SOLIDserver Installation on Virtual Appliances

efficient iP™
DEFINING SMART DDI

SOLIDserver Installation on Virtual Appliances

SOLIDserver Installation on Virtual Appliances

Revision: #82989

Table of Contents

Chapter 1. Purpose of this Guide

The present guide is a shortened version of the Administrator Guide to help you **install SOLID-server in version 7.x on a virtual machine created via VMware or Microsoft Hyper-V** and carry out a first configuration of the software.

For more details about each module and the different ways to manage data on your network, refer to SOLIDserver Administrator Guide, available in the GUI via the menu *? > Administrator Guide*.

Before starting the installation, make sure your equipment matches the virtualization software prerequisites.

Virtualization Software Prerequisites

To install SOLIDserver on a virtual machine you must respect the following **virtual machine configuration settings**.

Table 1.1. SOLIDserver configuration requirements on a virtual machine

	SDS-50	SDS-260	SDS-550	SDS-1100	SDS-2200	SDS-3300	SDS-4000 BLAST
VCPU	1	2	2	4	4	8	12
RAM	2 GB	4 GB	8 GB	8 GB	16 GB	32 GB	32 GB
IOPS	> 80 IOPS	> 80 IOPS	> 80 IOPS	> 160 IOPS	> 160 IOPS	> 160 IOPS	> 160 IOPS
Virtual disk size	> 32 GB	> 32 GB	> 32 GB	> 64 GB	> 64 GB	> 64 GB	> 64 GB
Network Perform-ance	Low (1 000 PPS)	Low (20 000 PPS)	Medium (40 000 PPS)	High (80 000 PPS)	High (160 000 PPS)	High (300 000 PPS)	PCI pass-through - Intel X520 NIC (3M PPS)

In addition, we recommend that you take into account the following:

- Make sure that the server that hosts your virtual machine performs **time synchronization via NTP**.

- If you want to configure a VIP, make sure that the network interface of the **virtual machine supporting the VIP is set in promiscuous mode**.

- Keep in mind that a **virtualization software low-performance can explain SOLIDserver slowness**. For instance, a very high disk access latency or a long interruption may impact SOLIDserver stability.

Chapter 2. Virtual Machine Installation

SOLIDserver can be installed on a virtual machine created using VMware or Microsoft Hyper-V. To successfully install and configure the software image no matter the vendor, you must:

1. Meet the prerequisites of the relevant virtualization software vendor, VMware or Microsoft.
2. Install SOLIDserver on your Virtual Machine via CLI.
3. Configure the Access to SOLIDserver through the IP address of your choice, via CLI.

VMware Prerequisites

1. Have VMware environment ready and running.
2. Create a virtual machine supporting freeBSD64, select this OS in the drop-down list *other*, with one of the following VMware softwares:
   - ESX,
   - ESXi,
   - Fusion,
   - Player,
   - Server,
   - vSphere,
   - Workstation.
3. Make sure the virtual machine matches the configuration requirements.
4. Import the ISO image of SOLIDserver software installation on your machine. You were provided the file *solidserver-amd64-<version_number>.iso* by your contact at EfficientIP.

Microsoft Hyper-V Prerequisites

1. Have Hyper-V environment ready and running.
2. Create a virtual machine using a network interface configured with the driver **Network Adapter**. In SOLIDserver, the NIC is listed as *hn0*
3. Make sure the virtual machine matches the configuration requirements.
4. Configure the virtual machine to configure the hardware with the IDE controller 1 set to *DVD drive* with the ISO image of SOLIDserver software as its *Media* file. You were provided the file *solidserver-amd64-<version_number>.iso* by your contact at EfficientIP.

Installing SOLIDserver on your Virtual Machine

Once you created a virtual machine following VMware Prerequisites or Microsoft Hyper-V Prerequisites, complete the installation of SOLIDserver on your virtual machine.

