

# SUSE Studio Onsite

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Deployment and Administration Guide



# Deployment and Administration Guide

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# Contents

<b>About this Guide</b>	<b>v</b>
<b>1 Deploying and Installing</b>	<b>1</b>
1.1 System Requirements . . . . .	1
1.2 Deploying SUSE Studio Onsite . . . . .	3
1.3 Deploying SUSE Studio Onsite on IBM System z . . . . .	6
1.4 Installing IBM System z Runner for SUSE Studio . . . . .	8
1.5 Supporting Special Hardware . . . . .	9
1.6 Configuring SUSE Studio Onsite . . . . .	12
1.7 Customizing SUSE Studio Onsite . . . . .	14
1.8 Keeping SUSE Studio Onsite Up-to-Date . . . . .	18
1.9 Upgrading from SUSE Studio 1.0 to Version 1.1 . . . . .	18
1.10 Upgrading from SUSE Studio 1.1 to Version 1.2 . . . . .	19
<b>2 Monitoring SUSE Studio Onsite Servers</b>	<b>21</b>
2.1 Viewing Build Statistics . . . . .	21
2.2 Getting Diary Information . . . . .	22
2.3 Monitor SUSE Studio Onsite with Nagios and Munin . . . . .	23
<b>3 Administering SUSE Studio Onsite Servers</b>	<b>25</b>
3.1 Logging in to SUSE Studio Onsite . . . . .	25
3.2 Inviting New Users . . . . .	26
3.3 Managing Your Repositories . . . . .	27
3.4 Managing Builds and Appliances . . . . .	28
3.5 Adding New Cron Jobs . . . . .	29
3.6 Backing Up SUSE Studio . . . . .	31
3.7 Setting the Read-Only Mode . . . . .	33

3.8	Extending Disk Storage . . . . .	33
3.9	Enabling OVF Format . . . . .	34
3.10	Changing Maximum Number of Slots . . . . .	35

<b>A</b>	<b>SUSE Studio Onsite Services</b>	<b>37</b>
----------	------------------------------------	-----------

<b>B</b>	<b>Administration Panel—Menu Structure</b>	<b>39</b>
----------	--	-----------

B.1	Dashboard . . . . .	39
B.2	Diary . . . . .	39
B.3	Advanced . . . . .	39

# About this Guide

SUSE Studio Onsite® is a Web application for building and testing appliances in a Web browser. It supports the creation of virtual appliances and live systems based on SUSE Linux operating systems. The publicly hosted version is available at <http://susestudio.com>.

This manual introduces the administrative part of SUSE Studio. It shows you how to deploy, configure, monitor and administer your SUSE Studio Onsite server. Most of the options mentioned in this manual are accessible after clicking on your login name (or the *Admin User* link if you have administrator's privileges) in the main navigation.

For an overview of the documentation available for your product and the latest documentation updates, refer to [http://www.novell.com/documentation/suse\\_studio/](http://www.novell.com/documentation/suse_studio/).

## 1 Feedback

Several feedback channels are available:

### Bugs and Enhancement Requests

For services and support options available for your product, refer to <http://www.novell.com/services/>.

To report bugs for a product component, please use <http://support.novell.com/additional/bugreport.html>.

Submit enhancement requests at <https://secure-www.novell.com/rms/rmsTool?action=ReqActions.viewAddPage&return=www>.

### User Comments

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

## 2 Documentation Conventions

The following typographical conventions are used in this manual:

- `/etc/passwd`: directory names and filenames
- *placeholder*: replace *placeholder* with the actual value
- `PATH`: the environment variable `PATH`
- `ls, --help`: commands, options, and parameters
- `user`: users or groups
- `Alt`, `Alt + F1`: a key to press or a key combination; keys are shown in uppercase as on a keyboard
- *File*, *File > Save As*: menu items, buttons
- **► amd64 em64t**: This paragraph is only relevant for the specified architectures. The arrows mark the beginning and the end of the text block. ◀
- *Dancing Penguins* (Chapter *Penguins*, ↑Another Manual): This is a reference to a chapter in another manual.

## 3 For More Information

Additional information about SUSE Studio can be found in the following links:

<http://www.novell.com/linux/appliance/>

Information about appliances and the SUSE Appliance Program.

[http://en.opensuse.org/Portal:SUSE\\_Studio](http://en.opensuse.org/Portal:SUSE_Studio)

The portal site about SUSE Studio with a tour, Howtos, and information for developers.

# Deploying and Installing

To deploy SUSE Studio Onsite, install it on your server and proceed with the installation in a Web browser. This chapter provides a step-by-step instruction to successfully complete deployment and installation of SUSE Studio Onsite on your designated server.

SUSE Studio Onsite is delivered in two variants, a compressed raw image and a CD. The raw image is a bitwise copy of a complete hard disk and contains a full Linux operating system including a boot sector and partition information. The CD is bootable and deploys the SUSE Studio Onsite image.

---

## WARNING: Erasing Your Disk

Installing SUSE Studio Onsite will erase your disk *completely*. If you have any important data on this disk, make a backup before you proceed.

---

## 1.1 System Requirements

Before you install SUSE Studio Onsite on your server, boot a Live CD and check if your machine fulfills the following system requirements:

### CPU: 64-Bit and Virtualization Support

The CPU must support 64-bit and full virtualization. Check if your CPU supports 64-bit by executing the following command:

```
grep lm /proc/cpuinfo
```

The `grep` command will only provide output if the processor supports long mode, indicated by the `lm` flag. If the `grep` command returns no output, your selected system only supports 32-bit addressing and does not meet the SUSE Studio Onsite requirements.

Virtualization support is needed for building appliances and using the test drive. Test the capabilities of your CPU by executing the following command in the text console or shell (the `vmx` flag is used by Intel, `svm` by AMD):

```
egrep '(vmx|svm)' /proc/cpuinfo
```

If there is no output from the `egrep` command, your processor does not support full virtualization or the feature has been disabled in the BIOS. Enable the setting in your BIOS and try again. Depending on your BIOS the entry can be named differently: *Virtualization Technology*, *VT* or something similar. Consult your main-board manual.

RAM

A minimum of 8 GB of RAM should be installed on the server machine. RAM in addition to the 8 GB minimum is recommended. SUSE Studio Onsite requires 2 GB of RAM for the user interface, 4 GB of RAM for each logged in appliance creator and KIWI slot, and 2 GB of RAM for the test drive slot.

Free Disk Space

The available disk space on the server should at least be 100 GB. Additional disk space is recommended. The following table provides an overview of the size requirements for ISO based repositories for the various distributions (only binary, no source or updates):

**Table 1.1** *Minimal Amount of Disk Space for Different Products (Approximate Values)*

Product	Size
SLES 10	~6 GB
SLED 10	~11 GB
SDK 10	~8 GB



Product	Size
SLES 11	~7 GB
SLED 11	~10 GB
SDK 11	~8 GB
openSUSE 11.1 DVD	~4.3 GB
openSUSE 11.2 DVD	~4.4 GB

## 1.2 Deploying SUSE Studio Onsite

The following sections describe two methods for the installation of SUSE Studio Onsite: using the installation from the installation CD and the raw disk image. Using the raw image requires network access and a second machine on your network to store the raw image.

