU	Memory	Java Heap
500	Multiple Teaming servers: ◆ 3 dedicated Tomcat servers with an L4 load balancer ◆ 2 dedicated Lucene servers ◆ 2 dedicated SQL servers	x64 quad core	8 GB	6 GB
1000	Multiple Teaming servers: ◆ 5 dedicated Tomcat servers with an L4 load balancer ◆ 4 dedicated Lucene servers ◆ 2 dedicated SQL servers	x64 quad core	8 GB	6 GB

Server machines can be physical or virtual.

You can perform a Basic Installation to set up a single-server configuration, as described in Chapter 3, “Planning a Basic Teaming Installation,” on page 27 and Chapter 4, “Setting Up a Basic Teaming Site,” on page 49.

You can perform a Basic Installation to set up a multiple-server configuration, but the remote database must be created manually and in advance of performing the installation, as described in Part IV, “Multi-Server Configurations and Clustering,” on page 101.

Basic Installation

- Chapter 3, “Planning a Basic Teaming Installation,” on page 27
- Chapter 4, “Setting Up a Basic Teaming Site,” on page 49
- Chapter 5, “Adding Users to Your Teaming Site,” on page 63
- Chapter 6, “Updating Your Teaming License,” on page 69
- Chapter 7, “What’s Next,” on page 71
- Chapter 8, “Basic Teaming Installation Summary Sheet,” on page 73

Planning a Basic Teaming Installation

3

The Novell® Teaming Installation program helps you install the Teaming software and file repository to the appropriate locations.

- Section 3.1, “What Is a Basic Teaming Installation?,” on page 27
- Section 3.2, “Selecting the Operating Environment for Your Teaming Server,” on page 28
- Section 3.3, “Selecting a Java Development Kit,” on page 31
- Section 3.4, “Gathering Network Information for Your Teaming Site,” on page 32
- Section 3.5, “Planning the Teaming Database,” on page 34
- Section 3.6, “Gathering Outbound E-Mail Information,” on page 37
- Section 3.7, “Enabling Inbound E-Mail,” on page 39
- Section 3.8, “Planning Site Security,” on page 41
- Section 3.9, “Gathering Directory Services Information,” on page 42
- Section 3.10, “Accommodating Multiple Languages,” on page 47

3.1 What Is a Basic Teaming Installation?

The Novell Teaming Installation program provides two installation types: Basic and Advanced. When you perform a Basic installation, the result is a fully functional Teaming site with all required options configured and with typical defaults in use for optional settings.

If you are new to Teaming, the easiest way to get started is to perform a Basic installation first, with all Teaming components installed on the same server, then add advanced configuration options to your Teaming site after the Basic installation has been successfully tested. However, experienced Teaming administrators can choose to perform an Advanced installation immediately, which includes all installation and configuration options, as described in Part III, “Advanced Installation and Reconfiguration,” on page 79.

IMPORTANT: The following Teaming configurations require that you perform an Advanced installation as your initial installation of the Teaming software:

- Setting up the Teaming file repository so that some types of files are located outside the Teaming file repository root directory. See Section 9.2, “Distributing Different Data Types to Different Locations,” on page 81 for Advanced installation instructions. You cannot move subdirectories within the Teaming file repository after they have been created.
- Installing the Teaming software on multiple servers to create a clustered environment. See Chapter 15, “Running Teaming on Multiple Servers,” on page 113 for Advanced installation instructions. The option to enable a clustered environment is available only during an Advanced installation.

If you want to implement an Advanced installation option, you should perform a Basic installation first, in a test environment, before performing the Advanced installation to set up your permanent Teaming site.

This section helps you make informed decisions about the required options for a Basic installation:

- Server platform (Linux or Windows)
- Server architecture (32-bit or 64-bit)
- Physical server memory requirements
- File locations (Teaming software and data)
- Java Development Kit (JDK) version (Sun or IBM)
- Database type (MySQL, Microsoft SQL Server, or Oracle)
- Database creation (during installation or before installation)
- Database authentication (username and password)
- Network information (Teaming server hostname or fully qualified domain name, and ports)
- Outbound e-mail configuration (SMTP vs. SMTPS, hostname, SMTP port, time zone, authentication)
- Inbound e-mail configuration (SMTP address, SMTP port, and TLS support)
- User and group for running the Teaming software (Linux only)

Before performing a Basic installation, make all system requirements are met, as listed in Chapter 2, “Teaming System Requirements,” on page 19.

3.2 Selecting the Operating Environment for Your Teaming Server

- Section 3.2.1, “Teaming Server Platform,” on page 28
- Section 3.2.2, “Teaming Server Architecture,” on page 29
- Section 3.2.3, “Teaming Server Memory,” on page 29
- Section 3.2.4, “Teaming Installation Locations,” on page 30
- Section 3.2.5, “TrueType Font Location (Linux Only),” on page 31

3.2.1 Teaming Server Platform

Novell Teaming can run on the versions of Linux and Windows listed in Section 2.1, “Teaming Server Requirements,” on page 19.

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *Teaming Server Platform*, mark your operating system of choice.

3.2.2 Teaming Server Architecture

Novell Teaming can run on 32-bit or 64-bit processors. A 64-bit processor is recommended for a large Teaming site where the processor load will be heavy and data storage will require a large amount of disk space.

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *Processor Architecture*, mark the processor capacity required for the size of Teaming site that you want to set up.

3.2.3 Teaming Server Memory

If a 32-bit processor is sufficient for your Novell Teaming server, the server needs at least 3 GB of memory. If you plan to use a 64-bit processor in your Teaming server, the server needs more.

Teaming server memory usage is significantly affected by some factors and less affected by others:

- **Number of users logged in:** No significant effect.
- **Number of concurrent active sessions:** No significant effect.
- **Database server caches:** Significant memory usage.

  When you follow the instructions for a Basic installation, the database is located on the same server as the Teaming software. After you have successfully tested your Basic installation, you can reconfigure Teaming to have its database on a remote server, so that the database uses separate memory resources, as described in Chapter 13, "Creating the Teaming Database on a Remote Server," on page 103.
- **Teaming internal data caches:** Significant memory usage.

  When you follow the instructions for a Basic installation, the Teaming internal data caches are subdirectories of the `teamingdata` directory, described in Section 3.2.4, "Teaming Installation Locations," on page 30. The Teaming internal data caches are separate from any caching or memory usage by the database server itself.
- **Lucene index cache:** Significant memory usage.

  The Lucene* Index Server is a high-performance Java search engine. Large file repositories (particularly with large files or a large number of files) can create a very large data index. When you perform a Basic installation, the Lucene index is created on the same server where the Teaming software is installed. After you have successfully tested your Basic installation, you can reconfigure Teaming to have its Lucene index on a remote server, so that it uses separate memory resources, as described in "Moving the Lucene Index Server to a Remote Server" on page 109.

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *Memory Requirements*, specify the amount of physical memory you plan to have in your Teaming server.

When you perform a Basic installation, the amount of memory allocated to the Java Virtual Machine (JVM*) where the Teaming software runs defaults to 1 GB, which is adequate for a medium-sized Teaming site running on a 32-bit server. This memory allocation, called the Java "heap size," does not include memory used by your database server or by the Lucene Index Server when these programs are running on the same server as the Teaming software.

A general rule is that no more than 75% of the available physical memory should be allocated to the JVM. Memory not allocated to the JVM must be sufficient to support the operating system, the database server, and the Lucene Index Server if they are also running on the Teaming server, and any other processes running on the Teaming server.

IMPORTANT: A JVM on a 32-bit server should not be configured to take more than 1.5 G of memory. However, large numbers of users and documents often need memory settings higher than 2 GB to provide adequate performance. Such a Teaming system should be set up on 64-bit hardware.

ADVANCED TEAMING INSTALLATION SUMMARY SHEET

Under *Java JDK Location*, specify the amount of memory to allocate to the JVM where Teaming runs.

Although it is possible to run Novell Teaming with less than 1 GB of memory for the JVM, this applies only to very small test configurations, and is not suitable for production systems. In a test configuration, 512 MB is the minimum amount of memory required to produce a functioning Teaming installation.

3.2.4 Teaming Installation Locations

The default file location for the Novell Teaming software varies by platform:

Linux: `/opt/novell/teaming`

Windows: `c:\Program Files\Novell\Teaming`

Included under the main Teaming software directory are subdirectories for Tomcat and file viewer software.

The default file location for the Novell Teaming file repository also varies by platform:

Linux: `/var/opt/novell/teaming`

Windows: `c:\Novell\Teaming`

IMPORTANT: On Windows, the Teaming Installation program displays the Windows pathname using forward slashes (/) rather than the traditional back slashes (\). This syntax is necessary in the Installation program.

The Teaming file repository holds all files that are imported into Teaming, information related to the imported files, such as thumbnails and HTML renderings, and the search engine index.

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *File Locations*, specify the directories where you want to install the Teaming software and data if you prefer not to use the default locations.

A Basic installation allows you to change the root directory for the Teaming software and the Teaming file repository.

IMPORTANT: If you want to organize the Teaming file repository so that some file types are not under the Teaming file repository root directory, you must perform an Advanced installation as your initial Teaming installation. You cannot move directories out of the Teaming file repository root directory after the initial installation has been performed. To perform an Advanced installation in order to organize the Teaming file repository to meet your needs, complete the planning steps for a Basic installation and complete the Basic Teaming Installation Summary Sheet, then follow the additional instructions in Distributing Different Data Types to Different Locations.

3.2.5 TrueType Font Location (Linux Only)

The Oracle Outside In viewer technology used by Novell Teaming to render various file formats into HTML for viewing require access to TrueType* fonts. Typical locations for these fonts are:

```
/usr/X11R6/lib/X11/fonts/truetype
/usr/share/fonts/truetype
```

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *File Locations*, specify the directories where you want to install the Teaming software and data if you prefer not to use the default locations.

3.3 Selecting a Java Development Kit

As listed in Section 2.1, “Teaming Server Requirements,” on page 19, you need to install a Java Development Kit (JDK) before you install Novell Teaming. You can use either the Sun JDK or the IBM JDK for the platform where you are installing Teaming (Linux or Windows). The Sun JDK is available in 32-bit and 64-bit versions. The IBM JDK is available for 32-bit processors only.

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *Java Development Kit*, mark the JDK that you want to use with Teaming.

You must install the JDK on the Teaming server before you install the Teaming software. If you are not familiar with installing a JDK, see Java Development Kit in Appendix A, “Teaming System Requirements Assistance,” on page 173 for instructions.

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *Java Development Kit*, specify the directory where you install the JDK.

The Teaming Installation program uses this path as if you had set the JAVA_HOME environment variable. The path is stored for future reference in the `installer.xml` file so that you have to specify the path to the JDK only once.

3.4 Gathering Network Information for Your Teaming Site

When you perform a Basic installation, the Novell Teaming Installation program needs hostname and HTTP port information about the server where you are installing Teaming.

- Section 3.4.1, "Host Identification," on page 32
- Section 3.4.2, "Port Numbers," on page 32

3.4.1 Host Identification

When you install Novell Teaming, the Teaming installation program needs to know the name of the server where you are installing the Teaming software. The default is `localhost`. Do not use the default.

For internal use, you can use the DNS hostname of the Teaming server. However, if you want your Teaming site to be accessible from the Internet, you must specify the fully qualified domain name for the Teaming server in order to allow external access.

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *Network Information*, specify the hostname or fully qualified domain name to use for the Teaming server.

3.4.2 Port Numbers

When you install Novell Teaming, Tomcat is installed along with the Teaming software. Teaming uses Tomcat as a standalone Web server for delivering data to Teaming users in their Web browsers. For more information about Tomcat, see the Apache Tomcat Web site (http://tomcat.apache.org).

IMPORTANT: If the server where you want to install Teaming already has a Web server running on it, shut it down while you install and test Teaming. The instructions for a Basic Teaming installation assume that no other Web server is running on the Teaming server. If you want to maintain another Web server on the Teaming server, you are responsible to resolve any port conflicts that might arise.

On the command line, use the `netstat` command to see what ports are currently in use on the server where you plan to install Teaming:

Linux: `netstat -tan`

Windows: `netstat -a -n -p tcp`

Make sure that the port numbers that you specify during Teaming installation do not conflict with ports that are already in use on the server.

- "HTTP/HTTPS Ports" on page 33

- "Shutdown Port" on page 33
- "AJP Port" on page 34

HTTP/HTTPS Ports

By default, standard Web servers such as Apache and Microsoft Internet Information Server (IIS) use port 80 for non-secure HTTP (Hypertext Transfer Protocol) connections and port 443 for secure HTTPS connections. HTTPS connections use SSL (Secure Sockets Layer) for added security. As a result, Web browsers default to port 80 when no port is specified in a non-secure HTTP URL and to port 443 when no port is specified in a secure HTTPS URL.

Tomcat defaults to port 8080 for non-secure HTTP connections and to port 8443 for secure HTTPS connections, so that it does not conflict with the standard Web server port numbers. If you configure Novell Teaming with the Tomcat default port numbers, users must include the appropriate port number when providing the Teaming site URL. Typically, users prefer not to do this.

Unfortunately, the situation is not as simple as just configuring Teaming to use the default port numbers of 80 and 443. On Linux, non-`root` processes are not allowed access to port numbers lower than 1024 and you are counseled against running Teaming as `root` in Section 3.8.2, "Linux User ID for Teaming," on page 41. Also on Linux and Windows, the default Tomcat installation expects ports 8080 and 8443.

For a Basic installation, you can use the default port numbers as presented by the Teaming Installation program:

HTTP port: 80
Secure HTTP port: 443
Listen port: 8080
Secure listen port: 8443

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *Network Information*, the default port numbers have been provided for you. You only need to specify different port numbers if you anticipate port conflicts with other software on the Teaming server. Resolving port conflicts is beyond the scope of this Teaming documentation.

After you install Teaming on Linux, you need to complete the steps in "Setting Up Port Forwarding" on page 53 so that users are not required to include the port number in the Teaming URL.

If you want to use secure HTTPS connections for your Teaming site, you must obtain signed certificate files as described in "Preparing for Secure HTTP Connections" in "Site Security" in the *Novell Teaming 2.1 Administration Guide* either before or after you install Teaming.

Shutdown Port

By default, Novell Teaming uses 8005 as its shutdown port. For an explanation of the shutdown port, see *Tomcat - Shutdown Port* (http://www.wellho.net/mouth/837_Tomcat-Shutdown-port.html).

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *Network Information*, specify the port you want Teaming to use as its shutdown port if the default of 8005 is already in use on the Teaming server.

AJP Port

By default, Novell Teaming uses 8009 as its AJP port. For an explanation of the Apache JServ Protocol port, see *The AJP Connector* (http://tomcat.apache.org/tomcat-6.0-doc/config/ajp.html).

IMPORTANT: If you are installing Teaming on Novell Open Enterprise Server 2, port 8009 is already in use, so you need to select a different port (for example 8010).

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *Network Information*, specify the port you want Teaming to use as its AJP port if the default of 8009 is already in use on the Teaming server.

3.5 Planning the Teaming Database

Novell Teaming database disk space requirements are relatively modest. Files that are imported into Teaming are saved in the Teaming file repository, as described in Section 3.2.4, "Teaming Installation Locations," on page 30.

The Teaming database is primarily used for storing:

- Structural information about workspaces, folders, and entries (for example, their location in the workspace tree)
- Identification information about workspaces, folders, and entries (for example, titles, descriptions, dates of creation/modification, and users associated with creation/modification)
- User profile information (for example, full name, phone number, and e-mail address)

You or your database administrator must make the following decisions about the Teaming database:

- Section 3.5.1, "Database Type," on page 34
- Section 3.5.2, "Database Setup Method," on page 35
- Section 3.5.3, "Database Location," on page 35
- Section 3.5.4, "Database Credentials," on page 36
- Section 3.5.5, "Database Encryption Algorithm," on page 37

3.5.1 Database Type

By default, Novell Teaming uses open source MySQL as its database on Linux and on Windows. On Linux, Teaming also supports Oracle. On Windows, Teaming also supports Microsoft SQL Server and Oracle.

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *Database Type*, mark the type of database that you want to use with Teaming.

Make sure that a supported version of the database server, as listed in Section 2.1, "Teaming Server Requirements," on page 19, is installed and running before you install Teaming.

3.5.2 Database Setup Method

If you plan to use a MySQL database or a Microsoft SQL database, the Novell Teaming Installation program can automatically set up the database for you. This is the easiest way to get started.

If you plan to use an Oracle database, you must have your database administrator set up the database for you. Instructions for your database administrator are provided in Section 13.4, "Creating an Oracle Database," on page 105.

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *Database Setup Method*, mark whether you want the Teaming Installation program to automatically set up a MySQL or Microsoft SQL database, or you need your database administrator to manually set up an Oracle database before you install Teaming.

3.5.3 Database Location

When you have the Novell Teaming Installation program create the database for you, the database is created on the same server where you install the Teaming software. This is the preferable location for your Basic installation. The default database name is `sitescape`, a reference to the company that previously developed the Teaming software.

Database Server	Default Linux Location	Default Windows Location
MySQL	`/var/lib/mysql`	`c:\Documents and Settings\All Users\ Application Data\MySQL\ MySQL Server version\Data`
Microsoft SQL	N/A	`c:\Program Files\Microsoft SQL Server\ MSSQL\Data`
Oracle	N/A	N/A

You can have your database administrator create a database on a remote server later, after you have successfully tested your Basic installation. See Chapter 13, "Creating the Teaming Database on a Remote Server," on page 103.

If you need to have your database administrator create an Oracle database, you must decide before installation whether you want the database on the Teaming server or on a remote server. See Section 13.4, "Creating an Oracle Database," on page 105.

Teaming knows where to find its database from the JDBC* (Java Database Connectivity) URL that you provide during installation. For a database that is local to the Teaming software, the default JDBC URL that provides `localhost` as the hostname of the Teaming server is appropriate. If the database is on a remote server, the JDBC URL must provide the hostname of the remote database server.

The JDBC URL also includes the port number on which Teaming can communicate with the database server. The default port number depends on the database server you are using:

Database Server	Default Port Number
MySQL	3306

Database Server	Default Port Number
Microsoft SQL	1433
Oracle	1521

Use this port number unless it is already in use by another process on the database server.

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *JDBC URL*, specify the appropriate hostname for the database server (`localhost` or the hostname of a remote server) and the port number it will use to communicate with Teaming.

3.5.4 Database Credentials

When you have the Novell Teaming Installation program create the database for you, it defaults to the following administrator usernames for the database server:

Database	Default Administrative Username
MySQL	`root` **IMPORTANT:** The MySQL `root` username is not the same as the Linux `root` user on a Linux server.
Microsoft SQL	`sa` (system administrator)
Oracle	(no default)

For an Oracle database, your database administrator establishes the administrator username and password for the database server.

Check with your database administrator to see if the default administrator username is still in use for your database server, and obtain the administrator password for the database server before you run the Teaming Installation program.

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *Database Credentials*, specify the administrator username and password for the database server so that Teaming can access its database.

3.5.5 Database Encryption Algorithm

Different encryption algorithms provide differing encryption strength. The supported algorithms for encrypting the Novell Teaming database password are listed below, in order from least strength to most strength.

- MD5
- SHA (default)
- SHA-256

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *Database Encryption Algorithm*, mark the encryption algorithm you want to use for Teaming passwords.

3.6 Gathering Outbound E-Mail Information

Your Novell Teaming site can be configured to send outbound e-mail through an existing e-mail system. E-mail from the Teaming site is useful for the following activities:

- Teaming users can subscribe to e-mail notifications, so that they automatically receive a message whenever a content of interest changes. For more information, see "Subscribing to a Folder or Entry" in "Getting Informed" in the *Novell Teaming 2.1 User Guide*.
- From the Teaming site, users can send e-mail messages to individual users or to teams. For more information, see "Sending E-Mail From within Teaming" in "Connecting With Your Co-Workers" in the *Novell Teaming 2.1 User Guide*.
- If your e-mail client is iCal-enabled, appointments created in a Teaming Calendar folder can be sent to your e-mail client for posting in your e-mail client Calendar. For example, if you are using GroupWise, see "Accepting or Declining Internet Items" in "Calendar" in the *GroupWise 8 Windows Client User GuideGroupWise 8 Windows Client Help*.

In order for your Teaming site to communicate with your e-mail system, you need to gather the following information about your e-mail system.

- Section 3.6.1, "Outbound E-Mail Protocol," on page 37
- Section 3.6.2, "Outbound E-Mail Host," on page 38
- Section 3.6.3, "Outbound E-Mail Authentication," on page 39
- Section 3.6.4, "Outbound E-Mail Send Restriction," on page 39

After installation, outbound e-mail can be disabled and enabled again on the Teaming site, as described in "Configuring E-Mail Integration" in "Site Setup" in the *Novell Teaming 2.1 Administration Guide*. However, you must configure outbound e-mail in the Teaming Installation program.

3.6.1 Outbound E-Mail Protocol

E-mail systems communicate using SMTP (Simple Mail Transfer Protocol). You need to determine whether the e-mail system that you want your Novell Teaming site to communicate with is using SMTP or SMTPS (secure SMTP).

For GroupWise, you can check how the Internet Agent is configured:

1. In ConsoleOne®, browse to and right-click the Internet Agent object, then click *Properties*.
2. Click *GroupWise* > *Network Address*.

   In the *SMTP* field, if the *SSL* column displays *Disabled*, GroupWise is using SMTP. If the *SSL* column displays *Enabled*, GroupWise is using SMTPS.
3. Click *Cancel* to close the Network Address page.

BASIC TEAMING INSTALLATION SUMMARY SHEET
Under *Outbound E-Mail Protocol*, mark SMTP or SMTPS to match the e-mail system that you want Teaming to communicate with.

If the e-mail system requires SMTPS, see "Securing E-Mail Transfer" in "Site Security" in the *Novell Teaming 2.1 Administration Guide*.

3.6.2 Outbound E-Mail Host

In order to send messages to your e-mail system, Novell Teaming needs to know the hostname of your SMTP mail server.

The default SMTP port of 25 is typically appropriate, unless the SMTP mail server requires port 465 or 587 for SMTPS connections.

For GroupWise, this is the hostname of a server where the Internet Agent is running. GroupWise always uses port 25, even when SSL is enabled.

When the Teaming site sends e-mail notifications for scheduled events, the messages are time-stamped according to the time zone you specify here during installation. This setting allows you to use a time zone for e-mail notifications that is different from the time zone where the server is located. The time zone list is grouped first by continent or region, optionally by country or state, and lastly by city. Some common selections for United States time zones are:

Time Zone	Continent/City
Pacific Time	America/Los Angeles
Mountain Time	America/Denver
Central Time	America/Chicago
Eastern Time	America/New_York

BASIC TEAMING INSTALLATION SUMMARY SHEET
Under *Outbound E-Mail Host*, specify the name of the mail host, the SMTP port number it uses, and the time zone for the time stamp you want on scheduled event notifications.

3.6.3 Outbound E-Mail Authentication

Many SMTP mail hosts require a valid e-mail address before they establish the SMTP connection. Some e-mail systems can construct a valid e-mail address if you specify only a valid username. Other e-mail systems require that you specify the full e-mail address for successful authentication.

Some e-mail systems also require a password. Some do not.

By default, the GroupWise Internet Agent does not require authentication in order to receive inbound messages. However, the /forceinboundauth startup switch is available for use in the Internet Agent startup file (`gwia.cfg`) to configure the Internet Agent to refuse SMTP connections where a valid e-mail username and password are not provided. The Internet Agent can accept just the username or the full e-mail address.

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *Outbound E-Mail Authentication*, indicate whether or not authentication is required for the Teaming site to communicate with your e-mail system, and if so, specify the username or e-mail address, and if necessary, the password for the e-mail account.

3.6.4 Outbound E-Mail Send Restriction

By default, the Novell Teaming site allows Teaming users to send messages to all Teaming users using the All Users group on the Teaming site. On a very large Teaming site, this generates a very large number of e-mail messages. If desired, you can prevent messages from being sent to the All Users group.

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *Allow Sending E-Mail to All Users*, mark whether or not you want users to be able to send messages to the All Users group.

3.7 Enabling Inbound E-Mail

You can configure your Novell Teaming site so that users can post comments by e-mailing them to the folder where they want to post the comment. In order to receive e-mail postings, folders must be properly configured, as described in "Enabling Folders to Receive Entries through E-Mail" in "Managing Folders" in the *Novell Teaming 2.1 User Guide*. Also, users must know the e-mail address of the folder where they want to post their comment.

- Section 3.7.1, "Internal Mail Host for Inbound E-Mail," on page 40
- Section 3.7.2, "Inbound E-Mail Port Number," on page 40
- Section 3.7.3, "Inbound E-Mail IP Address," on page 40
- Section 3.7.4, "Inbound E-Mail Security," on page 41

After installation, inbound e-mail can be disabled and enabled again on the Teaming site, as described in "Disabling/Enabling Inbound E-Mail Postings" in "Site Setup" in the *Novell Teaming 2.1 Administration Guide*. However, you must configure inbound e-mail in the Teaming Installation program.

3.7.1 Internal Mail Host for Inbound E-Mail

Inbound e-mail is disabled by default. When you enable it, the Novell Teaming site starts an internal SMTP mail host to receive incoming messages and post them to the folders associated with the e-mail addresses to which the messages are addressed. By default, the internal SMTP mail host uses port 2525, so that it does not conflict with another mail host that might be running on the Teaming server.

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *Inbound E-Mail Configuration*, mark whether or not you want users to be able to post to the Teaming site from their e-mail clients.

3.7.2 Inbound E-Mail Port Number

Selecting the port number for the Novell Teaming internal SMTP mail host presents the same issue that needs to be dealt with for the HTTP port numbers, as described in "HTTP/HTTPS Ports" on page 33. You might want to configure the Teaming internal SMTP mail host to use the standard SMTP port of 25. How you handle the issue depends on whether you are installing on Linux or on Windows.

Linux: Keep the default port number (2525) in the Teaming Installation program, then complete the steps in Section 4.1.4, "Setting Up Port Forwarding," on page 53 so that requests incoming on port 25 are forwarded to port 2525.

Windows: Specify port 25 for incoming e-mail in the Teaming Installation program.

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *Inbound E-Mail Configuration*, specify the port number for the Teaming internal SMTP host to listen on.

3.7.3 Inbound E-Mail IP Address

If you want to install Novell Teaming on a server where an SMTP mail host is already running, you can do so if the server has multiple IP addresses. The existing SMTP mail host can use port 25 on one IP address and Teaming can use port 25 on another IP address. During installation, you only need to specify an IP address if the server has multiple IP addresses and you want Teaming to bind to a specific IP address rather than all of them.

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *Inbound E-Mail Configuration*, specify the IP address for the Teaming internal SMTP host to listen on, if you are installing Teaming on a server with multiple IP addresses and you want Teaming to bind to just one of them.

3.7.4 Inbound E-Mail Security

You can choose whether the Novell Teaming internal mail host uses TLS (Transport Layer Security) when it communicates with other SMTP mail hosts. In order for TLS to function properly, you must have a certificate on the Teaming server, as described in "Securing E-Mail Transfer" in "Site Security" in the *Novell Teaming 2.1 Administration Guide*. When an SMTP mail host queries the Teaming mail host, the Teaming mail host communicates its ability or inability to handle TLS. The other SMTP mail host then communicates appropriately, taking into account how the Teaming internal mail host is configured. The default is to use TLS, because this provides more secure communication between mail hosts.

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *Inbound E-Mail Configuration*, mark whether or not you want the Teaming server to announce that it can use TLS.

You can install Teaming with *Announce TLS* selected, and then set up the certificate afterwards. However, if you select *Announce TLS*, inbound e-mail does not work until the certificate is available on the Teaming server.

3.8 Planning Site Security

- Section 3.8.1, “Teaming Site Administrator Password,” on page 41
- Section 3.8.2, “Linux User ID for Teaming,” on page 41

3.8.1 Teaming Site Administrator Password

When you first log in to the Novell Teaming site, you use `admin` as the Teaming administrator username and `admin` as the password. You should immediately change the password to one of your own choosing.

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *Teaming Administrator Credentials*, specify the password that you want to use whenever you log in as the Teaming site administrator.

3.8.2 Linux User ID for Teaming

For optimum security, Novell Teaming should not run as the Linux `root` user. For example, if an intruder manages to assume the identity of the Teaming program, the intruder gains all the privileges of the commandeered process. If the process is running with `root` user privileges, the intruder has `root` access to your system. If the process is running as a user with minimal privileges, the intruder has only restricted access to your system. Therefore, your system is more secure if the Teaming program does not run as `root`. For example, you might want to create a user named `teamingadmin` for the Teaming program to run as. Linux users require a full name and a password.

In addition to creating a Linux user for the Teaming program to run as, you can also create a Linux group for that user to belong to. This enables the Teaming program to create directories and files with consistent ownership and permissions. For example, you might want to create a group named `teamingadmin` for the `teamingadmin` user to belong to. Groups do not require passwords.

As an alternative to creating a custom Linux username and group for Teaming, you can use the existing `wwwrun` username and the `www` group. This account is typically used to start Web server processes.

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *Linux Username and Group*, specify the non-`root` Linux username and group name to use for running the Teaming program. If you are creating a new Linux user, specify its full name and password.

IMPORTANT: The non-`root` Linux username and group must exist before you start the Teaming Installation program. Instructions for creating the username and group are provided in Section 4.1.1, “Performing Pre-Installation Tasks on Linux,” on page 49.

3.9 Gathering Directory Services Information

Unless you are planning a very small Novell Teaming site, the most efficient way to create Teaming users is to synchronize initial user information from your network directory service (Novell eDirectory, Microsoft Active Directory, or other LDAP directory service) after you have installed the Teaming software. Over time, you can continue to synchronize user information from the LDAP directory to your Teaming site.

- Section 3.9.1, “LDAP Directory Service,” on page 42
- Section 3.9.2, “LDAP Connections,” on page 42
- Section 3.9.3, “LDAP Synchronization Options,” on page 45

IMPORTANT: Teaming performs one-way synchronization from the LDAP directory to your Teaming site. If you change user information on the Teaming site, the changes are not synchronized back to your LDAP directory.