To install SOLIDserver on a virtual machine

1. Boot the virtual machine you created for SOLIDserver from the CD-ROM. The following prompt appears:

```
CD Loader 1.2

Building the boot loader arguments
Looking up /BOOT/LOADER... Found
Relocating the loader and the BTX
Starting the BTX loader

BTX loader 1.00 BTX version 1.02
Consoles: internal video/keyboard
BIOS CD is cd0
BIOS drive A: is disk0
BIOS drive C: is diskl
BIOS 638kB/522176kB available memory

FreeBSD/x86 bootstrap loader, Revision 1.1
(root@frebsd9.intranet, Wed Oct 3 21:20:30 UTC 2012)
Loading boot/default/loader.conf
boot/kernel/kernel text=0xa532ef data=0xde17c+0xba214 /
_
Hit [Enter] to boot immediately, or any other key for command prompt.
Booting [/boot/kernel/kernel] in 8 seconds... _
```

Figure 2.1. Virtual machine boot from CD-ROM

Once the machine is done booting, the page **EFFICIENTIP SOLIDserver Installation on VMware Virtual Platform** opens.

2. The line **C CDROM (cd1) INSTALLATION IN da0** is highlighted.

```
Main Menu

   C CDROM (cd1) INSTALLATION ON da0
   R CDROM (cd1) REPAIR ON da0
   F MANUAL NETWORK INSTALLATION (scp/http)
   S SHELL ON INSTALLED SYSTEM (internal use)
   A RESCAN DEVICES
   Q REBOOT


                  <  OK  >
```

Figure 2.2. Main menu

Note that, depending on the appliance, the lines related to CDROM installation and repair may display *cd0* or *ad0*.

Hit **Enter** to start the installation. The page **EFFICIENTIP SOLIDserver Installation** opens.

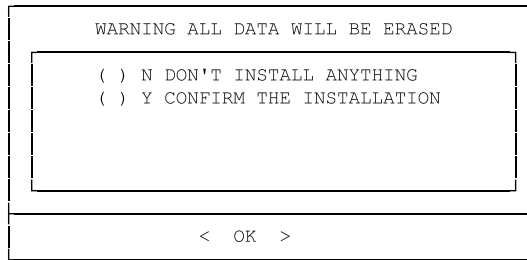3. Hit the key **Y** to highlight the option **CONFIRM THE INSTALLATION**.

```
              WARNING ALL DATA WILL BE ERASED

          ( ) N DON'T INSTALL ANYTHING
          ( ) Y CONFIRM THE INSTALLATION




                      <  OK  >
```

Figure 2.3. Installation confirmation

4. Hit the **space** key to select **Y CONFIRM THE INSTALLATION**. *[*]* indicates which line is se-
   lected. The space key can also be used to deselect a line.

5. Hit **Enter**. The transition windows open while the software is being installed on the virtual
   machine.

   The following messages appear: **Fetching image file** and **Extracting SOLIDserver files**.

6. Once the extraction is over, the last window of the procedure opens.
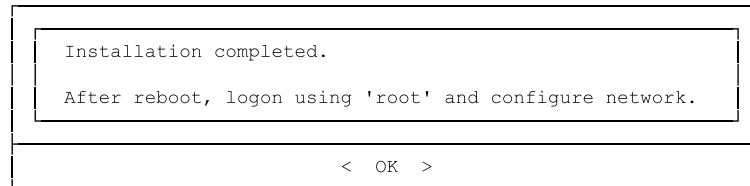
```
      Installation completed.

      After reboot, logon using 'root' and configure network.


                      <  OK  >
```

Figure 2.4. Last installation window

Hit **Enter** to reboot the machine.

Once the reboot is done, you can configure the access IP address of your choice to connect to
SOLIDserver.

Configuring the Access to SOLIDserver

Once SOLIDserver is installed on your virtual machine, you must configure it an IP address via
CLI in order to access its GUI from a web browser.

During the first configuration, the menu *Quick Start* allows to set up the IP address, netmask and
gateway. By default SOLIDserver is configured with the IP address *192.168.1.1*, the netmask
255.255.255.0 and no gateway.

