MICRO FOCUS

GroupWise TeamWorks 18.2.1
Installation and Deployment Guide

March 2020

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Contents

About This Guide

Production Deployments

To create a production-viable, best practice TeamWorks deployment, complete the sections below in the order presented.

Test and Evaluation Deployments

To create an evaluation or test deployment, see Appendix A, "Creating an All-in-One Deployment," on page 43.

Audience

This guide is intended for TeamWorks Administrators.

Feedback

We want to hear your comments and suggestions about this manual and the other documentation included with this product. Please use the **comment on this topic** link at the bottom of each page of the online documentation.

Documentation Updates

For the most recent version of this guide, visit the TeamWorks Documentation web site (http://www.novell.com/documentation/teamworks-18).

Additional Documentation

For other documentation on TeamWorks, see the TeamWorks Documentation web site (http://www.novell.com/documentation/teamworks-18).

1 Start Here

IMPORTANT: TeamWorks 18.2.1 is delivered as online updates that are applied on fully deployed and functioning TeamWorks 18.2 appliances.

If you are new to TeamWorks, begin here and install your 18.2 appliances first. Then after your 18.2 deployment is complete and working as expected, follow the instructions in Chapter 10, "Updating to TeamWorks 18.2.1," on page 37.

If you already have a TeamWorks 18.2 deployment and want to move to version 18.2.1, skip to Chapter 10, "Updating to TeamWorks 18.2.1," on page 37.

You can deploy TeamWorks in two different ways.
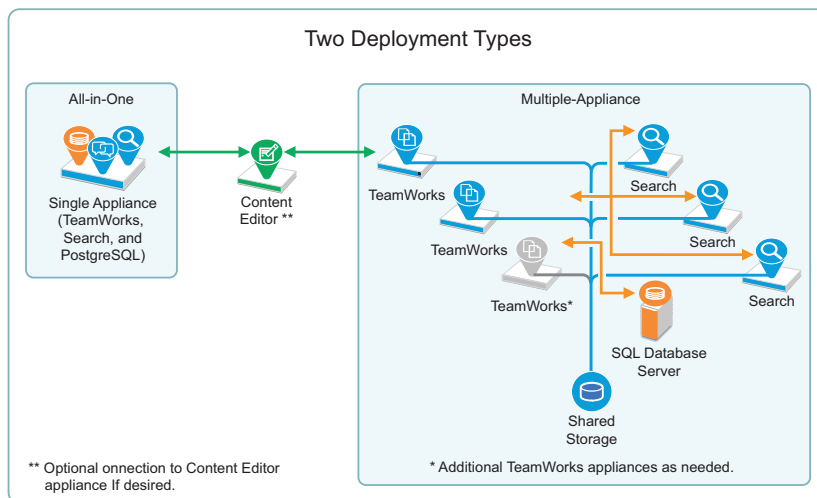
Micro Focus recommends multiple-appliance deployments as a best practice for the reasons in the following comparison table.

All-in-One	Multiple-Appliance
◆ One All-in-One Appliance	◆ Multiple Appliances
◆ No fault tolerance—Single Point of Failure	◆ Fault-tolerant TeamWorks services
◆ Not expandable beyond a single All-in-One appliance	◆ Expandable by adding TeamWorks appliances, disk space, or RAM as needs increase

To deploy an all-in-one appliance, follow the instructions in Appendix A, "Creating an All-in-One Deployment," on page 43.

Otherwise, continue with Chapter 2, "Planning Is Important," on page 9.

2 Planning Is Important

Creating a successful TeamWorks deployment requires that you

1. Involve pertinent stakeholders.
2. Conduct a thorough needs assessment.
3. Plan your deployment based on the needs assessment.

Before you continue with "System Requirements," open the *TeamWorks 18.2.1 Planning Your TeamWorks Deployment—Best Practices* guide and complete the planning processes outlined there.

Then return to this guide and the chapters that follow.

3 System Requirements

Multiple-Appliance Deployments Are the Focus of This Guide

All-in-One deployments are covered in Appendix A, "Creating an All-in-One Deployment," on page 43.

The following sections outline platform, version, and other requirements for your multi-appliance TeamWorks deployment.

- "Administrative Workstations and Browsers" on page 11
- "Appliance Disk Space" on page 11
- "Appliance Memory and CPU" on page 12
- "Appliance Shared Storage (/vashare Mount Point) Platforms" on page 12
- "Web Application Access (End Users)" on page 13
- "TeamWorks Software" on page 13
- "IP Addresses" on page 13
- "LDAP Directory Services (Users and Groups)" on page 15
- "Mobile Device Platforms" on page 15
- "SQL Database Server" on page 16
- "Virtualization Hypervisor Platform" on page 16

Administrative Workstations and Browsers

Table 3-1   Administrative Workstations and Browsers

Platform	Browser	Requirement	Caveats
Windows, Mac, or Linux Capable of running a listed browser	Mozilla Firefox	Latest version	
	Microsoft Edge with Chromium	Latest version	Windows only
	Chrome	Latest version	Supported but not tested on Linux. Supported and tested on Windows and Mac.
	Safari	Latest version	Mac only

Appliance Disk Space

- See Worksheet 15—Storage Planning Summary

Planning for disk space varies widely according to organization needs and the planning process is covered in the *TeamWorks 18.2.1 Planning Your TeamWorks Deployment—Best Practices* guide.

General guidelines are summarized in the following sections of the Planning Best Practices guide:

- Using Worksheet 10 - TeamWorks Appliances

Appliance Shared Storage (/vashare Mount Point) Platforms

  ◆ See Worksheet 15—Storage Planning Summary

The TeamWorks appliances in a Multi-appliance deployment access a commonly-shared NFS storage disk that you will identify and create in Chapter 4, "Setting Up NFS Shared Storage," on page 17.

Table 3-2   *Shared Storage Platforms (/vashare Mount Point)*

Protocol	Requirement
NFS	Exported mount point on one of the following: ◆ SLES 12 ◆ SLES 15 NFS on Windows is not supported.