3.9.1 LDAP Directory Service

You can synchronize initial Novell Teaming user information from any LDAP directory. This guide provides instructions for synchronizing user information from eDirectory and Active Directory. If you are using another LDAP directory, the instructions provide guidelines for the tasks you need to perform.

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *LDAP Directory Service*, mark the LDAP directory service from which you want to synchronize Teaming user information.

3.9.2 LDAP Connections

You can configure one or more LDAP connections. Each connection requires the following configuration information:

- “LDAP Server” on page 43
- “User Attribute” on page 43
- “User and Group Object Locations” on page 44

LDAP Server

In order to synchronize initial user information, Novell Teaming needs to access an LDAP server where your directory service is running. You need to provide the hostname of the server using a URL of the following format:

`ldap://`*`hostname`*

If the LDAP server requires a secure SSL connection, use the following format:

`ldaps://hostname`

If the LDAP server is configured with a default port number (389 for non-secure connections or 636 for secure SSL connections), you do not need to include the port number in the URL. If the LDAP server uses a different port number, use the following format for the LDAP URL:

`ldap://hostname:port_number`
`ldaps://hostname:port_number`

In addition, Teaming needs the username and password of a user on the LDAP server who has sufficient rights to access the user information stored there. You need to provide the username, along with its context in your LDAP directory tree, in the format expected by your directory service.

Directory Service	Format for Username
eDirectory	`cn=username,ou=organizational_unit,o=organization`
Active Directory	`cn=username,ou=organizational_unit,dc=domain_component`

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *LDAP Server*, specify the LDAP URL of the server, a fully qualified username with sufficient rights to read the user information, and the password for that user.

If the LDAP server requires a secure SSL connection, additional setup is required. You must complete the steps in "Securing LDAP Synchronization" in "Site Security" in the *Novell Teaming 2.1 Administration Guide* to import the root certificate for your LDAP directory into the Java keystore on the Teaming server before you configure Teaming for LDAP synchronization.

User Attribute

LDAP directories differ in the LDAP attribute used to identify a User object. eDirectory and Active Directory both use the `cn` (common name) attribute. Other LDAP directories might use the `uid` (unique ID) attribute. Novell Teaming needs to know which attribute to look for in order to find User objects.

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *LDAP User Attribute*, mark `cn` or `uid`, based on the convention used by your LDAP directory service for User objects.

Teaming calls the User object attribute `screenName`, so when you configure LDAP synchronization, you map `screenName` to either `cn` or `uid`.

As needed, other LDAP attributes can be used for logging in to the Teaming site, as long as the attribute is unique for each User object. For example, the `mail` LDAP attribute on User objects could be used to enable Teaming users to log in to the Teaming site using their e-mail addresses.

NOTE: Because the login name becomes part of the user's workspace URL, the at sign (@) in the e-mail address is replaced with an underscore (_) in the workspace URL because the at sign is not a valid character in a URL.

User and Group Object Locations

Novell Teaming can find and synchronize initial user information from User objects located in one or more containers in the LDAP directory tree. A container under which User objects are located is called a base DN (distinguished name). The format you use to specify a base DN depends on your directory service.

Directory Service	Format for the User Container
eDirectory	`ou=`*`organizational_unit`*`,o=`*`organization`*
Active Directory	`ou=`*`organizational_unit`*`,dc=`*`domain_component`*

To identify potential Teaming users, Teaming by default filters on the following LDAP directory object attributes:

- `Person`
- `orgPerson`
- `inetOrgPerson`

If you want to create Teaming groups based on information in your LDAP directory, Teaming filters on the following LDAP directory object attributes:

- `group`
- `groupOfNames`
- `groupOfUniqueNames`

You can add attributes to the user or group filter list if necessary. You can use the following operators in the filter:

- | OR (the default)
- & AND
- ! NOT

You can choose whether you want Teaming to search for users (and optionally, groups) in containers underneath the base DN (that is, in subtrees).

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *LDAP User Context*, specify a base DN, along with object attributes if any, and mark whether you want subtrees searched for Teaming users.

Under *LDAP Group Context*, specify a base DN, along with object attributes if any, and mark whether you want subtrees searched for Teaming groups.

You might find it convenient to create a group that consists of all the users that you want to set up in Teaming, regardless of where they are located in your LDAP directory. After you create the group, you can use the following filter to search for User objects that have the specified group membership attribute:

```
(groupMembership=cn=group_name,ou=organizational_unit,o=organization)
```

IMPORTANT: Be sure to include the parentheses in your filter.

3.9.3 LDAP Synchronization Options

The following synchronization options apply to all LDAP configurations within the same Novell Teaming zone:

- "Synchronization Schedule" on page 45
- "User Synchronization Options" on page 46
- "Group Synchronization Options" on page 47

NOTE: Because the synchronization options apply to all LDAP configurations within the same zone, you cannot have customized synchronization settings for each LDAP configuration. A Novell Teaming site can have multiple zones. For more information about zones, see "Setting Up Zones (Virtual Teaming Sites)" in "Site Setup" in the *Novell Teaming 2.1 Administration Guide*.

Synchronization Schedule

When you enable LDAP synchronization, you can set up a schedule for when it is convenient for synchronization to occur. In planning the schedule, take into account how often your LDAP directory user (and, optionally, group) information changes and the server resources required to perform the synchronization for the number of users (and, optionally, groups) that you have.

You can choose to have LDAP synchronization performed every day (for example, on Saturday), or you can select specific days of the week when you want it performed (for example, on Monday, Wednesday, and Friday). You can choose to have it performed once a day at a specified time (for example, at 2:00 a.m.), or you can set a time interval, so that it is performed multiple times each day (for example, every four hours). The smallest time interval you can set is .25 hours (every 15 minutes).

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *Synchronization Schedule*, record the schedule for when you want LDAP synchronization to take place.

User Synchronization Options

The following options are available for enabling and configuring user synchronization from your LDAP directory to your Novell Teaming site:

- **Synchronize User Profiles:** Select this option to synchronize the following user information whenever the LDAP directory information changes after initial Teaming site setup:
  - First name

- Last name
- Phone number
- E-mail address
- Description

- **Register LDAP User Profiles Automatically:** Select this option to automatically add LDAP users to the Teaming site. However, workspaces are not created until users log into the Teaming site for the first time.
- **Delete Users That Are Not in LDAP:** Select this option to delete users that exist on the Teaming site but do not exist in your LDAP directory. Use this option under the following conditions:
  - You have deleted users from your LDAP directory and you want the LDAP synchronization process to delete them from Teaming as well.
  - In addition to the users synchronized from LDAP, you create some Teaming users manually, as described in Section 5.2, "Creating a User," on page 64, and you want the LDAP synchronization process to delete the manually created users.
- **When Deleting Users, Delete Associated User Workspaces and Content:** Select this option to remove obsolete information along with the user accounts.
- **Time Zone for New Users** Select this option to set the time zone for user accounts that are synchronized from the LDAP directory into your Teaming site. The time zone list is grouped first by continent or region, optionally by country or state, and lastly by city. Some common selections for United States time zones are:

Time Zone	Continent/City
Pacific Time	America/Los Angeles
Mountain Time	America/Denver
Central Time	America/Chicago
Eastern Time	America/New_York

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *LDAP User Options*, mark the synchronization options you want to use.

Group Synchronization Options

The following options are available for enabling and configuring user and group synchronization from your LDAP directory to your Novell Teaming site:

- **Synchronize Group Profiles:** Select this option to synchronize group information, such as the group description, to the Teaming site whenever this information changes in LDAP.
- **Register LDAP Group Profiles Automatically:** Select this option to automatically add LDAP groups to the Teaming site.

- **Synchronize Group Membership:** Select this option so that the Teaming group includes the same users (and possibly groups) as the group in your LDAP directory. If you do not select this option, when you make changes to group membership in the LDAP directory, the changes are not reflected on your Teaming site.
- **Delete Local Groups That Are Not in LDAP:** Select this option to delete groups that exist on the Teaming site but do not exist in your LDAP directory. Use this option under the following conditions:
  - You have deleted groups from your LDAP directory and you want the LDAP synchronization process to delete them from Teaming as well.
  - In addition to the groups synchronized from LDAP, you create some Teaming groups manually, as described in "Creating Groups of Users" in "Site Setup", in the *Novell Teaming 2.1 Administration Guide*, and you want the LDAP synchronization process to delete the manually created groups.

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *LDAP Group Options*, mark the synchronization options you want to use.

3.10 Accommodating Multiple Languages

The Novell Teaming Installation program runs in English only. When you install the Teaming software, you can choose to have the primary language of the Teaming site to be any of the following languages:

- Chinese-Simplified
- Chinese Traditional
- Danish
- Dutch
- English
- French
- German
- Hungarian
- Italian
- Japanese
- Polish
- Portuguese
- Russian
- Spanish
- Swedish

Some languages have an additional distinction by locale (the country where the language is spoken).

The language you select during installation establishes the language of the global text that displays in locations where all Teaming users see it, such as in the workspace tree above the Workspace toolbar:

The language you select also establishes the default interface language and locale for creating new workspaces.

BASIC TEAMING INSTALLATION SUMMARY SHEET
Under *Default Locale*, mark the default language and specify the default country for your Teaming site.

Additional language customization can be done after installation, as described in "Managing a Multiple-Language Teaming Site" in "Site Setup" in the *Novell Teaming 2.1 Administration Guide*

Setting Up a Basic Teaming Site

4

Follow the setup instructions for the platform where you are installing the Novell® Teaming software:

- Section 4.1, “Linux: Setting Up a Basic Teaming Site,” on page 49
- Section 4.2, “Windows: Setting Up a Basic Teaming Site,” on page 57

4.1 Linux: Setting Up a Basic Teaming Site

You should already have reviewed Chapter 3, “Planning a Basic Teaming Installation,” on page 27 and filled out the Basic Teaming Installation Summary Sheet. The following sections step you through the process of installing and starting Novell Teaming on Linux.

- Section 4.1.1, “Performing Pre-Installation Tasks on Linux,” on page 49
- Section 4.1.2, “Running the Linux Teaming Installation Program,” on page 50
- Section 4.1.3, “Configuring Teaming to Start Automatically on Reboot,” on page 53
- Section 4.1.4, “Setting Up Port Forwarding,” on page 53
- Section 4.1.5, “Starting Teaming on Linux,” on page 55
- Section 4.1.6, “Checking the Status of the Teaming Server,” on page 56
- Section 4.1.7, “Restarting Teaming,” on page 56
- Section 4.1.8, “Stopping Teaming,” on page 56
- Section 4.1.9, “Uninstalling Teaming,” on page 57

4.1.1 Performing Pre-Installation Tasks on Linux

1. Make sure that the Linux server where you plan to install Teaming meets the system requirements listed in Section 2.1, “Teaming Server Requirements,” on page 19.
2. In a terminal window, become `root` by entering `su -` and the `root` password.
3. Set the Linux open file limit to meet the needs of the Teaming software:
   - **3a** Open the `/etc/security/limits.conf` file in an ASCII text editor.
   - **3b** Add the following lines to the bottom of the list, following the format of the example lines:

     ```
     *     hard    nofile    65535
     *     soft    nofile    4096
     ```

   - **3c** Save the file, then exit the text editor.
4. Perform the following conditional tasks if needed:
   - “Stopping and Disabling an Existing Web Server” on page 50
   - “Creating a Teaming User and Group” on page 50

Stopping and Disabling an Existing Web Server

For example, to stop the Apache Web server and its associated instance of Tomcat:

1. Enter the following commands to stop Apache and Tomcat:

   ```
   /etc/init.d/tomcat5 stop
   /etc/init.d/apache2 stop
   ```

2. Enter the following commands to make sure that Apache and Tomcat do not start again when you reboot the server:

   ```
   chkconfig --del apache2
   chkconfig --del tomcat5
   ```

Creating a Teaming User and Group

If the user and group that you want to use for Teaming, as described in Section 3.8.2, "Linux User ID for Teaming," on page 41 do not exist yet, create them. It is easier if you create the group first.

1. Create the Linux group that you want to own the Teaming software and data store directories:
   - **1a** In YaST, click *Security and Users* > *User Management* to display the User and Group Administration page.
   - **1b** Click *Groups*, then click *Add*.
   - **1c** Specify the group name, then click *Accept* or *OK*.

     The group does not need a password.
2. Create the Linux user that you want Teaming to run as:
   - **2a** Click *Users*, then click *Add*.
   - **2b** On the *User Data* tab, specify the user's full name, username, and password, then select *Disable User Login*.

     Like any Linux system user, the Teaming Linux user does not need to manually log in. The Teaming Linux user does not need a password, either, but YaST requires you to provide one.
   - **2c** Click the *Details* tab.
   - **2d** In the *Login Shell* drop-down list, select */bin/false*, because this user does not need to manually log in.
   - **2e** In the *Default Group* drop-down list, select the Linux group that you created in Step 1.
   - **2f** In the *Groups* list, select the Linux group that you created in Step 1.
   - **2g** Click *Accept* or *OK*.
3. Exit YaST.

4.1.2 Running the Linux Teaming Installation Program

When you run the Novell Teaming Installation program for the first time, you typically want to use the GUI interface. However, if you are installing Teaming on a server where the X Window System* is not available, a text-based Installation program is also available. After you are familiar with the Teaming installation process, you can use a silent installation to automate the process.

- "Using the GUI Installation Program" on page 51

- “Using the Text-Based Installation Program” on page 52
- “Performing a Silent Installation” on page 53

Using the GUI Installation Program

1. In a terminal window, enter `su -` to become the `root` user, then enter the `root` password.

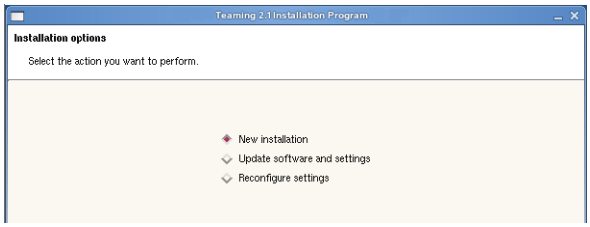
   You need `root` permissions in order to install the Teaming software, but you should not run the Teaming software as `root`.
2. Change to the directory where you downloaded and extracted the Teaming software.
3. Make sure that you have a `license-key.xml` file in the same directory with the Teaming Installation program.

   ```
   more license-key.xml
   ```

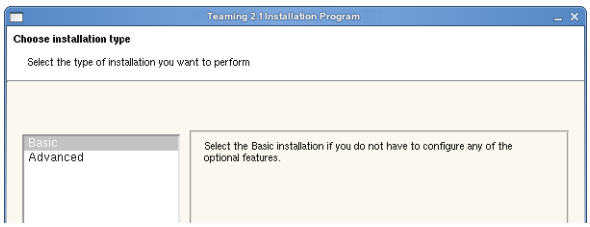
   The Teaming Installation program does not start without a license file in the same directory, and the license file has a different name when you download it.

   For more information about licensing, see Chapter 6, “Updating Your Teaming License,” on page 69.
4. Enter the following command to start the Teaming Installation program:

   ```
   ./installer-teaming.linux
   ```
5. Accept the License Agreement, then click *Next*.



6. Click *Next* to accept the default of *New installation*.



7. Click *Next* to accept the default of *Basic*.
8. Use the information that you have gathered on the Basic Teaming Installation Summary Sheet to provide the information that the Teaming Installation program prompts you for:

   Installation Locations
   Location of TrueType Fonts for Stellent Converters
   Default Locale for Novell Teaming
   User ID for Novell Teaming
   Network Information
   Database Selection

- Database Type
- JDBC URL
- Credentials
- Setup
- Encryption Algorithm

- Java JDK Location
- Outbound E-Mail Configuration
  - Protocol
  - Host, Port, and Time Zone
  - Username, Password, and Authentication
  - Allow Sending E-Mail to All Users
- Inbound E-Mail Configuration

The Installation program stores the information it gathers in the `installer.xml` file in the same directory where you started the Installation program.

9 After you have provided all the requested information, click *Install* to begin the Teaming installation.

10 When the installation is completed, click *Finish* to exit the Teaming Installation program.

Information about the installation process is written to the `installer.log` file in the same directory where you ran the Installation program. If a problem arises during the installation, the `installer.log` file provides information that can help you resolve the problem.

11 Continue with Section 4.1.3, “Configuring Teaming to Start Automatically on Reboot,” on page 53.

Using the Text-Based Installation Program

If you try to start the GUI Teaming Installation program in an environment where the X Windows System is not running, the text-based Teaming Installation program starts instead.

```
Checking license key...

License Summary

  Product:   Novell Teaming
  Version:   2.1
  UID:       1
  Users:     50

Installing this software requires agreement to the
terms and conditions set forth in the:
  Novell EULA and Export Compliance Notice

You can review this agreement again at the download site or
type "REVIEW" below.

Note: You must answer "YES" to install the software.

Have you read and agree with the license? :
```

If you want to use the text-based Installation program in an environment where it is starting with a GUI by default, use the following command in the directory where the Installation program is located:

```
./installer-teaming.linux --text
```

IMPORTANT: The text-based Teaming Installation program must be run in the same directory where the Teaming license file is located. If the license file is not in the same directory, the text-based Installation program cannot find it.

The text-based Installation program gathers the same configuration information as the GUI Installation program does. This information is stored in the `installer.xml` file in the directory where you run the Installation program.

The Installation program does not write the information it gathers into the `installer.xml` file until you exit the Installation program, and you cannot back up when using the text-based Installation program. Therefore, when you use the text-based Installation program, you should plan you installation carefully in advance, using the Basic Teaming Installation Summary Sheet or the Advanced Teaming Installation Summary Sheet. If you make a mistake during the installation, continue to the end of the installation process and exit the Installation program normally, so that all information is saved. Then run the text-based Installation program again. Your previous information is supplied as defaults and you can change the information as needed.

Performing a Silent Installation

If your Novell Teaming system expands beyond one server, you might need to repeatedly install the same Teaming components. A silent installation makes this an easy process. Edit an existing `installer.xml` file so that it has the hostname of the server where you want to perform the silent installation and copy it to that server. In the directory where the Installation program is located. use the appropriate command to run the Teaming installation program, depending on the action that you want the silent installation to perform:

```
./installer-teaming.linux --silent --install
./installer-teaming.linux --silent --upgrade
./installer-teaming.linux --silent --reconfigure
```

The Installation program obtains all the information it needs from the `installer.xml` file and completes the installation without user interaction.

4.1.3 Configuring Teaming to Start Automatically on Reboot

You can configure Novell Teaming to start automatically each time you reboot the Linux server.

1. As the Linux `root` user, enter the following command:

   ```
   chkconfig --add teaming
   ```

2. To verify that automatic startup is turned on, enter the following command:

   ```
   chkconfig teaming
   ```

4.1.4 Setting Up Port Forwarding

In order to make Novell Teaming available on the default HTTP/HTTPS ports of 80 and 443, you must set up port forwarding in order to forward the browser default ports (80 and 443) to the Teaming server ports (8080 and 8443). In addition, you must set up port forwarding if you want to forward the default SMTP mail host port (25) to the default Teaming internal mail host port (2525).

You can set up port forwarding in one of two ways, depending on whether or not you are using the Teaming server as a firewall.

- "Using the SuSEfirewall2 File" on page 54
- "Using iptables Commands" on page 54

Using the SuSEfirewall2 File

To enable port forwarding on a SUSE Linux server that leverages `SuSEfirewall2`:

1. As the Linux `root` user, open the following file:

   `/etc/sysconfig/SuSEfirewall2`

2. Find the following line:

   `FW_REDIRECT=""`

3. Between the quotation marks, copy and insert the following string:

   `0/0,`*`ip_address`*`,tcp,80,8080 0/0,`*`ip_address`*`,tcp,443,8443`
   `0/0,`*`ip_address`*`,tcp,25,2525`

4. Replace *`ip_address`* with the IP address of the Teaming server.
5. Save the `SuSEfirewall2` file, then exit the text editor.
6. Use the following command to restart the firewall:

   `/sbin/SuSEfirewall2 start`

7. Use the following command to verify that the default browser ports (80 and 443) have been forwarded to the Teaming server ports (8080 and 8443) and that the default SMTP mail host port (25) has been forwarded to the Teaming internal mail host:

   `iptables-save | grep REDIRECT`

Now, users do not need to include a port number in the Teaming site URL.

Using iptables Commands

To leverage `iptables` commands to enable port forwarding on any type of Linux server:

1. As the Linux `root` user, change to the `/etc/init.d` directory.
2. In a text editor, create a new file for a set of `iptables` commands, for example:

   `gedit teaming-iptables`

3. Copy and paste the following lines into the `teaming-iptables` file:

```
iptables -t nat -A OUTPUT -d localhost -p tcp --dport 80
                                       -j REDIRECT --to-ports 8080

iptables -t nat -A OUTPUT -d hostname -p tcp --dport 80
                                      -j REDIRECT --to-ports 8080

iptables -t nat -A PREROUTING -d hostname -p tcp --dport 80
                                          -j REDIRECT --to-ports 8080

iptables -t nat -A OUTPUT -d localhost -p tcp --dport 443
                                       -j REDIRECT --to-ports 8443

iptables -t nat -A OUTPUT -d hostname -p tcp --dport 443
                                      -j REDIRECT --to-ports 8443

iptables -t nat -A PREROUTING -d hostname -p tcp --dport 443
                                          -j REDIRECT --to-ports 8443

iptables -t nat -A OUTPUT -d localhost -p tcp --dport 25
                                       -j REDIRECT --to-ports 2525

iptables -t nat -A OUTPUT -d hostname -p tcp --dport 25
                                      -j REDIRECT --to-ports 2525

iptables -t nat -A PREROUTING -d hostname -p tcp --dport 25
                                          -j REDIRECT --to-ports 2525
```

In this example, the lines are wrapped for readability. When you paste them into the text editor, if the lines are still wrapped, remove the hard returns from the middle of the commands, so that you have six `iptables` commands, each on its own line.

4. Replace *`hostname`* with the hostname of the Teaming server.
5. Save the `teaming-iptables` file, then exit the text editor.
6. Use the following command to make the file executable:

   ```
   chmod +x teaming-iptables
   ```

7. Restart the firewall to put the `iptables` commands into effect:
   - **7a** Click *Security and Users* > *Firewall*.
   - **7b** Click *Stop Firewall Now*, click *Start Firewall Now*, then click *Next* > *Accept*.
   - **7c** Exit YaST, then return to the terminal window where you are logged in as `root`.
8. Use the following command to verify that the default browser ports (80 and 443) have been forwarded to the Teaming server ports (8080 and 8443) and that the default SMTP mail host port (25) has been forwarded to the Teaming internal mail host:

   ```
   iptables-save | grep REDIRECT
   ```

Now, users do not need to include a port number in the Teaming site URL.

4.1.5 Starting Teaming on Linux

The Novell Teaming Installation program created a `teaming` startup script in the `/etc/init.d` directory.

1. In a terminal window, become `root` by entering `su -` and the `root` password.
2. Enter the following command to start Teaming:

```
/etc/init.d/teaming start
```

You must execute the `teaming` script as `root`, but the script runs Teaming as the user you selected in Section 3.8.2, “Linux User ID for Teaming,” on page 41 and specified during installation.

You should see output similar to the following example:

```
Using CATALINA_BASE:    /opt/teaming/apache-tomcat-6.0.18
Using CATALINA_HOME:    /opt/teaming/apache-tomcat-6.0.18
Using CATALINA_TEMPDIR: /opt/teaming/apache-tomcat-6.0.1/temp
Using JRE_HOME:         /use/java/jdk1.5.0_17/jre
```

3 To make sure that Teaming is ready for work:

3a Change to the following directory:

```
/opt/novell/teaming/apache-tomcat-version/logs
```

where *version* is the version number of Tomcat that was installed along with Teaming (for example, 6.0.18)

3b Enter the following command to display the end of the Tomcat log:

```
tail --f catalina.out
```

At the end of the log file listing, you should see:

```
INFO: Server startup in nnnn ms
```

4 Press Ctrl+C when you are finished viewing the end of the `catalina.out` file.

4.1.6 Checking the Status of the Teaming Server

You can see if Novell Teaming is running by checking for its process ID (PID).

1 In a terminal window, enter the following command:

```
ps -eaf | grep teaming
```

You should see the Teaming PID number, along with a listing of configuration settings.

4.1.7 Restarting Teaming

You need to restart Novell Teaming whenever you use the Teaming Installation program to make configuration changes, as described in Chapter 10, “Performing an Advanced Teaming Installation,” on page 93.

1 As `root` in a terminal window, enter the following command:

```
/etc/init.d/teaming restart
```

You should see the same output as when you originally started Teaming.

4.1.8 Stopping Teaming

1 As `root` in a terminal window, enter the following command:

```
/etc/init.d/teaming stop
```

You should see the same output as when you started Teaming.

2 To verify that Teaming has stopped, check for its PID number:

```
ps -eaf | grep teaming
```

The Teaming PID number, along with a listing of configuration settings, should no longer be displayed.

4.1.9 Uninstalling Teaming

If you move the Novell Teaming site to a different server, you can delete the Teaming files from the original server to reclaim disk space. The default Teaming file locations are:

Teaming Software	`/opt/novell/teaming`
Teaming File Repository and Lucene Index	`/var/opt/novell/teaming`
MySQL Database	`/var/lib/mysql`

For a complete list of your Teaming files, check the `installer.xml` file in the directory where you originally ran the Teaming Installation program.

4.2 Windows: Setting Up a Basic Teaming Site

You should already have reviewed Chapter 3, "Planning a Basic Teaming Installation," on page 27 and filled out the Basic Teaming Installation Summary Sheet. The following sections step you through the process of installing and starting Novell Teaming on Windows.

- Section 4.2.1, "Performing Pre-Installation Tasks on Windows," on page 57
- Section 4.2.2, "Running the Windows Teaming Installation Program," on page 58
- Section 4.2.3, "Running Teaming as a Windows Service," on page 59
- Section 4.2.4, "Running Teaming as a Windows Application," on page 61
- Section 4.2.5, "Uninstalling Teaming," on page 61

4.2.1 Performing Pre-Installation Tasks on Windows

- "Verifying System Requirements" on page 57
- "Stopping an Existing Web Server" on page 57
- "Setting Environment Variables" on page 58

Verifying System Requirements

Make sure that the Windows server where you plan to install Novell Teaming meets the system requirements listed in Section 2.1, "Teaming Server Requirements," on page 19.

Stopping an Existing Web Server

If a Web server is currently running on the Teaming server, stop it, and preferably disable it.

For example, to stop and disable the Internet Information Services (IIS) Web server:

1. On the Windows desktop, click *Start* > *Administrative Tools* > *Services*.
2. Right-click *World Wide Web Publishing Service*, then click *Properties*.

3 In the *Startup type* drop-down list, select *Disabled*.

4 Click *Stop*, then click *OK*.

Setting Environment Variables

Make sure that the JAVA_HOME environment variable is set to the path where you installed the Java JDK and that the Windows PATH environment variable includes the path to your database server.

1 Right-click *My Computer*, then click *Properties*.

2 On the *Advanced* tab, click *Environment Variables*.

3 Set the JAVA_HOME environment variable:

3a In the *System variables* box, click *New*.

3b In the *Variable name* field, specify JAVA_HOME.

3c In the *Variable value* field, specify the path where you installed the Java JDK.

3d Click *OK* to add the JAVA_HOME environment variable to the list of system variables, then click *OK* again to save the setting and return to the *Advanced* tab.

4 Check the PATH environment variable:

4a On the *Advanced* tab, click *Environment Variables*.

4b In the *System variables* list, locate the PATH environment variable.

4c If the path includes your database server software directory, click *Cancel*.

or

If the path does not include your database server software directory, add the directory, then click *OK*.

4.2.2 Running the Windows Teaming Installation Program

1 Log in to the Windows server as a user with Administrator rights.

2 In Windows Explorer, browse to the directory where you downloaded and extracted the Novell Teaming software.

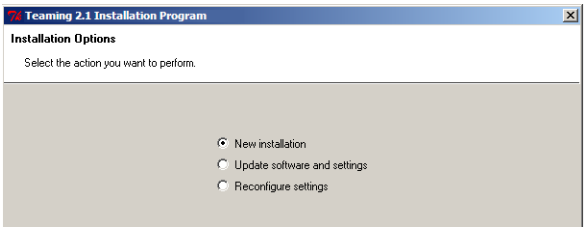
3 Make sure that there is a `license-key.xml` file in the directory.

The Teaming Installation program does not start without a license file, and it has a different name when you download it.

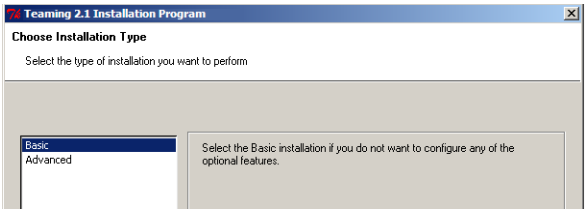
For more information about licensing, see Chapter 6, “Updating Your Teaming License,” on page 69.

4 Double-click the `installer-teaming.exe` file to start the Teaming Installation program.

5 Accept the License Agreement, then click *Next*.



6 Click *Next* to accept the default of *New installation*.



7 Click *Next* to accept the default of *Basic*.

8 Use the information that you have gathered on the Basic Teaming Installation Summary Sheet to provide the information that the Teaming Installation program prompts you for:

- Installation Locations
- Default Locale for Novell Teaming
- Network Information
- Database Selection
  - Database Type
  - JDBC URL
  - Credentials
  - Setup
  - Encryption Algorithm
- Java JDK Location
- Outbound E-Mail Configuration
  - Protocol
  - Host, Port, and Time Zone
  - Username, Password, and Authentication
  - Allow Sending E-Mail to All Users
- Inbound E-Mail Configuration

The Installation program stores the information it gathers in the `installer.xml` file in the same directory where you started the Installation program.

9 After you have provided all the requested information, click *Install* to begin the Teaming installation.

10 When the installation is completed, click *Finish* to exit the Teaming Installation program.

Information about the installation process is written to the `installer.log` file in the same directory where you ran the Installation program. If a problem arises during the installation, the `installer.log` file provides information that can help you resolve the problem.