To configure access to your SOLIDserver

1. Connect to your SOLIDserver virtual machine. Once it has booted, the page **WELCOME TO
   SOLIDSERVER** opens.

```
####################################################################
####################################################################

                         WELCOME TO SOLIDSERVER

####################################################################
####################################################################

.
Starting inetd.

Fri Jan 16 17:04:10 UTC 2015

SOLIDserver access

login:
```

Figure 2.5. SOLIDserver login page

2. Log in using the login *root* and no password. The configuration window opens.

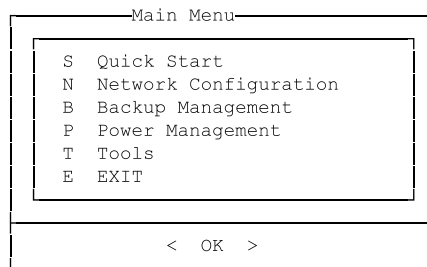3. In the **Main Menu**, the line **S Quick Start** is highlighted.

```
                    ─Main Menu─
   ┌──────────────────────────────────────┐
   │  S  Quick Start                      │
   │  N  Network Configuration            │
   │  B  Backup Management                │
   │  P  Power Management                 │
   │  T  Tools                            │
   │  E  EXIT                             │
   │                                      │
   └──────────────────────────────────────┘

                  <  OK  >
```

Figure 2.6. First Network Configuration Main Menu

Hit **Enter**.

4. The quick start option confirmation window opens.

```
  ┌────────────────────────────────────────────────────┐
  │  ┌──────────────────────────────────────────────┐  │
  │  │                                              │  │
  │  │  Quick Start - Configure basic network settings │
  │  │                                              │  │
  │  └──────────────────────────────────────────────┘  │
  │                                                    │
  │                    <  OK  >                        │
  └────────────────────────────────────────────────────┘
```
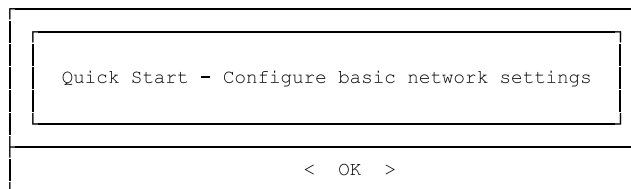
Figure 2.7. Quick Start Confirmation Message

Hit **Enter** to confirm the quick start configuration. The next window opens.

5. In the window **Physical Interfaces**, select one or several interfaces. *[*]* indicates which interface is selected, there can be several. Use the keyboard arrows or the digits to highlight the interface of your choice and hit the **space** key to select or deselect an interface.
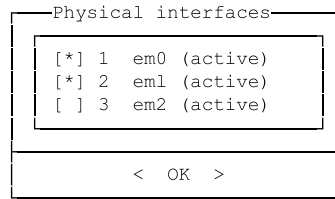
```
┌─────Physical interfaces─────┐
│                             │
│  [*] 1  em0 (active)        │
│  [*] 2  em1 (active)        │
│  [ ] 3  em2 (active)        │
│                             │
├─────────────────────────────┤
│          <  OK  >           │
└─────────────────────────────┘
```

Figure 2.8. Example of SOLIDserver physical interfaces on a VMware virtual machine

```
┌─────Physical interfaces─────┐
│                             │
│    [*] 1 De0 (active)       │
│                             │
├─────────────────────────────┤
│          <  OK  >           │
└─────────────────────────────┘
```
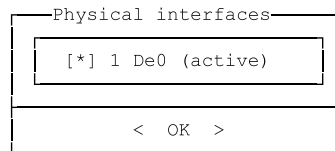
Figure 2.9. Example of SOLIDserver physical interfaces on a Microsoft Hyper-V virtual machine

Once selected, the interface responds to the IP address, netmask and gateway you will configure in the next step. Selecting several interfaces configures an Ethernet port failover.