Appliance Memory and CPU

Table 3-3   *Memory and CPU*

Appliance	Recommended
TeamWorks	◆ 16 GB RAM 1.5 GB Operating System 8 GB Java Heap (always 1/2 total system memory) ◆ 4 CPUs
TeamWorks Search	Less than 1,000 Users ◆ 8 GB RAM ◆ 2 CPUs More than 1,000 Users ◆ 12 GB RAM ◆ 2 CPUs

Appliance	Recommended
PostgreSQL	Less than 1,000 Users
	◆ 8 GB RAM
	2 GB Operating System
	2 GB Memcached
	4 GB Java Heap
	◆ 2 CPUs
	More than 1,000 Users
	◆ 12 GB RAM
	2 GB Operating System
	3 GB Memcached
	7 GB Java Heap
	◆ 2 CPUs
Content Editor	◆ 16 GB RAM
	◆ 4 CPUs

Web Application Access (End Users)

Table 3-4 *Browsers for End User Web Application Access*

Platform	Requirement
Linux	Mozilla Firefox; Google Chrome (latest versions)
Windows	Microsoft Edge with Chromium , Mozilla Firefox; Google Chrome (latest versions)
Mac	Safari; Mozilla Firefox (latest versions)

TeamWorks Software

You must download and prepare the TeamWorks software in Chapter 5, "Downloading and Preparing the TeamWorks Software," on page 19.

IP Addresses

Each appliance requires the following.

Table 3-5 *IP Addresses*

Component	Requirement
IP Address	◆ A static address that is associated with a DNS host name.
	Example: 192.168.1.61

Component	Requirement
Network Mask	◆ The appropriate network mask for the IP address. Example: 255.255.255.0
Gateway IP Address	◆ The gateway for the IP address subnet. Example: 192.168.1.254
DNS Host Name	◆ The DNS name associated with the IP address. Example: TeamWorks-1.myorg.local
DNS IP Address	◆ Up to three IP addresses of DNS servers for the IP address subnet. Example: 192.168.1.1
NTP IP Address or DNS Name	◆ Up to three IP addresses or DNS names of reliable NTP servers used to coordinate time on your organization's network—especially your LDAP directory servers. Example: time.myorg.local If using VMware, Micro Focus recommends setting up NTP in accordance with the VMware best practices guidelines (http://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1006427).
(Optional) Network Proxy	◆ If you want TeamWorks to connect through a forward proxy server for web requests, such as online updates, you can specify this as part of the initial configuration. You need the proxy server's URL and a username and password if authentication is required. You can also use the **Port 9443 > Network Services** icon to set and manage this. See "Changing Network Settings" in the *TeamWorks 18.2.1: Administrative UI Reference*.

LDAP Directory Services (Users and Groups)

Table 3-6 *LDAP Directory Services*

Directory Service	Platform	Version	Support
GroupWise	All	◆ 2018	Recommended
eDirectory	Linux	◆ Version 9.1 with the latest patch For more information, see the NetIQ eDirectory 9.1 Documentation website (https://www.netiq.com/documentation/edirectory-91/).	Recommended
	Windows	◆ Version 9.1 and later	Supported
Active Directory	Windows	◆ Active Directory - no version specified	Supported

Content Editor Requires an SSL Connection with Each TeamWorks Appliance

If you integrate the Content Editor appliance with your TeamWorks appliances, the connections between the Content Editor and each TeamWorks appliance must be secured through certificates issued by an industry-recognized Certificate Authority.

You must install a valid certificate in each TeamWorks appliance's and Content Editor appliance's JVM Certificates key store by using the information found in "Certificates" in the *TeamWorks 18.2.1: Administrative UI Reference*.

IMPORTANT: The use of self-signed certificates for securing inter-appliance communications is not supported in TeamWorks 18.2 and later.

Mobile Device Platforms

IMPORTANT: Accessing TeamWorks through a web browser on a mobile device is not recommended unless an app is not available for the device.

For more information about the TeamWorks mobile app, see the *TeamWorks User Help*.

Table 3-7 *Mobile Devices*

Platform	Supported Versions
iOS Phones and Tablets	◆ iOS 12.*x* or later The native app is available as a free download in the Apple App Store.
Android Phones and Tablets	◆ Android phones and tablets for Android 8.1 or later The native app is available in the Android app store.

SQL Database Server

Table 3-8 *SQL Database Server*

Database Type	Supported Platforms
PostgreSQL (10 and later)	◆ Linux
Microsoft SQL Server	◆ 2019 ◆ 2016 ◆ 2014 (not formally tested)

Virtualization Hypervisor Platform

Table 3-9 *Virtualization Hypervisor Platform*

Hypervisor Type	Supported Versions
VMware	◆ A VMware ESXi 6.*x* host server with the latest update for hosting the appliance VMs. For the most up-to-date compatibility matrix of supported VMware host servers, see the *VMware Compatibility Guide* (http://www.vmware.com/resources/compatibility/search.php?deviceCategory=software&testConfig=16) provided by VMware. ◆ A VMware vSphere client 6.x or later for accessing the host server and the appliances for initial configuration. Not all versions of the vSphere client are compatible with versions of VMware ESXi. See the VMware Product Interoperability Matrixes (http://partnerweb.vmware.com/comp_guide2/sim/interop_matrix.php) provided by VMware. ◆ VMware vMotion is supported when running TeamWorks on VMware ESXi.

4 Setting Up NFS Shared Storage

Compatibility Caveat

The NFS system users that are created by a newly installed TeamWorks 18.2 and later appliance, are not backwardly compatible with TeamWorks 18.1.1 and earlier systems.

This means that:

- In a given multi-appliance deployment, you cannot mix
  - Appliances that were originally version 18.1.1 or earlier

    with
  - Newly installed 18.2 TeamWorks appliances.
- Multi-appliance deployments can only contain either
  - Appliances that were all initially version 18.1.1 or earlier

    Or
  - Appliances that were all initially version 18.2 or later.
- New 18.2 deployments must use a different NFS mount point than older deployments that began as 18.1.1 or earlier.
- If you want a new 18.2 deployment to use the NFS mount point that a discarded, older TeamWorks deployment used previously, you must delete the `/esn` subdirectory and its content in the mount point directory structure before installing the new 18.2 appliances.

Exporting an NFS Directory for /vashare

- See Worksheet 15—Storage Planning Summary

Table 4-1 *Exporting an NFS Directory for /vashare*

Page, Dialog, or Option	Do This
	1 - Verify that the server has adequate disk space.
	1. Make sure that the Linux server that you are targeting has the available disk space you identified in "Planning Your Appliances" in the *TeamWorks 18.2.1 Planning Your TeamWorks Deployment—Best Practices* guide and recorded on Worksheet 15. If necessary, add disk space to the Linux server.
	1. On the Linux server, launch YaST2.
YaST Control Center	1. In the **Network Services** section, click **NFS Server**. The NFS Server Configuration dialog box displays.