---

### TIP: Additional Information

Additional information for the administration are contained in the file `/srv/studio/README.onsite_user` after the installation is completed. The Release Notes contain important information regarding SUSE Studio Onsite as well as updates not reflected in this manual.

---

### 1.2.1 Installing from CD

To start the installation process, proceed as follows:

#### **Procedure 1.1** *Deploying a Raw Image from CD*

- 1 Boot your future SUSE Studio Onsite server with the installation CD. Select *Install/Restore SUSE Studio Onsite*.

- 2 Answer the question *This will destroy ALL data on /dev/sda, continue?* with *Yes* to proceed. The deployment process is taking over.
- 3 Remove the CD and reboot your server. The boot loader GRUB is started and the firstboot system takes over.

This completes the installation of SUSE Studio Onsite using the install CD. Proceed with Section 1.6, “Configuring SUSE Studio Onsite” (page 12).

## 1.2.2 Installing Over a Network

This method is useful if your server does not have a CD/DVD drive or you prefer installation over a network. You need two machines which are connected to your network: the first machine contains the raw image, the second machine is your future SUSE Studio Onsite server. Installing over a network usually takes these steps:

- 1 Procedure 1.2, “Preparing Your Future SUSE Studio Onsite Server” (page 4).
- 2 Procedure 1.3, “Decompressing the Image on the Client” (page 5)
- 3 Procedure 1.4, “Deploying the Raw Image” (page 6)

### **Procedure 1.2** *Preparing Your Future SUSE Studio Onsite Server*

- 1 Boot your future SUSE Studio Onsite server with a rescue system. Such systems are available on all SUSE installation CDs or DVDs. Alternatively boot from a Live CD.
- 2 Log in as `root`. A password is not needed.
- 3 If the network in the rescue image has not been configured automatically via DHCP, it must be configured. Check for an IP address with the following command:

```
ifconfig
```

If you only get one item with an 127.0.0.1 address, you must configure your network. To configure a DHCP-based network setup use:

```
ifup-dhcp eth0
```

Remember the IP address of your system, it is needed later.

- 4 Set up a listener on an unused port (in our example, 1234) and dump the incoming data to the system disk. Generally, this is the first hard drive, in our example `/dev/sda`. This will destroy any data on this disk! To use the example parameters enter the following command:

```
netcat -l -v -p1234 | dd of=/dev/sda
```

- 5 Make sure you do not clean the screen as you need the output of the last step to compare it with the output of another command later.

### ***Procedure 1.3 Decompressing the Image on the Client***

- 1 Check the file type of your image with `file IMAGENAME`:

- If you get the following output (as one line), skip this procedure and proceed with Procedure 1.4, “Deploying the Raw Image” (page 6):

```
...raw: x86 boot sector; GRand Unified Bootloader,
stage1 version 0x3, stage2 address 0x2000, stage2 segment 0x200,
GRUB version 0.97; partition 1: ID=0x83, active, starthead 1,
startsector 63, 4192902 sectors
```

- If you get one of the following outputs, your raw image is compressed:

```
gzip compressed data, extra field, from Unix, last modified: ...
```

or

```
bzip2 compressed data, block size = 900k
```

- 2 Decompress the raw image with one of the following commands, depending on the file extension of the image:

- For an image compressed with `gzip` (file extension `.gz`), use:

```
gunzip IMAGENAME
```

- For an image compressed with `bzip2` (file extension `.bz2`), use:

```
bunzip2 IMAGENAME
```

- For an image compressed with `tar` and `gzip` (file extension `.tar.gz`), use:

```
tar xzvf IMAGENAME
```

At the end of decompression you will have a raw image with the `.raw` extension.

### **Procedure 1.4** *Deploying the Raw Image*

- 1 Send the raw image to the machine designated as the SUSE Studio Onsite server using the following command. Replace the *RAW\_IMAGE* with the path to your image and *IP\_of\_Client* with the IP address from Step 3 (page 4) of Procedure 1.2:

```
dd if=RAW_IMAGE | netcat IP_of_Client 1234
```

- 2 Compare the output from the last step with the output from Step 5 (page 5) of Procedure 1.2. The following shows an example of the output:

```
2625536+0 records in
2625536+0 records out
1344274432 bytes (1.3 GB) copied, 113.989 s, 11.8 MB/s
```

The time (113.989 s), the throughput (11.8 MB/s), the number of records (2625536+0), and the total size (1.3 GB) may be different in your case. However, the `records in` and `records out` as well as the size must match between the two machines. If you see any discrepancies, repeat the previous steps.

- 3 Reboot the server and remove the rescue medium from your CD or DVD drive. The boot loader GRUB is started and the firstboot system takes over.

This completes the deployment of SUSE Studio Onsite using the raw disk image. Proceed with Section 1.6, “Configuring SUSE Studio Onsite” (page 12).

## **1.3 Deploying SUSE Studio Onsite on IBM System z**

From version 1.2, SUSE Studio supports building appliances for IBM System z. For this reason, you need a runner who is able to build IBM System z appliances. Make sure you fulfill all of the following prerequisites:

- SUSE Linux Enterprise Server11 SP1 for System z with all service packs installed

- Minimum of 3 GB RAM
- Minimum of 6 GB disk space
- The downloaded runner add-on for System z on a System z instance

To install the SUSE Studio add-on product on IBM System z, proceed as follows:

**1** Prepare your IBM System z machine:

**1a** Add the following parameter line in `/etc/zipl.conf`:

```
switch_amode
```

**1b** Run `zipl`

**1c** Reboot the runner

**1d** After the reboot, run `yast2 add-on`

**1e** Select *Add* and go to *Local ISO image...*

**1f** Select the add-on image for System z and accept the End User License Agreement (EULA). The software selection dialog appears.

**2** Select the filter *SUSE Studio Upgrade for System z* for add-on repository.

**3** Select all packages in that repository.

**4** Choose *Install* and accept the suggestion.

**5** Finish with *Ok* to close the YaST module.

Your System z runner is successfully installed.

# 1.4 Installing IBM System z Runner for SUSE Studio

This section describe how to install a runner dedicated for building appliances for IBM's System z. It is assumed you have successfully setup your system as described in Section 1.3, “Deploying SUSE Studio Onsite on IBM System z” (page 6).

To create an IBM System z runner, proceed as follows:

- 1 Log in to your SUSE Studio Onsite server.
- 2 Click the *Admin User* and *Advanced* links.
- 3 Click the *Manage extension for System z* link.
- 4 Enter the hostname or IP address of your previously configured System z runner. SUSE Studio requests all relevant information from the System z runner and creates a `/studio/filestore` directory. This directory will be made available to the System z runner host.
- 5 Wait until all the System z repositories and templates are added. This step is run automatically after the runner setup and takes some time.
- 6 Use a NFS share from SUSE Studio server on your IBM System z runner:

**6a** Log in as `root` on your IBM System z runner.

**6b** Open the file `/etc/fstab` and add the following line:

```
UI_SERVER:/studio:filestore /studio/filestore nfs rw,nolock,auto 0
0
```

Replace `UI_SERVER` with the name or IP address of your SUSE Studio Onsite server.