6. Hit **Enter** to confirm the interface(s) selection. The next window opens.

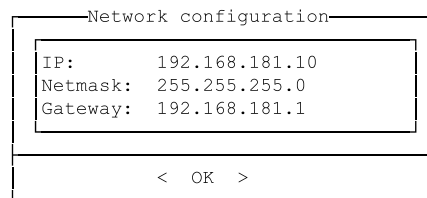7. In the IPv4 **Network configuration** window, configure the access to SOLIDserver.

```
┌─────Network configuration─────┐
│                               │
│ IP:       192.168.181.10      │
│ Netmask:  255.255.255.0       │
│ Gateway:  192.168.181.1       │
│                               │
├───────────────────────────────┤
│          <  OK  >             │
└───────────────────────────────┘
```

Figure 2.10. Network configuration

- Configure the interface IP address on the line **IP:** . Hit the **down arrow** to get to the next line.

- Configure the interface netmask on the line **Netmask:** . Hit the **down arrow** to get to the next line.

- Configure the interface default gateway on the line **Gateway:** . Hit the **tabulation** key to highlight OK.

Hit **Enter** to confirm your configuration and go back to the **Main Menu**.

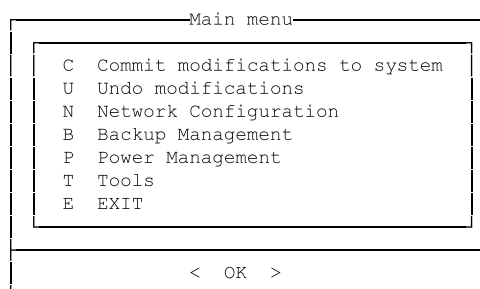8. The line **C Commit modifications to system** is highlighted.

```
┌─────────────Main menu─────────────┐
│                                   │
│  C  Commit modifications to system│
│  U  Undo modifications            │
│  N  Network Configuration         │
│  B  Backup Management             │
│  P  Power Management              │
│  T  Tools                         │
│  E  EXIT                          │
│                                   │
├───────────────────────────────────┤
│            <  OK  >               │
└───────────────────────────────────┘
```

Figure 2.11. Main menu before saving your configuration

9. Hit **Enter** to save the whole configuration. The next window opens.

```
Are you sure you want to commit modifications to system ?


              < Yes >           < No  >
```

Figure 2.12. Network configuration confirmation window

The button **Yes** is highlighted.

10. Hit **Enter** to commit your choice. When the configuration is saved, the window **Configuration applied** opens.

11. Hit **Enter** to close the window. The **Main Menu** is visible again.

Now SOLIDserver is configured with an IP address. You can follow the chapter Connection to SOLIDserver to access its interface and finish its configuration.

Chapter 3. Connection to SOLIDserver

During your first connection you must:

1. Connect to SOLIDserver GUI.

2. Request and activate a valid license.

3. Make the first configurations.

Once SOLIDserver configuration is complete, you can follow the chapter Quick Start to get a first hand of the software potential.

Connecting to SOLIDserver

To connect to SOLIDserver, you need the IP address you configured.

To connect to SOLIDserver for the first time

1. Open your browser, in the URL field type in **https://<SOLIDserver-configured-IP-address>**.

2. Hit **Enter**. The browser displays a security warning because the default certificate is in use.

   Your browser probably identified that the certificate is not from a trusted certifying authority and that the hostname on the certificate is invalid or does not match the name of the site.

3. Accept the certificate. SOLIDserver login page appears:

Figure 3.1. First connection to SOLIDserver

4. In the field **Login**, type in *ipmadmin*. The default superuser login.

5. In the field **Password**, type in *admin*. The default superuser password.

6. Click on OK. The page **Main Dashboard** opens, SOLIDserver homepage.

On the *Main Dashboard* the gadget **System Information** indicates that there is *No license installed*, you must request a license and add it to manage SOLIDserver.

Requesting and Activating a License

During the first connection, you need to request a license from EfficientIP. They will generate and send you a valid license key that you must add to the GUI to activate the license and use SOLIDserver.

Each license key is unique and specific to one SOLIDserver appliance, you cannot use the same license key on several appliances.