Page, Dialog, or Option	Do This
NFS Server Configuration	1. Make sure that the NFS Server is set to **Start**, that **Open Port in Firewall** is selected (running firewall required for option), and that **Enable NFSv4** is *not selected* - i.e. NFS v4 is disabled. 2. Click **Next**.
Directories to Export	1. Click **Add Directory**.
YaST2	1. Click **Browse** and choose the directory or share path identified on Worksheet 15 that has the required disk space. You can add a directory name, such as `/shared` to the path if desired. **IMPORTANT:** The directory path must not be located in the /var directory structure on the NFS server, as explained in "NFS Mount Point Must Not Point to /var on Target Server" in the *TeamWorks 18.2.1 Release Notes*. 2. Click **OK**. As your first TeamWorks appliance is deployed, a directory named `TeamWorks` will be created within the directory path you have specified. 3. If you added to the directory path, click **Yes** to confirm directory creation. 4. Leave the asterisk (*) in the **Host Wild Card** field. 5. Click the **Options** field to edit it and change the following options: `ro` to `rw` (read-only to read-write) `root_squash` to `no_root_squash`. 6. Click **OK**.
Directories to Export	1. Click **Finish**. 2. Skip to Chapter 5, "Downloading and Preparing the TeamWorks Software," on page 19.

5 Downloading and Preparing the TeamWorks Software

After planning your deployment and making sure you have the necessary system requirements in place, you are ready to download and prepare the TeamWorks software that applies to your virtualization platform.

1 Download the TeamWorks software shown below to your management workstation.

IMPORTANT: Registration with Micro Focus is required to receive an email with a download link.

Appliance Type	Filename
TeamWorks	`TeamWorks-18.`*`version`*`.ovf.zip`
Search	`TeamWorks-Search-18.`*`version`*`.ovf.zip`
PostgreSQL (only if no in-house SQL server is available)	`PostgreSQL-1.`*`version`*`.ovf.zip`
Content Editor (optional)	`ContentEditor-1.`*`version`*`.ovf.zip`

2 Extract each `.ovf.zip` file on your management workstation until an *`ApplianceType-version`* folder appears.

3 Continue with "Creating the TeamWorks Virtual Machines" on page 21.

6 Creating the TeamWorks Virtual Machines

Referring to the following Worksheets, complete the steps in Table 6-1 for each appliance you have planned to deploy:

- Worksheet 10 - TeamWorks Appliances
- Worksheet 11 - Search Appliances
- Worksheet 12 - SQL Database (if you are not using an in-house SQL database server)
- Worksheet 13 - Content Editor Appliance (optional)

Table 6-1 *Creating an appliance VM on VMware*

Page, Dialog, or Option	Do This
1 - Launch the vSphere Client, name the VM, and choose the datastore.	
VMware Host Client	1. On your management workstation, start the browser-based VMware Host Client. **IMPORTANT:** These instructions describe the browser-based client. The vSphere path is documented in previous versions of TeamWorks if needed. 2. In the **Navigator** side bar, click **Virtual Machines**, then click **Create / Register VM**.
Select creation type	1. Select **Deploy a virtual machine from an OVF or OVA file**, then click **Next**.
Select OVF and VMDK files	1. Type the name of the appliance as planned on the applicable worksheet. 2. In a file browser, navigate to the contents of the folder extracted in Step 2 on page 19. 3. Select the `.ovf` and .vmdk files and drop them in the area indicated as you hoover over the VMware dialog. 4. Click **Next**.
Select storage	1. Choose the datastore for the appliance you are deploying and click **Next**.
Deployment options	1. Change **Disk provisioning** to **Thick**. 2. Deselect **Power on after deployment**. 3. Click **Next**.
Ready to complete	1. Click **Finish**. The boot disk is created and the appliance is deployed as specified to this point.
2 - Edit the VM settings.	
Virtual Machines	1. Right-click the VM that you just created and select **Edit Settings**.

Page, Dialog, or Option	Do This
Edit settings	With the Virtual Hardware tab selected, adjust the following as needed: 1. **Memory** and **CPU**: Set these according to the calculations and settings on the applicable worksheet. Of course if needed, you can adjust them later for performance-tuning purposes. 2. **SCSI Controller Type**: VMware recommends optimizing disk performance by using the **VMware Paravirtual** as the **SCSI Controller Type**. This is especially recommended for high-data-load installations. Therefore, if you are installing in an ESX or ESXi environment, Micro Focus recommends changing the SCSI Controller at this point to **VMware Paravirtual**. You can safely ignore any warnings. Also, if needed you can adjust these settings later for performance tuning or other purposes. See "Optimizing Disk Performance" in *TeamWorks 18.2.1: Maintenance Best Practices Guide*.
3 - Add and configure a second disk (/vastorage)	
Edit settings	1. Above the list of devices, click **Add hard disk > New standard hard disk**. 2. Expand the **New Hard disk** entry that you just added.
New Hard Disk	1. Adjust the disk size as planned for the appliance you are deploying. 2. If you need to change the datastore for the new disk, use the **Browse** button on the **Location** row to make your selection. 3. Next to **Disk Provisioning**, select **Thick provision eagerly zeroed**. 4. Next to **Disk mode**, select **Independent - Persistent**.
4 - Add and Configure a third disk (/var)	
Edit settings	1. Above the list of devices, click **Add hard disk > New standard hard disk**. 2. Expand the **New Hard disk** entry that you just added.
New Hard Disk	1. Adjust the disk size as planned for the appliance you are deploying. 2. If you need to change the datastore for the new disk, use the **Browse** button on the **Location** row to make your selection. 3. Next to **Disk Provisioning**, select **Thick provision eagerly zeroed** . 4. Next to **Disk mode**, select **Independent - Persistent**. 5. Click **Save** to create the VM. 6. When the appliance is deployed, return to the beginning and deploy the next appliance. When all of the planned appliances are deployed, continue with Chapter 7, "Starting and Configuring the Appliances," on page 23.

7 Starting and Configuring the Appliances

After the VMs are deployed with the necessary disks added and other settings adjusted according to your worksheets, it is time to start and configure the appliance software on each appliance. When this section is completed, all of the appliances will be running and ready to be deployed as an integrated TeamWorks infrastructure by using the instructions in Chapter 8, "Creating a Multiple-Appliance TeamWorks Deployment," on page 27.