**6c** Mount the share:

```
mount /studio/filestore
```

- 6d** Open the file `/srv/studio/runner/config/options.yml` and locate the section `production:`. Change it to the following line (observe the two spaces before `scheduler`):

```
production:
  scheduler: UI_SERVER:80
```

Replace `UI_SERVER` with the name or IP address of your SUSE Studio Onsite server.

- 6e** Restart the Apache Web server:

```
rcapache2 restart
```

- 6f** Enable and start Samba:

```
insserv smb
rcsmb start
```

Your IBM System z is now correctly configured.

If you want to disable the System z template, proceed as follows:

- 1** Log in to your SUSE Studio Onsite server.
- 2** Click the *Admin User* and *Advanced* links.
- 3** Choose *Repositories > Software*.
- 4** Click the *Hide* button on the SLES11\_SP1 System z template.

If a users want to create a new appliance, it will not be shown in the list of available templates. To enable the template again, click the *Show* button.

## 1.5 Supporting Special Hardware

In almost all cases, the installation as described in Section 1.2, “Deploying SUSE Studio Onsite” (page 3) is sufficient and you can skip this section. However, special hardware may not be supported directly by SUSE Studio, for example, the driver cannot be in-

cluded for legal reasons. In such case you need to integrate a third-party driver into your appliance using KIWI.

In order to repair the faulty driver you need to understand KIWI's build process. More details of KIWI's build process can be found in the PDF file under `/usr/share/doc/packages/kiwi/kiwi.pdf`, package `kiwi-doc`. The following procedure gives you a general overview of how to do this:

- 1 Install the image description for KIWI where you locate the faulty driver. For example, `kiwi-desc-oemboot` if you want to build an OEM images with a special driver.
- 2 Get to know the path of the image description, the product name and locate the config file. In our example, KIWI's OEM image description is installed under `/usr/share/kiwi/image/oemboot/`. If you want to change that for SUSE Linux Enterprise Server 11, add `suse-SLES11` to the previous path. The full path yields `/usr/share/kiwi/image/oemboot/suse-SLES11`.
- 3 Insert the missing driver in the configuration file. Depending on the driver, you have several options:
  - If your driver is part of the standard Kernel, extend the `drivers` section as described in Step 4 (page 11).
  - If your driver is *not* part of the standard Kernel, build a KMP package of your driver as described in [http://developer.novell.com/wiki/index.php/Creating\\_a\\_Kernel\\_Module\\_Package\\_%28KMP%29](http://developer.novell.com/wiki/index.php/Creating_a_Kernel_Module_Package_%28KMP%29). Insert the following highlighted line in the `packages` section:

```
<packages type="image">
  <package name="..." />
  <package name="YOUR_KMP_PACKAGE" />
</packages>
```

Additionally create a repository for your driver RPM. Usually this is an ordinary directory for KIWI. Edit the file `/usr/share/kiwi/image/oemboot/suse-SLE11/config.xml` and insert:

```
<repository type="rpm-dir">
  <source path="/path/to/your/repo" />/>
</repository>
```



- If your driver is *not* part of the standard Kernel and you do not want to create a KMP package, the only option is to copy your binary driver into the overlay tree of the boot image description. The overlay tree is the directory in the image description, in our case `/usr/share/kiwi/image/oemboot/suse-SLES11/root/`. The overlay tree contains all the overlay files which you have changed or added. Note that binary drivers in the overlay tree are hard to maintain as the module has to match with the Kernel version. Use this method only as your last option.

- 4 Extend the `drivers` section as indicated with the highlighted line. Replace the dots with the corresponding driver name (extension `.ko`):

```
<drivers type="drivers">
  <file name="..." />
  <file name="drivers/..." />
</drivers>
```

One additional note for KIWI users: KIWI tries to make the `initrd` as small as possible. As such, it removes everything which is not specified in the `drivers` section.

- 5 Create a new boot image with the following commands and replace `URL` with the repository URL:

```
kiwi -p /usr/share/kiwi/image/oemboot/suse-SLES11 \
  --root /tmp/fixed-oemboot --set-repo URL

kiwi --create /tmp/fixed-oemboot -d /tmp/myfixed-oemboot
```

- 6 Copy the `initrd` and the Kernel file on a USB stick (usually mounted as `/media/disk`). Name them `initrd.kexec` and `linux.kexec`:

```
cp /tmp/myfixed-oemboot/kernel /media/disk/linux.kexec
cp /tmp/myfixed-oemboot/initrd /media/disk/initrd.kexec
```

The stick can only contain these two files.

- 7 Boot the media with the Kernel option `hotfix=1`.

If there is a reboot during deployment, pass `hotfix=1` again. Usually this is not necessary for normal installation.

# 1.6 Configuring SUSE Studio Onsite

---

## **NOTE: Avoid Changing `root` Password**

Do *not* change the `root` in a shell by yourself. The `root` password will be changed and synced during the configuration of SUSE Studio. If you have already changed the password, change it back to `linux`.

---

It is assumed you successfully completed one of the two installation methods in Section 1.2, “Deploying SUSE Studio Onsite” (page 3). Before you continue, get the IP address of your server and proceed as follows:

### **Procedure 1.5** *Obtaining IP Address of your SUSE Studio Server*

- 1 During the boot process, press the Esc key to enter verbose boot mode.
- 2 Follow the boot messages and assure that one of the following messages is displayed:

```
Loading KVM for intel
```

or:

```
Loading KVM for amd
```

If you receive an error message check Section 1.1, “System Requirements” (page 1).

- 3 If you need to change your network parameters, log in as `root` (with password `linux`). The password is changed later in Step 5 of Procedure 1.6. Run `yast network` and select *Network Card*. There configure your network according to your needs. Find more information in the section *Configuring a Network Connection with YaST* under [http://www.novell.com/documentation/sles11/book\\_sle\\_admin/data/sec\\_basicnet\\_yast.html](http://www.novell.com/documentation/sles11/book_sle_admin/data/sec_basicnet_yast.html).

If you want to customize more than the network, use YaST to configure additional settings of your SUSE Studio Onsite server.

Proceed with the configuration of SUSE Studio Onsite using a Web browser as described in Procedure 1.6.

### **Procedure 1.6** *Configuring Your SUSE Studio Onsite Server*

- 1** Start a browser on a *different* machine and point the browser to your SUSE Studio Onsite instance. In our example it is `https://192.168.1.1`.
- 2** Accept the license agreement.
- 3** Register your SUSE Studio server with SMT or with the Novell Customer Center. The registration process is needed to get the necessary repositories in order to update SUSE Studio Onsite and to provide packages for all the images in the build step. Either way, without a successful registration you cannot proceed and SUSE Studio Onsite will not work. Choose the registration with SMT or Novell Customer Center:

---

#### **NOTE: Licenses and Expiring**

If an evaluation license expires, SUSE Studio will no longer work. If a full license expires, each user will see a red message on every page telling that the license has expired. In such case, SUSE Studio will still be functional. The administrator will see a message on his home screen two months before the license eventually expires.