To request a license key

1. Retrieve the request license key.

   a. On SOLIDserver **Main Dashboard**, a set of gadgets is visible.

   b. In the gadget **System Information**, click on the link `Request license`. The wizard **Request license** opens.

   c. Read the **Software License Agreement** and click on `NEXT`. The next page opens.

   d. Copy the content of the field **Key**, you need it to fill out the request license form.

   e. Click on `OK` to close the wizard.

2. Send the request key to Efficient IP.

   a. Go to the page http://www.efficientip.com/license-request/ and fill out the *Request Your License* form.

   b. In the fields **FIRST NAME**, **LAST NAME**, **EMAIL**, **COMPANY**, **PHONE NUMBER** and **COUNTRY NAME**, specify your contact details. All these fields are required.

   c. In the field **LICENSE PERIOD REQUEST**, specify the desired license length: *1 month*, *2 months*, *3 months*, *6 months* or *Permanent*. This field is required.

   d. If you selected *Permanent*, you must fill in the field **CONTRACT NUMBER (IF PERMANENT LICENSE)**.

   e. In the field **REQUEST KEY**, paste your request key or the content of your request key file. This field is required.

   f. In the field **NUMBER OF EXTERNAL MANAGED SERVERS (MVSM, IF ANY)**, specify the total number of servers - DNS/DHCP/... - you intend to manage from SOLIDserver.

   g. In the section **OPTIONAL MODULE**, tick all the optional modules you might need: *NETCHANGE* [1], *DEVICE MANAGER*, *SPX* or *DNS GUARDIAN*.

   h. If relevant, fill in the field **IF REQUESTER IS OTHER THAN THE END CUSTOMER, PLEASE PROVIDE YOUR CONTACT INFORMATION (NAME, COMPANY, EMAIL, PHONE)**.

   i. Click on `SUBMIT` to send us your information.

Once EfficientIP has answered your request and sent you a license key, you can add it to the appliance to activate your licence as detailed below. Note that **you cannot activate the license if the appliance is not on time**.

---

[1]If you do not tick this box, you are using NetChange basic options, or NetChange-IPL.

To activate a license

1. From the EfficientIP email response to your license request, copy the license key.

2. Connect to SOLIDserver using the superuser credentials. The page **Main Dashboard** opens.

3. In the gadget **System Information**, click on the link Add license. The wizard opens.

4. Read the **License Agreement** and click on NEXT. The page **Add a license** opens.

5. In the field **License**, paste the license key.

6. Click on OK to add your license. The page refreshes, in the gadget **System Information** the *License type* is now displayed and all the modules that come with your license are visible.

If you need to renew your license, because you want more services or a temporary license is about to expire, refer to the chapter *Licence Management* in the Administrator Guide.

Making the First Configurations

Before going further, you need to **define the Internal Module Setup** and **configure the NTP**.

Note that when the license is installed, two gadgets on the *Main Dashboard*, SOLIDserver homepage, provide an overview of the appliance configurations and services status:

- *SOLIDserver Configuration Checklist* indicates the configurations set ● or that must be set ●.
- *General Information* indicates which services are running ●, stopped ●, or unset ●.

All the procedures below are performed by the only user available at installation *ipmadmin* who belongs to the group *admin*.

Defining the Internal Module Setup

Once the license is installed, and before making any further network configurations, we recommend that you set the *Internal module setup*.

This setup allows you to enable the interaction between the IPAM, DNS and DHCP modules. That way you can manage your resources and objects on one page and update them in other modules.

To configure the internal module setup from the configuration gadget

1. In the sidebar, go to 📊 **Dashboard** > **Main Dashboard**, SOLIDserver homepage.

2. At the bottom of the gadget **SOLIDserver Configuration Checklist**, next to *Internal module setup*, click on **Configuration**. The wizard **Internal module setup** opens.

3. If you want to activate all the module interactions:

    a. In the drop-down list **Architecture**, select *IPAM*.

    b. Tick the box **Use DNS**.

    c. Tick the box **Use DHCP**.

4. If you only want to activate the DNS, in the drop-down list **Architecture**, select *DNS only*.

5. Click on OK to commit your configuration. The wizard closes. The Main Dashboard is visible again, the *Internal module setup* is marked ●.