Table 7-1 *Starting and Configuring the Appliances*

Page, Dialog, or Option	Do This
	1 - Before you deploy the first VM.
	1. (Multi-appliance deployments only) If you have not already done so, before you begin this process, you must set up shared storage for your TeamWorks appliances by: ◆ Exporting an NFS directory See the "Network-Based Shared Disk Space for /vashare" section of *Worksheet 15* and complete the instructions in Section 4, "Setting Up NFS Shared Storage," on page 17 before continuing.
	2 - Select an appliance.
	1. Choose one of the appliances that you deployed in Chapter 6, "Creating the TeamWorks Virtual Machines," on page 21 and refer to its planning worksheet as you start and configure it. **CAUTION:** Initial start-up order doesn't matter, but *deployment order is critical!* When you reach Chapter 8, "Creating a Multiple-Appliance TeamWorks Deployment," on page 27, you must follow the exact order presented there.
	3 - Start the appliance.
	1. After you have downloaded the TeamWorks software and configured your appliances, you must start and configure each appliance in turn. ◆ **VMware:** In the VMware browser-based client, power on the first appliance, then right-click the appliance and use the **Console** option to open a console.
	4 - Accept the license and specify the keyboard layout.
	1. After the appliance boots, the License Agreement screen displays.
License Agreement	1. Select your preferred keyboard layout in the **Keyboard Language** drop-down. 2. (Optional) use the **License Language** drop-down to change the license language. 3. (Optional) use the **Keyboard Language** drop-down to change the keyboard layout. 4. Accept the license agreement.

Page, Dialog, or Option	Do This
Passwords and Time Zone	1. On the configuration page, specify the following information: **IMPORTANT:** Keep a confidential record of the passwords you set for the root and vaadmin users below. **Root password and confirmation:** The root password provides root access to the appliance terminal prompt. Do not access appliances as the root user unless specifically requested by TeamWorks support personnel. **Vaadmin password and confirmation:** The preferred user for accessing the appliance as requested by TeamWorks support personnel. Consider using a different password for each appliance for enhanced security. **NTP Server:** The IP address or DNS name of the reliable external Network Time Protocol (NTP) server for your network. Example: time.example.com. For the best results, set up NTP in accordance with the VMware best practices guidelines (http://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1006427). **Region:** Your local region. **Time Zone:** The time zone where the appliance is located. 2. Click **Next**.
Network Settings	1. Specify the Hostname: **Hostname:** The fully qualified DNS host name associated with the appliance's static IP address. Example: TW-Search-1.mynetwork.example.com. 2. Specify the following: **IP Address:** The static IP address for the appliance. Example: 172.17.2.3. **Network Mask:** The network mask associated with the appliance's IP address. Example: 255.255.255.0. **Gateway:** The IP address of the gateway on the subnet where your TeamWorks virtual appliance is located. Example: 172.17.2.254. **IMPORTANT:** TeamWorks appliances do not tolerate latency and should be installed in the same subnet or a near-subnet. **DNS Servers:** The IP address of a primary DNS server for your network. Example: 172.17.1.1. **Domain Search:** The domain that is associated with the TeamWorks host name. The first is derived from the hostname. If your deployment is located in multiple domains, be sure to include the other domains as well. 3. Click **Next**.

Page, Dialog, or Option	Do This

Additional LAN Card Configuration	1. (Conditional) If you configured multiple network adapters for this appliance, select from the following options, then click **Next**:
	
	    ◆ **Do Not Configure:** Select this option to configure this network at a later time as described in "Changing Network Settings" in the *TeamWorks 18.2.1: Administrative UI Reference*.
	
	    ◆ **DHCP Dynamic Address:** Select this option to have an IP address assigned dynamically on the secondary network.
	
	    ◆ **Statically Assigned IP Address:** Select this option to assign a static IP address on the secondary network. Then specify the IP address, network mask, and host name.

Data Store Location	1. Hard Disk 2 is automatically detected and the disk designation is displayed in the hard drive drop-down. Accept the defaults for the other options on this page by clicking **Next**. **IMPORTANT:** If you want a different filesystem than the default, do not select Ext 4. **WARNING:** If you have not already created additional disks 2 and 3 for each of your VMs and prepared a shared storage location for your TeamWorks appliances as described in early sections of this guide and in Planning Your Appliances in the TeamWorks 18.2.1 Planning Your TeamWorks Deployment—Best Practices guide, power off the virtual machine and make sure you have the required disk space in place for your deployment before proceeding. Otherwise, there is a substantial risk that your deployment will not meet your organization's needs.
Data Log Location	1. Hard Disk 3 is automatically detected and the disk designation is displayed in the hard drive drop-down. **IMPORTANT:** If you want a different filesystem than the default, do not select Ext 4. **TeamWorks:** Accept the defaults for the other options on this page by clicking **Next**. **Search and PostgreSQL:** Accept the defaults for the other options on this page by clicking **Configure**.
Shared Storage Type (TeamWorks and Search)	1. If you are configuring a PostgreSQL appliance, this page doesn't appear. Go to "Configuring Password, Time, and Network Settings" on page 26. 2. If you are configuring a TeamWorks or Search appliance in a multi-appliance deployment, click **Next**.

Page, Dialog, or Option	Do This
Shared Storage NFS Location	Referring to the work you did in Table 4-1, "Exporting an NFS Directory for / vashare," on page 17, do the following: 1. For the **NFS Server Hostname** field, click **Browse** and select the NFS server that you identified. If the NFS server is not found by browsing, typing its IP address or DNS name in the field should resolve the issue. 2. For the **Remote Directory** field, click **Browse** and select the directory that you exported. **IMPORTANT:** It is important to use the browse feature for this step to ensure that NFS is working and the path is correct. If the Remote Directory is not found, verify that the NFS server path is entered correctly and NFS is running on the server.Then browse for the directory again. If the server is still not found, or if you overlooked making an NFS mount point available, you must do the following in order to proceed: ◆ Click **Shut Down Appliance to Fix Resources** and confirm your action. ◆ Complete the instructions in Table 4-1, "Exporting an NFS Directory for / vashare," on page 17, and verify that an NFS client can connect to the mount point you have just created. ◆ When the NFS service is verified, power on the appliance. ◆ When prompted, re-enter the passwords for the `root` and `vaadmin` users, then click Next to confirm the choices you entered in all of the dialogs, until you reach the **NFS Server Hostname** field prompt (Step 1, above). 3. Click **Configure**. 4. Continue with "Configuring Password, Time, and Network Settings" on page 26.
Configuring Password, Time, and Network Settings	1. The settings you have specified are configured, storage is verified, and the appliance starts. 2. Continue as indicated for your deployment type: **Multi-appliance Deployment:** Repeat the above steps starting with "2 - Select an appliance." on page 23 until all of your appliances are started, configured, and running. Only then should you go to Chapter 8, "Creating a Multiple-Appliance TeamWorks Deployment," on page 27. **All-in-one (Small) Deployment:** Return to Creating an All-in-One Deployment > "Setting Up an All-in-One (small) TeamWorks Appliance" on page 44.