11 Continue with one of the following sections, depending on how you want to run the Teaming software:

- Section 4.2.3, “Running Teaming as a Windows Service,” on page 59
- Section 4.2.4, “Running Teaming as a Windows Application,” on page 61

4.2.3 Running Teaming as a Windows Service

- “Configuring Teaming as a Windows Service” on page 60
- “Starting Teaming as a Windows Service” on page 60

- "Configuring the Teaming Service to Start Automatically on Reboot" on page 60
- "Restarting the Teaming Service" on page 60
- "Stopping the Teaming Service" on page 60

Configuring Teaming as a Windows Service

The Novell Teaming Installation program created a `service.bat` file for configuring Teaming to run as a Windows service.

1. In a Command Prompt window, change to the following directory:

   `c:\Program Files\Novell\Teaming\apache-tomcat-`*`version`*`\bin`

   where *version* is the version number of Tomcat that was installed along with Teaming (for example, 6.0.18).
2. Use the following command to configure Teaming as a Windows service:

   `service.bat install Teaming`

   This creates a service named Apache Tomcat Teaming.

Starting Teaming as a Windows Service

1. On the Windows desktop, click *Start* > *Administrative Tools* > *Services*.
2. Right-click *Apache Tomcat Teaming*, then click *Start*.

Configuring the Teaming Service to Start Automatically on Reboot

When you run Novell Teaming as a Windows service, you can configure Teaming to start automatically each time you reboot the Windows server.

1. On the Windows desktop, click *Start* > *Administrative Tools* > *Services*.
2. Right-click *Apache Tomcat Teaming*, then click *Properties*.
3. In the *Startup type* drop-down list, select *Automatic*, then click *OK*.

Restarting the Teaming Service

You need to restart Novell Teaming whenever you use the Teaming Installation program to make configuration changes, as described in Chapter 10, "Performing an Advanced Teaming Installation," on page 93.

1. On the Windows desktop, click *Start* > *Administrative Tools* > *Services*.
2. Right-click *Apache Tomcat Teaming*, then click *Restart*.
3. Close the Services window.

Stopping the Teaming Service

1. On the Windows desktop, click *Start* > *Administrative Tools* > *Services*.
2. Right-click *Apache Tomcat Teaming*, then click *Stop*.
3. Close the Services window.

4.2.4 Running Teaming as a Windows Application

- "Starting Teaming as an Application" on page 61
- "Stopping Teaming as an Application" on page 61

Starting Teaming as an Application

The Novell Teaming Installation program created a `startup.bat` file for starting Teaming.

1. In a Command Prompt window, change to the following directory:

   `c:\Program Files\Novell\Teaming\apache-tomcat-`*`version`*`\bin`

   where *`version`* is the version number of Tomcat that was installed along with Teaming (for example, 6.0.18).
2. Run the `startup.bat` file to start Teaming as an application.

Stopping Teaming as an Application

1. In a Command Prompt window, change to the following directory:

   `c:\Program Files\Novell\Teaming\apache-tomcat-`*`version`*`\bin`

   where *version* is the version number of Tomcat that was installed along with Teaming (for example, 6.0.18).
2. Run the `shutdown.bat` file to stop the Teaming application.

4.2.5 Uninstalling Teaming

If you move the Novell Teaming site to a different server, you can delete the Teaming files from the original server to reclaim disk space. The default Teaming file locations are:

Teaming Software	`c:\Program Files\Novell\Teaming`
Teaming File Repository and Lucene Index	`c:\Novell\Teaming`
MS SQL Database	`c:\Program Files\Microsoft SQL Server\MSSQL\Data`

For a complete list of your Teaming files, check the `installer.xml` file in the directory where you originally ran the Teaming Installation program.

Adding Users to Your Teaming Site

5

After you have installed the Novell® Teaming software and made sure that Teaming starts successfully, you are ready to access your Teaming site from your Web browser and add users.

- Section 5.1, “Accessing Your Basic Teaming Site as the Site Administrator,” on page 63
- Section 5.2, “Creating a User,” on page 64
- Section 5.3, “Adding Teaming Users from Your LDAP Directory,” on page 65

5.1 Accessing Your Basic Teaming Site as the Site Administrator

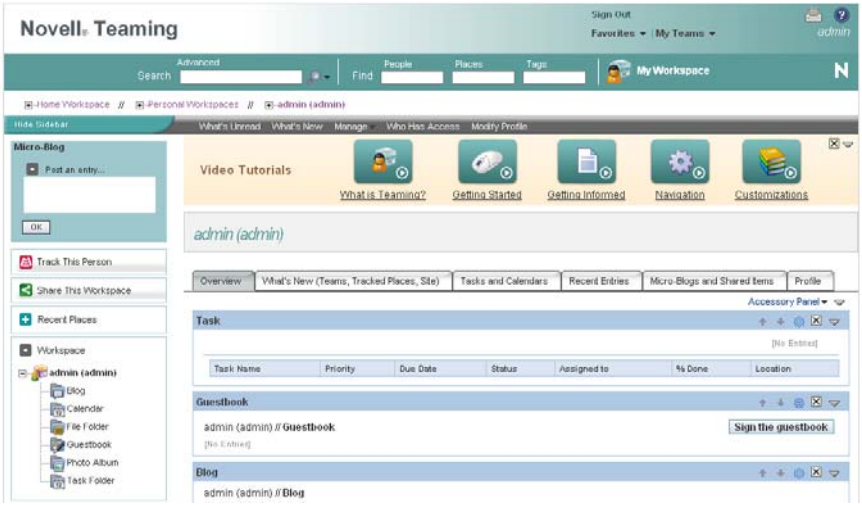
1 In your Web browser, specify one of the following URLs, depending on whether or not you are using a secure SSL connection:

`http://teaming_server`
`https://teaming_server`

where *`teaming_server`* is the DNS hostname or fully qualified domain name of the Teaming server. If you have configured the HTTP ports correctly, you do not need to include the port number in the Teaming URL.

2 Log in using `admin` as the login name and `admin` as the password.

The Teaming administrator’s personal workspace displays.



3 Change the default administrator password to a secure password.

3a On the Workspace toolbar, click *Modify Profile*.

3b Specify your own password for the Teaming administrator in the *New Password* and *Confirm New Password* fields.

3c (Optional) Provide useful information in the additional fields of the Teaming administrator's profile.

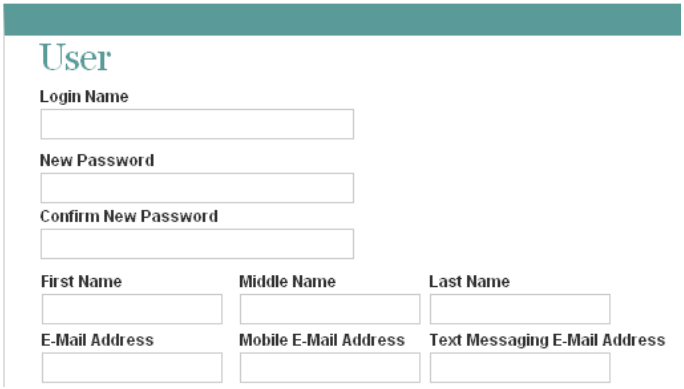
3d Click *OK* to return to the administrator's workspace.

5.2 Creating a User

For testing purposes or for a very small Novell Teaming site, you can create each Teaming user manually.

1 Log in as the Teaming administrator, then click *Manage* on the Workspace toolbar.

2 Click *Site Administration*, then click *Add User*.



3 Specify at least the login name, password, first name, and last name.

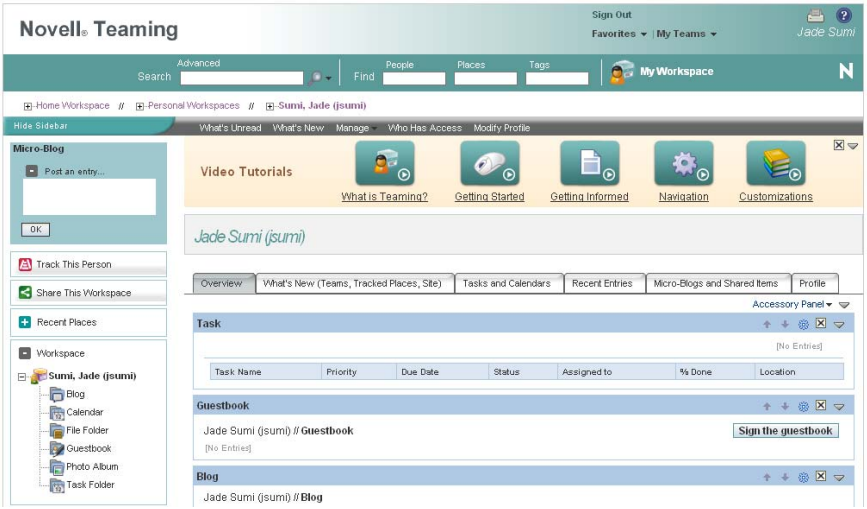
4 (Optional) Provide useful information in the additional fields for the new user.

5 Click *OK*, then click *Close* to return to the administrator's workspace.

If you expand *Personal Workspaces* in the Workspace tree above the Workspace toolbar, you see that the workspace for the user you just created does not exist yet. Workspaces are not created for users until the users log in for the first time.

6 Click *Sign Out* to log out as the Teaming administrator.

7 On the Sign In page, provide the username and password for the Teaming user you just created, then click *OK* to see the workspace for the new user.



As each new user logs into the Teaming site, a personal workspace is created.

8 Click *Sign Out* to leave the new user's personal workspace.

5.3 Adding Teaming Users from Your LDAP Directory

Unless you have a very small Novell Teaming site, you create Teaming users by synchronizing their user information from an LDAP directory service such as Novell eDirectory™ or Microsoft Active Directory.

IMPORTANT: For a large Teaming site with thousands of users, the synchronization process can consume substantial server resources and can take some time to complete. Perform the initial import from the LDAP directory at a time when this processing does not conflict with other activities on the server.

---

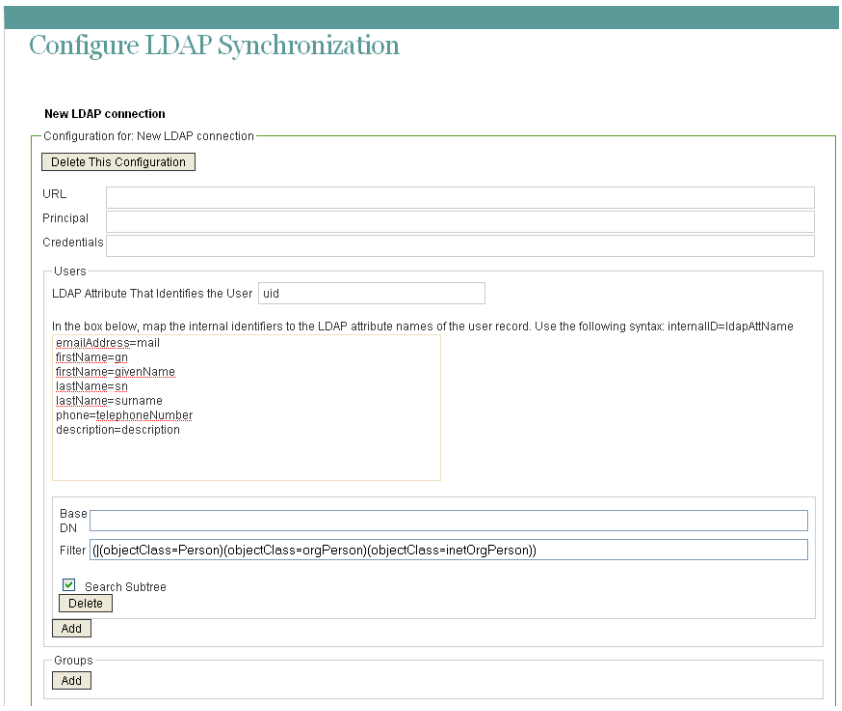
1 If the LDAP server requires a secure SSL connection in order to access the directory service, create a public-key certificate for the Teaming server.

For instructions, see "Securing LDAP Synchronization" in "Site Security" in the *Novell Teaming 2.1 Administration Guide*.

2 In a Web browser, log in to the Teaming site as the Teaming administrator, then click *Manage* on the Workspace toolbar.

3 Click *Site Administration* > *Configure LDAP*, then click *Add a New LDAP Connection*.

4 Fill in the following fields based on the information you gathered on the Basic Teaming Installation Summary Sheet:



LDAP Server URL

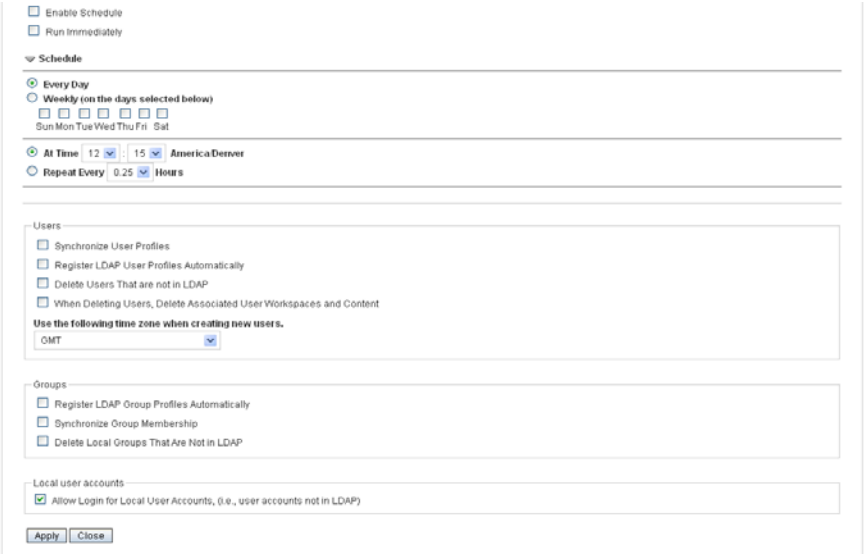
User DN

Password

LDAP User Attribute

Base DN

5 Set the following synchronization options based on the information you gathered on the Basic Teaming Installation Summary Sheet:



Enable Schedule

Synchronize User Profiles

Register LDAP User Profiles Automatically

6 Click *Apply* to save the information and settings.

7 Select *Run Immediately*, then click *Apply* to test LDAP synchronization.

A status box displays the users and groups that have been added, modified, or deleted on the Teaming site.

IMPORTANT: If you used an LDAP user attribute of `uid` and some users were not synchronized from the LDAP directory to Teaming, repeat the procedure using `cn` instead of `uid`.

The usernames `admin` and `guest` are reserved for use by Teaming. If your LDAP directory includes users with these names, LDAP information for these reserved usernames is not imported into the Teaming site.

---

8 Click *Close* to close the status box, then click *Close* to close the Configure LDAP Synchronization page.

Teaming performs one-way synchronization from the LDAP directory to your Teaming site. If you change user information on the Teaming site, the changes are not synchronized back to your LDAP directory.

IMPORTANT: At this point, users could log into the Teaming site by using their eDirectory or Active Directory usernames and passwords. However, you should not invite users to visit the Teaming site until after you have finished setting up the Teaming site, as described in "Site Setup" in the *Novell Teaming 2.1 Administration Guide*.

Updating Your Teaming License

6

Several different Teaming licenses are available:

- **Evaluation License:** Available from Novell® Downloads (http://download.novell.com)

  You receive your evaluation license when you download the evaluation version of Teaming.

- **Starter Pack License:** Available from the Novell Teaming 2 Starter Pack Web page (http://www.novell.com/products/teaming/starterpack.html)

  You receive your 20-user starter pack license when you download the 20-user starter pack.

- **Standard Teaming License:** Purchased through a Novell sales representative or Novell partner

  The Standard Teaming License gives full Teaming functionality on a per-user bases. It includes Guest user functionality for Teaming users who are covered by a Standard Teaming License. However, if non-licensed Teaming users are accessing the Teaming site through the Guest user functionality (as an anonymous user), then you must purchase a Guest Access Instance License in addition to the Standard Teaming License for each Teaming instance.

  After you purchase the Standard Teaming License, you can access your license key or view your purchase history in the Novell Customer Center (http://www.novell.com/customercenter)

- **Guest Access Instance License:** Purchased through a Novell sales representative or Novell partner

  This license must be purchased in addition to the Standard Teaming License. The Guest Access Instance Licence licenses you to provide Guest user access to your Teaming site for non-licensed Teaming users. If you are using Guest user for licensed Teaming users only, you do not need to purchase this license.

  The Guest Access Instance Licence is a paper license and does not require a new `license-key.xml` file.

  The Guest Access Instance License can provide added benefit to your site at a manageable cost. For example, imagine that your company employs 500 people. Only 200 of which are company knowledge-workers who you expect to actively participate in the Teaming site; the other 300 employees simply need to access information that is already posted on the Teaming site, such as files, news, or other company information. In this case, you would purchase 200 Standard Teaming Licenses. For the remaining 300 employees who will simply be accessing the site to obtain information, you would purchase a single Guest Access Instance License.

  You must purchase one Guest Access Instance License for each Teaming instance that you are running.

  For more information about the added functionality provided by this license, see "Allowing Guest Access to Your Teaming Site" and "Allowing Web Crawler Access to Your Teaming Site" in "Site Setup" in the *Novell Teaming 2.1 Administration Guide*.

If you originally installed Teaming with an Evaluation License or a Starter Pack License, it is easy to update your Teaming site with the new license file.

1. Copy the new license file that you downloaded from one of the sources listed above into the directory where you originally ran the Teaming Installation program.
2. Rename the existing `license-key.xml` file to a different name.

3. Rename the new license file to be `license-key.xml`.
4. Stop Teaming.
5. Run the Teaming Installation program, select the *Reconfigure Settings* option, then select the *Basic Installation* option.
6. Click *Next* through all the Installation program pages, then click *Install* to update your Teaming license.
7. Start Teaming.
8. Log in to the Teaming site as the Teaming administrator.
9. Click *Manage* > *Site Administration*, then click *Manage License*.

   You should see the contents of the new license file.
10. Click *Close*.

At any time, you can generate a report of license usage, as described in "License Report" in "Site Maintenance" in the *Novell Teaming 2.1 Administration Guide*.

What's Next

7

After you have installed and started the Teaming software, there are still administrative tasks to perform before your Teaming site is ready for users to log in and use Teaming efficiently. Refer to sections of the *Novell Teaming 2.1 Administration Guide* as you finish setting up your Teaming site.

- "Setting Up Initial Workspaces"
- "Planning and Controlling User Access to Workspaces and Folders"
- "Setting Up User Access to the Teaming Site"
- "Configuring E-Mail Integration"
- "Configuring Real-Time Communication Tools"
- "Setting Up Mirrored Folders"
- "Setting Up Zones (Virtual Teaming Sites)"
- "Adding Software Extensions to Your Teaming Site"
- "Using Remote Applications on Your Teaming Site"
- "Customizing Your Teaming Site by Editing Teaming Properties"
- "Managing a Multiple-Language Teaming Site"

Basic Teaming Installation Summary Sheet

8

Installation Program Field	Value for Your Teaming Site	Explanation
Teaming Server Platform: ◆ Windows ◆ Linux		See Section 3.2.1, “Teaming Server Platform,” on page 28.
Teaming Server Architecture: ◆ 32-bit ◆ 64-bit		See Section 3.2.2, “Teaming Server Architecture,” on page 29.
Teaming Server Memory: ◆ 4 GB ◆ 8 GB ◆ More		See Section 3.2.3, “Teaming Server Memory,” on page 29.
Java Development Kit (JDK): ◆ Sun JDK ◆ IBM JDK		See Section 3.3, “Selecting a Java Development Kit,” on page 31.

Teaming Installation Locations:
◆ Software
Linux default:
`/opt/novell/teaming`
Windows default:
`c:\Program Files\Novell\Teaming`
◆ File repository
Linux default:
`/var/opt/novell/teaming`
Windows default:
`c:\Novell\Teaming`
		See Section 3.2.4, “Teaming Installation Locations,” on page 30.

TrueType Font Location: Default: `/usr/X11R6/lib/X11/fonts/truetype`		See Section 3.2.5, “TrueType Font Location (Linux Only),” on page 31.

Installation Program Field	Value for Your Teaming Site	Explanation
Teaming Site Locale: Language: ◆ Chinese-Simplified ◆ Chinese Traditional ◆ Danish ◆ Dutch ◆ English ◆ French ◆ German ◆ Hungarian ◆ Japanese ◆ Polish ◆ Portuguese ◆ Russian ◆ Spanish ◆ Swedish Country:		See Section 3.10, “Accommodating Multiple Languages,” on page 47
User ID for Novell Teaming (Linux only): ◆ User ID: Full name: Password: ◆ Group ID:		See Section 3.8.2, “Linux User ID for Teaming,” on page 41.
Network Information: ◆ Host: ◆ HTTP port: 80 ◆ Secure HTTP port: 443 ◆ Listen port: 8080 ◆ Secure listen port: 8443 ◆ Shutdown port: ◆ AJP port:		Section 3.4, “Gathering Network Information for Your Teaming Site,” on page 32.
Database Type: ◆ MySQL ◆ Microsoft SQL ◆ Oracle		See Section 3.5.1, “Database Type,” on page 34.

Installation Program Field	Value for Your Teaming Site	Explanation
JDBC URL: ◆ Hostname: ◆ Port number:		See Section 3.5.3, “Database Location,” on page 35.
Database Credentials: ◆ Username: ◆ Password:		See Section 3.5.4, “Database Credentials,” on page 36.
Database Setup Method: ◆ During installation (automatically by the Teaming Installation program) ◆ Before installation (manually by your database administrator)		See Section 3.5.2, “Database Setup Method,” on page 35.
Database Encryption Algorithm: ◆ SHA ◆ SHA-256 ◆ MD5		See Section 3.5.5, “Database Encryption Algorithm,” on page 37.
Java JDK Location: ◆ Java home: ◆ JVM heap size:		See Section 3.3, “Selecting a Java Development Kit,” on page 31.
Outbound E-Mail Protocol: ◆ SMTP ◆ SMTPS		See Section 3.6.1, “Outbound E-Mail Protocol,” on page 37.
Outbound E-Mail Host: ◆ Hostname: ◆ SMTP port: Default: 25 ◆ Time zone ◆ Continent/region: ◆ Country/state: ◆ City:		See Section 3.6.2, “Outbound E-Mail Host,” on page 38.

Installation Program Field	Value for Your Teaming Site	Explanation
Outbound E-Mail Authentication: ◆ Username: ◆ Password: ◆ Authentication required? No / Yes		See Section 3.6.3, “Outbound E-Mail Authentication,” on page 39.
Allow Sending E-Mail to All Users Yes / No		See Section 3.6.4, “Outbound E-Mail Send Restriction,” on page 39.
Inbound E-Mail Configuration ◆ Enable: No / Yes ◆ SMTP bind address: ◆ SMTP port: ◆ Announce TLS: Yes / No		See Section 3.7, “Enabling Inbound E-Mail,” on page 39.
Teaming Site Password: ◆ Administrator username: admin ◆ Default password: admin ◆ Your password:		See Section 3.8.1, “Teaming Site Administrator Password,” on page 41.
LDAP Directory Service: ◆ Novell eDirectory ◆ Microsoft Active Directory ◆ Other LDAP directory		See Section 3.9, “Gathering Directory Services Information,” on page 42.
LDAP Server: ◆ LDAP server URL: ◆ User DN: ◆ Password:		See “LDAP Server” on page 43.

LDAP User Attribute:
◆ `cn`
`screenName=cn`
◆ `uid`
`screenName=uid`
		See “User Attribute” on page 43.

LDAP User Search Context: ◆ Base DNs: ◆ Additional filter attributes: ◆ Search subtree: Yes / No		See “User and Group Object Locations” on page 44.

Installation Program Field	Value for Your Teaming Site	Explanation
LDAP Group Search Context: ◆ Base DNs: ◆ Additional filter attributes: ◆ Search Subtree: Yes / No		See “User and Group Object Locations” on page 44.
LDAP Synchronization Schedule: ◆ Days ◆ Every day ◆ Weekly Sun Mon Tue Wed Thu Fri Sat ◆ Hours: ◆ At time: ◆ Repeat every *nn* hours		See “Synchronization Schedule” on page 45.
LDAP User Options: ◆ Synchronize user profiles ◆ Register LDAP user profiles automatically ◆ Delete users that are not in LDAP ◆ When deleting a user, delete associated user workspaces and content ◆ Time zone for new users		See “User Synchronization Options” on page 46.
LDAP Group Options: ◆ Synchronize group profiles ◆ Register LDAP group profiles automatically ◆ Synchronize group membership ◆ Delete local groups that are not in LDAP		See “User Synchronization Options” on page 46.

Advanced Installation and Reconfiguration

- Chapter 9, “Planning an Advanced Teaming Installation,” on page 81
- Chapter 10, “Performing an Advanced Teaming Installation,” on page 93
- Chapter 11, “Setting Configuration Options after Installation,” on page 95
- Chapter 12, “Advanced Teaming Installation Summary Sheet,” on page 97

Planning an Advanced Teaming Installation

9

- Section 9.1, “What Is an Advanced Installation?,” on page 81
- Section 9.2, “Distributing Different Data Types to Different Locations,” on page 81
- Section 9.3, “Using Advanced Network Information Settings,” on page 83
- Section 9.4, “Configuring Web Services,” on page 84
- Section 9.5, “Changing Your Lucene Index Server Configuration,” on page 84
- Section 9.6, “Managing RSS Feeds,” on page 86
- Section 9.7, “Configuring Presence,” on page 87
- Section 9.8, “Configuring Single Sign-On with Novell Access Manager,” on page 88
- Section 9.9, “Configuring Mirrored Folder Resource Drivers,” on page 89
- Section 9.10, “Installing the Teaming Software in a Clustered Environment,” on page 91

9.1 What Is an Advanced Installation?

In addition to the Basic installation options described in Section 3.1, “What Is a Basic Teaming Installation?,” on page 27, the Novell® Teaming Installation program provides several optional advanced installation and configuration alternatives. You can implement the advanced options after performing a Basic installation option, or you can opt to have the Installation program present all the options together.

Compared to a Basic installation, an Advanced installation offers the following additional options:

- Changing the session timeout
- Specifying a keystore file
- Specifying different directories for different types of data
- Disabling and enabling four different Web services
- Changing the configuration of the Lucene Index Server
- Configuring a remote Lucene Index Server or a group of high-availability Lucene nodes
- Reconfiguring how RSS feeds are retained or disabling them entirely
- Enabling presence in conjunction with Conferencing
- Configuring a reverse proxy to accommodate single sign-on
- Configuring mirrored folders
- Installing Teaming in a clustered environment

9.2 Distributing Different Data Types to Different Locations

The default location for the Novell Teaming file repository varies by platform:

Linux: `/var/opt/novell/teaming`

Windows: `c:\Novell\Teaming`

Under the main Teaming file repository root directory are subdirectories for various kinds of data files that are not stored in the Teaming database (MySQL, Microsoft SQL Server, or Oracle). Using an Advanced installation, you can store Teaming data files in various locations.

The data files not stored in the Teaming database are divided up into several functional areas:

- **Simple file repository:** A large consumer of disk space.

  All attachment files are stored in the file repository. All versions of files are also stored here.

- **Jackrabbit repository:** (Optional) Takes only a fraction of the space consumed by the file repository.

  By default, Teaming stores all data files individually on disk, in the file repository. If you prefer to store data files in the database itself, you can use Apache Jackrabbit* with Teaming. See the Apache Jackrabbit Web site (http://jackrabbit.apache.org) for setup instructions.

- **Extensions repository:** Depends on the number of extensions you add to your Teaming site.

  An extension is a software program that you can incorporate into your Teaming site in order to enhance (extend) Teaming capabilities. Adblock Plus is an example of a browser extension for the Firefox Web browser that filters out advertisements. You or a Java developer can create custom extensions for your Teaming site. For more information about creating and using Teaming extensions, see the *Novell Teaming 2.1 Developer Guide*.

- **Archive store:** A large consumer of disk space.

  When entries are deleted, files that were attached to the deleted entries are retained in the archive store in order to meet compliance and archival goals. Previous versions of documents are also retained in the archive store. After files have been archived, they are inaccessible from the Teaming site. Files that accumulate in the archive store must be manually deleted as needed to manage the disk space occupied by the archive store.

- **Cache store:** Consumes less disk space than the file repository.

  Information derived from the attachments, such as thumbnails, HTML renderings, scaled images, and word lists for indexing are stored in the cache store.

- **Lucene index:** Takes only a fraction of the space consumed by the file repository.

  The Lucene index contains only pointers to the actual data stored in the file repository. The index enables the Lucene search engine to perform very fast searches through large quantities of data.

The directories for the various types of data can be on the Teaming server or on a remote server. Data access is fastest if the data is local, but depending on the size of your Teaming site and the types of data you store, the Teaming server might not be the best place to store all the Teaming data. If you want to store any of the data types on a remote server, you must ensure that the remote location of the data appears local to the Teaming server and that it is always available with read/write access.

Linux: Mount the file repository to the Teaming server.

Windows: Map a drive from the Teaming server to the file repository.

Linux and Windows	Place the file repository on a SAN (storage area network) with read/write access. This alternative provides the most reliable remote location for the Teaming file repository. This is required for a clustered environment, as described in Chapter 15, “Running Teaming on Multiple Servers,” on page 113.

ADVANCED TEAMING INSTALLATION SUMMARY SHEET

Under *Data Locations*, specify the directories where you want to store the various types of Teaming data.

Complete the planning process for additional Advanced installation features as needed, then perform the Advanced installation as described in Chapter 10, “Performing an Advanced Teaming Installation,” on page 93.

9.3 Using Advanced Network Information Settings

- Section 9.3.1, “Changing the Teaming Session Timeout,” on page 83
- Section 9.3.2, “Providing a Secure Keystore File,” on page 83

9.3.1 Changing the Teaming Session Timeout

By default, if a user’s Novell Teaming session is idle for four hours (240 minutes), Teaming logs the idle user out. For increased convenience to Teaming users, you can make the session timeout interval longer. For increased security for your Teaming site, you can make the session timeout shorter.