---

- If you have an SMT server (Subscription Management Tool), click *Use SMT* and enter the server hostname (without the protocol) to continue. Find detailed information in the section *How to Get Mirroring Credentials* of the *SUSE Lifecycle Management Server Manual*.
  - If you do not have an SMT server, register your product in the Novell Customer Center. Enter the following data to complete the registration procedure:
    - your e-mail address that you have used for registration in the Novell Customer Center,
    - your SUSE Linux Enterprise Server registration code,
    - your SUSE Studio registration code.
- 4** If you have used the Novell Customer Center for registration, enter username and password for your mirror credentials from the Novell Customer Center. Get your credentials from the link aside. In case you used SMT, skip this step.

- 5 Create the administrator account and enter the login name, password and e-mail address. Finish with *Continue*.

---

**NOTE: Changed Password for root**

Your administrator password for your SUSE Studio server is also synced with the system's `root` account. Use a safe and secure password.

---

The previous procedure completes the setup of SUSE Studio Onsite. Prior to building your first appliance you will need to wait a few minutes to let the server initialize all the repositories and complete automated setup tasks.

## 1.7 Customizing SUSE Studio Onsite

This section introduces the SUSE Studio Onsite configuration file and two system and network monitoring tools that are part of the standard installation.

### 1.7.1 The SUSE Studio Onsite Configuration File

The file `/srv/studio/options.yml` serves as the SUSE Studio Onsite configuration file. Certain aspects of the SUSE Studio Onsite application behavior can be controlled with the settings in this file, for example, restricting access to users or setting feedback options, repository notifications, or announcements. When modifying this configuration file, you need to restart the Apache Web server to apply your changes. Restart Apache as user `root` with the `rcapache2 restart` command.

---

**NOTE: Avoiding Syntax Errors**

When modifying the configuration file, do not change the indentation and leave one or more spaces after the colon contained in each option. Find more information about the syntax at <http://www.yaml.org>.

---

### Example 1.1 Central Configuration File `/srv/studio/options.yml`

```
default:
  ### Invitation mode settings
  #invitation_required: true      # default: true ❶
  #invitation_expires: false     # default: false ❷
  #invitation_from: "studio@example.com" ❸

  ### Email Settings ❹
  #feedback_to:
  #feedback_to_name: 'The SUSE Studio Team'
  #feedback_from: '"SUSE Studio Feedback" <feedback@example.com>'

  ### Notification Settings ❺
  #repo_added_default_and_fallback_from: 'studio-status@example.com'
  #repo_added_to:
  #repo_added_host: 'studio.example.com'

  ### Announcement Settings ❻
  #announcement_enabled: false
  #announcement_message:

  ### Authentication method
  #ldap_authentication: false ❼
```

- ❶ As SUSE Studio Onsite administrator you can either choose to let users apply for accounts on the SUSE Studio Onsite login screen or you can restrict the access to SUSE Studio Onsite to certain users. For more information, refer to Section 3.2, “Inviting New Users” (page 26).

If this option is set to `true`, users can request an account by entering their e-mail address on the SUSE Studio Onsite login screen. After the administrator has approved the request, users will receive an e-mail invitation to activate the requested account.

Setting this option to `false` prevents users from requesting request access to the system. Users can only be added via invitation from SUSE Studio Onsite administrator.

- ❷ Setting this option to `true` causes invitations to expire one week after the invitation has been mailed to the user. If the user does not accept the invitation within one week, a new invitation must be issued.
- ❸ Specifies the e-mail address that is used as return address for invitation e-mails.

- ④ Configure the feedback feature of SUSE Studio Onsite with `feedback_to`, `feedback_to_name`, and `feedback_from`. If all keywords are enabled, users will see a *Send Feedback* link on the left pane when creating appliances. Clicking the link will display a text field in the interface, allowing the user to enter feedback comments. Once a user clicks *Send feedback*, an e-mail will be sent to the address specified in the `feedback_to` option. As the return address of the e-mail the value of the `feedback_from` option will be used.
- ⑤ Use the `Notification Settings` to enable a notification e-mail when a user adds one or more additional repositories to a given appliance configuration. This generally indicates that the user is using a package not available in the pre-configured repositories. Set `repo_added_host` to the hostname of your SUSE Studio Onsite server. This will ensure that all generated URLs in the notification e-mails are correct. Set the recipient of the notification e-mail with the `repos_added_to` option.
- ⑥ Setting these options allows you to display messages on the SUSE Studio Onsite login screen.
- ⑦ Enables or disables the LDAP authentication method for SUSE Studio Onsite. For more information, see Section 1.7.2, “Enabling LDAP Authentication” (page 16).

## 1.7.2 Enabling LDAP Authentication

The *Lightweight Directory Access Protocol* (LDAP) is a set of protocols designed to access and maintain information directories. LDAP can be used for user and group management, system configuration management, address management, and more.

To enable LDAP for SUSE Studio Onsite, proceed as follows:

- 1 Log in as `root` in your SUSE Studio Onsite server.
- 2 Edit the file `/srv/studio/ui-server/config/initializers/omniauth.rb` and set the variables to your LDAP server settings.
- 3 Set `ldap_authentication` to `true` in `/srv/studio/options.yml` (see Section 1.7.1, “The SUSE Studio Onsite Configuration File” (page 14).)
- 4 Set `invitation_required` to `true` in `/srv/studio/options.yml`.

**5** Restart the Apache Web server:

```
rcapache2 restart
```

**6** Set a new root password

## 1.7.3 Setting Administrator Passwords for Nagios and Munin

Nagios and Munin are network monitoring tools (see Section 2.3, “Monitor SUSE Studio Onsite with Nagios and Munin” (page 23) for more details). It is recommended to set administrator passwords for both Nagios and Munin in case you need to configure these tools later. Both services can be accessed through a Web interface with the passwords set in the following procedure:

**Procedure 1.7** *Setting Login Name and Passwords for Nagios and Munin*

**1** Set the Nagios password with:

```
htpasswd2 -c /etc/nagios/htpasswd.users nagiosadmin
```

**2** Set the Munin password with:

```
htpasswd2 -c /etc/munin/htpasswd.users admin
```

**3** Authenticate with the above usernames and passwords as follows (replace 192.168.1.1 with the IP address of your server):

**3a** Start a Web browser and login into Nagios with the URL

```
http://192.168.1.1/nagios/index.html.
```

By default, Nagios starts and monitors some services automatically. Refer to Appendix A, *SUSE Studio Onsite Services* (page 37) to get an overview of these services.

**3b** Open another window in your Web browser and log in to Munin here

```
http://192.168.1.1/munin/index.html.
```

In general it is sufficient to use the default configuration of Nagios and Munin to monitor the SUSE Studio Onsite server. For custom configuration of the services refer to the Nagios and Munin documentation.