8 Creating a Multiple-Appliance TeamWorks Deployment

If You Need to Use a PostgreSQL Appliance Instead of a Server

IMPORTANT: Micro Focus recommends using an existing SQL database if one is available. Instructions are provided in "Setting Up the SQL Database" on page 27.

However, if you need to use a PostgreSQL appliance, do the following:

1. Prepare the PostgreSQL appliance now by completing the instructions in Appendix C, "Configuring the PostgreSQL 1.2 Appliance to Provide the SQL Database," on page 47

2. After the appliance is installed, configured, and running, skip to "Setting Up Three Search Appliances" on page 29.

Setting Up the SQL Database

Prepare your in-house SQL server by completing the steps in one of the following sections:

- "Configuring a PostgreSQL Server" on page 27
- "Configuring a Microsoft SQL Server" on page 28

Configuring a PostgreSQL Server

IMPORTANT: Do not create the TeamWorks database on your PostgreSQL server manually.

Let the TeamWorks configuration wizard create the database to ensure the correct configuration.

Table 8-1 *Configuring PostgreSQL for TeamWorks*

File	Do This
	1 - Edit the configuration file.

File	Do This

PostgreSQL server > /etc/my.cnf file	1. Edit the file as follows:
	
	```\n[client]\ndefault-character-set = utf8\n\n[PostgreSQLd]\ncharacter-set-server = utf8\nmax_connections = 900\ntransaction-isolation = READ-COMMITTED\nexpire_logs_days = 7\n```
	
	The `expire_logs_days` setting is optional, but is recommended because it cleans up `PostgreSQL-bin-*` files.
	
	Unless this is done regularly, the files will consume significant disk space in the `vastorage` directory.
	
	2. Uncomment the InnoDB tables section.
	
	3. Increase the buffer pool size to approximately 60 percent of the amount of RAM that has been allocated to the dedicated server.
	
	For example, a dedicated server with 4 GB of RAM should have a buffer pool size of 2560 MB, as follows:
	
	```\ninnodb_buffer_pool_size = 2560M\n```
	
	4. Identify or create a user account with sufficient rights to create and manage the TeamWorks database.

Worksheet 12	1. Record the username and password on Worksheet 12. 2. Continue with "Setting Up Three Search Appliances" on page 29.

Configuring a Microsoft SQL Server

IMPORTANT: Do not create the TeamWorks database on your MS SQL server manually.

Let the TeamWorks configuration wizard create the database to ensure the correct configuration.

Table 8-2   *Configuring Microsoft SQL Server for TeamWorks*

File	Do This
	1 - Configure the server.
Server management console	1. Enable remote access to the Microsoft SQL database server. 2. Open port 1433 on the Windows firewall where the database server is running. 3. Identify or create a user account that is configured with **SQL Server Authentication** and has sufficient rights to create and manage the TeamWorks database. **IMPORTANT:** TeamWorks supports only **SQL Server Authentication**. Windows Authentication and Windows Domain User Authentication to Microsoft SQL are not supported.
Worksheet 12	1. Record the username and password on Worksheet 12.

Server management console	1. Run the following queries against the database:
	
	`ALTER DATABASE database-name SET READ_COMMITTED_SNAPSHOT ON`
	`ALTER DATABASE database-name COLLATE Latin1_General_CI_AS_KS_WS`
	
	2. Continue with "Setting Up Three Search Appliances" on page 29.

Setting Up Three Search Appliances

TeamWorks best practices require that every multi-appliance deployment have three Search appliances. There are no advantages to having more than three.

Best practices allow for operating TeamWorks with fewer than three search appliances, but only under special circumstances, such as when reindexing is required.

In the case of reindexing, one appliance focuses on rebuilding the search index while the other two continue to service user requests and provide the Messaging services that TeamWorks requires.

Setting Up the First Search Appliance

Table 8-3   *Setting Up the First Search Appliance*

Page, Dialog, or Option	Do This
	1. Open a management browser on your administrative workstation and access the Port 9443 Appliance Console on the first Search appliance using the following URL: `https://IP_Address:9443` Where *IP_Address* is the IP address of the first Search appliance.
TeamWorks Search Appliance Sign In	1. Log in as the `vaadmin` user with the password that you set for the appliance in "Vaadmin password and confirmation:" on page 24.
TeamWorks Search Tools	1. Click the **Configuration** button [⚙] to launch the **TeamWorks Search Configuration Wizard**.

Page, Dialog, or Option	Do This
TeamWorks Search Configuration Wizard	1. Read the information to be sure that you're ready to proceed. 2. Click **Next**.

Database	1. Select the database type for this TeamWorks deployment.
	2. Type the DNS name or IP address of the database server or appliance.
	3. The standard port for the database type is shown. You can adjust this if required.
	4. Enter a name for the database.
	   The name must not contain a dash.
	5. Type the name of the database user/role that you created when preparing the database for TeamWorks.
	6. Type the password for the database user/role.
	7. If you have prepared your appliances for SSL communications, leave the option selected. Otherwise, deselect it before continuing.
	8. Click **Next**.
	   The credentials are validated and the process continues.

Passwords	1. Type and confirm a password for the Search and Messaging services administrator. Make a note of the password in case a support technician needs it later to resolve a support issue. 2. Type and confirm a password for service clients, such as Tomcat, to use for accessing the Search and Messaging services. 3. Click **Next**.

Locale	1. Select a Default Locale.
	2. Click **Finish**.
	   Services configuration can take a few minutes. Do not proceed until the process finishes.
	3. After the process finishes, best practice dictates setting up the other two Search appliances before setting up the TeamWorks appliances.
	   However, this is not enforced in case your circumstances dictate a different setup order. You can deploy a TeamWorks appliance when the database and at least one Search appliance are running.

Setting Up Subsequent Search Appliances

Table 8-4   *Setting Up Subsequent Search Appliance*

Page, Dialog, or Option	Do This
	1. Open a management browser on your administrative workstation and access the Port 9443 Appliance Console on a subsequent Search appliance using the following URL: `https://IP_Address:9443` Where *IP_Address* is the IP address of a second or third, etc. Search appliance.