ADVANCED TEAMING INSTALLATION SUMMARY SHEET

Under *Network Information*, specify the session timeout interval (in minutes) for your Teaming site.

Complete the planning process for additional Advanced installation features as needed, then perform the Advanced installation as described in Chapter 10, “Performing an Advanced Teaming Installation,” on page 93.

9.3.2 Providing a Secure Keystore File

For your convenience, the Novell Teaming software includes a self-signed public certificate that enables you to specify secure HTTP and listen ports during installation. This certificate is stored in the `.keystore` file in the following directory:

Linux: `/opt/novell/teaming/apache-tomcat-`*`version`*`/conf`

Windows: `c:\Program Files\Novell\Teaming\apache-tomcat-`*`version`*`\conf`

To ensure secure SSL connections for your Teaming site, you should replace the self-signed public certificate with a public certificate issued by a valid Certificate Authority.

ADVANCED TEAMING INSTALLATION SUMMARY SHEET

Under *Network Information*, specify the name and location of the public certificate.

If you do not already have a permanent public certificate for your Teaming server, see "Securing HTTP Browser Connections" in "Site Security" in the *Novell Teaming 2.1 Administration Guide*.

Complete the planning process for additional Advanced installation features as needed, then perform the Advanced installation as described in Chapter 10, "Performing an Advanced Teaming Installation," on page 93.

9.4 Configuring Web Services

When you install and set up your Novell Teaming site, three Web services are enabled by default. A fourth is available for selection. These Web services enable programs to access information on your Teaming site just as users would. Allowing programmatic access to your Teaming site can be useful or can be viewed as a security risk.

- **WSS authentication:** Uses OASIS Web Services Security (WSS) (http://www.oasis-open.org).
- **HTTP Basic authentication:** Uses HTTP Basic Access authentication (http://tools.ietf.org/html/rfc2617).
- **Token-based authentication:** Uses custom Teaming tokens to communicate with Teaming remote applications. For more information, see "Using Remote Applications on Your Teaming Site" in "Site Setup" in the *Novell Teaming 2.1 Administration Guide*.
- **Anonymous access:** Allows access to your Teaming site without authentication. It is similar to the Guest access provided for users, as described in "Allowing Guest Access to Your Teaming Site" in "Site Setup" in the *Novell Teaming 2.1 Administration Guide*.

ADVANCED TEAMING INSTALLATION SUMMARY SHEET

Under *Web Services*, mark which Web services you want enabled for your Teaming site. The first three are enabled by default. The fourth is disabled by default.

Complete the planning process for additional Advanced installation features as needed, then perform the Advanced installation as described in Chapter 10, "Performing an Advanced Teaming Installation," on page 93.

9.5 Changing Your Lucene Index Server Configuration

The default Lucene Index Server configuration is appropriate for a medium-sized Novell Teaming site. If you have a larger Teaming site, you can change its Lucene Index Server configuration.

- Section 9.5.1, "Understanding Indexing," on page 85
- Section 9.5.2, "Changing Lucene Configuration Settings," on page 85
- Section 9.5.3, "Running the Lucene Index Server in Its Own JVM," on page 86

- Section 9.5.4, “Running the Lucene Index Server on a Remote Server,” on page 86
- Section 9.5.5, “Running Multiple Lucene Index Servers,” on page 86

After planning your Lucene configuration, complete the planning process for additional Advanced installation features as needed, then perform the Advanced installation as described in Chapter 10, “Performing an Advanced Teaming Installation,” on page 93.

9.5.1 Understanding Indexing

The Lucene Index Server is responsible for indexing all data on the Novell Teaming site so that Teaming users can easily use the Find and Search features to retrieve the information that they need. Text posted in folder entries is easy to index, because the formatting is simple. However, text in attached files arrives in many different file formats, many of which require conversion before the text in the files can be indexed. Therefore, the Lucene Index Server is dependent on the available file conversion technology in order to perform its indexing function. For information about the file viewers that Teaming uses, see Section 2.4.1, “File Viewer Support,” on page 22.

The Lucene Index Server provides additional services on your Teaming site in addition to indexing. In fact, you cannot access your Teaming site if the Lucene Index Server is not running. For this reason, Novell Teaming provides multi-server Lucene configuration options that are not available in Kablink Teaming.

9.5.2 Changing Lucene Configuration Settings

If you have an extremely large Novell Teaming site and you need to reindex the Teaming data, you might see improved performance by increasing these settings.

- **Flush threshold:** The default is 100. This means that after 100 documents have been cached in memory, they are flushed to disk. Increasing the setting allows additional documents to be cached in memory before a flush occurs.
- **Max booleans:** The default is 10000. This means that 10,000 Boolean clauses are allowed in a query. You would only need to increase this if your Teaming site includes more than 10,000 users, groups, or teams.
- **Max merge documents:** The default is 1000. This means that the Lucene Index Server starts a new index segment after the current index segment contains 1000 documents. Only a very large Teaming site would benefit from increasing this.
- **Merge factor:** The default is 10. This sets the number of index segments that are created on disk. When additional index segments are needed, existing segments are merged to keep the merge factor constant. Only a very large Teaming site would benefit from increasing this.

ADVANCED TEAMING INSTALLATION SUMMARY SHEET
Under *Lucene Configuration*, specify any Lucene configuration settings that you want to change.

9.5.3 Running the Lucene Index Server in Its Own JVM

By default, the Lucene Index Server runs in the same Java Virtual Machine (JVM) as the Teaming software. To leave more memory available for the Novell Teaming software, you can configure the Lucene Index Server to run in a separate JVM. In this configuration, it communicates with the Teaming software using the RMI (Remote Method Invocation (http://java.sun.com/javase/technologies/core/basic/rmi/index.jsp)) port, which, by default is 1199.

ADVANCED TEAMING INSTALLATION SUMMARY SHEET

Under *Lucene Configuration*, specify a hostname of `localhost`. Use the default RMI port number unless it is already in use on the server.

To change from running the Lucene Index Server in the same JVM with Teaming to running it in its own JVM, you must complete the same steps as if you were setting up the Lucene Index Server on a remote server, including manually installing the Lucene Index Server software on the Teaming server, as described in Chapter 14, "Moving the Lucene Index Server to a Remote Server," on page 109.

9.5.4 Running the Lucene Index Server on a Remote Server

If the Lucene Index Server requires more memory, disk space, or CPU resources than are available on the Novell Teaming server, you can move it to a remote server. This requires installing the Lucene Index Server software on that server. For instructions, see Chapter 14, "Moving the Lucene Index Server to a Remote Server," on page 109.

9.5.5 Running Multiple Lucene Index Servers

Because the availability of the index is critical to the functioning of the Novell Teaming site, you can install multiple Lucene Index Servers on multiple remote servers to provide high availability. For instructions, see Chapter 16, "Running Multiple Lucene Index Servers," on page 119.

9.6 Managing RSS Feeds

By default, Teaming users can set up RSS feeds in folders on the Teaming site, as described in "Viewing Teaming Folders as RSS or ATOM Feeds" in "Getting Informed" in the *Novell Teaming 2.1 User Guide*.

- Section 9.6.1, "Configuring RSS Feeds," on page 87
- Section 9.6.2, "Disabling RSS Feeds," on page 87

After planning the RSS settings, complete the planning process for additional Advanced installation features as needed, then perform the Advanced installation as described in Chapter 10, "Performing an Advanced Teaming Installation," on page 93.

9.6.1 Configuring RSS Feeds

The following aspects of RSS functionality on your Novell Teaming site are configurable:

- **Max elapsed days:** By default, items from RSS feeds are retained on the Teaming site for 31 days. You can decrease the number of days to reduce the amount of disk space occupied by the RSS files.
- **Max inactive days:** By default, if no one on the Teaming site accesses an RSS feed for 7 days, the feed is no longer updated. Increase or decrease the retention time for inactive feeds to meet the needs of Teaming users and disk space considerations.

ADVANCED TEAMING INSTALLATION SUMMARY SHEET
Under *RSS Configuration*, specify the number of days that meet the needs of your Teaming site.

9.6.2 Disabling RSS Feeds

Some administrators consider RSS feeds to be a security risk because the RSS feed URL includes username and password information. If you do not want Novell Teaming site users to be able to subscribe to RSS feeds from the Teaming site, you can disable this feature.

ADVANCED TEAMING INSTALLATION SUMMARY SHEET
Under *RSS Configuration*, mark *No*.

9.7 Configuring Presence

If you are using the Conferencing component of Novell Teaming + Conferencing 1.0, you can configure Novell Teaming to display a user's Conferencing presence icon anyplace on the Teaming site where that user's name displays. When you click the presence icon, contact options are presented. In addition, with Conferencing presence enabled, a link at the bottom of each workspace and folder page enables you to start an instant meeting with team members of a team workspace or with users who have created entries and comments in the folder.

In order to configure Conferencing presence in Teaming, you need the following information about the Conferencing system:

- **Jabber server:** Specify the IP address or DNS hostname of the Conferencing XML router. For more information, see "Installing the Conferencing Server " in the *Conferencing 1.0 Server Installation Guide*.
- **Broker admin ID:** The default admin ID is `admin`.
- **Broker admin password:** The default admin password is `admin`.
- **Jabber domain:** Specify the IP address or DNS hostname of the Conferencing XML router.
- **Default community ID:** Users in a Conferencing system are organized into groups called communities. When the Conferencing software is installed, a system community is created. For more information, see "Conferencing Communities" in the *Conferencing 1.0 Operations Guide*.

  Specify the community ID where you want to obtain presence information.

- **Conferencing URL:** Specify the URL of the Conferencing server:

  `http://ip_address_or_dns_hostname:8000/imidio_api`

ADVANCED TEAMING INSTALLATION SUMMARY SHEET

Under *Presence Configuration*, list the information that the Teaming site needs to know in order to communicate with the Conferencing system.

Complete the planning process for additional Advanced installation features as needed, then perform the Advanced installation as described in Chapter 10, "Performing an Advanced Teaming Installation," on page 93.

IMPORTANT: In order for Conferencing presence to display, the *Conferencing User Name* field of each user's Teaming profile must contain the user's Conferencing ID. Users can provide this information manually, or you can populate the *Conferencing User Name* field from your LDAP directory.

9.8 Configuring Single Sign-On with Novell Access Manager

Novell Access Manager provides secure single sign-on access to your Novell Teaming site by functioning as a reverse proxy server. Access Manager 3.1 SP1 IR1 is required for use with Novell Teaming. You can download the required version of Access Manager from Novell Downloads (http://download.novell.com).

For background information about setting up Novell Access Manager 3.1, see the Access Manager 3.1 Documentation Web site (http://www.novell.com/documentation/novellaccessmanager31). For instructions specific to Teaming, see "Configuring a Protected Resource for a Novell Teaming 2.*x* Server" (http://www.novell.com/documentation/novellaccessmanager31/accessgateway/data/b3nqgsg.html#blpk97e). These instructions are based on the Linux text-based Teaming Installation program, as described in "Using the Text-Based Installation Program" on page 52. They can easily be adapted for running the Linux GUI Teaming Installation program, as described in "Using the GUI Installation Program" on page 51, or when installing on Windows, as described in Section 4.2.2, "Running the Windows Teaming Installation Program," on page 58.

After you have configured Novell Access Manager, you must configure your Teaming site with the IP address of one or more Access Gateway servers and with the logout URL. When you configure the Teaming site to use the Access Gateway, the IP addresses that you specify are the only locations from which the Teaming site accepts logins. The logout URL is the location where users find themselves when they log out of the Teaming site.

When you enable the Access Gateway for use with your Teaming site, all Teaming users must log in through the Access Gateway. It is not possible to set up the Teaming site so that some users log in through the Access Gateway and some do not.

ADVANCED TEAMING INSTALLATION SUMMARY SHEET

Under *Reverse Proxy Configuration*, list one or more IP addresses of Access Gateway servers that have been configured for use by Teaming. List the logout URL, and if necessary, the Access Gateway hostname for WebDAV connections.

Complete the planning process for additional Advanced installation features as needed, then perform the Advanced installation as described in Chapter 10, “Performing an Advanced Teaming Installation,” on page 93.

9.9 Configuring Mirrored Folder Resource Drivers

A mirrored folder is a directory, either local or shared on a SAN (storage area network), that is directly accessible from the Novell Teaming site. The files on the file system are accessed by the Teaming program using a resource driver, not directly by individual Teaming users. A resource driver defines how the Teaming program accesses the file system.

During installation, you define the users and groups that can access the mirrored folder resource drivers. After installation, from the Teaming site, you associate resource drivers with specific Teaming folders and use folder access controls to govern which users and groups can access the data in the mirrored folder. As a result, you can set up a small number of users who can create mirrored folders, while a large number of users can access shared folders.

Teaming attempts to keep the metadata about each mirrored folder synchronized with the contents of the actual file system. Therefore, mirrored folders are most appropriate for large sets of relatively static data. Mirrored folders are also useful for making extremely large files available from your Teaming site without including them in the Teaming file repository.

Although the Installation program allows you to set up three mirrored folder resource drivers at once, you can set up and test just one to start with, then set up additional resource drivers later.

- Section 9.9.1, “File System Type,” on page 89
- Section 9.9.2, “File System Directory,” on page 90
- Section 9.9.3, “File System Access,” on page 90
- Section 9.9.4, “Mirrored Folder Setup,” on page 90

After planning mirrored folders, complete the planning process for additional Advanced installation features as needed, then perform the Advanced installation as described in Chapter 10, “Performing an Advanced Teaming Installation,” on page 93.

9.9.1 File System Type

Novell Teaming provides resource drivers for two different types of file systems:

- **file:** A directory in a regular file system on a Linux or Windows server.
- **webdav:** A directory on a Web server that supports WebDAV (Web-based Distributed Authoring and Versioning). The WebDAV server must support HTTP Basic Authentication (http://en.wikipedia.org/wiki/Basic_access_authentication) so that Teaming can provide a username and a password when making a request from the WebDAV server.

ADVANCED TEAMING INSTALLATION SUMMARY SHEET

Under *Mirrored Folder Resource Driver Configuration*, mark the type of directory that you want to mirror in your Teaming site.

9.9.2 File System Directory

The file system on which a Novell Teaming mirrored folder is based can be on Linux, NetWare®, or Windows, as long as the following conditions are met:

- The file system is accessible from the Teaming server, by using a directory path specification that the Teaming server operating system understands.
- The file system is accessible through the standard `java.io` package interface.

IMPORTANT: On Windows, you must use forward slashes (/) in the pathname, not the typical Windows back slashes (\). For example, use `c:/Documents` rather than `c:\Documents`.

ADVANCED TEAMING INSTALLATION SUMMARY SHEET

Under *Mirrored Folder Resource Driver Configuration*, specify the full path for the directory that you want to mirror in your Teaming site. Also, provide a title for the mirrored folder resource driver that indicates what directory or data is being mirrored. For WebDAV mirrored folders, you must also specify the URL of the WebDAV host where the data is located.

If you need to eventually set up more than three directories as mirrored folders in your Teaming site, you can edit the `installer.xml` file in the directory where you run the Installation program.

9.9.3 File System Access

Novell Teaming offers several security options for controlling access to the data that resides on the file system.

- You can restrict the Teaming program to read-only access to the mirrored data, or you can allows full read/write access.
- You can list specific Teaming users who are allowed to access the mirrored folder resource drivers and thereby create mirrored folders.
- You can list specific Teaming groups whose members are allowed to access the mirrored folder resource drivers and thereby create mirrored folders.
- For WebDAV mirrored folder resource drivers, you must also specify a username and password that the Teaming program can use to access the WebDAV server.

ADVANCED TEAMING INSTALLATION SUMMARY SHEET

Under *Mirrored Folder Resource Driver Configuration*, list the file access (read/write or read-only) for the mirrored data, along with users and groups that you want to have access to the resource driver for it. For a WebDAV mirrored folder, list a username and password that provides access to the WebDAV server.

9.9.4 Mirrored Folder Setup

After you run the Novell Teaming Installation program to configure the Teaming site for mirrored folder resource drivers, additional folder setup is required. Follow the instructions in "Setting Up Mirrored Folders" in "Site Setup" in the *Novell Teaming 2.1 Administration Guide*.

9.10 Installing the Teaming Software in a Clustered Environment

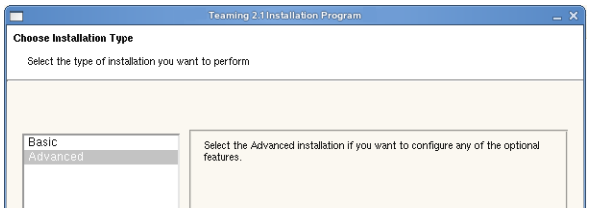
You must use an Advanced installation in order to install the Novell Teaming software on multiple servers and set up a clustered environment. Setting up multiple Teaming servers, along with other clustering options, are described in Chapter 15, “Running Teaming on Multiple Servers,” on page 113.

Performing an Advanced Teaming Installation

10

You should already have reviewed Chapter 3, “Planning a Basic Teaming Installation,” on page 27 and filled out the Basic Teaming Installation Summary Sheet. You should also have reviewed Chapter 9, “Planning an Advanced Teaming Installation,” on page 81 and filled out the Advanced Teaming Installation Summary Sheet for those aspects of an Advanced installation that you want to implement for your Novell® Teaming site.

1. Follow the Basic installation instructions provided in Chapter 4, “Setting Up a Basic Teaming Site,” on page 49 for the platform where you are installing Teaming.
2. In the Choose Installation Type page, select *Advanced*.



3. Use the information that you have gathered on the Basic Teaming Installation Summary Sheet and the Advanced Teaming Installation Summary Sheet to provide the information that the Teaming Installation program prompts you for:

   Basic Installation Pages:

   Installation Locations
   Location of TrueType Fonts for Stellent Converters
   Default Locale for Novell Teaming
   User ID for Novell Teaming (Linux only)
   Network Information
   Database Selection
   Java JDK Location
   Outbound E-Mail Configuration
   Inbound E-Mail Configuration

   Some Basic installation pages have additional options available when you perform an Advanced installation.

   Advanced Installation Pages:

   Web Services
   Lucene Configuration
   RSS Configuration
   Presence Configuration
   Reverse Proxy Configuration
   Mirrored Folder Resource Driver Configuration
   Teaming Cluster Configuration

The Installation program stores the information it gathers in the `installer.xml` file in the same directory where you started the Installation program.

4. After you have provided all the requested information, click *Install* to begin the Advanced installation.
5. When the installation is completed, click *Finish* to exit the Teaming Installation program.

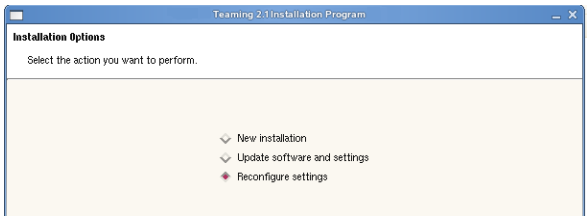
   Information about the installation process is written to the `installer.log` file in the same directory where you ran the Installation program. If a problem arises during the installation, the `installer.log` file provides information that can help you resolve the problem.
6. After you complete the Advanced installation, continue setting up your Teaming site, as described in Chapter 5, “Adding Users to Your Teaming Site,” on page 63.

Setting Configuration Options after Installation

11

After you install Novell® Teaming following the instructions in Part II, “Basic Installation,” on page 25 or Part III, “Advanced Installation and Reconfiguration,” on page 79, you can rerun the Teaming Installation program to change configuration options or add new functionality to your Teaming site.

1. Stop Teaming.
2. Start the Teaming Installation program.

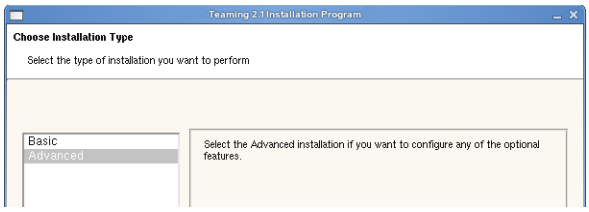


   Because the Installation program finds an existing `installer.xml` file, it defaults to *Reconfigure settings*.

3. Click *Next*.

   The Teaming Installation program asks you to verify that you have stopped Teaming.

4. Click *Yes*.



5. Select *Basic* or *Advanced*, depending on the configuration setting that you want to change, then click *Next*.
6. Click *Next* until you reach an installation page where you want to reconfigure settings.

   Basic Installation Pages:

   Installation Locations
   Location of TrueType Fonts for Stellent Converters
   Default Locale for Novell Teaming
   User ID for Novell Teaming (Linux only)
   Network Information
   Database Selection
   Java JDK Location
   Outbound E-Mail Configuration

Inbound E-Mail Configuration

Advanced Installation Pages:

Web Services
Lucene Configuration
RSS Configuration
Presence Configuration
Reverse Proxy Configuration
Mirrored Folder Resource Driver Configuration
Teaming Cluster Configuration

7 When you reach the Ready to Install page, click *Install* to implement the reconfigured settings.

8 Start Teaming.

Advanced Teaming Installation Summary Sheet

12

Installation Program Field	Value for Your Teaming Site	Explanation

Data Locations:
Linux default:
`/var/opt/novell/teaming`
Windows default:
`c:\Novell\Teaming`
◆ Simple file repository
◆ Jackrabbit repository
◆ Extensions repository
◆ Archive store
◆ Cache store
◆ Lucene index
		See Section 9.2, “Distributing Different Data Types to Different Locations,” on page 81.

Network Information: ◆ Enable Web services: No / Yes ◆ Session timeout Default: 240 minutes ◆ Enable Tomcat access log: No / Yes ◆ Keystore file:		See Section 9.3, “Using Advanced Network Information Settings,” on page 83.
Web Services: ◆ Enable WSS authentication ◆ Enable Basic authentication ◆ Enable token-based authentication ◆ Enable anonymous access		See Section 9.4, “Configuring Web Services,” on page 84.

Installation Program Field	Value for Your Teaming Site	Explanation
Lucene Configuration: Configuration type: all ◆ Flush threshold: Default: 100 ◆ Max booleans: Default: 10000 ◆ Max merge documents: Default: 1000 ◆ Merge factor: 10		See Section 9.5.2, “Changing Lucene Configuration Settings,” on page 85.
Server Lucene Configuration: Configuration type: server only ◆ Host: ◆ RMI port: Default: 1199		See Section 9.5.3, “Running the Lucene Index Server in Its Own JVM,” on page 86.
High Availability Lucene Configuration: Configuration type: high availability only Number of high availability search nodes: ◆ Service name: ◆ Service title: ◆ Host: ◆ RMI port: ◆ Service name: ◆ Service title: ◆ Host: ◆ RMI port:		See Chapter 16, “Running Multiple Lucene Index Servers,” on page 119.
RSS Configuration: Enable RSS: No / Yes ◆ Max elapsed days: ◆ Max inactive days:		See Section 9.6, “Managing RSS Feeds,” on page 86.

Installation Program Field	Value for Your Teaming Site	Explanation
Presence Configuration: Enable presence: No / Yes ◆ Jabber server: ◆ Broker admin ID: ◆ Broker admin password: ◆ Jabber domain: ◆ Default community ID: ◆ Conferencing URL:		See Section 9.7, “Configuring Presence,” on page 87.
Reverse Proxy Configuration: Enable Access Gateway: No / Yes ◆ Access Gateway address(es): ◆ Logout URL: ◆ Use Access Gateway for WebDav connections: No / Yes ◆ WebDAV Access Gateway address:		See Section 9.8, “Configuring Single Sign-On with Novell Access Manager,” on page 88.
Mirrored Folder Resource Driver Configuration: Enable file share: No / Yes ◆ Share type ◆ File ◆ WebDav ◆ Sharepoint ◆ Read only: No / Yes ◆ Title ◆ Root path ◆ Allowed users ◆ Allowed groups ◆ User ◆ Password ◆ Host URL		See Section 9.9, “Configuring Mirrored Folder Resource Drivers,” on page 89.

Multi-Server Configurations and Clustering

IV

- Chapter 13, “Creating the Teaming Database on a Remote Server,” on page 103
- Chapter 14, “Moving the Lucene Index Server to a Remote Server,” on page 109
- Chapter 15, “Running Teaming on Multiple Servers,” on page 113
- Chapter 16, “Running Multiple Lucene Index Servers,” on page 119
- Chapter 17, “Running Multiple Database Servers,” on page 135

Creating the Teaming Database on a Remote Server

13

The default location for the Novell® Teaming database is on the same server with the Teaming software, as described in Section 3.5.3, “Database Location,” on page 35. However, for better performance and scalability, you can install the database server (MySQL, Microsoft SQL, or Oracle) on a remote server, then use the scripts that are included with the Teaming software to manually create the Teaming database in any location that you prefer.

- Section 13.1, “Preparing to Manually Create a Database,” on page 103
- Section 13.2, “Creating a MySQL Database,” on page 104
- Section 13.3, “Creating a Microsoft SQL Database,” on page 105
- Section 13.4, “Creating an Oracle Database,” on page 105
- Section 13.5, “Installing Teaming with a Remote Database,” on page 107

NOTE: This section assumes that you already have a Basic installation of Teaming up and running successfully. It is highly recommended to follow the instructions in Part II, “Basic Installation,” on page 25 before attempting a more complex Teaming configuration.

13.1 Preparing to Manually Create a Database

Novell Teaming includes scripts for creating the Teaming database on a remote server.

1. In the directory where the Teaming Installation program is located on the Teaming server, unzip the `teaming-2.1.n-sql.zip` file.

   This creates two new subdirectories, the `create` subdirectory for database creation scripts and the `update-2.0.n-2.1.n` directory for database update scripts.
2. Change to the `create` subdirectory.
3. Copy all the scripts for your database type to a convenient temporary location on the server where you want to create the database, and make sure that your database management utility is on your path so that you can run it from that directory

Database	Database Script	Database Management Utility
MySQL:	`*mysql.sql`	`mysql`
Microsoft SQL:	`*sqlserver.sql`	`osql`
Oracle:	`*oracle.sql`	`sqlplus`

4. Continue with the instructions for the type of database that you want to create:
   - Section 13.2, “Creating a MySQL Database,” on page 104
   - Section 13.3, “Creating a Microsoft SQL Database,” on page 105
   - Section 13.4, “Creating an Oracle Database,” on page 105

13.2 Creating a MySQL Database

1. Review the MySQL requirements listed in Section 2.1, "Teaming Server Requirements," on page 19
2. Make sure that the MySQL database server and client have been installed and configured, as described in Section A.2, "MySQL Database Server," on page 175.
3. Make sure that the MySQL database client is also installed on the Teaming server

   The Teaming Installation program needs the MySQL client in order to communicate with the remote MySQL database server.
4. Make sure that you know the password for the MySQL `root` administrator user.
5. Make sure that `innodb` support is enabled.

   It is enabled by default. You can verify the setting in the MySQL configuration file.

   Linux: `/etc/my.cnf`

   Windows: `c:\Program Files\MySQL\MySQL Server version\my.ini`
6. In the MySQL configuration file, make the following changes using a text editor:

   6a Under the `[client]` section, add the following line:

   ```
   default_character_set = utf8
   ```

   6b Under the `[mysqld]` section, add the following line:

   ```
   character_set_server = utf8
   ```

   Setting the character set to UTF-8 ensures that extended characters are handled correctly in the database.

   6c Also under the `[mysqld]` section, add the following line:

   ```
   bind-address = teaming_server_address
   ```

   where *`teaming_server_address`* is the IP address or DNS hostname of the Teaming server that is allowed to remotely access the MySQL database server.

   6d Save the updated configuration file, then exit the text editor.
7. In the directory where you copied the database scripts (Step 3 in Section 13.1, "Preparing to Manually Create a Database," on page 103), enter the following command to run the MySQL database creation script:

   ```
   mysql -uuser -ppassword < create-database-mysql.sql
   ```
8. Configure MySQL to allow access from a remote server:

   ```
   mysql -uuser -ppassword
   mysql> grant all privileges on *.*
           -> to 'username'@'%'
           -> identified by 'password'
           -> with grant option
           -> ;
   ```
9. Be familiar with standard database maintenance procedures.

   For more information about MySQL, see the following references:

   - *MySQL 5.0 Reference Manual* (http://dev.mysql.com/doc/refman/5.0/en)
   - *MySQL 5.1 Reference Manual* (http://dev.mysql.com/doc/refman/5.1/en)

The following database tools can be helpful:

- MySQL GUI Tools (http://dev.mysql.com/downloads/gui-tools)
- SQLyog (http://www.webyog.com)
- Squirrel SQL Client (http://squirrel-sql.sourceforge.net)

10 Skip to Section 13.5, “Installing Teaming with a Remote Database,” on page 107.

13.3 Creating a Microsoft SQL Database

1 Review the Microsoft SQL requirements listed in Section 2.1, “Teaming Server Requirements,” on page 19.

2 Make sure that the Microsoft SQL Server and Client have been installed and configured properly.

IMPORTANT: Make sure that TCP/IP is enabled for Microsoft SQL Server.

For more information, see Microsoft SQL Server (http://msdn.microsoft.com/en-us/library/bb545450.aspx).

3 Make sure that the Microsoft SQL database client is also installed on the Teaming server

The Teaming Installation program needs the Microsoft SQL client in order to communicate with the remote Microsoft SQL database server.

4 When you install Microsoft SQL Server, select *SQL Server and Windows* for authentication.

The default is *Windows Only*, which is not appropriate for Teaming

5 Immediately establish the database administrator username and password for the SQL database server.

6 Change to the directory where you copied the database scripts in Step 3 in Section 13.1, “Preparing to Manually Create a Database,” on page 103.