## 1.8 Keeping SUSE Studio Onsite Up-to-Date

If you previously registered SUSE Studio Onsite with the Novell Customer Center as described in Section 1.6, “Configuring SUSE Studio Onsite” (page 12), this registration enables the system to check for updates relating to bug fixes, improvements, and security fixes. Apply available updates with `zypper` by executing:

```
zypper patch
```

Find more information about `zypper` at [http://www.novell.com/documentation/sles11/book\\_sle\\_admin/?page=/documentation/sles11/book\\_sle\\_admin/data/sec\\_zypper.html](http://www.novell.com/documentation/sles11/book_sle_admin/?page=/documentation/sles11/book_sle_admin/data/sec_zypper.html).

## 1.9 Upgrading from SUSE Studio 1.0 to Version 1.1

To upgrade your SUSE Studio Onsite server from version 1.0 to version 1.1, the upgrade process has to be done in the following order:

- 1 Log in as `root` into your SUSE Studio Onsite server 1.0.
- 2 Do a maintenance update.
- 3 Run the `export_from_on-site10.sh` script. This script is part of the maintenance update. Replace the `PATH` placeholder where you want to store the resulting tar archives:

```
/srv/studio/scripts/export_from_on-site10.sh PATH
```



The script stops the services (RMDS, Thoth, Apache), packs the `/studio` directory, and creates a database dump. After running this script, you will get the files `studio.tar.gz` and `studio_db.tar.gz`.

- 4 Save the archives from Step 3 (page 18) on a external storage device.
- 5 Shut down your SUSE Studio Onsite server 1.0 and deploy version 1.1 as described in Section 1.2, “Deploying SUSE Studio Onsite” (page 3). **Do NOT run the setup wizard yet!**
- 6 Log in as `root` into your SUSE Studio Onsite server 1.1.
- 7 Run the `import_to_onsite11.sh` script and insert the directory where the tar archives from Step 4 (page 19) are stored, for example:

```
/srv/studio/scripts/import_to_onsite11.sh /media/studio-backup
```

The script migrates database dumps and populates the database with the old values.

- 8 Run the setup wizard manually by entering the domain of your SUSE Studio server and the path `/admin/onsite/license`. For example `http://YOUR-STUDIO-SERVER/admin/onsite/license`.

## 1.10 Upgrading from SUSE Studio 1.1 to Version 1.2

To upgrade your SUSE Studio Onsite server from version 1.1 to version 1.2, the upgrade process has to be done in the following order::

- 1 Log in as `root` into your SUSE Studio Onsite server 1.1.
- 2 Do a maintenance update.
- 3 Run the `export_from_onsite11.sh` script. This script is part of the maintenance update. Replace the `PATH` placeholder where you want to store the resulting tar archives:

```
/srv/studio/scripts/export_from_onsite11.sh PATH
```

The script stops the services (RMDS, Thoth, Apache), packs the `/studio` directory, and creates a database dump. After running this script, you will get the file `studio_export-1.1.tar.gz`.

- 4 Save the archive from Step 3 (page 19) on a external storage device.
- 5 Deploy version 1.2 on a different server as described in Section 1.2, “Deploying SUSE Studio Onsite” (page 3). **Do NOT run the setup wizard yet!**
- 6 Log in as `root` into your SUSE Studio Onsite server 1.2.
- 7 Run the `import_to_onsite12.sh` script and insert the directory where the tar archive from Step 4 (page 20) are stored, for example:

```
/srv/studio/scripts/import_to_onsite12.sh /media/studio-backup
```

The script migrates database dumps and populates the database with the old values.

# Monitoring SUSE Studio Onsite Servers

# 2

SUSE Studio Onsite offers utilities to monitor the state of your server such as build statistics, diary information, and others.

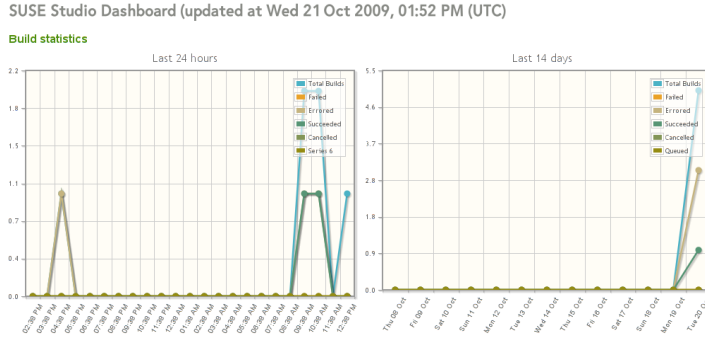
## 2.1 Viewing Build Statistics

SUSE Studio collects data about appliance builds in various categories and appliance test drives. This data can be visualized by using the *Dashboard* menu. Each category lists the image, its version, its format, the architecture, and other useful information. Click the *Log* link on each line to get detailed information. The categories are:

### *Build statistics*

Gives a general overview, see Figure 2.1, “SUSE Studio Onsite Dashboard” (page 22). By drawing a rectangle with your mouse on the graph you can zoom in on a particular area of interest. Double-click to return to the original view.

**Figure 2.1** *SUSE Studio Onsite Dashboard*



### *Active builds*

Lists appliances that are currently being built.

### *Errored builds*

Indicates internal errors of your SUSE Studio Onsite server.

### *Failed builds*

Lists appliances which could not be built because of errors. Usually these errors are file conflicts or problems with RPM packages.

### *Completed builds*

Lists all appliances which succeeded. Narrow down the list with the pop-up menu or click *View all*. Each appliance contains a detailed graph of the build times.

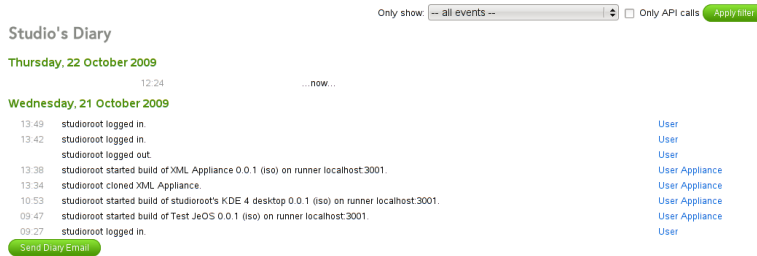
### *Test drives*

Lists all appliances started through the test drive environment.

## 2.2 Getting Diary Information

The administration panel contains a link named *Diary*. Use this link to further investigate events in SUSE Studio. Events are listed on the left. The link on the right allows you to access more detailed information about the event. The *Only show* drop-down list allows you to filter the list based on the event type. Activate the filter with *Apply Filter*.

**Figure 2.2** *SUSE Studio Onsite's Diary*



## 2.3 Monitor SUSE Studio Onsite with Nagios and Munin

The SUSE Studio Onsite installation contains Nagios and Munin, both system and network monitoring tools:

### Nagios

Nagios is a scalable and extensible enterprise-class network and system monitoring tool which allows administrators to monitor network and host resources such as HTTP, SMTP, POP3, disk usage and processor load. Find more information at <http://www.nagios.org/>.