Page, Dialog, or Option	Do This
TeamWorks Search Appliance Sign In	1. Log in as the `vaadmin` user with the password that you set for the appliance in "Vaadmin password and confirmation:" on page 24.
TeamWorks Search Tools	1. Click the **Configuration** button [⚙] to launch the **TeamWorks Search Configuration Wizard**.
TeamWorks Search Configuration Wizard	1. Read the information to be sure that you are ready to proceed. 2. Click **Next**.
Search Clustering and Messaging Services	1. Best practices dictate that two Search appliances have Messaging services enabled. You can enable this on the second or third Search appliance. The configuration wizard prevents you from disabling the Messaging service when it is the only instance in the deployment. 2. Click **Finish**. Services configuration can take a few minutes. Do not proceed until the process finishes. 3. Repeat the process until three Search appliances are running–two of them with Messaging services enabled.

Setting Up the TeamWorks Appliances

Table 8-5   *Logging in and Starting the Configuration Wizard*

Page, Dialog, or Option	Do This
	1. Open a management browser on your administrative workstation and access the Port 9443 Appliance Console on a TeamWorks appliance using the following URL: `https://TeamWorks_IP_Address:9443` Where *IP_Address* is the IP address of the first TeamWorks appliance.
TeamWorks Appliance Sign In	1. Log in as the `vaadmin` user with the password that you set for the appliance in "Vaadmin password and confirmation:" on page 24.
TeamWorks Appliance Tools	1. Click the Configuration icon [⚙] to launch the **TeamWorks Configuration Wizard**.
TeamWorks Configuration Wizard	The installation wizard accesses the shared storage specified for the appliance and verifies that the deployment is prepared for a TeamWorks appliance. It then displays the Search appliances added earlier and prompts you to add this appliance to the deployment. 1. Click **Finish** to add the TeamWorks appliance to the TeamWorks deployment.

Page, Dialog, or Option	Do This
(Optional when integrating a Content Editor appliance)	If your appliances use certificates issued by a certificate authority, skip to the next row. If you are including a Content Editor appliance in your TeamWorks deployment and you are using self-signed certificates, you must export the appliance's certificate. 1. Under Appliance Configuration, click the **Digital Certificates** icon. 2. Select the **Web Application Certificates** keystore. 3. Select **self-signed_cert**. 4. Click **File > Export > Public Certificate**. 5. Rename the downloaded certificate to a name that identifies the appliance it belongs to.
	1. Repeat this process for all of the TeamWorks appliances. 2. After adding all of the appliances planned for the initial deployment, continue with "Chapter 9, "Setting Up TeamWorks Services," on page 35."

Setting Up a Content Editor Appliance

If your TeamWorks deployment includes an integrated Content Editor appliance, complete all of the instructions in this section.

IMPORTANT: As stated in "Content Editor Requires an SSL Connection with Each TeamWorks Appliance" on page 15, the Content Editor appliance requires a secure connection with each TeamWorks appliance that accesses its services.

This means that the Content Editor and each TeamWorks appliance must have a certificate installed from an industry-recognized Certificate Authority.

Using the appliances' self-signed certificates for this purpose is not supported.

Before you complete the instructions that follow, use the "Certificates" icon in each affected appliance's Port 9443 admin console to

- Generate certificate signing requests (CSRs)
- Install certificates

as needed.

For more information, see "Certificates" in the *TeamWorks 18.2.1: Administrative UI Reference*.

Configuring the Content Editor Appliance

To enable the Content Editor appliance to work with TeamWorks, do the following.

Table 8-6 *Logging in and Starting the Configuration Wizard*

Page, Dialog, or Option	Do This
	1. Open a management browser on your administrative workstation and access the Port 9443 Appliance Console on the Content Editor appliance using the following URL: `https://Content-editor_IP_or_DNS:9443` Where *IP_or_DNS* is the IP address or DNS name of the Content Editor appliance.
Content Editor Appliance Sign In	1. Log in as the `vaadmin` user with the password that you set for the appliance in "Vaadmin password and confirmation:" on page 24.
Content Editor Appliance Tools	1. Click the Configuration icon to launch the **Content Editor Configuration Wizard**.

Allowed Hosts	The installation wizard accesses the Allowed Hosts list.
	
	1. List each TeamWorks appliance's DNS hostname on a separate line.
	
	For example, if you have two TeamWorks appliances, list them as follows:
	
	`tw-appliance-1.my-organization.com`
	`tw-appliance-2.my-organization.com`
	
	IMPORTANT: Do not substitute IP addresses for DNS hostnames in this list.
	
	2. Click **Test Connection** to make sure that the configured TeamWorks appliances are found.

Configuring the TeamWorks Appliances to Work with Content Editor

To configure TeamWorks to work with Content Editor, do the following.

Table 8-7 *Configuring TeamWorks to Work with Content Editor*

Page, Dialog, or Option	Do This
	1. Open a management browser on your administrative workstation and access the Port 9443 Appliance Console on a TeamWorks appliance using the following URL: `https://TeamWorks_IP_or_DNS:9443` Where *IP_or_DNS* is the IP address or DNS name of the TeamWorks appliance.
C Appliance Sign In	1. Log in as the `vaadmin` user with the password that you set for the appliance in "Vaadmin password and confirmation:" on page 24.
TeamWorks Appliance Tools	1. Click the Configuration icon to launch the **TeamWorks Configuration Wizard**.
Configuration	1. Click **Web-based Document Editing**.

Page, Dialog, or Option	Do This
Web-based Document Editing	1. Click **Enable Web-based Document Editing**. 2. In the **DNS Hostname** field, type the DNS hostname of the Content Editor appliance. For example, `ce-appliance.my-organization.com` **IMPORTANT:** Do not substitute the IP addresses for the DNS hostname in this field. 3. Click Test Connection to make sure that the Content Editor appliance is found. 4. Click Reconfigure TeamWorks appliance.
	1. Access the Port 9443 console on each of the other TeamWorks appliances and reboot them as well.

Using Content Editor Requires DNS

Content Editor requires that users enter the TeamWorks appliance's DNS name when accessing TeamWorks services.

Using an IP address to access TeamWorks causes Content Editor to fail.

Documents will not open for editing when an IP address was used.

9 Setting Up TeamWorks Services

Complete the following steps to make your TeamWorks deployment available to users.

NOTE: As you complete the steps in this section, refer to any Worksheets indicated to make sure that you follow your plans and have an accurate record of your TeamWorks deployment's configurations.

Changing some settings in the Port 9443 Appliance Console requires restarting TeamWorks.