7 Enter the following command to run the Microsoft SQL database creation script:

```
osql -Uuser -Ppassword -i create-database-sqlserver.sql
```

8 Be familiar with standard database maintenance procedures.

For more information about Microsoft SQL, see the following references:

- Microsoft SQL Server 2008 Learning Resources (http://www.microsoft.com/sqlserver/2008/en/us/learning.aspx)
- Microsoft SQL Server 2005 Learning Resources (http://www.microsoft.com/sqlserver/2005/en/us/learning-resources.aspx)

The following database tool can be helpful:

- Squirrel SQL Client (http://squirrel-sql.sourceforge.net)

9 Skip to Section 13.5, “Installing Teaming with a Remote Database,” on page 107.

13.4 Creating an Oracle Database

When you use an Oracle database, your database administrator must create it for you. The Novell Teaming Installation program cannot create an Oracle database.

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *Database Creation*, make sure you have marked that you want your database administrator to manually create the Oracle database before installation.

1. Review the Oracle database requirements listed in Section 2.1, "Teaming Server Requirements," on page 19.
2. Make sure that the Oracle database server and client software has been installed and configured properly.

   For more information, see Oracle Database (http://www.oracle.com/database).
3. Make sure that the Oracle database client is also installed on the Teaming server

   The Teaming Installation program needs the Oracle client in order to communicate with the remote Oracle database server.
4. Make sure that you know the password for the Oracle database administrator user.
5. Set up the Oracle database character set to support Unicode character encodings.

   Teaming requires either the UTF-8 or AL32UTF8 character set for proper operation. Oracle recommends the use of AL32UTF8, because it has increased support for certain Asian languages. For more information, see *Choosing a Character Set* (http://download.oracle.com/docs/cd/B19306_01/server.102/b14225/ch2charset.htm) in the *Oracle Database Globalization Support Guide*.
6. Change to the directory where you copied the Oracle database scripts in Step 3 in Section 13.1, "Preparing to Manually Create a Database," on page 103.
7. Edit the `create-database-oracle.sql` script with your Oracle database password.

   Original:

   ```
   drop user sitescape cascade;
   create user sitescape identified by sitescape;
   grant connect, resource to sitescape;
   connect sitescape/sitescape;
   ```

   NOTE: SiteScape® is the name of the company that previously owned the Teaming software.

   Updated:

   ```
   drop user sitescape cascade;
   create user sitescape identified by your_oracle_password;
   grant connect, resource to sitescape;
   connect sitescape/your_oracle_password;
   ```

   IMPORTANT: Unless you are very familiar with editing scripts, change only the password. Do not attempt to change the name of the database from the legacy default of `sitescape`.
8. Enter the following commands to run the database creation script:

   ```
   sqlplus "/ as sysdba"
   SQL> spool create-database-oracle.out;
   SQL> @create-database-oracle;
   SQL> quit
   ```
9. Check the resulting `create-database-oracle.out` file for errors and resolve them.
10. Be familiar with standard database maintenance procedures.

For more information about your Oracle database, see the following reference:

- Oracle Product Documentation (http://www.oracle.com/technology/documentation)
- Oracle SQL*Plus Documentation (http://www.oracle.com/technology/docs/tech/sql_plus)

The following database tool can be helpful:

- Squirrel SQL Client (http://squirrel-sql.sourceforge.net)

11 (Conditional) If you created the Oracle database on the Teaming server, skip to Chapter 4, "Setting Up a Basic Teaming Site," on page 49 or Chapter 10, "Performing an Advanced Teaming Installation," on page 93.

IMPORTANT: On the Database Selection page in the Installation program, be sure to select *Database already exists or has already been created*.

---

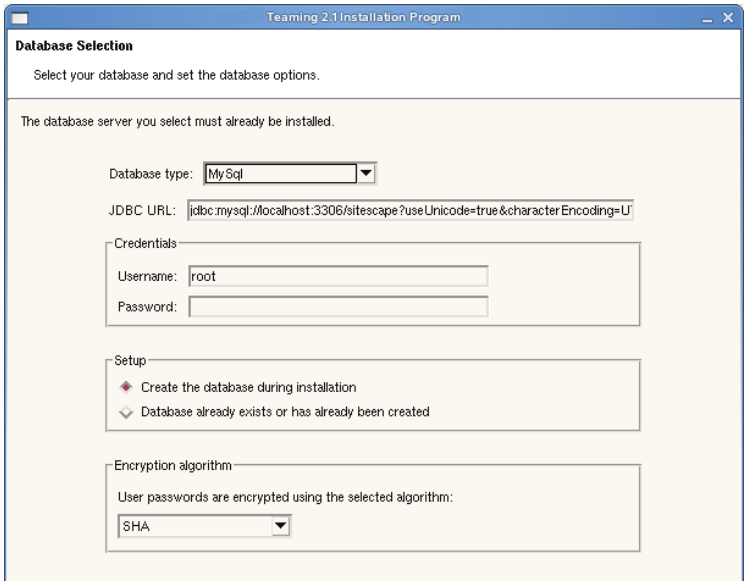
or

(Conditional) If you created the Oracle database on a remote server, continue with Installing Teaming with a Remote Database.

13.5 Installing Teaming with a Remote Database

1 Run the Novell Teaming Installation program, as described in Chapter 4, "Setting Up a Basic Teaming Site," on page 49 or Chapter 10, "Performing an Advanced Teaming Installation," on page 93.

2 When you get to the Database Selection page:



2a Fill in the fields:

Database type: Select the type of database that you just created.

JDBC URL: Replace `localhost` with the hostname of the server where you created the Teaming database.

Credentials: Specify the password for the database administrator user.

Setup: Select *Database already exists or has already been created* so that the Installation program does not create one for you.

Encryption algorithm: Set the encryption appropriate for the security needs of the Teaming site. For more information, see Section 3.5.5, “Database Encryption Algorithm,” on page 37.

2b Click *Next*.

The Teaming Installation program tries to connect to the database. If it connects successfully, you can continue with the installation. If the Teaming Installation program cannot connect to the database, you must resolve the problem with the database before you can continue with the Teaming installation.

2c When the Teaming Installation program can successfully connect to the remote database, continue as usual with the installation.

Moving the Lucene Index Server to a Remote Server

14

You can install the Lucene Index Server on a different server from where Novell® Teaming is running so that both programs have access to more server memory, disk space, and CPU resources.

IMPORTANT: The Teaming server and the Lucene Index Server must not have a firewall between them. The RMI protocol used for the Lucene Index Server port works only within a trusted local area network (LAN).

- Section 14.1, “Installing the Lucene Software,” on page 109
- Section 14.2, “Updating Your Teaming Site,” on page 110
- Section 14.3, “Managing a Remote Lucene Index Server,” on page 111

NOTE: This section assumes that you already have a Basic installation of Teaming up and running successfully. It is highly recommended to follow the instructions in Part II, “Basic Installation,” on page 25 before attempting a more complex Teaming configuration.

14.1 Installing the Lucene Software

1. Make sure that a supported Java Developer Kit (JDK) is installed on the remote server where you want to install the Lucene Index Server.

   For instructions, see Appendix A, “Teaming System Requirements Assistance,” on page 173.
2. Make sure that there is no firewall between the Teaming server and the Lucene Index Server.
3. Copy the Lucene Installation program from its original location in the same directory with the Teaming Installation program to a convenient temporary directory on the remote server.

   The filename for the Lucene Installation program varies by platform:

   Linux: `lucene-installer.linux`

   Windows: `lucene-installer.exe`
4. Change to the directory where you copied the Lucene Installation program, then start it.
5. Accept the License Agreement, then click *Next*.
6. Select *New installation*, then click *Next*.
7. Browse to and select the directory where you want to install the Lucene Index Server, then click *Next*.

   The default location varies by platform:

   Linux: `/opt/novell/teaming/luceneserver`

   Windows: `c:\Program Files\Novell\Teaming\luceneserver`

8 Browse to and select the directory where you installed the JDK, then click *Next*.

9 Adjust the configuration of the Lucene Index Server, as described in Section 9.5, “Changing Your Lucene Index Server Configuration,” on page 84, then click *Next*.

10 Click *Install* to install the Lucene software.

11 (Conditional) On Linux, deselect *Start Lucene server*.

You must edit the Lucene Index Server startup script before you start the Lucene Index Server.

12 (Conditional) On Windows, if you do not want to start the Lucene Index Server immediately, deselect *Start Lucene server*.

For instructions for starting and stopping the Lucene Index Server manually, see Section 14.3, “Managing a Remote Lucene Index Server,” on page 111.

13 Click *Finish*.

14 (Conditional) On Linux:

14a Change to the following directory:

```
/opt/novell/teaming/luceneserver/indexserver/bin
```

14b Open the `indexserver-startup.sh` file in a text editor.

14c Add the following switch to the `java` launch command at the end of the script:

```
-Djava.rmi.server.hostname=ip_address
```

where *`ip_address`* is the IP address of the server where you installed the Lucene Index Server.

14d Save the `indexserver-startup.sh` file, then exit the text editor.

14e Start the Lucene Index Server.

For instructions for starting and stopping the Lucene Index Server manually, see Section 14.3, “Managing a Remote Lucene Index Server,” on page 111.

Moving the Lucene Index Server from the Teaming server to a remote server increases the scalability of your Teaming system because the workload is distributed between two different physical servers. However, in this configuration, the Lucene Index Server still runs on a single server. Your Teaming site depends on the Lucene Index Server for full functionality. If that server goes down for some reason, the Teaming site becomes inaccessible until access to the Lucene Index Server is restored. You can further expand your Teaming system by setting up multiple Lucene Index Servers to provide high availability, as described in Chapter 16, “Running Multiple Lucene Index Servers,” on page 119.

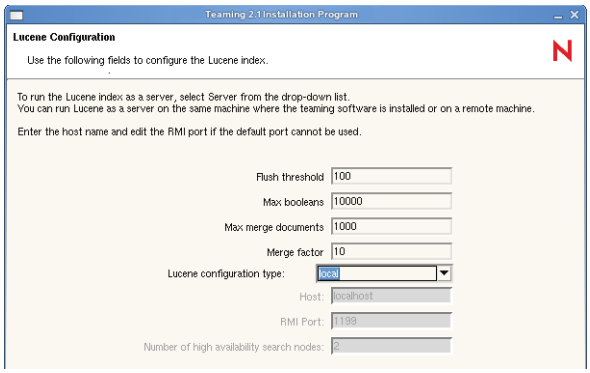
14.2 Updating Your Teaming Site

1 Stop Novell Teaming.

2 Start the Teaming Installation program to reconfigure the Lucene Index Server settings.

3 On the Choose Installation Type page, select *Advanced*, then click *Next*.

4 Click *Next* until you reach the Lucene Configuration page.



5 In the *Lucene configuration type* field, select *server* to activate additional fields.

Host: Specify the hostname of the server where you installed the Lucene Index Server software.

RMI Port: Use the same port number that you used when you installed the Lucene Index Server software. The default RMI port is 1199.

6 Click *Next* until you reach the Ready to Install page, then click *Install*.

7 When the installation is complete, click *Finish*.

8 Start Teaming

14.3 Managing a Remote Lucene Index Server

- Section 14.3.1, “Linux: Managing a Remote Lucene Index Server,” on page 111
- Section 14.3.2, “Windows: Managing a Remote Lucene Index Server,” on page 111

14.3.1 Linux: Managing a Remote Lucene Index Server

Use the following commands to start and stop the Lucene Index Server manually:

```
/etc/init.d/indexserver start
/etc/init.d/indexserver stop
```

To configure the Lucene Index Server to start automatically when the Linux server reboots, use:

```
chkconfig --add indexserver
```

14.3.2 Windows: Managing a Remote Lucene Index Server

Use the following command at a DOS command prompt to start the Lucene Index Server manually:

```
c:\Program Files\Novell\Teaming\luceneserver\indexserver\bin\
                                                indexserver-startup.bat
```

To stop the Lucene Index Server, close the command prompt window where you started the Lucene Index Server.

To configure the Lucene Index Server to start automatically when the Windows server reboots, you can set it up as a scheduled task that runs at system startup.

1. On the Windows server where the Lucene Index Server is installed, click *Start* > *All Programs* > *Accessories* > *System Tools* > *Scheduled Tasks*.
2. Double-click *Add Scheduled Task.* to open the Scheduled Task Wizard, then click *Next* to continue.
3. Click Browse, then browse to and double-click the `indexserver-startup.bat` file in the following directory:

   `c:\Program Files\Novell\Teaming\luceneserver\indexserver\bin`
4. In the *Task name* field, specify an informative name for the task, such as Lucene Index Server.

   The default task name is the name of the batch file.
5. In the *Perform this task* field, select *When my computer starts*, then click *Next*.
6. Specify and confirm the `Administrator` password for the Windows server, then click *Next*.
7. Select *Open advanced properties for this task when I click Finish*, then click *Finish*.
8. Verify that *Run only if logged on* is deselected, then click *OK*.

   A new task with the name you specified in Step 4 is added to the list in the Scheduled Tasks window.
9. Click File > Exit to close the Scheduled Task Wizard.

Running Teaming on Multiple Servers

15

By running Novell® Teaming on multiple servers, you can achieve high availability functionality, including failover and load balancing, depending on how you configure your servers. You must perform an Advanced installation on each server in order to configure the Teaming software for such a clustered environment.

- Section 15.1, "Planning a Multi-Server Teaming Configuration," on page 113
- Section 15.2, "Installing the Teaming Software on Multiple Servers," on page 113
- Section 15.3, "Configuring a Web Application to Provide High Availability Functionality for Your Teaming Site," on page 114

NOTE: This section assumes that you already have a Basic installation of Teaming up and running successfully. It is highly recommended to follow the instructions in Part II, "Basic Installation," on page 25 before attempting a more complex Teaming configuration.

15.1 Planning a Multi-Server Teaming Configuration

- Section 15.1.1, "Lucene Index Server Considerations," on page 113
- Section 15.1.2, "Teaming File Repository Considerations," on page 113

15.1.1 Lucene Index Server Considerations

Before you can implement a multi-server Novell Teaming configuration, you must move your Lucene Index Server off of the initial Teaming server, as described in Chapter 14, "Moving the Lucene Index Server to a Remote Server," on page 109.

15.1.2 Teaming File Repository Considerations

Before you implement a multi-server Novell Teaming configuration, you must plan the Teaming file repository for the clustered Teaming servers. The Teaming file repository must be placed in a shared location that is accessible to all Teaming servers. For background information on the contents of the Teaming file repository, see Section 9.2, "Distributing Different Data Types to Different Locations," on page 81.

15.2 Installing the Teaming Software on Multiple Servers

1 Update your existing Novell Teaming server to participate in a multi-server configuration.

   1a Stop Teaming.

   1b Start the Teaming Installation program.

1c On the Installation Settings page, select *Reconfigure Settings*, then click *Next*.

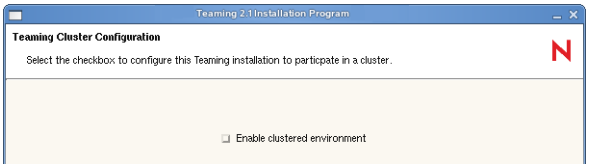
1d On the Choose Installation Type page, select *Advanced*, then click *Next*.

1e Click *Next* to proceed through the installation pages where no changes are needed.

1f (Conditional) If you do not have the Basic Teaming Installation Summary Sheet and Advanced Teaming Installation Summary Sheet from the initial Teaming server installation, record the configuration of the initial Teaming server as you proceed through the installation pages.

Subsequent Teaming servers in the multi-server configuration must be installed with the same configuration settings as the initial Teaming server.

1g On the Teaming Cluster Configuration page, select *Enable clustered environment*, then click *Next*.



Selecting this option configures Ehcache (http://ehcache.sourceforge.net) for your Teaming cluster. If you need to have more than one cluster, see Section 15.3.3, “Configuring Ehcache for Multiple Clusters,” on page 116 for additional instructions.

1h On the Ready to Install page, click *Install*.

1i On the Installation Complete page, click *Finish*.

2 Install the Teaming software on each additional server, using the same installation settings that you used for the initial Teaming server.

3 Start Teaming on each server, as described for the platform where you are installing Teaming:

- Section 4.1.5, “Starting Teaming on Linux,” on page 55
- Section 4.2.3, “Running Teaming as a Windows Service,” on page 59
- Section 4.2.4, “Running Teaming as a Windows Application,” on page 61

4 Continue with Configuring a Web Application to Provide High Availability Functionality for Your Teaming Site.

15.3 Configuring a Web Application to Provide High Availability Functionality for Your Teaming Site

After the Novell Teaming software is installed and running on multiple servers, you must provide additional software to provide high availability functionality. Because Teaming is based on Tomcat, software that can provide high availability for Tomcat can be used to provide high availability for your Teaming site.

1 Install and configure one of the following Web applications to provide high availability functionality for your Teaming site:

- Apache Web server (http://www.apache.org)
- Linux Virtual Server (http://www.linuxvirtualserver.org)

- Novell Access Manager (http://www.novell.com/products/accessmanager)
- Microsoft Internet Information Services (http://www.iis.net)

2 Configure the Web application to establish the Teaming site URL, which then stays constant for Teaming users regardless of which Teaming server they access at any given time.

3 Start the Web application with its new configuration settings.

4 Test your Teaming site for high availability functionality.

- If you are using Apache Web server, Linux Virtual Services, or Microsoft Internet Information Services, users can immediately log in to the Teaming site again after a failover has occurred. The connection between the user's browser and the Teaming site is maintained as the failover occurs.
- If you are using Novell Access Manager, users must start a new browser session, then log into the Teaming site after a failover has occurred. They cannot log in again from the same browser session because the connection between the user's browser and the Teaming site must be reestablished after the failover.

Some illustrative examples are provided:

- Section 15.3.1, "Configuring Tomcat and Apache as a Load Balancer," on page 115
- Section 15.3.2, "Configuring Linux Virtual Server as a Load Balancer," on page 116
- Section 15.3.3, "Configuring Ehcache for Multiple Clusters," on page 116

15.3.1 Configuring Tomcat and Apache as a Load Balancer

The following example configuration uses the balancer module built into the newer Apache (version 2.2.4) Web server, and is based on a widely used sticky session technique. Novell Teaming does not support session sharing/replication among Tomcat instances.

1 Edit the Tomcat `server.xml` file on each Teaming server.

The location of the `server.xml` file varies by platform:

Linux: `/opt/novell/teaming/apache-tomcat-`*`version`*`/conf`

Windows: `c:\Program Files\Novell\Teaming\apache-tomcat-`*`version`*`\conf`

1a Search for `jvmRoute`.

A sample line with a `jvmRoute` tag is provided in a comment.

```
<Engine name="Catalina" defaultHost="localhost" jvmRoute="jvm1">
```

1b Update the active line below the comment so that it looks like the sample.

1c On the second Teaming server, make the same change, incrementing the `jvmRoute` setting.

```
<Engine name="Catalina" defaultHost="localhost" jvmRoute="jvm2">
```

1d Repeat Step 1c for each Teaming server, so that each Tomcat instance has a unique `jvmRoute` setting.

2 Install the Apache Web server (http://httpd.apache.org) on one server.

3 Edit the `httpd.conf` file in the Apache installation.

The `httpd.conf` file is located in the `conf` subdirectory in the Apache installation.

3a Locate and uncomment the following lines:

```
LoadModule proxy_module modules/mod_proxy.so
LoadModule proxy_ajp_module modules/mod_proxy_ajp.so
LoadModule proxy_balancer_module modules/mod_proxy_balancer.so
```

3b Append the following section to the `httpd.conf` file, providing a `BalancerMember` line for each `jvmRoute` value in a Tomcat `server.xml` file.

```
<Location /balancer-manager>
   SetHandler balancer-manager
   Order deny,allow
   Deny from all
   Allow from 127.0.0.1
</Location>
<Proxy balancer://cluster_name>
   BalancerMember ajp://teaming_server_1:8009 route=jvm1
   BalancerMember ajp://teaming_server_2:8009 route=jvm2
</Proxy>
<Location />
   ProxyPass balancer://cluster_name/ stickysession=JSESSIONID
</Location>
```

4 Restart Tomcat and Apache.

15.3.2 Configuring Linux Virtual Server as a Load Balancer

Consult the following online sources for instructions for setting up Linux Virtual Server as a load balancer for your Novell Teaming site:

- The Linux Virtual Server Project (http://www.linuxvirtualserver.org)
- Linux Virtual Server (LVS) Project (http://www.austintek.com/LVS)
- Linux Virtual Server Tutorial (http://www.ultramonkey.org/papers/lvs_tutorial/html)

15.3.3 Configuring Ehcache for Multiple Clusters

Ehcache (http://ehcache.sourceforge.net) is a distributed cache often used in a clustered Apache/Tomcat environment. In such a cluster, each clustered Tomcat node knows about other nodes in the cluster by means of a common multicast group IP address that is specified in the `ehcache-hibernate-clustered.xml` file.

The location of the `ehcache-hibernate-clustered.xml` file varies by platform:

Linux: `/opt/novell/teaming/apache-tomcat-version/webapps/ssf/WEB-INF/classes/config`

Windows: `c:\Program Files\Novell\Teaming\apache-tomcat-version\webapps\ssf\WEB-INF\classes\config`

The default multicast group IP address is 232.0.0.1. If you have more than one clustered Novell Teaming system (for example, one in the lab and one in production), or if you have another software product that is already using the default multicast group IP address, you must update the `ehcache-hibernate-clustered.xml` file for one installation so that it uses an IP address other than the default.

1. On each clustered Teaming server, change to the directory where the `ehcache-hibernate-clustered.xml` file is located, then open the file in a text editor.
2. Search for 232.
3. Replace the default address with a unique IP address.

   Use an IP address in the range of 224.0.0.1 to 239.255.255.255.

   IMPORTANT: Make sure that you specify the same IP address on all clustered Teaming nodes.

   ---
4. Save the updated `ehcache-hibernate-clustered.xml` file.
5. Restart all Teaming nodes.

Running Multiple Lucene Index Servers

16

Your Novell® Teaming site depends on the Lucene Index Server for full functionality. Different Lucene configurations provide different levels of scalability and reliability:

You can install the Lucene Index Server on a different server from where Teaming is running so that both programs have access to more server memory, disk space, and CPU resources. However, the Teaming server and the Lucene Index Server must not have a firewall between them. The RMI protocol used for the Lucene Index Server port works only within a trusted local area network (LAN).

- A Basic installation of Teaming places the Lucene Index Server on the same server where the Teaming software is installed.
- To provide additional memory for the Lucene Index Server, you might already have configured it to run in its own memory space, as described in Section 9.5.3, “Running the Lucene Index Server in Its Own JVM,” on page 86.
- To provide additional disk space and memory for the Lucene Index Server, you might already have moved it to a different server, as described in Chapter 14, “Moving the Lucene Index Server to a Remote Server,” on page 109.

These configurations provide additional resources for the Lucene Index Server, but it is still a single point of failure for your Teaming site. If the Lucene Index Server goes down, the Teaming site becomes inaccessible until access to the Lucene Index Server is restored.

Running multiple Lucene Index Servers provides high availability functionality, so that if one Lucene Index Server goes down, Teaming users can still access the Teaming site because other Lucene Index Servers are still available.

- Section 16.1, “Planning a High Availability Lucene Configuration,” on page 119
- Section 16.2, “Setting Up a High Availability Lucene Configuration,” on page 120
- Section 16.3, “Testing Your Lucene High Availability Configuration,” on page 132
- Section 16.4, “Synchronizing a High Availability Lucene Configuration,” on page 134

NOTE: This section assumes that you already have a Basic installation of Teaming up and running successfully. It is highly recommended that you follow the instructions in Part II, “Basic Installation,” on page 25 before attempting a more complex Teaming and Lucene configuration.

16.1 Planning a High Availability Lucene Configuration

A high availability Lucene Index Server configuration must include at least two different servers (either physical or virtual), referred to as “nodes” in the Novell Teaming Installation program. Lucene nodes in a high availability configuration can be set up on Linux servers, Windows servers, or both.

Each Lucene node must have its own independent directory structure for index files. The default location for the index files for the Lucene Index Server varies by platform:

Linux: `/var/opt/novell/teaming/lucene`

Windows: `c:\Novell\Teaming\lucene`

ADVANCED TEAMING INSTALLATION SUMMARY SHEET

Under *High Availability Lucene Configuration*, specify the number of Lucene nodes that you want in your high availability Lucene configuration.

Each Lucene node needs a unique name, a descriptive title, and a static IP address. The name and title identify the node in the Teaming administrative interface. Typically, the Lucene Index Server listens on RMI port 1199 on its server, but you can configure it to use a different port number if the default port number is already in use.

ADVANCED TEAMING INSTALLATION SUMMARY SHEET

Under *High Availability Lucene Configuration*, specify the name, description, IP address, and RMI port number for each Lucene node.

If you have already accumulated index data on your initial Teaming server, you can choose to copy the index files to the Lucene nodes, or you can reindex the Teaming site after the new Lucene nodes are running. Depending on the amount of accumulated index data, reindexing can be a time-consuming process.

The Teaming server and the Lucene nodes must not have a firewall between them. The RMI protocol used for the Lucene Index Server port works only within a trusted local area network (LAN).

16.2 Setting Up a High Availability Lucene Configuration

- Section 16.2.1, “Changing from a Local Lucene Index Server,” on page 120
- Section 16.2.2, “Changing from a Single Remote Lucene Index Server,” on page 123
- Section 16.2.3, “Expanding an Existing High Availability Lucene Configuration,” on page 126
- Section 16.2.4, “Changing Your Lucene Configuration without Teaming Site Down Time,” on page 128

16.2.1 Changing from a Local Lucene Index Server

To change from a local Lucene Index Server running on the Novell Teaming server, you must install the Lucene Index Server on two or more remote servers, then reconfigure Teaming for a high availability Lucene configuration.

NOTE: Although it is possible to use the Lucene Index Server on the Teaming server as one of the "remote" Lucene nodes, this is not a recommended configuration. Consider it only if you are restricted to two servers for your Teaming site.

1 Set up two or more Lucene nodes:

1a Install the Lucene Index Server on each node, as described in Section 14.1, "Installing the Lucene Software," on page 109.

1b (Optional) Copy accumulated index data from the initial Lucene Index Server to each additional Lucene node.

The default location for the index files varies by platform:

Linux: `/var/opt/novell/teaming/lucene`

Windows: `c:\Novell\Teaming\lucene`

1c Start the Lucene Index Server on each Lucene node, as described in Section 14.3, "Managing a Remote Lucene Index Server," on page 111.

2 Stop Teaming.

If you have installed the Teaming software on multiple servers, as described in Chapter 15, "Running Teaming on Multiple Servers," on page 113, stop Teaming on all servers, or follow the instructions in Section 16.2.4, "Changing Your Lucene Configuration without Teaming Site Down Time," on page 128.

3 Run the Teaming Installation program to configure the Teaming server for multiple Lucene nodes.

3a On the Installation Settings page, select *Reconfigure Settings*, then click *Next*.

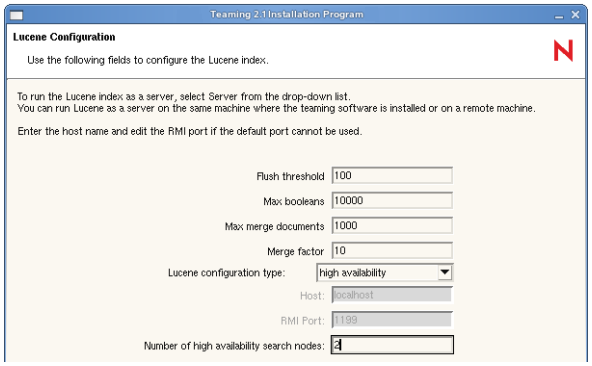
3b On the Choose Installation Type page, select *Advanced*, then click *Next*.

3c Click *Next* to proceed through the installation pages where no changes are needed.

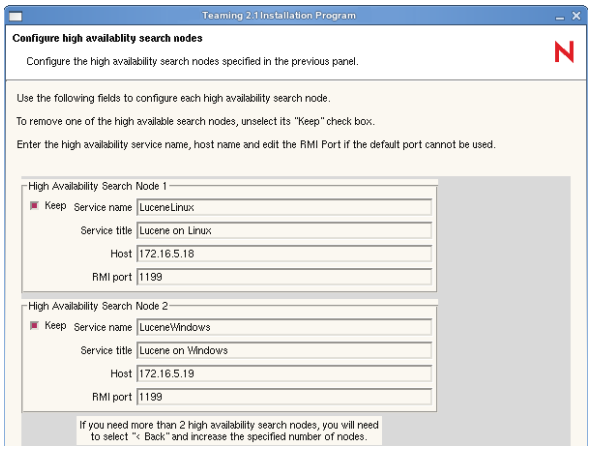
3d On the Lucene Configuration page, fill in the following fields, then click *Next*.

Lucene configuration type: Select *high availability.*

Number of high availability search nodes: Specify the number of Lucene nodes where you have installed and started the Lucene Index Server.



3e On the Configure High Availability Search Nodes page, specify the configuration information for each Lucene node from the Advanced Teaming Installation Summary Sheet that you filled out in Section 16.1, "Planning a High Availability Lucene Configuration," on page 119, then click *Next*.



3f Click *Next* until you reach the Ready to Install page, then click *Install*.

3g On the Installation Complete page, click *Finish*.

3h Start Teaming.

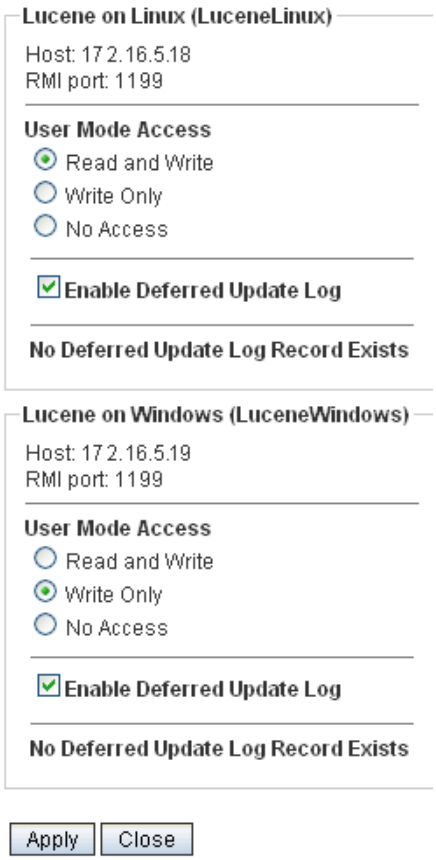
3i (Conditional) If you have multiple Teaming servers, repeat Step 3 on each Teaming server.