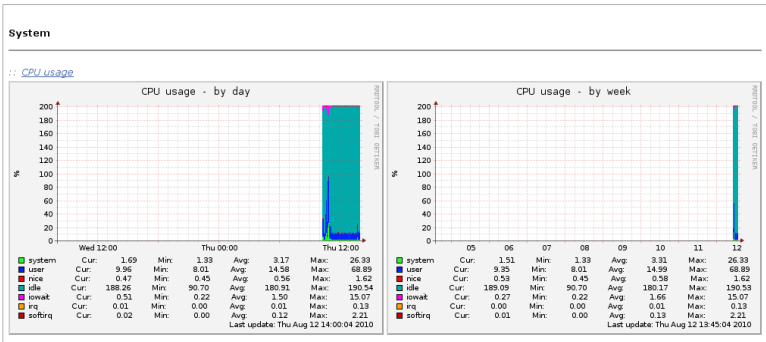
### Munin

Munin is a network and system monitoring tool. It can easily monitor the network and performance of your computers, show bottlenecks, and peak loads and memory leaks. A summary of monitoring results can be accessed through the Munin Web interface. Find more information at <http://munin-monitoring.org/>.

If you have set the administrator password as described in Section 1.7.3, “Setting Administrator Passwords for Nagios and Munin” (page 17), log in with your credentials.

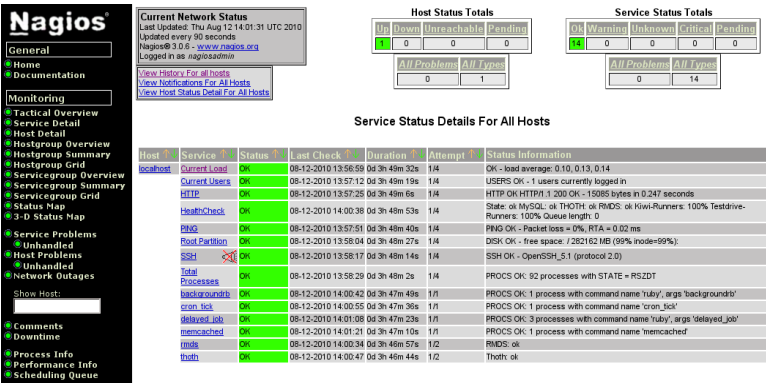
After you have logged in to Munin, the Web site displays details about network, processes, disks, and others in a graphical grid (see Figure 2.3 (page 24)).

**Figure 2.3** Munin Web Site Displaying CPU Usage



Munin is only able to show the results in a grid whereas Nagios can be influenced by the administrator.

**Figure 2.4** Nagios Web Site Displaying Status Information



# Administering SUSE Studio Onsite Servers

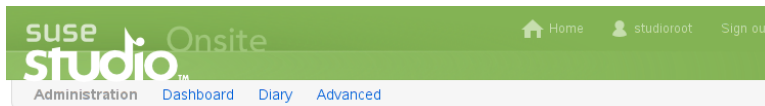
In this chapter, learn how to log in to SUSE Studio Onsite and how to execute basic administration tasks, like viewing statistics or checking events on your server, how to manage repositories, builds and appliances, and how to add cron jobs.

## 3.1 Logging in to SUSE Studio Onsite

To log in to the SUSE Studio Onsite Web interface, enter the URL of your SUSE Studio Onsite server in your browser and click *Create account/Sign in* (in the upper right hand corner).

After you have successfully logged in, your home page of SUSE Studio Onsite gives you an overview of all your appliances. To switch to the administration settings, click on your login name to show the administration panel, see Figure 3.1, “The Administration Panel” (page 25).

**Figure 3.1** *The Administration Panel*

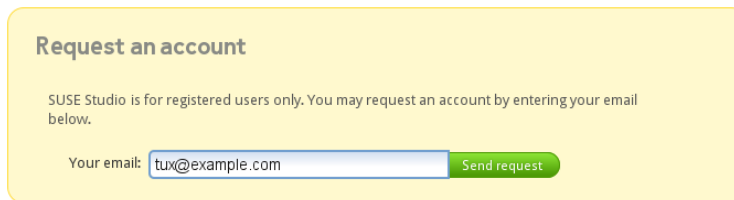


## 3.2 Inviting New Users

Accessing SUSE Studio Onsite is permission-based. Access can be granted by the administrator based on a user access request or via administrator invitation:

1. **User Issues an Account Request:** The user requests an account from the SUSE Studio Onsite home page by entering an appropriate e-mail address as shown in Figure 3.2, “Requesting an Account” (page 26) and clicking the *Send request* button. A request is generated and sent to the SUSE Studio Onsite administrator for approval.

**Figure 3.2** *Requesting an Account*



**Request an account**

SUSE Studio is for registered users only. You may request an account by entering your email below.

Your email:

2. **Administrator Initiates Account:** The administrator issues an invitation to a user (without a prior user request).

For both approval and invitation of a user, use the administration panel. To approve a request you have received, select *Advanced > Users > Signups* and click the *Invite* link.

If you want to initiate an account, select *Advanced > Users > Invitations* and enter the e-mail address of the user you want to invite.

After administrator approval or by direct invitation, a user account will be created and an invitation e-mail is sent to the specified e-mail address. The user must activate the account by following the instructions in the invitation e-mail. Activation requires the user to log into SUSE Studio Onsite with a username and a password.

It is possible to disable user requests by modifying the SUSE Studio Onsite configuration file. See Example 1.1, “Central Configuration File `/srv/studio/options.yml`” (page 15) for additional details.



## 3.3 Managing Your Repositories

Information about the repositories available for your appliance builds can be accessed in the administration panel by clicking *Advanced > Repositories*. Use one of the following options to add repositories:

- **From media (CD/DVD)** Insert the media and press the *Scan* button to search for packages. This feature is able to copy packages from SUSE Linux Enterprise repositories of the installation media, but only those that have metadata already downloaded from SMT or Novell Customer Center.
- **From a SMT server** Insert your SMT server hostname and press the *Add* button to search for packages.
- **From an URL** Insert the name and URL into the corresponding text fields and press the *Add* button.

To modify an already configured repository, click the *Details* link on the right. This will display a page containing the details of the selected repository, see Figure 3.3, “Editing Repository Information” (page 28). Make the desired changes, such as setting the *Trusted* or *Internal* flag and click the *Save changes* button when finished.

**Figure 3.3** *Editing Repository Information*

**Editing repository**

ID: 6

Name:

Base URL: [https://nu.novell.com/repo/\\$RCE/SLED11-SP1-Pool/sle-11-x86\\_64](https://nu.novell.com/repo/$RCE/SLED11-SP1-Pool/sle-11-x86_64)

Trusted ☒ Internal ☒

[Additional options](#)

Repo Type:

Update repo for:

Base system:

Status: Ready  
3078 total packages  
3078 packages to be downloaded (0.0% complete)

Last updated: 2011-04-18 12:47:02 UTC  
Digest: ab2a81fcebba180200d8c3feccb883d754a1286

Current version: Mon Apr 18 12:46:10 +0000 2011  
Available versions: Mon Apr 18 12:46:10 +0000 2011 [Rollback to this version](#)

Used by: [0 appliances](#)

**Actions**












Next to the label *Used by* a link indicates the number of appliances built using this repository. Click the link to modify or replace the references to this repository. With the action buttons at the bottom of the page you enable or disable automatic updates to the repository or delete the repository from your system. You can also disallow the URL for future addition to the repository list by clicking *Ban this URL & delete repository*.