Now you must set the NTP server to complete the configuration.

Configuring the NTP Server

Before seeing the interaction between the modules, you need to enable and configure the NTP.

The Network Time Protocol (NTP) ensures clock synchronization on a network. Configuring an NTP server allows to synchronize the time of your appliance, which is paramount to manage a dynamic addressing of your network. With the NTP configured, the DHCP server we add in the next chapter can deliver leases to your client

To enable the NTP service

1. In the sidebar, click on ✿ **Administration** or **Admin Home**. The page **Admin Home** opens.
2. In the section **System**, click on **Services configuration**. The page **Services configuration** opens.
3. In the middle of the list, the **NTP server** is listed.
4. In the column **Enabled**, click on **Disabled**. The wizard **Enable a service** opens.
5. Click on ⌧OK to commit your changes. The report opens and closes. The NTP server is now marked *Enabled* in the list.
6. Right now your configuration is pending. In the menu, select ✕ **Tools** > **Apply configuration**. The wizard opens, click on ⌧OK to confirm your choice.

To configure the NTP server

1. In the sidebar, click on ✿ **Administration** or **Admin Home**. The page **Admin Home** opens.
2. In the section **System**, click on **Services configuration**. The page **Services configuration** opens.
3. In the column **Name**, click on **NTP server**. The wizard **NTP Servers Configuration** opens.
4. In the field **NTP address**, type in the IP address or hostname of the server. It can be an IPv4 or IPv6 address.
5. In the field **Stratum**, you can specify a level between *0* and *15*. By default nothing is specified, the stratum is retrieved from the server. We strongly advise against setting a stratum if it is not necessary.
6. Click on ⌧ADD, the address is now in the list **NTP servers**.
7. Click on ⌧OK to commit your changes.
8. Right now your configuration is pending. In the menu, select ✕ **Tools** > **Apply configuration**. The wizard opens, click on ⌧OK to confirm your choice.

Now you can follow the chapter Quick Start to get a first hand of the software potential.

Chapter 4. Quick Start

To have an overview of SOLIDserver potential for network management, you will:

1. Create a **DNS server** and **zone**,

2. Create a **DHCP server**,

3. Create an **IPAM space** containing a **block-type network** and a **terminal network** of IP addresses,

4. Add one of your **network devices** and start managing it via NetChange.

In the procedures below, only the fields relevant to basic configurations are mentioned. Once you completed the quick start, we recommend that you create groups of users and assign them users, rights and resources. For more details, refer to the Administrator Guide.

DNS Basic Configuration

The Domain Name System (DNS) is a hierarchical distributed naming system that locates all kinds of devices connected on your network and resolves hostnames vs IP addresses queries. It is an essential module in SOLIDserver and the database it relies on to answer queries is divided as such:

- **Server**: The highest level of the DNS hierarchy. Without it, you cannot manage DNS databases. A server can contain all kinds of zones and resource records. You can also configure views on some servers to limit user access to your domains.

- **View**: An optional second level of the DNS hierarchy. It allows to manage the responses sent out to DNS clients based on their location on your network. That way two clients querying the same zone receive different answers because their levels of access are not the same (external client vs employee, administrator vs standard user...). The view addition and management is not discussed in this guide, for more details refer to the Administrator Guide.

- **Zone**: The second level of the DNS hierarchy, if you do not create views, where you define the DNS resolution (IP > name or name > IP) of your domains.

- **RR**: The lowest level of the DNS hierarchy, the content of your zones, the database itself. The set of resource records (RR set) of each zone determines the zone type through its SOA and all kinds of records: A, NS, PTR...

You can add as many servers, views and zones as you need, to address IPv4 or IPv6 queries, in the sections below we simply configure an EfficientIP DNS server managing IPv4 queries.

Note that within SOLIDserver, you can manage DNS servers from smart architectures. They provide a backup of the configuration and data for the physical servers they manage. Five smart architectures are available to manage DNS servers: Master/Slave, Stealth, Multi-Master, Single-Server and Farm. We strongly recommend using them to manage all the servers you add and intend to manage. For more details, refer to the Administrator Guide.