For example,

- All modifications to settings accessed through the Configuration Icon ⚙
- Changes to the appliance's Network settings.

---

1. Using the Port 9443 Appliance Console > Configuration Icon > License dialog, install the same license on each TeamWorks appliance in your system.

2. Using the settings in the Port 9443 Appliance Console > Firewall dialog as a reference, make sure that your network's port and firewall settings are configured to support TeamWorks.

3. Add users and groups to your TeamWorks deployment and set up the LDAP synchronization processes.

Worksheet 4 - Users and Groups	1. Configure your TeamWorks system to connect to an existing LDAP source, such as eDirectory or Active Directory, to control user access to the system. **Path:** Port 8443 TeamWorks Admin Console > **System > LDAP** **IMPORTANT:** For initial access to the Port 8443 console, use `admin` as both the username and password. You are then prompted to change the password for user `Admin` before proceeding. 2. Manually create any non-LDAP users and groups that need access to TeamWorks services. For more information, see "the New User button" in the *TeamWorks 18.2.1: Administrative UI Reference*.
Worksheet 5 - LDAP Synchronization	1. Configure the TeamWorks system to synchronize with your LDAP servers. For assistance, see "LDAP Servers and Synchronization" in the *TeamWorks 18.2.1: Administrative UI Reference*.

4. Enable additional TeamWorks Users for Administrative Access.

Worksheet 8 - Administrative Access	1. Configure users for administrative access to TeamWorks. For more information, see "Assigning and Managing Port 8443 Designated Administrators" in the *TeamWorks 18.2.1: Administrative UI Reference*.

5 If your TeamWorks deployment needs to support multiple languages, configure the site as described in "Language and Locale Settings" in the TeamWorks 18.2.1: Maintenance Best Practices Guide.

6 After you have completed all of the topics in this list that are relevant to your TeamWorks environment, you can invite users to use the TeamWorks deployment. For information about how to use the TeamWorks deployment, see the TeamWorks User Help.

10 Updating to TeamWorks 18.2.1

TeamWorks 18.2.1 is only available as online updates for TeamWorks 18.2 and TeamWorks Search 18.2 appliances.

If your TeamWorks deployment leverages the Micro Focus PostgreSQL 1.2 appliance, we recommend that you update it as well.

Use the information in the following sections to move to TeamWorks 18.2.1.

- "You Must Register for Updates" on page 37
- "Updating an All-in-One Appliance" on page 37
- "Updating a Multi-Appliance Deployment" on page 37

You Must Register for Updates

Only registered appliances can have updates applied. If you need to register an appliance, do the following:

1 On an appliance, log into the Port 9443 console as the vaadmin user.
2 Click the **Online Update** icon.
3 Use the Register Online Update Service dialog to register the appliance. For help, see "Register Online Update Service" in the *TeamWorks 18.2.1: Administrative UI Reference*.

Updating an All-in-One Appliance

To update an all-in-one TeamWorks appliance, complete the instructions in Appendix B, "Updating an All-in-One 18.2 TeamWorks Appliance to Version 18.2.1," on page 45.

Updating a Multi-Appliance Deployment

IMPORTANT: Make sure that you update only one appliance at a time. Do not begin with the next update until the previous update process is completed.

Complete the following sections in the order presented:

- "If You Use the PostgreSQL Appliance" on page 38
- "Disabling User Access" on page 38
- "Updating the Search Appliances" on page 38
- "Updating the TeamWorks Appliances" on page 39
- "Resolving Web Client Connection Issues" on page 39

If You Use the PostgreSQL Appliance

If your deployment uses an in-house SQL database service rather than the PostgreSQL appliance, skip to "Disabling User Access" on page 38.

Otherwise, we recommend that you update your PostgreSQL 1.2 appliance to version 1.2.1 by doing the following:

1 Starting with the TeamWorks Search appliances, log in to the Port 9443 console.

2 Click the **Shutdown** button.

3 When all the search appliances are down, shut down each TeamWorks appliance.

4 Log in to the PostgreSQL appliance's Port 9443 console.

5 Click the **Online Update** icon.

6 In the drop-down options list, make sure that **Needed Patches** is selected.

7 Above the drop-down options list, click **Update Now**.

8 When the update completes, click **Home** (upper-right corner).

9 Click the **Reboot Needed** button, click **OK**, and then wait for the appliance to reboot before continuing.

10 When the updated PostgreSQL appliance is running, start each Search appliance and then start the TeamWorks appliances until your entire deployment is running again.

11 Continue with "Disabling User Access" on page 38.

Disabling User Access

Before beginning the TeamWorks update processes, you must disable user access to each TeamWorks appliance.

If you use a reverse proxy or other load-balancing solution to provide TeamWorks access, you should be able to accomplish this by taking the service offline.

If your users access TeamWorks appliances directly, you must disable the TeamWorks service on each TeamWorks appliance by doing the following:

1 On a TeamWorks appliance, log in to the Port 9443 console.

2 Click the **System Services** icon.

3 Click **GroupWise TeamWorks > Action > Stop**.

4 Repeat this on each TeamWorks appliance in your deployment.

Updating the Search Appliances

Do the following.

1 On a Search appliance, log in to the Port 9443 console.

2 Click the **Online Update** icon.

3 In the drop-down options list, make sure that **Needed Patches** is selected.

4 Above the drop-down options list, click **Update Now**.

5 When the update completes, click **Home** (upper-right corner).

6 Click the **Reboot Needed** button, click **OK**, and then wait for the appliance to reboot before continuing.

7 Repeat the update process on each Search appliance before continuing with the TeamWorks appliances.

8 When all of the Search appliances are updated and running, continue with "Updating the TeamWorks Appliances" on page 39.

Updating the TeamWorks Appliances

For each TeamWorks appliance, do the following:

1 On a TeamWorks appliance, log in to the Port 9443 console.

2 Click the **Online Update** icon.

3 In the drop-down options list, make sure that **Needed Patches** is selected.

4 Above the drop-down options list, click **Update Now**.

5 When the update completes, click **Home** (upper-right corner).

6 Click the **Reboot Needed** button, click **OK**, and then wait for the appliance to reboot before continuing.

7 Repeat the update process on each TeamWorks appliance.

8 When all of the TeamWorks appliances are updated and running, the update is complete.

Continue with "Resolving Web Client Connection Issues" on page 39.

Resolving Web Client Connection Issues

Depending on the web browser and version, web client users that were connected to TeamWorks when the update process began, might have issues connecting after the update completes.