4 Configure the Teaming site for the additional Lucene nodes:

4a Log in to the Teaming site as the Teaming administrator.

4b Click *Manage* > *Site Administration*.

4c Expand *Manage the Search Index*, then click *Nodes*.



By default, the first Lucene node in the list has Read and Write access, meaning that Teaming updates it as new content is added to the Teaming site. By default, subsequent nodes in the list have Write Only access, meaning that the Teaming software can update content on the server, but users cannot access it. This setting is useful when you need to perform maintenance on a Lucene node, but it is not the setting you want when setting up a new Lucene node.

4d In the *User Mode Access* box, select *Read and Write* for all Lucene nodes, click *Apply*, then click *Close*.

The new setting is put into effect immediately, so that users immediately have access to the additional Lucene nodes.

5 Skip to Section 16.3, “Testing Your Lucene High Availability Configuration,” on page 132.

16.2.2 Changing from a Single Remote Lucene Index Server

To change from a single remote Lucene Index Servers to a high availability configuration, you must install the Lucene Index Server on one or more additional remote servers, then reconfigure Novell Teaming for additional Lucene nodes.

1 Bring down your Teaming site:

1a Stop Teaming.

If you have installed the Teaming software on multiple servers, as described in Chapter 15, “Running Teaming on Multiple Servers,” on page 113, stop Teaming on all servers, or follow the instructions in Section 16.2.4, “Changing Your Lucene Configuration without Teaming Site Down Time,” on page 128.

1b Make sure that the existing remote Lucene Index Server also stops.

2 Set up one or more additional Lucene nodes:

2a Install the Lucene Index Server on each additional remote server, as described in Section 14.1, “Installing the Lucene Software,” on page 109.

2b (Optional) Copy accumulated index data from the initial remote Lucene node to each additional Lucene node.

The default location for the index files varies by platform:

Linux: `/var/opt/novell/teaming/lucene`

Windows: `c:\Novell\Teaming\lucene`

2c Start the Lucene Index Server on each Lucene node, as described in Section 14.3, “Managing a Remote Lucene Index Server,” on page 111, but do not bring up your Teaming site.

3 Run the Teaming Installation program to configure the Teaming server for multiple Lucene nodes.

3a On the Installation Settings page, select *Reconfigure Settings*, then click *Next*.

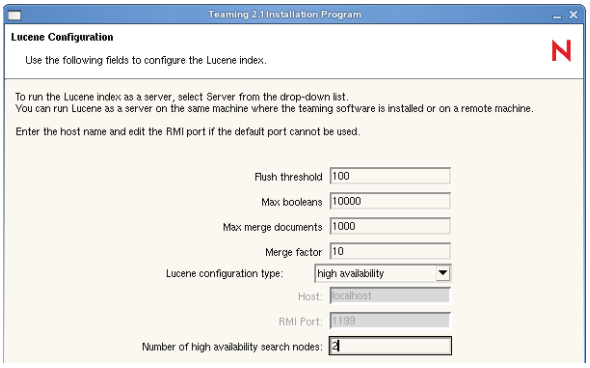
3b On the Choose Installation Type page, select *Advanced*, then click *Next*.

3c Click *Next* to proceed through the installation pages where no changes are needed.

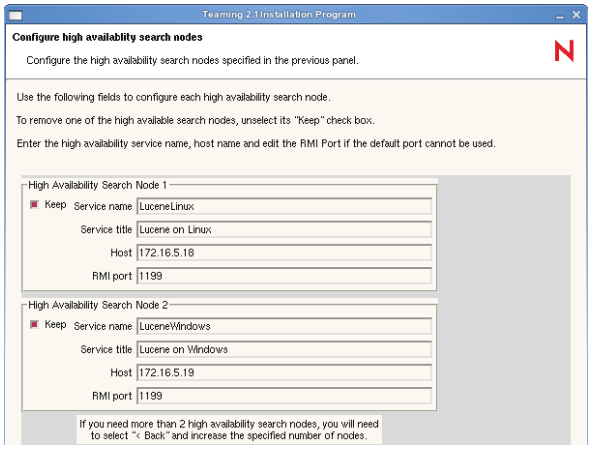
3d On the Lucene Configuration page, fill in the following fields, then click *Next*.

Lucene configuration type: Change *server* to *high availability.*

Number of high availability search nodes: Specify the number of Lucene nodes where you have installed the Lucene Index Server.



3e On the Configure High Availability Search Nodes page, specify the configuration information for each Lucene node from the Advanced Teaming Installation Summary Sheet that you filled out in Section 16.1, “Planning a High Availability Lucene Configuration,” on page 119, then click *Next*.



3f Click *Next* until you reach the Ready to Install page, then click *Install*.

3g On the Installation Complete page, click *Finish*.

3h Start Teaming.

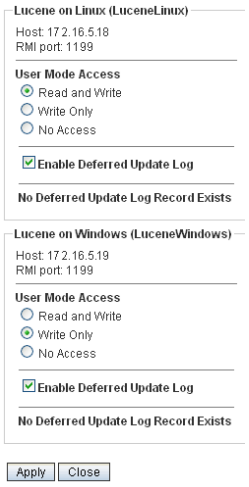
3i (Conditional) If you have multiple Teaming servers, repeat Step 3 on each Teaming server.

4 Configure the Teaming site for the additional Lucene nodes:

4a Log in to the Teaming site as the Teaming administrator.

4b Click *Manage* > *Site Administration*.

4c Expand *Manage the Search Index*, then click *Nodes*.



By default, the first Lucene node in the list has Read and Write access, meaning that Teaming updates it as new content is added to the Teaming site. By default, subsequent nodes in the list have Write Only access, meaning that the Teaming software can update content on the server, but users cannot access it. This setting is useful when you need to perform maintenance on a Lucene node, but it is not the setting you want when setting up a new Lucene node.

4d In the *User Mode Access* box, select *Read and Write* for all Lucene nodes.

4e Click *Apply*, then click *Close*.

The new setting is put into effect immediately, so that users immediately have access to the additional Lucene nodes.

5 Skip to Section 16.3, “Testing Your Lucene High Availability Configuration,” on page 132.

16.2.3 Expanding an Existing High Availability Lucene Configuration

After you have set up an initial high availability Lucene configuration, you can add additional Lucene nodes at any time.

1 Bring down your Teaming site:

1a Stop Teaming.

If you have installed the Teaming software on multiple servers, as described in Chapter 15, “Running Teaming on Multiple Servers,” on page 113, stop Teaming on all servers, or follow the instructions in Section 16.2.4, “Changing Your Lucene Configuration without Teaming Site Down Time,” on page 128.

1b Stop all Lucene nodes, as described in Section 14.3, “Managing a Remote Lucene Index Server,” on page 111.

2 Set up one or more additional Lucene nodes:

2a Install the Lucene Index Server on each additional remote server, as described in Section 14.1, “Installing the Lucene Software,” on page 109.

2b (Optional) Copy accumulated index data from an existing Lucene node to each additional Lucene node.

The default location for the index files varies by platform:

Linux: `/var/opt/novell/teaming/lucene`

Windows: `c:\Novell\Teaming\lucene`

2c Start the Lucene Index Server on each Lucene node, as described in Section 14.3, “Managing a Remote Lucene Index Server,” on page 111, but do not bring up your Teaming site.

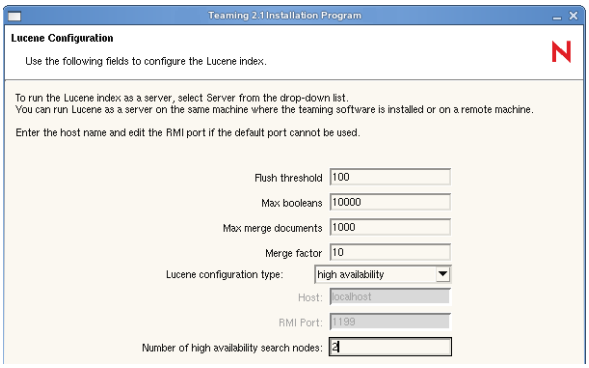
3 Run the Teaming Installation program to configure the Teaming server for the additional Lucene nodes.

3a On the Installation Settings page, select *Reconfigure Settings*, then click *Next*.

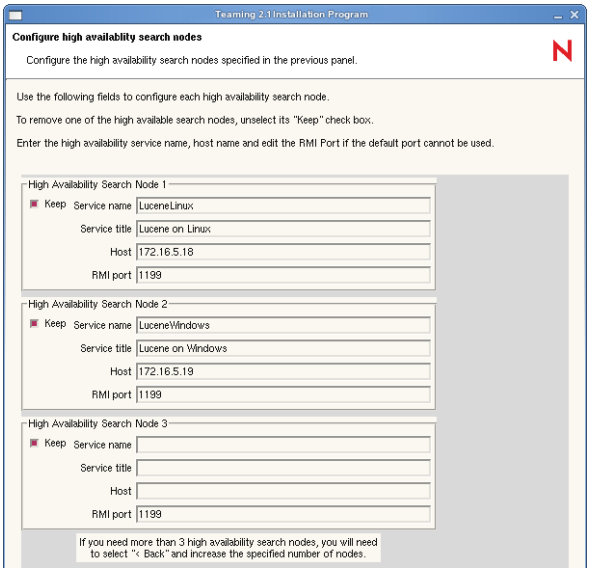
3b On the Choose Installation Type page, select *Advanced*, then click *Next*.

3c Click *Next* to proceed through the installation pages where no changes are needed.

3d On the Lucene Configuration page, increase the number of nodes in the *Number of high availability search nodes* field, then click *Next*.



3e On the Configure High Availability Search Nodes page, specify the configuration information for each additional Lucene node, then click *Next*.



3f Click *Next* until you reach the Ready to Install page, then click *Install*.

3g On the Installation Complete page, click *Finish*.

3h Start Teaming.

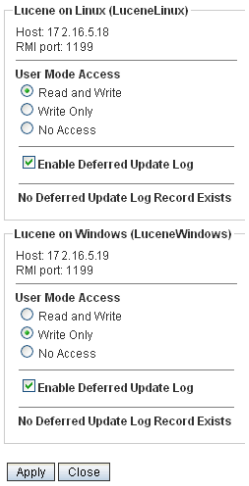
3i (Conditional) If you have multiple Teaming servers, repeat Step 3 on each Teaming server.

4 Configure the Teaming site for the additional Lucene nodes:

4a Log in to the Teaming site as the Teaming administrator.

4b Click *Manage* > *Site Administration*.

4c Expand *Manage the Search Index*, then click *Nodes*.



By default, the first Lucene node in the list has Read and Write access, meaning that Teaming updates it as new content is added to the Teaming site. By default, subsequent nodes in the list have Write Only access, meaning that the Teaming software can update content on the server, but users cannot access it. This setting is useful when you need to perform maintenance on a Lucene node, but it is not the setting you want when setting up a new Lucene node.

4d In the *User Mode Access* box, select *Read and Write* for all Lucene nodes.

4e Click *Apply*, then click *Close*.

The new setting is put into effect immediately, so that users immediately have access to the additional Lucene nodes.

5 Skip to Section 16.3, “Testing Your Lucene High Availability Configuration,” on page 132.

16.2.4 Changing Your Lucene Configuration without Teaming Site Down Time

Teaming site down time can be avoided only if you have installed the Novell Teaming software on multiple servers, as described in Chapter 15, “Running Teaming on Multiple Servers,” on page 113.

To change to a high availability Lucene configuration in a multiple Teaming server configuration:

1 Set up two or more Lucene nodes:

1a Install the Lucene Index Server on each node, as described in Section 14.1, “Installing the Lucene Software,” on page 109

1b Start the Lucene Index Server on each Lucene node, as described in Section 14.3, “Managing a Remote Lucene Index Server,” on page 111.

2 Stop Teaming on one server.

The other Teaming servers remain in service for users and continue to communicate with the original Lucene Index Server.

3 Run the Teaming Installation program on the Teaming server that you stopped to configure it for multiple Lucene Index Servers.

3a On the Installation Settings page, select *Reconfigure Settings*, then click *Next*.

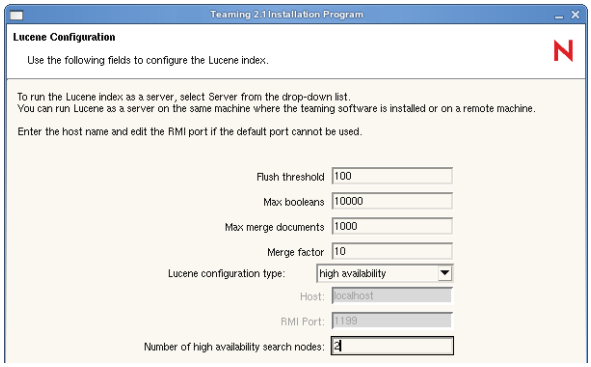
3b On the Choose Installation Type page, select *Advanced*, then click *Next*.

3c Click *Next* to proceed through the installation pages where no changes are needed.

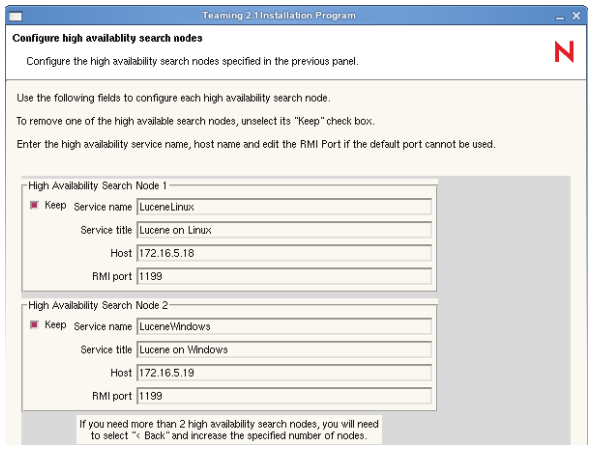
3d On the Lucene Configuration page, fill in the following fields, then click *Next*.

Lucene configuration type: Select *high availability.*

Number of high availability search nodes: Specify the number of Lucene nodes where you have installed the Lucene Index Server.



3e On the Configure High Availability Search Nodes page, specify the configuration information for each Lucene node from the Advanced Teaming Installation Summary Sheet that you filled out in Section 16.1, “Planning a High Availability Lucene Configuration,” on page 119, then click *Next*.



3f Click *Next* until you reach the Ready to Install page, then click *Install*.

3g On the Installation Complete page, click *Finish*.

4 Start the reconfigured Teaming server.

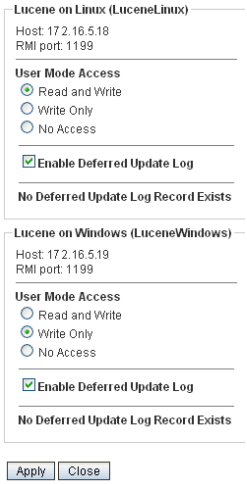
5 Access the reconfigured Teaming server and prevent access to the additional Lucene nodes:

IMPORTANT: All Teaming servers must be reconfigured before any of them access the additional Lucene nodes.

5a Log in to the reconfigured Teaming server as the Teaming administrator, using the server hostname rather than your Teaming site URL.

5b Click *Manage* > *Site Administration*.

5c Expand *Manage the Search Index*, then click *Nodes*.



By default, the first Lucene node in the list has *Read and Write* access, meaning that Teaming updates it as new content is added to the Teaming site. By default, subsequent nodes in the list have *Write Only* access, meaning that the Teaming software can update content on the server, but users cannot access it. When setting up a high availability Lucene configuration without Teaming site down time, you need to prevent write access during the reconfiguration process.

5d In the *User Mode Access* box, change *Write Only* to *No Access* for the additional Lucene nodes.

5e Click *Apply*, then click *Close*.

The new setting is put into effect immediately, so that the reconfigured Teaming server does not communicate with the additional Lucene nodes.

6 Reconfigure the rest of the Teaming servers:

6a Stop each Teaming server.

6b Repeat Step 3 to configure each Teaming server for the additional Lucene nodes.

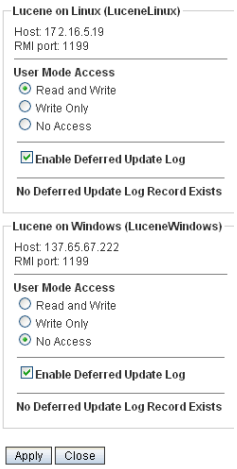
6c Start each reconfigured Teaming server.

7 Access the reconfigured Teaming site and allow write access to the additional Lucene nodes:

7a Log in to the reconfigured Teaming as the Teaming administrator.

7b Click *Manage* > *Site Administration*.

7c Expand *Manage the Search Index*, then click *Nodes*.



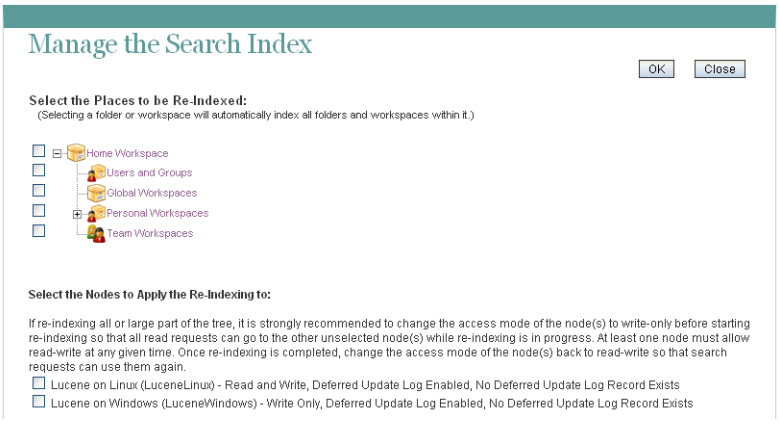
7d In the *User Mode Access* box, change *No Access* to *Write Only* for the additional Lucene nodes.

7e Click *Apply*, then click *Close*.

The new setting is put into effect immediately, so that the reconfigured Teaming servers can now communicate with the additional Lucene nodes, although user access is still disallowed.

8 Reindex the Teaming site, so that the additional Lucene nodes are updated with the same index data that the original Lucene Index Server has:

8a On the Site Administration page, click *Index*.



8b Select *Home Workspace*, so that the entire Teaming site is reindexed.

8c Select the additional Lucene nodes, but do not select any previously existing nodes.

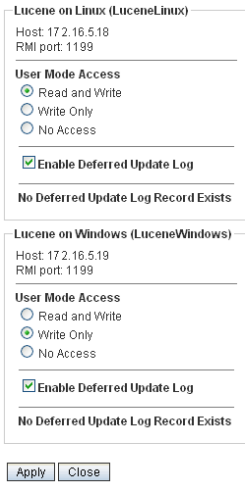
8d Click *OK* to start the indexing.

Depending on the size of your Teaming site, reindexing can be a time-consuming process. However, because one or more previously existing Lucene Index Servers are still servicing the Teaming site, users are not affected by the reindexing process.

8e When the reindexing is completed, click *Close*.

9 Make the additional Lucene nodes available to Teaming users:

9a On the Site Administration page, expand *Mange the Search Index*, then click *Nodes*.



9b In the *User Mode Access* box, change *Write Access* to *Read and Write* for the additional Lucene nodes.

9c Click *Apply*, then click *Close*.

The new setting is put into effect immediately, so that Teaming users have additional Lucene Index Servers available as they use the Teaming site.

16.3 Testing Your Lucene High Availability Configuration

When you first set up your high availability Lucene configuration, you can configure Novell Teaming to write Lucene node information to the Tomcat log file so that you can observer the behavior of the Lucene nodes. Then you can take nodes down and bring them up again to see the effect on your Teaming site. This process helps you prepare for the situation where a Lucene node goes down unexpectedly or you need to take one down on purpose, perhaps for maintenance.

- Section 16.3.1, "Configuring Teaming to Log Lucene Node Activity," on page 132
- Section 16.3.2, "Observing Lucene Node Activity," on page 133

NOTE: For background information about the Tomcat log file, see "Tomcat Log File" in "Site Maintenance" in the *Novell Teaming 2.1 Administration Guide*.

16.3.1 Configuring Teaming to Log Lucene Node Activity

By default, Novell Teaming writes an error to the Tomcat log file whenever it cannot communicate with a Lucene node. For testing purposes, you can increase the logging so that the Tomcat log file includes a message for each time Teaming contacts a Lucene Index Server. After observing and understanding the behavior, you should return the logging to normal levels.

1 Open the `log4j.properties` file in a text editor.

The location of the `log4j.properties` file varies by platform.

Linux: `/opt/novell/teaming/apache-tomcat-version/webapps/ssf/WEB-INF`

Windows: `c:\Program Files\Novell\Teaming\apache-tomcat-version\webapps\ssf\WEB-INF`

2 Search for the following line:

```
#log4j.category.com.novell.teaming.search=DEBUG
```

3 Remove the pound sign (#) from the beginning of the line to activate DEBUG level logging for the Lucene Index Server.

4 Save the `log4j.properties` file, then exit the text editor.

5 Stop Teaming, then start Teaming to put the new logging level into effect.

16.3.2 Observing Lucene Node Activity

After changing the Novell Teaming logging level to include Lucene node activity, you can monitor the Tomcat log file to see which Lucene nodes Teaming is contacting.

1 Change to the directory where the Tomcat log file is located.

For background information about the Tomcat log file, see "Tomcat Log File" in "Site Maintenance" in the *Novell Teaming 2.1 Administration Guide*.

2 On Linux, use the `tail` command to monitor the end of the Tomcat log file.

```
tail -f catalina.out
```

or

On Windows, download an equivalent command from the Internet in order to perform the following steps.

For example, there is one available at SourceForge.net (http://sourceforge.net/projects/tailforwin32).

3 Perform some activities on the Teaming site to create new content.

For example, you could create a blog entry. The Tomcat log file shows that Teaming is contacting each available Lucene Index Server in turn as it submits the new information for indexing. Nodes are considered available if they are marked *Read and Write* in the *User Mode Access* box on the Lucene Nodes page.

4 Bring down one of the Lucene nodes.

For example, you might reboot the Lucene server, stop the Lucene Index Server on the node, or otherwise prevent Teaming from contacting the Lucene node.

5 Observe that the Tomcat log file displays an error when the Lucene node becomes unavailable.

6 Perform some additional activities on the Teaming site that create new content.

You might notice a pause as Teaming tries to connect with the Lucene node that is no longer available.

7 Observe that the Tomcat log file shows when normal Teaming processing has resumed without access to the unavailable Lucene node.

8 Make the unavailable Lucene node available again.

9 Observe that the Tomcat log file indicates that Teaming has created a journal record on the Lucene node that was temporarily unavailable.

The journal record contains the indexing operations that failed to take place while the Lucene node was unavailable. Even though the Lucene node is back up, Teaming does not start accessing it until it has been synchronized with the latest index information.

10 To synchronize the out-of-date Lucene node, follow the steps in Section 16.4, "Synchronizing a High Availability Lucene Configuration," on page 134.

After the out-of-date Lucene node has been synchronized, Teaming starts accessing it again.

If a situation arises where no Lucene node is marked *Read and Write* in the *User Mode Access* box on the Lucene Nodes page, Teaming temporarily accesses the first node in the list that is set *Write Only*. If no nodes are set to *Write Only* or *Read and Write*, Teaming temporarily access the first node in the list, even though it is set to *No Access*. This functionality is required because you cannot log in to the Teaming site without access to a Lucene Index Server.

16.4 Synchronizing a High Availability Lucene Configuration

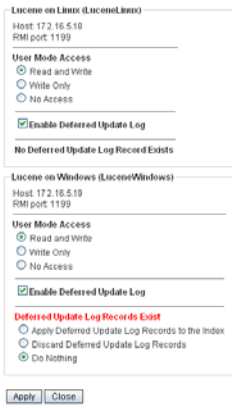
Whenever a Lucene node is down for a relatively short period of time (no more than a couple of days), you can synchronize it with other Lucene nodes whose index files are up to date.

1 Make sure that the out-of-date Lucene node is running reliably again.

2 Log in to the Teaming site as the Teaming administrator.

3 Click *Manage* > *Site Administration*.

4 Expand *Manage the Search Index*, then click *Nodes*.



5 To repair the out-of-date Lucene node, select *Apply Deferred Update Log Records to the Index*, then click *Apply*.

The Deferred Update Log options disappear if the update is successful. If for some reason the deferred update log records cannot be applied to the index, you can rebuild the index, as described in "Rebuilding the Lucene Index" in "Site Maintenance" in the *Novell Teaming 2.1 Administration Guide*.

6 Click *Close*.

Running Multiple Database Servers

17

The three databases supported by Novell® Teaming (MySQL, Microsoft SQL, and Oracle) each have their own approach to clustering the database server. Information about clustering database servers is available on the Internet, for example:

- MySQL Cluster (http://www.mysql.com/products/database/cluster)
- SQL Server Clustering (http://www.sql-server-performance.com/articles/clustering/clustering_intro_p1.aspx)
- Oracle Real Application Clusters (http://www.oracle.com/technology/products/database/clustering)

NOTE: It is highly recommended to follow the instructions in Part II, “Basic Installation,” on page 25 before attempting a more complex Teaming configuration.

Update

V

- Chapter 18, “What’s New in Novell Teaming 2.x,” on page 139
- Chapter 19, “Updating from Novell Teaming 2.0 to Novell Teaming 2.1,” on page 141
- Chapter 20, “Updating from Novell Teaming 1.0 to Novell Teaming 2.1,” on page 147
- Chapter 21, “Updating from Kablink Teaming 1.0 to Novell Teaming 2.1,” on page 157
- Chapter 22, “Changing from Kablink Teaming 2.1 to Novell Teaming 2.1,” on page 159
- Chapter 23, “Migrating Existing Novell Teaming Data into a New Teaming 2.1 System,” on page 161
- Chapter 24, “Migrating from SiteScape Forum or Other Collaboration Software,” on page 169

What's New in Novell Teaming 2.*x* 18

- Section 18.1, "Teaming 2.x User Enhancements," on page 139
- Section 18.2, "Teaming 2.x Installation Enhancements," on page 139
- Section 18.3, "Teaming 2.x Administration Enhancements," on page 139

18.1 Teaming 2.*x* User Enhancements

For a list of Novell® Teaming enhancements and instructions for use, see:

- "What's New in Teaming" in the *Novell Teaming 2.1 User Guide*
- "What's New in Teaming" in the *Novell Teaming 2.1 Advanced User Guide*

18.2 Teaming 2.*x* Installation Enhancements

- **No Liferay dependency (v2.0):** Novell Teaming 2.*x* is a standalone application with no dependency on Liferay.
- **Built-in mail server for incoming posts (v2.0):** Teaming 2.0 includes a build-in SMTP mail server for incoming e-mail. This allows Teaming users to easily post to folders in the Teaming site from their e-mail clients. For configuration instructions, see Section 3.7, "Enabling Inbound E-Mail," on page 39.
- **Multiple Lucene Index Servers (v2.0):** You can install multiple Lucene Index Servers to provide high availability for the Teaming site index. For setup instructions, see Chapter 16, "Running Multiple Lucene Index Servers," on page 119.
- **Novell Access Manager Integration (v2.0):** Novell Access Manager can provide single sign-on access to your Teaming site. For configuration instructions, see Section 9.8, "Configuring Single Sign-On with Novell Access Manager," on page 88.

18.3 Teaming 2.*x* Administration Enhancements

- **User/Entry Data Quota (v2.1):** The Teaming administrator can set a maximum size limit for each Teaming user's accumulated attached files and versions in any single folder entry. Users receive a warning when they reach a "high-water mark" (a percentage of their data quota for the folder entry). When they finally reach the data quota for the folder entry, users cannot create additional file attachments or versions in that folder entry until they free up space by deleting file attachments and versions in that folder entry. Administrators can assign data quotas on an individual user basis, or use groups to easily assign the same data quota to multiple users. For usage instructions, see "Managing User Disk Space Usage with User Data Quotas" in "Site Maintenance" in the *Novell Teaming 2.1 Administration Guide*.
- **Administrative Purge for Workspaces and Folders (v2.1):** Because deleted items count against users' data quotas, the Teaming administrator can choose to purge deleted items from the Teaming site to free up storage space. For usage instructions, see "Purging Deleted Files" in "Site Maintenance" in the *Novell Teaming 2.1 Administration Guide*.

- **Workspace/Folder Export/Import (v2.1):** The Teaming administrator can export workspaces, folders, and folder entries, then import them into a different Teaming system. The export process includes all content associated with the exported workspace, folder, or folder entry, such as users, groups, team members, roles, custom forms, landing pages, workflows, custom JSPs, and simple URLs. The import process attempts to reconcile imported data with data already existing in the target Teaming site. For usage instructions, see "Exporting/ Importing Workspaces, Folders, and Entries" in "Site Maintenance" in the *Novell Teaming 2.1 Administration Guide*.
- **Multiple LDAP queries (v2.0):** Novell Teaming 2.*x* can search multiple LDAP containers for User objects so that Teaming user accounts can be set up for users distributed throughout your LDAP directory. For setup instructions, see Section 5.3, "Adding Teaming Users from Your LDAP Directory," on page 65.
- **Multiple zones (v2.0):** A zone is like a separate Teaming site that exists as a subset of your overall Teaming site. Different zones have different URLs and all data in different zones is kept completely separated. For setup instructions, see "Setting Up Zones (Virtual Teaming Sites)" in "Site Setup" in the *Novell Teaming 2.1 Administration Guide*.
- **Software extensions (v2.0 / v2.1):** You can enhance the functionality of your Teaming site by implementing software extensions. In Teaming 2.1, you can deploy extensions to the Teaming software while logged in to the Teaming site, without manually editing the Teaming properties file (`ssf-ext.properties`). Existing Teaming software extensions can also be viewed and deleted from the new Manage Extensions page on the Teaming site. For usage instructions, see "Adding Software Extensions to Your Teaming Site" in "Site Setup" in the *Novell Teaming 2.1 Administration Guide*.
- **Remote applications (v2.0):** You can also expand the functionality of your Teaming site by running remote applications from the Teaming site. For setup instructions, see "Using Remote Applications on Your Teaming Site" in "Site Setup" in the *Novell Teaming 2.1 Administration Guide*.