## 3.4 Managing Builds and Appliances

To get an overview of all your builds, go to *Builds > Appliances*. The page shows a tabular view of all appliances that have already been built, see Figure 3.4, “Overview of Built Appliances” (page 29).

**Figure 3.4** Overview of Built Appliances

Appliances owned by SUSE Studio Team ([show all appliances](#))

Id	Name	Description	Author	Version	Is template	Base system	Number of total packages	Deleted	Actions
29275	openSUSE 11.1, Just enough OS (JeOS)		SUSE Studio Team 	0.0.1	true	11.1	137	0	<a href="#">Show</a> <a href="#">Diary</a> <a href="#">Edit</a> <a href="#">Delete</a>
29305	SLES 10, Server		SUSE Studio Team 	0.0.1	true	SLES10	248	0	<a href="#">Show</a> <a href="#">Diary</a> <a href="#">Edit</a> <a href="#">Delete</a>
29306	SLES 11, Just enough OS (JeOS)		SUSE Studio Team 	0.0.1	true	SLES11	155	0	<a href="#">Show</a> <a href="#">Diary</a> <a href="#">Edit</a> <a href="#">Delete</a>
29307	SLES 11, Server		SUSE Studio Team 	0.0.1	true	SLES11	298	0	<a href="#">Show</a> <a href="#">Diary</a> <a href="#">Edit</a> <a href="#">Delete</a>
29302	SLED 10, GNOME desktop		SUSE Studio Team 	0.0.1	true	SLED10	509	0	<a href="#">Show</a> <a href="#">Diary</a> <a href="#">Edit</a> <a href="#">Delete</a>
29304	SLED 11, GNOME desktop		SUSE Studio Team 	0.0.1	true	SLED11	648	0	<a href="#">Show</a> <a href="#">Diary</a> <a href="#">Edit</a> <a href="#">Delete</a>
29303	SLED 11, KDE 4 desktop		SUSE Studio Team 	0.0.1	true	SLED11	501	0	<a href="#">Show</a> <a href="#">Diary</a> <a href="#">Edit</a> <a href="#">Delete</a>
29301	SLED 10, KDE 3 desktop		SUSE Studio Team 	0.0.1	true	SLED10	597	0	<a href="#">Show</a> <a href="#">Diary</a> <a href="#">Edit</a> <a href="#">Delete</a>
29280	openSUSE 11.1, GNOME desktop		SUSE Studio Team 	0.0.1	true	11.1	455	0	<a href="#">Show</a> <a href="#">Diary</a> <a href="#">Edit</a> <a href="#">Delete</a>
29279	openSUSE 11.1, KDE 4 desktop		SUSE Studio Team 	0.0.1	true	11.1	400	0	<a href="#">Show</a> <a href="#">Diary</a> <a href="#">Edit</a> <a href="#">Delete</a>
29278	openSUSE 11.1, KDE 3 desktop		SUSE Studio Team 	0.0.1	true	11.1	385	0	<a href="#">Show</a> <a href="#">Diary</a> <a href="#">Edit</a> <a href="#">Delete</a>

Clicking the filter icon next to the author will filter the displayed list to only show appliances created by this author. As can be seen in Figure 3.4, “Overview of Built Appliances” (page 29), the table shows details for each appliance, like the appliance name, a description, the author, the version and other information. In the right most column of the table the following action links are available:

#### *Show*

Displays information about this appliance, like its ID or name.

#### *Diary*

Displays the events diary for this appliance.

#### *Edit*

Allows you to grant other users read and write permissions.

#### *Delete*

Allows you to delete this appliance and its configuration from the server after confirming the respective pop-up message.

## 3.5 Adding New Cron Jobs

SUSE Studio allows you to easily set up preconfigured periodic task. These are also known as *cron jobs*. The following table provides a list of the available preconfigured jobs:

**Table 3.1** *Description of Cron Jobs*

Task	Description
<code>cleanup_testdrives</code>	This job removes expired test drives and makes sure that test drive sessions ended by users are removed.
<code>delete_expired_images</code>	This job removes all appliance images that are older than one week. The configuration of the appliances is not affected by this job—the appliance configuration is retained and will continue to be displayed in the Web interface for the given user. Activating this job can help you reduce the disk space requirements for SUSE Studio.
<code>delete_old_testdrive_images</code>	This job removes uncompressed image files that are older than one week. These uncompressed files are only used for test drives. If a test drive is started for a build whose uncompressed image file was removed, it is regenerated on the fly. Activating this job can help you reduce the disk space requirements for SUSE Studio. However, accessing the test drive feature for a particular appliance may take initial time as the appliance image has to be extracted.
<code>process_queues</code>	Internal job to process the build queues.
<code>sync_all_runners</code>	Internal job to keep the state of the different services synchronized.

To create a new cron job, proceed as follows:

- 1 From your administration panel select *Advanced > Cron*.

- 2 Click *New Cron Job*.
- 3 Choose a task from the pop-up menu, see the description in Table 3.1, “Description of Cron Jobs” (page 30).

### New Cron Job

check\_read\_only\_mode

Frequency (in minutes)

5

First run in UTC (server time now: Thu Oct 22 13:40:48 +0000 2009)

2009 | October | 22 | — | 13 | : | 40 |

Create

- 4 Modify the *Frequency (in minutes)* value to change the cron job execution frequency.
- 5 Optionally, change the initial start date and time by modifying the date and time entries.
- 6 Click *Create*. The configured cron job will be executed at the configured intervals.

## 3.6 Backing Up SUSE Studio

If you need to backup your SUSE Studio server, proceed as follows:

### **Procedure 3.1** *Creating Backups of SUSE Studio*

- 1 Log in as `root`.
- 2 Stop the services RMDS, Thoth, and Apache with:

```
rcrmds stop
rcrthoth stop
rcapache2 stop
```

### 3 Create a dump of the PostgreSQL database:

```
cd /root
pg_dump -Ft -b studio | gzip > studio_db.tar.gz
```

### 4 Create a tar archive of the complete /studio directory with:

```
tar cfz studio.tar.gz --absolute-names \
--preserve-permissions --dereference /studio
```

### 5 Copy the tar archives (studio\_db.tar.gz, and studio.tar.gz) to some persistent storage device.

### 6 Restart the services:

```
rcrmbs start
rcthoth start
rcapache2 start
```

To restore the backup, proceed as follows:

## ***Procedure 3.2 Restoring Backups of SUSE Studio***

### 1 Log in as root.

### 2 Stop the services RMDS, Thoth, Apache, and restart the PostgreSQL database with:

```
rcrmbs stop
rcthoth stop
rcapache2 stop
rcstudio_delayed_job stop
rcpostgresql restart
```