Connection issues can be resolved by doing one of the following:

- Refreshing the browser.
- Closing and restarting the browser.
- Clearing browser cache by typing Ctrl+F5.

Appendixes

A Creating an All-in-One Deployment

To create an all-in-one deployment, you install one TeamWorks appliance. By default TeamWorks also includes the PostgreSQL database and Search functions.

Ensuring All-in-One Suitability

With few exceptions, small deployments are only suitable for proof-of-concept deployments, which, by definition, do not require extensive planning. There is, however, a planning worksheet for all-in-one deployments. See Worksheet 10-a - All-in-One Appliance.

For a production deployment, you should use the TeamWorks 18.2.1 Planning Your TeamWorks Deployment—Best Practices guide and associated planning worksheets to gauge whether a small deployment could meet your organization's production needs.

All-in-One System Requirements

Most of the requirements in Chapter 3, "System Requirements," on page 11 apply to small deployments.

However, 80% of the RAM should be dedicated to the Java heap.

For information about adjusting the Java heap settings, see "Changing the Memory Configuration Settings" in the *TeamWorks 18.2.1: Administrative UI Reference*.

All-in-One Deployment

To deploy an all-in-one TeamWorks appliance, complete the instructions in the following sections:

Table A-1

Section	Additional Information
Chapter 5, "Downloading and Preparing the TeamWorks Software," on page 19	You only need to download the TeamWorks software and the Content Editor software if integrating with TeamWorks.
Chapter 6, "Creating the TeamWorks Virtual Machines," on page 21	Follow the instructions.
Chapter 7, "Starting and Configuring the Appliances," on page 23	Follow the instructions, then continue with "Setting Up an All-in-One (small) TeamWorks Appliance" on page 44

Setting Up an All-in-One (small) TeamWorks Appliance

Table A-2 *Logging in and Setting Up a Small TeamWorks Appliance*

Page, Dialog, or Option	Do This
	1. Open a management browser on your administrative workstation and access the Port 9443 Appliance Console on the TeamWorks appliance using the following URL: `https://TeamWorks_IP_Address:9443` Where *IP_Address* is the IP address of the TeamWorks appliance.
TeamWorks Appliance Sign In	1. Log in as the `vaadmin` user with the password that you set for the appliance in "Vaadmin password and confirmation:" on page 24.
TeamWorks Appliance Tools	1. Click the Configuration icon to launch the **TeamWorks Configuration Wizard**.
TeamWorks Configuration Wizard	1. Click **Next**.

Database, Search, and Messaging services Passwords	1. Type and confirm a password for each of the following system users:
	   ◆ `db-user`
	   ◆ `postgres`
	   ◆ `svcs-user` (standard ASCII only)
	   ◆ `svcs-admin` (standard ASCII only)
	
	2. Make a record of the passwords in case Micro Focus Support needs them to resolve a support incident in the future. (No administrative tasks require these passwords.)

Default Locale	1. Select your Default System Locale from the dropdown list. 2. Click **Finish**. 3. Do not close or exit the browser page until the warning message disappears.
Set Up TeamWorks Services	1. Use the information in Chapter 9, "Setting Up TeamWorks Services," on page 35 as a guide for setting up your all-in-one appliance.

Integrating a Content Editor Appliance

To use a Content Editor appliance with your All-in-One deployment, follow the instructions in "Setting Up a Content Editor Appliance" on page 32.

B Updating an All-in-One 18.2 TeamWorks Appliance to Version 18.2.1

Disabling User Access

Disable the TeamWorks service by doing the following:

1 On the TeamWorks appliance, log in to the Port 9443 console.
2 Click the **System Services** icon.
3 Click **GroupWise TeamWorks > Action > Stop**.
4 Continue with the next section.

Updating the All-in-One Appliance

Do the following:

1 In to the Port 9443 console, click the **Online Update** icon.
2 In the drop-down options list, make sure that **Needed Patches** is selected.
3 Above the drop-down options list, click **Update Now**.
4 When the update completes, click **Home** (upper-right corner).
5 Click the **Reboot Needed** button, click **OK**, and then wait for the appliance to reboot before continuing.
6 Continue with "Resolving Web Client Connection Issues" on page 45.

Resolving Web Client Connection Issues

Depending on the web browser and version, web client users that were connected to TeamWorks when the update process began, might have issues connecting after the update completes.

Connection issues can be resolved by doing one of the following:

- Refreshing the browser.
- Closing and restarting the browser.
- Clearing browser cache by typing Ctrl+F5.

C Configuring the PostgreSQL 1.2 Appliance to Provide the SQL Database

Table C-1 *Configuring a PostgreSQL Appliance*

Page or Dialog	Do This
	IMPORTANT: The following steps assume that you installed and prepared a PostgreSQL appliance in addition to your TeamWorks and Search appliances, as documented in Chapter 6, "Creating the TeamWorks Virtual Machines," on page 21.
	1. Using a browser on your management workstation, access the Port 9443 Appliance Console on the PostgreSQL appliance by entering the following URL: `https://PostgreSQL_IP_Address:9443` Where *IP_Address* is the IP address of the PostgreSQL appliance.
PostgreSQL Appliance Sign In	1. Log in as the `vaadmin` user with the password that you set for the appliance in "Vaadmin password and confirmation:" on page 24.
PostgreSQL Appliance Tools	1. Click the **Configure PostgreSQL** icon .
Postgres User Configuration	1. Type and confirm a new password for the `postgres` role/user, then click **Submit**.
PostgreSQL Appliance Tools	1. Click the **phpPgAdmin** icon to launch the phpPgAdmin utility. 2. In the left panel, click **PostgreSQL**, then log in as user `postgres` with the password that you specified above.
phpPgAdmin	1. Click the Roles icon . 2. Click **Create role**.
Create Role	1. Type a name in the **Name** field, such as `db-user`, for the role that will create the database for TeamWorks and provide TeamWorks services with database access. 2. Type and confirm a password for the role that you are creating. 3. Select the **Create DB?** and **Can login?** options. 4. Click the **Create** button. The role you created is added to the Roles list. 5. Close the browser and return to "Setting Up Three Search Appliances" on page 29.

D Troubleshooting the TeamWorks Installation

Unable to Access a Newly Installed Appliance

If you are unable to access a newly installed appliance and you need to change appliance settings, such as the IP address, use the VACONFIG utility from the TeamWorks command prompt.

For more information, see "Using VACONFIG to Modify Network Information" in the *TeamWorks 18.2.1: Maintenance Best Practices Guide*.

E Third-Party Materials

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