Updating from Novell Teaming 2.0 to Novell Teaming 2.1

19

- Section 19.1, “Understanding the Update Process from 2.0 to 2.1,” on page 141
- Section 19.2, “Updating a Single-Server Teaming System from 2.0 to 2.1,” on page 141
- Section 19.3, “Updating a Multiple-Server Teaming System from 2.0 to 2.1,” on page 143
- Section 19.4, “Performing Post-Update Tasks,” on page 145

19.1 Understanding the Update Process from 2.0 to 2.1

During the update from Novell® Teaming 2.0 to Teaming 2.1, the following aspects of your Teaming system are modified:

- The Teaming software is updated from version 2.0 to 2.1.
- The Teaming database is updated with a new database structure to support the new features in 2.1. All teams, groups, roles, workspaces, and folders are preserved throughout the update process.
- A backup copy of your existing Teaming installation is created in the following directory:

  `/opt/novell/teaming/teaming-backup`

19.2 Updating a Single-Server Teaming System from 2.0 to 2.1

When you update a single-server Novell Teaming installation from version 2.0 to version 2.1, the Teaming Installation program can perform the entire update in a single process, unless the Teaming system uses an Oracle database.

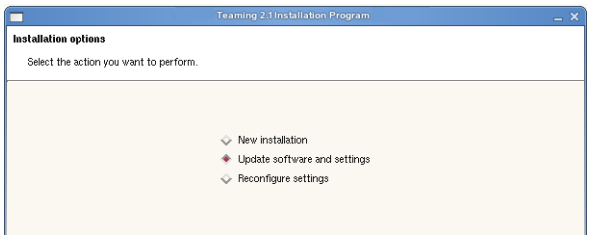
1. Make sure you have a current backup of your Teaming 2.0 system.
2. Stop Teaming.
3. (Conditional) If your Teaming system uses an Oracle database, update the database as described in Section 19.2.1, “Updating an Oracle Database from 2.0 to 2.1,” on page 142 before running the Teaming Installation program.
4. Copy the `installer.xml` file and the `license-key.xml` file from the directory where the Teaming 2.0 Installation program is located to the directory where you have extracted the Teaming 2.1 software.

   The `installer.xml` file provides default values when you run the Teaming 2.1 Installation program, and you can use the same license file for Teaming 2.1 as your used for Teaming 2.0.
5. Start the Teaming 2.1 Installation program.

If you need assistance with this task, see the detailed installation instructions for the platform where you are updating Teaming:

- Section 4.1.2, “Running the Linux Teaming Installation Program,” on page 50
- Section 4.2.2, “Running the Windows Teaming Installation Program,” on page 58

6 Accept the License Agreement, then click *Next*.



Because you provided your Teaming 2.0 `installer.xml` file in the directory with the Teaming 2.1 Installation program, the *Update software and settings* installation option is selected by default.

7 Click *Next* to continue.

8 Click *Yes* to let the Installation program know that you have stopped Teaming.

9 Select the check box to let the Installation program know that you have backed up all of your Teaming data, then click *Next*.

10 Select *Basic* or *Advanced*, depending on the type of Teaming installation you are updating, then click *Next*.

11 Continue through the installation process, retaining or changing configuration information depending on the needs of your Teaming 2.1 system.

12 Click *Install* when you are ready to perform the update.

The Installation program might seem to pause at this point. It needs to update tables and indexes in the Teaming database. If you have a large database, this process can be time-consuming.

13 Click *Finish* when the update is completed.

14 Start Teaming 2.1 in the same way that you have been starting Teaming 2.0

When you start Teaming for the first time after the update, it takes longer to start than usual because data in the Teaming database must be updated before the Teaming site is ready to use.

19.2.1 Updating an Oracle Database from 2.0 to 2.1

The Novell 2.1 Teaming Installation program can update MySQL and Microsoft SQL databases as part of the Teaming software update, but it cannot update an Oracle database. Therefore, if you are using Oracle, you must manually run the Teaming 2.1 database update script after you have stopped Teaming.

1 Change to the directory where the Teaming 2.1 Installation program is located.

2 Unzip the `teaming-2.1.`*n*`-sql.zip` file to create the `update-2.0.0-2.1.`*n* directory

The `update-2.0.0-2.1.`*n* directory contains an update script for each type of database (MySQL, Microsoft SQL, and Oracle).

3 Run the `update-oracle.sql` script to update the database structure.

```
sqlplus "/ as sysdba"
SQL>spool update-oracle.out;
SQL>@update-oracle;
SQL>quit;
```

4 Return to Step 4 in Section 19.2, "Updating a Single-Server Teaming System from 2.0 to 2.1," on page 141.

19.3 Updating a Multiple-Server Teaming System from 2.0 to 2.1

If your Novell Teaming 2.0 system is distributed across multiple servers, the Teaming 2.1 Installation program can update Teaming components on the Teaming server, but you must manually update any Teaming components that you have placed on remote servers.

- Section 19.3.1, "Manual Teaming Database Update," on page 143
- Section 19.3.2, "Manual Lucene Index Server Update," on page 144

19.3.1 Manual Teaming Database Update

In order to update the Novell Teaming database when the Teaming Installation program cannot do it for you, you must run the Teaming 2.1 database update script.

1 Stop Teaming.

2 Change to the directory where the Teaming 2.1 Installation program is located.

3 Unzip the `teaming-2.1.n-sql.zip` file to create the `update-2.0.0-2.1.n` directory

The `update-2.0.0-2.1.n` directory contains an update script for each type of database (MySQL, Microsoft SQL, and Oracle).

4 Copy the script for your database type to the server where the Teaming database is located.

5 Use the database client utility for your database type to run the script:

MySQL:
```
mysql -uusername -ppassword < /path/update-mysql.sql
```

Microsoft SQL:
```
osql -Uusername -Ppassword -i update-sqlserver.sql
```
You can also use the script with the SQL Server Express Utility (http://www.microsoft.com/downloads/details.aspx?familyid=fa87e828-173f-472e-a85c-27ed01cf6b02&displaylang=en) to update the database.

Oracle:
```
sqlplus "/ as sysdba"
SQL>spool update-oracle.out;
SQL>@update-oracle
SQL>quit;
```

6 After you have updated the Teaming database:

(Conditional) If your Lucene Index Server is also on a remote server, continue with Section 19.3.2, “Manual Lucene Index Server Update,” on page 144.

or

(Conditional) If all remaining Teaming components that need to be updated are on the Teaming server, follow the instructions in Section 19.2, “Updating a Single-Server Teaming System from 2.0 to 2.1,” on page 141.

19.3.2 Manual Lucene Index Server Update

In order to update your Novell Teaming index when the Teaming Installation program cannot do it for you, you need to run the Remote Lucene Server Installation program.

1. Stop Teaming.
2. Stop the Lucene Index Server.
3. Copy the Teaming 2.1 Remote Lucene Server Installation program from the directory where the Teaming 2.1 Installation program is located to a convenient directory on the server where the remote Lucene Index Server is located.

   The name of the Remote Lucene Server Installation program varies by platform:

   Linux: `lucene-installer.linux`

   Windows: `lucene-installer.exe`

   Because you are updating from Teaming 2.0, the existing license file (`license-key.xml`) on the remote Lucene server still works with the Teaming 2.1 Remote Lucene Server Installation program.
4. Start the Teaming 2.1 Remote Lucene Server Installation program.
5. Accept the License Agreement, then click *Next*.
6. Select *Update software and settings*.
7. Click *Next* to continue.
8. Click *Next* to accept the installation location.
9. Click *Next* to accept the Java JDK location.
10. In the *Host* field, specify the hostname where you are installing the remote Lucene Index Server.
11. Change Lucene configuration settings as needed, then click *Next*.

    For information about Lucene configuration settings, see Section 9.5.2, “Changing Lucene Configuration Settings,” on page 85.
12. Click *Install* to install the updated Lucene Index Server software.
13. Click *Finish* when the update is completed.
14. Start the Lucene Index Server.
15. Now that all remote Teaming components have been updated, follow the instructions in Section 19.2, “Updating a Single-Server Teaming System from 2.0 to 2.1,” on page 141.

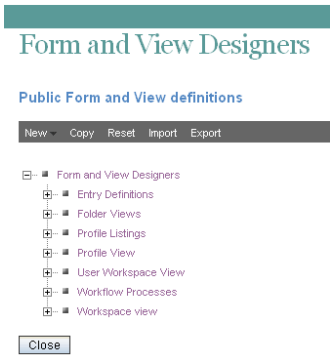
19.4 Performing Post-Update Tasks

After you start Novell Teaming 2.1, you can access your Teaming site as usual. However, you need to reset some aspects of the interface before you allow users to access the updated site. The interface reset affects only those definitions and templates that are included with the Teaming product. If you have created custom definitions and templates, they are unaffected by the interface reset.

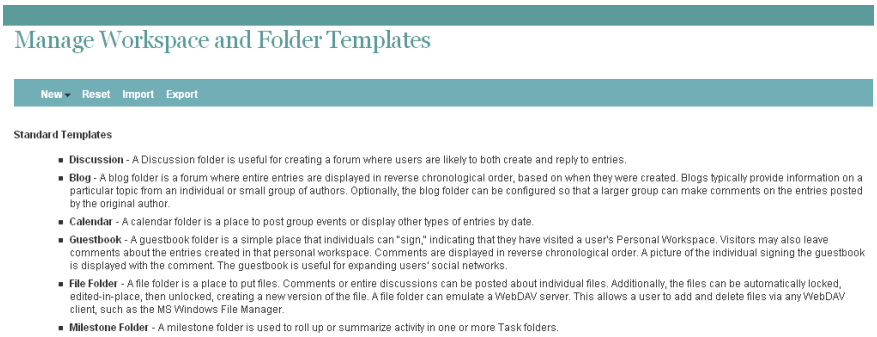
IMPORTANT: If you have manually customized any definitions or templates that are included with the Teaming product, back up the files you have modified before performing the interface reset.

---

1. Log in to the Teaming site as the Teaming administrator.
2. Reset the public form and view definitions:
   - **2a** Click *Manage* > *Site Administration* > *Form and View Designer*.



   - **2b** Click *Reset*.
   - **2c** Click *Select All*, click *OK* to confirm, then click *Close*.
3. Reset the standard templates:
   - **3a** On the Site Administration page, click *Manage Workspace and Folder Templates*.



   - **3b** Click *Reset*.
   - **3c** Click *OK* to confirm, then click *Close*.

Your Teaming 2.1 site is now ready for use.

IMPORTANT: If Teaming users encounter problems displaying any pages on the Teaming site after the update, simply have them clear the browser cache.

Updating from Novell Teaming 1.0 to Novell Teaming 2.1

20

- Section 20.1, “Understanding the Update Process,” on page 147
- Section 20.2, “Preparing Your Teaming System for Updating from 1.0 to 2.1,” on page 147
- Section 20.3, “Updating a Single-Server Teaming System from 1.0 to 2.1,” on page 150
- Section 20.4, “Updating a Multiple-Server Teaming System from 1.0 to 2.1,” on page 152
- Section 20.5, “Performing Post-Update Tasks,” on page 155

20.1 Understanding the Update Process

The major change when you update from Novell® Teaming 1.0 to Novell Teaming 2.1 is that the Liferay portal is no longer used by your Teaming system. The Teaming 2.1 Installation program backs up your Teaming data and disconnects your Teaming system from the Liferay software that was installed as part of Teaming 1.0. No Teaming data is lost in this process.

During the update from Teaming 1.0 to Teaming 2.1, the following aspects of your Teaming system are modified:

- The Teaming software is updated from version 1.0 to 2.1.
- The Teaming database is updated with a new database structure to support the new features in 2.1. All teams, groups, roles, workspaces, and folders are preserved throughout the update process.
- The Lucene Index Server is updated for improved functionality.
- Teaming no longer uses an external e-mail system for inbound message delivery. Teaming 2.1 includes an internal SMTP mail host for incoming messages. This implementation allows for the easy creation of simple URLs to facilitate posting to the Teaming site from e-mail clients.
- The Liferay portal is eliminated from your Teaming installation. The Liferay data is backed up, so if you have made customizations to Liferay, they remain intact, but the Liferay portal is not left in a usable state after the Teaming files are removed from it. If you want to continue to use Liferay, you must set up a new, independent installation of Liferay and transfer any customizations that you have made to the Teaming version into the new, independent version. To obtain the latest version of Liferay, see Liferay Portal (http://www.liferay.com).
- A backup copy of your existing Teaming installation is created in the following directory:

  `/opt/icecore/teaming-backup`

20.2 Preparing Your Teaming System for Updating from 1.0 to 2.1

- Section 20.2.1, “Updating Your Operating Environment,” on page 148
- Section 20.2.2, “Backing Up Your Teaming 1.0 Data,” on page 148
- Section 20.2.3, “Planning and Performing Your Update to Teaming 2.1,” on page 149
- Section 20.2.4, “Entry Type Repair for Imported Files in Your Teaming 2.1 Site,” on page 149

20.2.1 Updating Your Operating Environment

The following components of the Novell Teaming operating environment were supported for Teaming 1.0 but are not supported for Teaming 2.1:

- Red Hat* Enterprise Linux 3 and 4
- Oracle 9g
- Microsoft SQL Server 2000

If the operating environment for your Teaming system includes any of these components, you must update the components before your update to Teaming 2.1. For currently supported versions, see Chapter 2, "Teaming System Requirements," on page 19.

For assistance with updating your operating system, see Chapter 23, "Migrating Existing Novell Teaming Data into a New Teaming 2.1 System," on page 161.

20.2.2 Backing Up Your Teaming 1.0 Data

Novell Teaming data is stored in the Teaming file repository and in the Teaming database. Make sure that you back up both kinds of Teaming data. In addition, you might want to back up your log files.

- "Teaming File Repository" on page 148
- "Teaming Database" on page 148
- "Teaming and Tomcat Log Files" on page 149

Teaming File Repository

The default file location for the Novell Teaming 1.0 file repository varies by platform:

Linux: `/home/icecoredata`

Windows: `c:\teaming`

The default locations for Teaming 2.1 are different, as listed in Section 3.2.4, "Teaming Installation Locations," on page 30, but the Teaming 2.1 Installation program does not move the data as part of the update process. If you have performed an Advanced installation and have distributed different types of Teaming data to different locations, check the `installer.xml` file located in the same directory with the Teaming 1.0 Installation program to make sure that you have backed up all different types of Teaming data.

Teaming Database

The default database locations have remained the same from Novell Teaming 1.0 to Novell Teaming 2.1, as listed in Section 3.5.3, "Database Location," on page 35. However, if your database administrator created the Teaming database in a different location, either on the Teaming server or on a remote server, you need to know where it is and make sure that it is backed up before you perform the Teaming update. Check the `installer.xml` file for the location, if necessary.

Teaming and Tomcat Log Files

The update process eliminates all existing Teaming and Tomcat log files. If you want to retain these log files, copy them to a location outside of the Teaming software directory structure.

The Teaming 1.0 log file (`ssf.log`) is located here:

Linux: `/opt/icecore/liferay-portal-tomcat-`*`version`*`-jdk5-`*`version`*`/webapps/ssf/WEB-INF/logs`

Windows: `c:\icecore\liferay-portal-tomcat-`*`version`*`-jdk5-`*`version`*`\webapps\ssf\WEB-INF\logs`

The Tomcat log file (`catalina.out` on Linux and `stdout_*.log` on Windows) is located here:

Linux: `/opt/icecore/liferay-portal-tomcat-`*`version`*`-jdk5-`*`version`*`/logs`

Windows: `c:\icecore\liferay-portal-tomcat-`*`version`*`-jdk5-`*`version`*`\logs`

20.2.3 Planning and Performing Your Update to Teaming 2.1

After confirming that you have backed up your Novell Teaming data, the Teaming 2.1 Installation program performs either a Basic installation or an Advanced installation of Teaming 2.1. As defaults, it uses the configuration information stored in the Teaming 1.0 `installer.xml` file.

In preparation for the update, review Chapter 3, “Planning a Basic Teaming Installation,” on page 27 and fill out the Basic Teaming Installation Summary Sheet. If you performed an Advanced installation for Teaming 1.0, review Chapter 9, “Planning an Advanced Teaming Installation,” on page 81 and fill out the Advanced Teaming Installation Summary Sheet.

To update your Teaming site, follow the instructions in Chapter 4, “Setting Up a Basic Teaming Site,” on page 49 or Chapter 10, “Performing an Advanced Teaming Installation,” on page 93.

20.2.4 Entry Type Repair for Imported Files in Your Teaming 2.1 Site

In Novell Teaming 1.0, if you used the Add Files to Folder feature to drag and drop a directory full of files into a Teaming folder, the files were automatically given the Discussion entry type, even if the Teaming folder was not a Discussion folder. In addition, if the directory contained subdirectories of files, the subdirectories were created as Teaming Discussion folders.

If you want to change the entry type and folder type to match the top-level Teaming folder type in Teaming 2.1, you can enable the Recursive Apply feature on the Configure Default Settings page of the top-level Teaming folder by editing the Teaming `ssf-ext.properties` file.

1 On the Teaming server, change to the directory where the `ssf-ext.properties` file is located.

   The default location of this file varies by platform:

   Linux: `/opt/novell/teaming/apache-tomcat-`*`version`*`/webapps/ssf/WEB-INF/classes/config`

Windows: `c:\Program Files\Novell\Teaming\apache-tomcat-`*`version`*`\webapps\ssf\WEB-INF\classes\config`

2 Make a backup copy of the `ssf-ext.properties` file.

3 Open the `ssf-ext.properties` file in a text editor, then scroll to the bottom of the file.

4 Add the following line:

```
ssf.allowFolderDefinitionFixups=true
```

5 Save the `ssf-ext.properties` file, then exit the text editor.

6 Restart Teaming to put the change into effect.

7 To change the entry types and folder types for imported files, follow the instructions in "Recursively Applying Folder Entry Types" in "Managing Folders" in the *Novell Teaming 2.1 Advanced User Guide*.

20.3 Updating a Single-Server Teaming System from 1.0 to 2.1

When you update a single-server Novell Teaming installation from version 1.0 to version 2.1, the Teaming 2.1 Installation program can perform the entire update in a single process, unless the Teaming system uses an Oracle database.

1 Stop Teaming.

2 (Conditional) If your Teaming system uses an Oracle database, update the database as described in Section 20.3.1, "Updating an Oracle Database from 1.0 to 2.1," on page 151 before running the Teaming 2.1 Installation program.

3 Copy the `installer.xml` file from the directory where the Teaming 1.0 Installation program is located to the directory where you have extracted the Teaming 2.1 software.

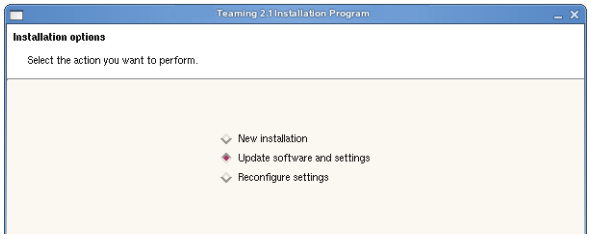
4 Remove old license file from your Teaming 1.0 system and make sure that you have a `license-key.xml` file in the same directory with the Teaming 2.1 Installation program.

5 Start the Teaming 2.1 Installation program.

If you need assistance with this task, see the detailed installation instructions for the platform where you are updating Teaming:

- Section 4.1.2, "Running the Linux Teaming Installation Program," on page 50
- Section 4.2.2, "Running the Windows Teaming Installation Program," on page 58

6 Accept the License Agreement, then click *Next*.



Because you provided your Teaming 1.0 `installer.xml` file in the directory with the Teaming 2.1 Installation program, the *Update software and settings* installation option is selected by default.

7 Click *Next* to continue.

8 Click *Yes* to let the Installation program know that you have stopped Teaming.

9 Select the check box to let the Installation program know that you have backed up all of your Teaming data, then click *Next*.

10 Select *Basic* or *Advanced*, depending on the type of Teaming installation you are updating, then click *Next*.

11 Continue through the installation process, using the configuration information gathered on the *Teaming Installation Summary Sheet*.

12 Click *Install* when you are ready to perform the update.

The Installation program might seem to pause at this point. It needs to update tables and indexes in the Teaming database. If you have a large database, this process can be time-consuming.

13 Click *Finish* when the update is completed.

14 Start Teaming 2.1.

Linux: New command:

```
/etc/init.d/teaming start
```

For more information, see Section 4.1.5, “Starting Teaming on Linux,” on page 55.

Windows: Same command, different directory:

```
c:\Program Files\Novell\Teaming\apache-tomcat-version\
                                                    bin\startup.bat
```

NOTE: The default locations for Teaming 2.1 are different from 1.0, as listed in Section 3.2.4, “Teaming Installation Locations,” on page 30, but the Teaming Installation program does not move the Teaming installation as part of the update process.

For more information, see Section 4.2.3, “Running Teaming as a Windows Service,” on page 59 and Section 4.2.4, “Running Teaming as a Windows Application,” on page 61.

When you start Teaming 2.1 for the first time after the update, it takes longer to start than usual because data in the Teaming database must be updated before the Teaming site is ready to use.

20.3.1 Updating an Oracle Database from 1.0 to 2.1

The Novell Teaming Installation program can update MySQL and Microsoft SQL databases as part of the Teaming software update, but it cannot update an Oracle database. Therefore, if you are using Oracle, you must manually run the Teaming 2.1 database update scripts after you have stopped Teaming.

1 Change to the directory where the Teaming 2.1 Installation program is located.

2 Unzip the `teaming-2.1.n-sql.zip` file to create the `update-1.0.0-2.0.n` directory and the `update-2.0.0-2.1.n directory`.

These directories contains an update script for each type of database (MySQL, Microsoft SQL, and Oracle).

3 Change to the `update-1.0.0-2.0.n` directory.

4 Run the `update-oracle.sql` script to update the database structure from 1.0 to 2.0.

```
sqlplus "/ as sysdba"
SQL>spool update-oracle.out;
SQL>@update-oracle;
SQL>quit;
```

5 Change to the `update-2.0.0-2.1.n` directory.

6 Run the `update-oracle.sql` script to update the database structure from 2.0 to 2.1.

```
sqlplus "/ as sysdba"
SQL>spool update-oracle.out;
SQL>@update-oracle;
SQL>quit;
```

7 Return to Section 20.3, “Updating a Single-Server Teaming System from 1.0 to 2.1,” on page 150.

20.4 Updating a Multiple-Server Teaming System from 1.0 to 2.1

If your Novell Teaming 1.0 system is distributed across multiple servers, the Teaming 2.1 Installation program can update Teaming components on the Teaming server, but you must manually update any Teaming components that you have placed on remote servers.

- Section 20.4.1, “Manual Teaming Database Update,” on page 152
- Section 20.4.2, “Manual Lucene Index Server Update,” on page 153

20.4.1 Manual Teaming Database Update

In order to update the Novell Teaming 1.0 database when the Teaming Installation program cannot do it for you, you must run the Teaming 2.1 database update scripts on the database server.

1 Stop Teaming.

2 Change to the directory where the Teaming 2.1Installation program is located.

3 Unzip the `teaming-2.1.n-sql.zip` file to create the `update-1.0.0-2.0.n` directory and the `update-2.0.0-2.1.n directory`.

These directories contain update scripts for each type of database (MySQL, Microsoft SQL, and Oracle).

4 Change to the `update-1.0.0-2.0.n` directory.

5 Copy the update script for your database type to the server where the Teaming database is located.

6 On the database server, use the database client utility for your database type to run the update script to convert the Teaming database structure from 1.0 to 2.0:

MySQL: `mysql -uusername -ppassword < /path/update-mysql.sql`

Microsoft SQL: `osql -Uusername -Ppassword -i update-sqlserver.sql`

You can also use the script with the SQL Server Express Utility (http://www.microsoft.com/downloads/details.aspx?familyid=fa87e828-173f-472e-a85c-27ed01cf6b02&displaylang=en) to update the database.

Oracle:

```
sqlplus "/ as sysdba"
SQL>spool update-oracle.out;
SQL>@update-oracle
SQL>quit;
```

7 Return to directory where the Teaming 2.1 Installation program is located.

8 Change to the `update-2.0.0-2.1.n` directory.

9 Copy the update script for your database type to the server where the Teaming database is located.

The update script for converting the database from 2.0 to 2.1 has the same name as the update script for converting from 1.0 to 2.0, so you overwrite the first update script when you copy the second update script to your database server.

10 On the database server, use the client utility for your database type to run the update script to convert the Teaming database structure from 2.0 to 2.1.

11 After you have updated the Teaming database to 2.1:

(Conditional) If your Lucene Index Server is also on a remote server, continue with Section 20.4.2, “Manual Lucene Index Server Update,” on page 153.

or

(Conditional) If all Teaming components that need to be updated are on the Teaming server, follow the instructions in Section 20.3, “Updating a Single-Server Teaming System from 1.0 to 2.1,” on page 150.

20.4.2 Manual Lucene Index Server Update

In order to update your Novell Teaming index when the Teaming Installation program cannot do it for you, you need to run the Teaming 2.1 Remote Lucene Server Installation program.

The default location for the Lucene Index Server software has change from Teaming 1.0 to Teaming 2.1:

Linux:	Teaming 1.0:	`/opt/icecore/luceneserver`
	Teaming 2.1:	`/opt/novell/teaming/luceneserver`
Windows:	Teaming 1.0:	`c:\icecore\luceneserver`
	Teaming 2.1:	`c:\Program Files\Novell\Teaming\luceneserver`

You can update the Lucene Index Server software in its current Teaming 1.0 location or you can install to the new Teaming 2.1 default location.

The default location for the Lucene index has also changed from Teaming 1.0 to Teaming 2.1:

Linux:	Teaming 1.0:	`/home/icecoredata/lucene`
	Teaming 2.1:	`/var/opt/novell/teaming/lucene`
Windows:	Teaming 1.0:	`c:\home\icecoredata\lucene`
	Teaming 2.1:	`c:\Novell\Teaming\lucene`

Because you need to reindex your Teaming site after performing the update, the Teaming 2.1 Lucene index is created in the new default location.

1. Stop Teaming.
2. Stop the Lucene Index Server by using the following command in the directory where the Lucene Index Server is currently installed:

   Linux: `./indexserver-stop.sh`

   Windows: `indexserver-stop.bat`

3. Copy the Teaming 2.1 Remote Lucene Server Installation program and the Teaming 2.1 license file (`license-key.xml`) from the directory where the Teaming 2.1 Installation program is located to a convenient directory on the server where the remote Lucene Index Server is located.

   The name of the Remote Lucene Server Installation program varies by platform:

   Linux: `lucene-installer.linux`

   Windows: `lucene-installer.exe`

4. Start the Remote Lucene Server Installation program.
5. Accept the License Agreement, then click *Next*.
6. Select *Update software and settings* to install to the current Teaming 1.0 location.

   or

   Select *New installation* to install to the new Teaming 2.1 location.
7. Click *Next* to continue.
8. Click *Next* to accept the installation location.
9. Click *Next* to accept the Java JDK location.
10. In the *Host* field, specify the hostname where you are installing the remote Lucene Index Server.
11. Change Lucene configuration settings as needed, then click *Next*.

    For information about Lucene configuration settings, see Section 9.5.2, “Changing Lucene Configuration Settings,” on page 85.
12. Click *Install* to install the updated Lucene Index Server software.
13. Click *Finish* when the update is completed.
14. Start the Lucene Index Server.

    Linux: `./indexserver-startup.sh`

    Windows: `indexserver-startup.bat`

15. Now that all remote Teaming components have been updated, follow the instructions in Section 20.3, “Updating a Single-Server Teaming System from 1.0 to 2.1,” on page 150.

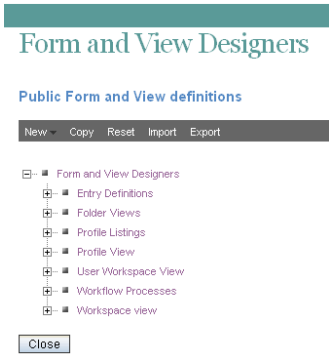
20.5 Performing Post-Update Tasks

After you start Novell Teaming 2.1, you can access your Teaming site as usual. However, you need to reindex the site and reset some aspects of the interface before you allow users to access the updated site. The reindexing process can consume a substantial amount of time for a large Teaming site. The interface reset affects only those definitions and templates that are included with the Teaming product. If you have created custom definitions and templates, they are unaffected by the interface reset.

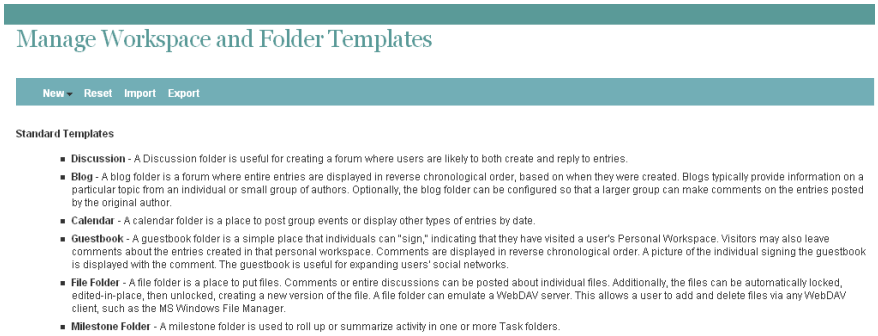
IMPORTANT: If you have manually customized any definitions or templates that are included with the Teaming product, back up the files you have modified before performing the interface reset.