Adding a DNS Server

You can manage the configuration and data of any DNS server you might need. In the following procedure, we add an EfficientIP DNS server to show you the basic configuration steps and then add it to a smart architecture. For more details, refer to the Administrator Guide.

To add an EfficientIP DNS server

1. In the sidebar, go to ▦ **DNS** > **Servers**. The page **All servers** opens.

2. In the menu, select ✚ **Add** > **Server** > **EfficientIP DNS**. The wizard **Add a DNS server** opens.

3. In the field **DNS server name**, name your server with a valid FQDN.

4. In the field **Management IP address**, type in the IP address of the DNS server you want to manage.

5. Click on OK to commit your creation. The report opens and closes. The server is listed, it appears ◍ *Busy* in the column **Status**. It will change to ✔ *OK* after a while.

Now you must add a smart architecture to manage the physical server.

To manage a DNS server via a smart architecture

1. In the sidebar, go to ▦ **DNS** > **Servers**. The page **All servers** opens.

2. In the menu, select ✚ **Add** > **Server** > **DNS smart architecture**. The wizard **Add a DNS server** opens.

3. In the field **DNS server name**, name your smart architecture with a valid FQDN.

4. Click on NEXT. The next page of the wizard opens.

5. In the list **DNS smart architecture**, select *Single-Server*.

6. Click on NEXT. The page **DNS servers role configuration** opens.

7. In the drop-down list **Available DNS servers**, select the physical server you just created.

8. Click on ＋ MASTER. The server moves to the **Master DNS server(s) list**.

9. Click on OK to commit the creation. The report opens and closes. The smart architecture is now listed above the physical server it contains.

If the server status is *Timeout*, you need to synchronize it following the procedure below.

To synchronize a server

1. In the sidebar, go to ▦ **DNS** > **Servers**. The page **All servers** opens.

2. Tick the server(s) you need to synchronize.

3. In the menu, select ✎ **Edit** > **Synchronize**. The wizard **Synchronization** opens.

4. Click on OK to synchronize the selected server. The report opens and might take a little while before closing. The list is visible again.

Now you must add a zone in your server.

Adding a DNS Zone

When deploying a name server, it is important to understand the difference between a zone and a domain. A zone is a delegated point within a DNS structure, and is made up of adjoining elements from the domain structure, which are governed by a name server.

There are six types of zones that can resolve an IP address using a name or a name using an IP address. In the procedure below we focus on the most basic one, the Master name zone, that

resolves a name using an IP address. For more details regarding DNS zones, refer to the Administrator Guide.

To add a master name zone

1. From the DNS page **All servers**, click on the name of the smart architecture. The page **All zones** opens.

2. In the menu, click on ✚ **Add**. The wizard **Add a DNS zone** opens.

3. Click on `NEXT`. The next page of the wizard opens.

4. In the field **Name**, name the zone respecting the syntax given in RFC1034.

5. Click on `NEXT`. The last page of the wizard opens.

6. In the field **Responsible**, fill in your email address.

7. Click on `OK` to commit the creation. The report opens and closes. The zone is listed.

If you click on the zone Name, you open the page *All RRs* and display the resource records it contains: the SOA and the NS.

The quick start continues in the module DHCP.

DHCP Basic Configuration

The Dynamic Host Configuration Protocol (DHCP) is an essential module that allows to configure channels of communication between the devices on your network. Within SOLIDserver, the DHCP is divided into different levels of hierarchy:

• **Server**: The highest level of the DHCP hierarchy. Without the server, you cannot provide access to your network to DHCP clients. Servers can contain scopes, ranges, leases, statics and groups.

• **Scope**: The second level of the DHCP hierarchy. The scope listens to certain parts of the network (subnet-type networks) and provides whatever the clients asks for, if it can. The scope can contain statics or ranges delivering leases.

• **Range**: The third level of the DHCP hierarchy. It indicates a dynamic addressing configuration of the DHCP and can contain the clients leases.