### 3 Drop the old database schema with:

```
echo "drop database studio;" | psql template1
echo "create database studio;" | psql template1
```

### 4 Unpack the old archives:

```
gunzip studio_db.tar.gz
```

### 5 Restore the PostgreSQL database:

```
pg_restore -c -d studio studio_db.tar
```

## 6 Populate database:

```
cd /srv/studio/ui-server  
RAILS_ENV=production rake db:migrate
```

## 7 Restore backup files"

```
tar -C / -x -z -f studio.tar.gz
```

## 8 Restart the services:

```
rcrmds start  
rcrthoth start  
rcapache2 start  
rcstudio_delayed_job start
```

## 9 Check sphinx. To make sure the sphinx indexer does work, check if its configuration file exists:

```
ls /srv/studio/ui-server/config/production.sphinx.conf
```

If the file is missing, create it and assign to the `wwwrun` user. Then restart sphinx:

```
touch /srv/studio/ui-server/config/production.sphinx.conf  
chown wwwrun /srv/studio/ui-server/config/production.sphinx.conf  
rcstudio_sphinx restart
```

# 3.7 Setting the Read-Only Mode

Whenever you administer your SUSE Studio server it is recommended to set the site status to “read-only” prior to any changes. No new jobs can be started in this mode. Any user who is logged in is notified about the read-only state.

Go to *Advanced > Scheduler* and press the *Put the site in read-only mode* button. The site is in read-only mode now. To switch back, press the *Reenable site* button.

# 3.8 Extending Disk Storage

The disk storage requirements for SUSE Studio Onsite may be very high depending on your usage patterns. Therefore you may wish to mount the `/studio/filestore`

directory or its subdirectories to different storage devices, particularly if you are running low on disk space.

Before moving the files in this directory, stop all SUSE Studio Onsite's services by running the following commands:

```
/etc/init.d/studio_crontick stop
/etc/init.d/studio_delayed_job stop
/usr/sbin/rcapache2 stop
/usr/sbin/rcrmds stop
/usr/sbin/rcthoth stop
```

After the disk operations are complete, start the services again:

```
/etc/init.d/studio_crontick start
/etc/init.d/studio_delayed_job start
/usr/sbin/rcapache2 start
/usr/sbin/rcrmds start
/usr/sbin/rcthoth start
```

After the services are started, SUSE Studio Onsite should be using the new storage device to store its data.

## 3.9 Enabling OVF Format

As already mentioned in Section “Appliance Formats” (Chapter 2, *Creating Appliances*, ↑User Guide), OVF format is disabled by default as we cannot distribute the VMware ovftool officially. To enable OVF format, proceed as follows:

- 1 Download and install the VMware ovftool from <http://communities.vmware.com/community/vmtn/vsphere/automationtools/ovf>. You need to register to download the file.
- 2 Install the downloaded file with the following command, for example:

```
sudo sh VMware-ovftool-2.0.1-260188-lin.x86_64.sh
```

The correct version might be different in your case.

- 3 Enable the OVF format after installing with the following command (one line):

```
cd /srv/studio/ui-server && ./script/runner -e production
'ImageType.find_by_key("ovf").update_attributes!(:enabled => true)'
```



The OVF build format will now appear in the build tab of the appliance editor.

## 3.10 Changing Maximum Number of Slots

The scheduler controls runners. Runners are used to build the image or control the test drive. Each runner contains a maximum slot value, which describes how many builds or test drives a runner can handle concurrently. In most cases, the default value is sufficient and you can skip this section. It is recommended to leave this value as it is and only change it, if you know what you do.

If you need to change the maximum number of slots for a runner, go to *Advanced > Scheduler* in the administration panel. Click *Show* on the corresponding runner type to get an overview of the load average, the used and maximum slots, and other information. Go to *Edit* and change the value in the text field. Finish with *Save*.



# SUSE Studio Onsite Services

The table below lists the preconfigured SUSE Studio Onsite services running on the server. These services are started at boot time and are controlled by Nagios. It generally neither is necessary nor recommended to apply any changes to these services.

**Table A.1**    *SUSE Studio Onsite Services*

Service	Description
<code>/etc/init.d/studio _backgroundrb</code>	Service for running Ruby tasks in the back-ground. Used in the KIWI runner for running the build jobs asynchronously.
<code>/etc/init.d/studio _crontick</code>	SUSE Studio Onsite's internal cron job system. Runs administrative tasks repeatedly and is used in the user interface server.
<code>/etc/init.d/studio _delayed_job</code>	Service for running tasks asynchronously in the background.
<code>/etc/init.d/ flashpolicyd</code>	Adobe Flash daemon required for the Flash VNC applet to work correctly. Needed for the test drive and the embedded VNC session.
<code>/etc/init.d/memcached</code>	A cache store service to increase performance (used in the user interface server).

Service	Description
<code>/etc/init.d/rmds</code> and <code>/etc/init.d/thoth</code>	Service to mirror repositories and do package resolution tasks.

# Administration Panel—Menu Structure

B

The following list is a reference of the administration panel's menu structure.

## B.1 Dashboard

The *Dashboard* gives you an overview of your build statistics and your builds. See Section 2.1, “Viewing Build Statistics” (page 21) for more information.

## B.2 Diary

The *Diary* shows events on your server. See Section 2.2, “Getting Diary Information” (page 22) for more information.

## B.3 Advanced

The availability of some menu items depends on the settings in the central SUSE Studio Onsite configuration file as mentioned below. For more information about the configuration file, see Example 1.1, “Central Configuration File `/srv/studio/options.yml`” (page 15).

## ***Servers & Services***

### ***Scheduler***

Shows the processes, also referred to as runners, for appliance builds and for the test drive feature. The back-end of the appliance build process is KIWI.

### ***Queue***

Lists system relevant build processes, excluding the processes triggered by the administrator.

### ***Cron***

Shows the defined cron jobs and additionally lists information about the first, last, and next scheduled execution.

## ***Repositories***

### ***Templates***

Lists your available templates and predefined repositories.

### ***Repositories***

Lets you add repositories to the SUSE Studio Onsite configuration.

## ***Builds***

### ***Appliances***

Shows the list of all built appliances.

### ***Downloads***

Shows a list of the downloaded appliances.

## ***Users***

### ***Users***

Provides a list of SUSE Studio Onsite users. If the option `invitation_required` in the configuration file `/srv/studio/options.yml` is set to `false`, the user cannot request accounts. In this case, users can only be added to the system via administrator invitation.

### *Signups*

Allows you to manage the SUSE Studio Onsite users. This entry is only displayed if the option `invitation_required` in `/srv/studio/options.yml` is set to `true` (or if the option is turned into a comment or removed from the file).

### *Invitations*

Lets you create e-mail invitations. This entry is only displayed if the option `invitation_required` in `/srv/studio/options.yml` is set to `true` (or if the option is turned into a comment or removed from the file).

### *E-Mail Templates*

Set text containing replaceables. This text is sent by e-mail if some specific action is triggered, for example, an invitation failed build, etc.