---

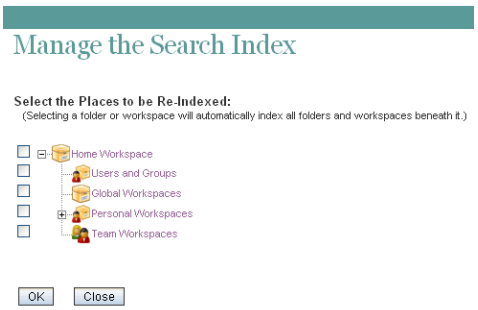
1. Log in to the Teaming site as the Teaming administrator.
2. Click *Manage* > *Site Administration* > *Form and View Designer*, click *Reset*, then click *Close*.



3. On the Site Administration page, click *Manage Workspace and Folder Templates*, click *Reset*, then click *Close*.



4. On the Site Administration page, click *Manage the Search Index*, select the *Home Workspace*, then click *OK*.

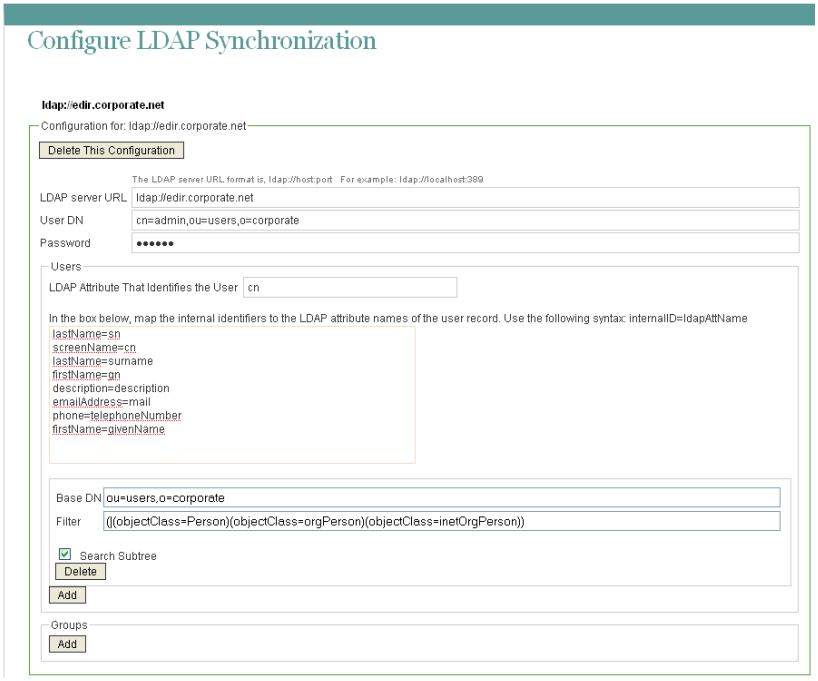


5 When the indexing is completed, click *Close*.

6 Update the LDAP configuration for your Teaming site.

In Teaming 1.0, if you did not want Teaming to search the entire directory service for users, you specified the search context right after the URL for the LDAP server. In Teaming 2.1, you specify the search context in a separate field. The syntax that worked for Teaming 1.0 does not work for Teaming 2.1.

6a On the Site Administration page, click *Configure LDAP*.



6b If the *LDAP server URL* field includes an object context, move that object context down to the *Base DN* field.

7 Select *Run Immediately*, then click *Apply* to test your change.

8 If your revised LDAP connection is valid, click *Close*.

Your Teaming 2.1 site is now ready for use.

IMPORTANT: If Teaming users encounter problems displaying any pages on the Teaming site after the update, simply have them clear the browser cache.

Updating from Kablink Teaming 1.0 to Novell Teaming 2.1

21

To update from Kablink® Teaming 1.0 to Novell® Teaming 2.1, you must first purchase Novell Teaming 2.1 in the Novell Customer Center (http://www.novell.com/customercenter). After you obtain the license and download the Novell Teaming 2.1 software, following the instructions in Chapter 20, “Updating from Novell Teaming 1.0 to Novell Teaming 2.1,” on page 147

See also Chapter 22, “Changing from Kablink Teaming 2.1 to Novell Teaming 2.1,” on page 159.

Changing from Kablink Teaming 2.1 to Novell Teaming 2.1

22

To change from Kablink® Teaming 2.1 to Novell® Teaming 2.1, you must first purchase Novell Teaming 2.1 in the Novell Customer Center (http://www.novell.com/customercenter).

After you obtain the license and download the Novell Teaming 2.1 software:

1. Stop Kablink Teaming.
2. In the directory where you downloaded the Novell Teaming 2.1 software, rename the license file that came with the software to the name `license-key.xml`.

   The Novell Teaming Installation program does not start unless there is a `license-key.xml` file in the same directory with the Installation program.
3. Install Novell Teaming using the same options that you used to install Kablink Teaming, as described in:
   - Chapter 3, "Planning a Basic Teaming Installation," on page 27
   - Chapter 9, "Planning an Advanced Teaming Installation," on page 81
4. Start Novell Teaming, as described for the platform where you installed Teaming:
   - Section 4.1.5, "Starting Teaming on Linux," on page 55
   - Section 4.2.3, "Running Teaming as a Windows Service," on page 59
   - Section 4.2.4, "Running Teaming as a Windows Application," on page 61
5. Verify that your Teaming license has been updated from Kablink to Novell:
   - **5a** Log in to the Teaming site as the Teaming administrator.
   - **5b** Click *Manage* > *Site Administration* > *Reports* > *Licensing*.
   - **5c** Verify that a Novell Teaming license is now listed.

Migrating Existing Novell Teaming Data into a New Teaming 2.1 System

23

If your existing Novell®Teaming system has outgrown the server where you originally set it up, or you want to move to a different operating system, you can install Teaming 2.1 on a new server, then migrate your existing Teaming data from a Teaming 1.0 or 2.0 system to your new Teaming 2.1 system. This is especially helpful if you created your Teaming system using the Virtual Eval version of the Novell Teaming Starter Pack (http://www.novell.com/products/teaming/starterpack.html).

- Section 23.1, "Linux Migration with a MySQL Database," on page 161
- Section 23.2, "Windows Migration with an MS SQL Database," on page 165

NOTE: In these instructions, "target server" refers to the server where you install the Teaming 2.1 software, and "source server" refers to your existing Teaming 1.0 or 2.0 server from which you are migrating Teaming data.

The instructions in this section are based on a single-server Teaming configuration. If you have a multi-server Teaming configuration, the single-server instructions can serve as a foundation to get you started with your more complex migration process.

This section does not include instructions for migrating an Oracle database. Use the instructions for your Teaming platform as a guideline for the tasks that are involved in migrating Teaming data, then apply these guidelines to your Oracle database migration.

23.1 Linux Migration with a MySQL Database

- Section 23.1.1, "Preparing the Target Linux Server," on page 161
- Section 23.1.2, "Preparing the Source Linux Server," on page 162
- Section 23.1.3, "Transferring Data from the Source Server to the Target Server," on page 162
- Section 23.1.4, "Importing the Teaming Database to the Target Server," on page 163
- Section 23.1.5, "Updating the Teaming Database on the Target Server," on page 163
- Section 23.1.6, "Updating the Zone Name from Teaming 1.0 to Teaming 2.1 (Conditional)," on page 164
- Section 23.1.7, "Finalizing Your New Teaming 2.1 Site," on page 164

23.1.1 Preparing the Target Linux Server

On the target server:

1. Install the Teaming 2.1 software on the target server, as described in Part II, "Basic Installation," on page 25, paying special attention to these important details:
   - Set up the same Linux user to run the Teaming software that has been used to run the Teaming software in the past.

- Select the same encryption algorithm for the Teaming database.

  IMPORTANT: If the database encryption algorithms do not match between the source and target Teaming systems, you cannot log in to the new Teaming 2.1 site.

2 Start Teaming on the target server.

3 Verify that the new Teaming site is working as expected.

4 Stop Teaming on the target server.

23.1.2 Preparing the Source Linux Server

On the source server:

1 Stop Teaming.

2 Back up your existing database:

```
mysqldump -uusername -ppassword sitescape > sitescape.sql
```

This creates a file named `sitescape.sql` in the directory where you executed the `mysqldump` command.

3 Make sure that you have a recent backup of your entire Teaming system.

23.1.3 Transferring Data from the Source Server to the Target Server

On the source server:

1 Mount the target server to the source server so that data can be copied from one server to the other.

2 In a terminal window on the source server, become the Linux user that runs the Teaming software.

3 (Conditional) If you are migrating data from Teaming 1.0:

3a Copy your existing Teaming file repository to the target server:

From:	`/home/icecoredata`
To:	`/var/opt/novell/teaming`

IMPORTANT: Do not copy the `liferay` directory.

3b Copy the database backup of your existing Teaming database (`sitescape.sql` file) that you created in Step 2 in Section 23.1.2, "Preparing the Source Linux Server," on page 162 to a convenient temporary location on the target server.

3c Copy your existing Teaming Lucene index to the target server:

From:	`/home/icecoredata/lucene`
To:	`/var/opt/novell/teaming/lucene`

In Teaming 2.1, the `lucene` directory now contains `kablink` and `liferay.com` directories.

3d Delete the empty `kablink` directory.

3e Rename the `liferay.com` directory where your existing Teaming database resides to `kablink`, which is the Teaming 2.1 zone name.

3f Copy your existing software extensions to the target server:

From:	`/home/icecoredata/extensions`
To:	`/var/opt/novell/teaming/extensions`

In Teaming 2.1, the `extensions` directory now contains the `kablink` and `liferay.com` directories.

3g Delete the empty `kablink` directory.

3h Rename the `liferay.com` directory where your existing software extensions reside to `kablink`, which is the Teaming 2.1 zone name.

4 (Conditional) If you are migrating data from Teaming 2.0:

4a Copy your existing Teaming file repository from `/var/opt/novell/teaming` on the source server to the same location on the target server.

4b Copy the database backup of your existing Teaming database (`sitescape.sql` file) that you created in Step 2 in Section 23.1.2, "Preparing the Source Linux Server," on page 162 to a convenient temporary location on the target server.

4c Copy your existing Teaming database index from `/var/opt/novell/teaming/lucene` on the source server to the same location on the target server.

4d Copy your existing software extensions from `/var/opt/novell/teaming/extensions` on the source server to the same location on the target server.

23.1.4 Importing the Teaming Database to the Target Server

On the target server:

1 Remove the empty Teaming database that was created when you installed the Teaming 2.1 software:

```
mysql>drop sitescape;
```

2 Change to the directory where you copied the `sitescape.sql` file in Step 3b or Step 4b in Section 23.1.3, "Transferring Data from the Source Server to the Target Server," on page 162.

3 Manually re-create the Teaming database with the data that you copied from the source server:

```
mysql -uusername -ppassword sitescape < sitescape.sql
```

23.1.5 Updating the Teaming Database on the Target Server

On the target server:

1 (Conditional) If your are updating from Teaming 1.0 to 2.1, unzip the `update-1.0.0-2.0.n.zip` file, change to the resulting `update-1.0.0-2.0.n` directory, then run the update script to update the Teaming database from Teaming 1.0 to 2.0:

```
mysql -uusername -ppassword < update-mysql.sql
```

For more complete database update instructions, refer to Section 20.4.1, “Manual Teaming Database Update,” on page 152.

2 To update from Teaming 2.0 to 2.1, unzip the `update-2.0.0-2.1.n.zip` file, change to the resulting `update-2.0.0-2.1.n` directory, then run the update script to update the Teaming database from Teaming 2.0 to 2.1:

```
mysql -uusername -ppassword < update-mysql.sql
```

For more complete database update instructions, refer to Section 19.3.1, “Manual Teaming Database Update,” on page 143.

23.1.6 Updating the Zone Name from Teaming 1.0 to Teaming 2.1 (Conditional)

In Teaming 1.0, the default zone name was `liferay.com`. Starting in Teaming 2.0, the default zone name is `kablink`. If your Teaming site originated as Teaming 2.0, rather than 1.0, skip to Section 23.1.7, “Finalizing Your New Teaming 2.1 Site,” on page 164.

If your Teaming site originated as Teaming 1.0, you must reset the default zone name.

On the target server:

1 Change to the following directory:

```
/opt/novell/teaming/apache-tomcat-version/webapps/
                                        ssf/WEB-INF/classes/config
```

2 View the following files to ensure that the current zone name is set to `kablink`.

```
zone.cfg.xml
zone-ext.cfg.xml
```

3 Use the following commands to update the Teaming database with the new default zone name:

```
mysql -uusername -ppassword
mysql>use sitescape;
mysql>update SS_ZoneInfo set zoneName='kablink'
                                        where zoneName='liferay.com';
mysql>update SS_Forums set name='kablink' where name='liferay.com';
```

4 Find and rename any `liferay.com` subdirectories to `kablink`.

You might or might not find `liferay.com` subdirectories in the following locations, so you should check them all:

```
/var/opt/novell/teaming/filerepository
/var/opt/novell/teaming/lucene
/var/opt/novell/teaming/extensions
/var/opt/novell/teaming/archivestore
/var/opt/novell/teaming/cachefilestore
```

23.1.7 Finalizing Your New Teaming 2.1 Site

1 Start Teaming 2.1, as described in Section 4.1.5, “Starting Teaming on Linux,” on page 55.

2 Reindex the Teaming site, as described in “Rebuilding the Lucene Index” in “Site Maintenance” in the *Novell Teaming 2.1 Administration Guide*.

Your Teaming site should now function just as it did on the original source server.

23.2 Windows Migration with an MS SQL Database

- Section 23.2.1, “Preparing the Target Windows Server,” on page 165
- Section 23.2.2, “Preparing the Source Windows Server,” on page 165
- Section 23.2.3, “Transferring Data from the Source Server to the Target Server,” on page 166
- Section 23.2.4, “Importing the Teaming Database to the Target Server,” on page 167
- Section 23.2.5, “Updating the Teaming Database on the Target Server,” on page 167
- Section 23.2.6, “Updating the Zone Name from Teaming 1.0 to Teaming 2.1 (Conditional),” on page 168
- Section 23.2.7, “Finalizing Your New Teaming 2.1 Site,” on page 168

23.2.1 Preparing the Target Windows Server

On the target server:

1. Install the Teaming 2.1 software, as described in Part II, “Basic Installation,” on page 25.

   IMPORTANT: Select the same encryption algorithm for the Teaming database. If the database encryption algorithms do not match between the source and target systems, you cannot log in to the new Teaming 2.1 site.

2. Start Teaming on the target server.
3. Verify that the new Teaming site is working as expected.
4. Stop Teaming on the target server.

23.2.2 Preparing the Source Windows Server

On the source server:

1. Stop Teaming.
2. Back up your existing Teaming database:
   - **2a** In Microsoft SQL Server Management Studio, browse to and right-click the existing Teaming database (named `sitescape`), then click *Tasks* > *Back Up*.
   - **2b** For *Backup type*, select *Full*.
   - **2c** Set other backup options as desired, then click *OK*.

     This creates a file named `sitescape.bak` in the following directory:

     `c:\Program Files\Microsoft SQL Server\MSSQL\Backup`
3. Make sure that you have a recent backup of your entire Teaming system.

23.2.3 Transferring Data from the Source Server to the Target Server

On the source server:

1. Map a drive from the destination server to the source server so that data can be copied from one server to the other.
2. (Conditional) If you are migrating data from Teaming 1.0:
   - **2a** Copy your existing Teaming file repository to the target server

From:	`c:\home\icecoredata`
To:	`c:\novell\teaming`

     IMPORTANT: Do not copy the `liferay` directory.
   - **2b** Copy the database backup of your existing Teaming database (`sitescape.bak` file) from the source server to the same location on the target server.

     You created this file Step 2 in Section 23.2.2, "Preparing the Source Windows Server," on page 165.
   - **2c** Copy your existing Teaming Lucene index to the target server:

From:	`c:\home\icecoredata\lucene`
To:	`c:\novell\teaming\lucene`

     In Teaming 2.1, the `lucene` directory now contains the `kablink` and `liferay.com` directories.
   - **2d** Delete the empty `kablink` directory.
   - **2e** Rename the `liferay.com` directory where your existing Teaming database resides to `kablink`.
3. Copy your existing software extensions to the target server:

From:	`c:\home\icecoredata\extensions`
To:	`c:\novell\teaming\extensions`

   In Teaming 2.1, the `extensions` directory now contains `kablink` and `liferay.com` directories.
4. Delete the empty `kablink` directory.
5. Rename the `liferay.com` directory where your existing software extensions reside to `kablink`.
6. (Conditional) If you are migrating data from Teaming 2.0:
   - **6a** Delete or rename the following directories to make room for the corresponding directories that you are copying from the source server:

```
c:\novell\teaming
c:\novell\teaming\lucene
c:\novell\teaming\extensions
```

6b Copy your existing Teaming file repository from `c:\novell\teaming` on the source server to the same location on the target server.

6c Copy your existing Teaming database index from `c:\novell\teaming\lucene` on the source server to the same location on the target server.

6d Copy your existing software extensions from `c:\novell\teaming\extensions` on the source server to the same location on the target server.

23.2.4 Importing the Teaming Database to the Target Server

On the target server:

1. In Microsoft SQL Server Management Studio, browse to and right-click the existing Teaming database (named `sitescape`) that was created when you installed the Teaming 2.1 software, then click *Delete*.
2. To import the data from your source Teaming database, browse to and right-click *Databases*, then click *Tasks* > *Restore*.
3. In the *To database* field, specify `sitescape`.
4. In the *From device* field, browse to and select the `sitescape.bak` file that you transferred to the target server.
5. Set other restore options as desired, then click *OK*.

   This creates the `sitescape` database in the following directory on the target server:

   ```
   c:\Program Files\Microsoft SQL Server\MSSQL
   ```

   Backed-up data from the source Teaming database is imported into the database for your new Teaming 2.1 system.

23.2.5 Updating the Teaming Database on the Target Server

On the target server:

1. (Conditional) If your are updating from Teaming 1.0 to 2.1, unzip the `update-1.0.0-2.0.`*`n`*`.zip` file, change to the resulting `update-1.0.0-2.0.`*`n`* directory, then run the update script to update the Teaming database from Teaming 1.0 to 2.0:

   ```
   osql -Uusername -Ppassword -i update-sqlserver.sql
   ```

   For more complete database update instructions, refer to Section 20.4.1, “Manual Teaming Database Update,” on page 152.
2. To update from Teaming 2.0 to 2.1, unzip the `update-2.0.0-2.1.`*`n`*`.zip` file, change to the resulting `update-2.0.0-2.1.`*`n`* directory, then run the update script to update the Teaming database from Teaming 2.0 to 2.1:

   ```
   osql -Uusername -Ppassword -i update-sqlserver.sql
   ```

   For more complete database update instructions, refer to Section 19.3.1, “Manual Teaming Database Update,” on page 143.

23.2.6 Updating the Zone Name from Teaming 1.0 to Teaming 2.1 (Conditional)

If you are migrating data from Teaming 2.0, rather than 1.0, skip to Section 23.2.7, "Finalizing Your New Teaming 2.1 Site," on page 168.

In Teaming 1.0, the default zone name was `liferay.com`. Starting in Teaming 2.0, the default zone name is `kablink`. In order to migrate Teaming 1.0 data into a Teaming 2.1 system, you must reset the default zone name.

On the target server:

1. Change to the following directory:

   ```
   c:\Program Files\Novell\Teaming\apache-tomcat-version\webapps\
                                                   ssf\WEB-INF\classes\config
   ```

2. View the following files to ensure that the current zone name is set to `kablink`.

   ```
   zone.cfg.xml
   zone-ext.cfg.xml
   ```

3. Use the following commands to update the Teaming database with the new default zone name:

   ```
   update SS_ZoneInfo set zoneName='kablink' where zoneName='liferay.com';
   update SS_Forums set name='kablink' where name='liferay.com';
   ```

4. Find and rename any `liferay.com` subdirectories to `kablink`.

   You might or might not find `liferay.com` subdirectories in the following locations, so you should check them all:

   ```
   c:\Novell\Teaming\filerepository
   c:\Novell\Teaming\lucene
   c:\Novell\Teaming\extensions
   c:\Novell\Teaming\archivestore
   c:\Novell\Teaming\cachefilestore
   ```

23.2.7 Finalizing Your New Teaming 2.1 Site

1. Start Teaming 2.1, as described in Section 4.1.5, "Starting Teaming on Linux," on page 55.
2. Reindex the Teaming site, as described in "Rebuilding the Lucene Index" in "Site Maintenance" in the *Novell Teaming 2.1 Administration Guide*.

   Your Teaming site should now function just as it did on the original source server.

Migrating from SiteScape Forum or Other Collaboration Software

24

Moving legacy corporate data into a new collaboration system can look like a long, challenging process. To make the job easier, see the *Novell Teaming Migration Services Flyer.* (http://www.novell.com/rc/docrepository/public/14/basedocument.2009-04-23.2174214965/Novell_Teaming_Migration_Flyer_en.pdf)

Appendixes

VI

- Appendix A, “Teaming System Requirements Assistance,” on page 173
- Appendix B, “Third-Party Materials,” on page 179

Teaming System Requirements Assistance

A

The Novell® Teaming system requirements include supporting components that might or might not already be installed on your Teaming server. This section helps you meet the Teaming system requirements if you are not already familiar with how to install these supporting components.

- Section A.1, “Java Development Kit,” on page 173
- Section A.2, “MySQL Database Server,” on page 175

A.1 Java Development Kit

The Novell Teaming software runs inside a Java Virtual Machine (JVM). At present, Teaming requires a Java Development Kit (JDK) not a Java Runtime Environment (JRE*) in order to run properly. You can use either the Sun JDK or the IBM JDK. Follow the instructions in the section below for your operating system and JDK preference:

- Section A.1.1, “Sun JDK on Linux,” on page 173
- Section A.1.2, “IBM JDK on Linux,” on page 174
- Section A.1.3, “Sun JDK on Windows,” on page 175

A.1.1 Sun JDK on Linux

1. Go to the following URL:

   Java SE Downloads (http://java.sun.com/javase/downloads/index.jsp)

   The update you need is listed as “JDK 6 Update *nn*.”
2. Click *Download* next to this update.
3. In the *Platform* field, select *Linux* or *Linux x64* depending on the processor in your Teaming server.
4. Select *I agree...*, then click *Continue* to accept Sun’s License Agreement.
5. Click the `jdk-6u`*`nn`*`-linux-`*`version`*`-rpm.bin` file., then save the file to an empty temporary directory on your Linux server.
6. As the `root` user, change to that temporary directory, then use the following command to make sure that the download arrived safely:

   ```
   ls -l
   ```

   You should see a file named `jdk-6u`*`nn`*`-linux-`*`version`*`-rpm.bin`.
7. Change the permissions on the file to include execute permissions:

   ```
   chmod +x jdk-6unn-linux-version-rpm.bin
   ```
8. Run the self-extracting file:

   ```
   ./jdk-6unn-linux-version-rpm.bin
   ```
9. Scroll through the License Agreement, then enter `y` to accept it.

This creates a file named `jdk-6u`*`nn`*`-linux-`*`version`*`.rpm`, and a directory named `/usr/java/jdk.1.6.0_`*`nn`* with the Sun JDK software in it.

The Sun JDK is now installed on your Linux server.

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *Java JDK Location* on the Basic Teaming Installation Summary Sheet, specify the directory where you install the JDK. The Teaming Installation program prompts you for this location.

A.1.2 IBM JDK on Linux

- "Installing the IBM JDK on SUSE Linux Enterprise Server 11" on page 174
- "Installing the IBM JDK on Open Enterprise Server 2 and SUSE Linux Enterprise Server 10" on page 174

Installing the IBM JDK on SUSE Linux Enterprise Server 11

The IBM JDK is not included with SUSE® Linux Enterprise Server (SLES) 11. It is available in the SLES 11 Software Development Kit at:

```
http://developer.novell.com/wiki/index.php/
                                SLES_SDK#SUSE_Linux_Enterprise_11_SDK_Release
```

Installation instructions are provided as part of the download process.

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *Java JDK Location* on the Basic Teaming Installation Summary Sheet, specify the directory where you install the JDK. The Teaming Installation program prompts you for this location.

Installing the IBM JDK on Open Enterprise Server 2 and SUSE Linux Enterprise Server 10

IBM JDK 5.0 is available with SUSE Linux Enterprise Server (SLES) 10, on which Open Enterprise Server (OES) 2 is based. You can install it using YaST.

1. In YaST, click *Software* > *Software Management*.
2. In the *Search* field, type `ibm`, then click *Search*.
3. Select *Java 5 SDK, Standard Edition* (`java-1_5_0-ibm-devel`), then click *Accept*.
4. Click *Continue* to accept the suggested dependencies, then click *No* because you don't need any more packages.
5. Exit YaST.

   This creates a directory named `/usr/lib/jvm/java-1_5_0-ibm-1.5.0_sr3` with the IBM JDK software in it.

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *Java JDK Location* on the Basic Teaming Installation Summary Sheet, specify the directory where you install the JDK. The Teaming Installation program prompts you for this location.

A.1.3 Sun JDK on Windows

1. Go to the following URL:

   Java SE Downloads (http://java.sun.com/javase/downloads/index.jsp)

   The update you need is listed as "JDK 6 Update *nn*."
2. Click *Download* next to this update.
3. In the *Platform* field, select *Windows* or *Windows x64* depending on the processor in your Teaming server.
4. Select *I agree...*, then click *Continue* to accept Sun's License Agreement.
5. Click the `jdk-6u`*`nn`*`-windows-`*`version`*`.exe` file., then save the file to an empty temporary directory on your Windows server.
6. Change to that temporary directory, then run the downloaded executable.

   This creates a directory named `c:\Program Files\Java\jdk6u`*`nn`* with the Sun JDK software in it.

   The Sun JDK is now installed on your Windows server.

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *Java JDK Location* on the Basic Teaming Installation Summary Sheet, specify the directory where you install the JDK. The Teaming Installation program prompts you for this location.

A.2 MySQL Database Server

- Section A.2.1, "MySQL on Linux," on page 175
- Section A.2.2, "MySQL on Windows," on page 177

A.2.1 MySQL on Linux

Depending on the options you select when installing Open Enterprise Server 2 and SUSE Linux Enterprise Server (SLES), the MySQL database server might be installed along with the operating system. Check for the following directory:

`/usr/bin/mysql`

If the `/usr/bin/mysql` directory does not exist, you need to install the MySQL database server. If MySQL is already installed, you still need to configure it for use with Teaming.

- "Installing MySQL" on page 175
- "Configuring MySQL" on page 176
- "Learning More about MySQL" on page 176

Installing MySQL

1. Make sure you have access to your operating system installation media.
2. In YaST, click *Software* > *Software Management*.
3. In the *Search* field, type `mysql`, then click *Search*.

4 Select *mysql*, then click *Accept*.

5 Click *Continue* to resolve dependencies.

6 Click *Continue* to acknowledge package support status.

MySQL is then installed from the SLES media.

7 Continue with "Configuring MySQL" on page 176.

Configuring MySQL

When MySQL is initially installed, it is not configured with an administrator password, nor is it configured to start automatically. Follow the steps below to set up the MySQL database server for use with Teaming:

1 In YaST, click *System* > *System Services*.

2 Scroll to and select the MySQL service, then click *Enable*.

3 Click *Continue* to install dependencies, then click *OK* to close the status box.

4 Click *OK* > *Yes* to finish the installation, then exit YaST.

5 In a terminal window, become the `root` user.

6 To verify that the MySQL database server has started, use the following command:

```
ps -eaf | grep mysql
```

You should see MySQL processes running.

7 Set the administrator password for the MySQL database server:

```
mysqladmin -u root password new_password
```

This command changes the password for the MySQL `root` user, which is the default administrator username for the MySQL database server. This command is part of the MySQL client package.

IMPORTANT: The MySQL `root` username is not the same as the Linux `root` user. The Linux `root` user has a password established for it when you install Linux. In a parallel fashion, the MySQL `root` user needs to have a password established for it when you install MySQL.

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *Database Credentials* on the Basic Teaming Installation Summary Sheet, specify the MySQL administrator password. The Teaming Installation program prompts you for this information.

Learning More about MySQL

The following are some basic and useful MySQL commands:

Action	Command
Stop MySQL	`/etc/initd/mysql stop`
Start MySQL	`/etc/initd/mysql start`
Show MySQL status	`mysqladmin -u root -p extended-status`

If you want to administer MySQL using a GUI interface, you can download tools from:

MySQL GUI Tools Downloads (http://dev.mysql.com/downloads/gui-tools/5.0.html)

For more information about MySQL, see:

MySQL Documentation (http://dev.mysql.com/doc)

A.2.2 MySQL on Windows

1. In your Web browser, go to the following URL:

   MySQL 5.1 Downloads (http://dev.mysql.com/downloads/mysql/5.1.html)
2. Scroll down if necessary, then click the type of Windows operating system you are using (32-bit or 64-bit).
3. On the *Windows Essentials* line, click *Download*.
4. Click *Save File*, browse to and select a convenient temporary directory, then click *Save*.
5. In Windows Explorer, browse to the directory where you saved the MySQL `.exe` file.
6. Double-click the MySQL `.exe` file to start the MySQL Setup Wizard.
7. Follow the on-line instructions to install the MySQL software on the Windows server, then continue with configuring the server.
8. Unless you are already familiar with configuring MySQL on a Windows server, select *Standard Configuration*, then click *Next*.
9. Select *Include Bin Directory in Windows PATH*, then click *Next*.
10. Set the MySQL root user password, then click *Next*.

BASIC TEAMING INSTALLATION SUMMARY SHEET

Under *Database Credentials* on the Basic Teaming Installation Summary Sheet, specify the MySQL administrator password. The Teaming Installation program prompts you for this information.

11. Click *Execute* to configure the MySQL database server, then click *Finish*.

    Some messages report the status of your MySQL installation.
12. To monitor the MySQL database server, click *Start* > *All Programs*, then click *MySQL* > *MySQL Server 5.1* > *MySQL Command Line Client*.

Third-Party Materials

B

- Section B.1, “ANTLR 3 License,” on page 179
- Section B.2, “Colt License Agreement,” on page 180
- Section B.3, “Dom4j License,” on page 180
- Section B.4, “iCal4j License,” on page 181
- Section B.5, “ICU4J license (ICU4J 1.3.1 and later),” on page 181
- Section B.6, “JAXEN License,” on page 182
- Section B.7, “Jung,” on page 183

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