• **Lease**: The lowest level of the DHCP hierarchy in a dynamic addressing configuration. A lease is a client access to a certain area of the network for a limited amount of time and correspond to a specific IP address of the IPAM module.

• **Group**: An optional second level of the DHCP hierarchy in a fixed addressing configuration. It allows to assign a number of options to statics.

• **Static**: The lowest level of DHCP hierarchy in a fixed reservation configuration, where are listed the static pairs of IP/MAC addresses and the statics without IP address. Note that creating a static with IP address also creates the corresponding lease whenever the client is active on the network.

In the procedures below we add a DHCP server, so make sure you configured the NTP server as detailed in the section Configuring the NTP Server.

Note that within SOLIDserver, you can also manage DHCP servers from smart architectures. They provide a backup of the configuration and data for the physical servers they manage. Four smart architectures are available to manage DHCP servers: One-to-One, One-to-Many, Split-

Scope and Single-Server. Three smart architectures are available to manage DHCPv6 servers: Single-Server, Split-Scope and Stateless. We strongly recommend using smart architectures to manage all the servers you add and intend to manage.

Adding a DHCP Server

A proper configuration of the DHCP requires a server, a scope and then a range of leases or a list of statics. The procedures of this guide demonstrate the importance of a proper configuration as the advanced properties you set earlier allow to automatically create a scope in the DHCP when creating a subnet-type network in the IPAM.

To add an EfficientIP DHCP server

1. In the sidebar, go to ◔ **DHCP** > **Servers**. The page **All servers** opens.

2. In the menu, select ✚ **Add** > **Server** > **EfficientIP DHCP**. The wizard **Manage a DHCP server** opens.

3. In the field **DHCP server name**, name your server with a valid FQDN.

4. In the field **Management IP address**, type in the IP address configured during the installation.

5. Click on OK to commit the server configuration. The report opens and closes. The server is listed.

Now you must add a smart architecture to manage the physical server.

To manage a DHCP server through a smart architecture

1. In the sidebar, go to ◔ **DHCP** > **Servers**. The page **All servers** opens.

2. In the menu, select ✚ **Add** > **Server** > **DHCP smart architecture**. The wizard **Manage a DHCP server** opens.

3. In the field **DHCP server name**, name your server with a valid FQDN.

4. Click on NEXT. The next page of the wizard opens.

5. In the **DHCP smart architecture** list, select *Single-Server*.

6. Click on NEXT. The last page of the wizard opens.

7. In the list **Available DHCP servers**, double click on the name of the physical server you just created. The server is now in the list **Selected DHCP servers**.

8. Click on OK to commit your configuration. The report opens and closes. The smart architecture is now listed above the physical server it contains.

If the server status is *Timeout*, you need to synchronize it following the procedure below.

To synchronize a server

1. In the sidebar, go to ◔ **DHCP** > **Servers**. The page **All servers** opens.

2. Tick the server(s) you need to synchronize.

3. In the menu, select ✐▾ **Edit** > **Synchronize**. The wizard **Synchronization** opens.

4. Click on OK to synchronize the selected server. The report opens and might take a little while before closing. The list is visible again.

The quick start continues in the module IPAM.

IPAM Basic Configuration

The Internet Protocol Address Management (IPAM) module allows to plan, track, organize and manage IP addresses on your network. Within SOLIDserver, IP address management is divided into 5 levels of organization:

- **Space**: The highest level of the IPAM hierarchy, the essential entry point of the IP address management. It defines an addressing range in which every IP address is unique. The spaces can contain block and subnet-type networks, pools and/or IP addresses. They can contain IPv4 and IPv6 addresses.

- **Network**, or **block-type network**: the second level of the IPAM hierarchy, where you set the range of IPv4 or IPv6 addresses that you manage within your space. It is mandatory to create at least one block-type network to manage IP addresses. They contain subnet-type networks.

- **Network**, or **subnet-type network**: the third level of the IPAM hierarchy, where you can assign IPv4 or IPv6 addresses. It is mandatory to create at least one terminal subnet-type network to manage IP addresses. They contain pools and/or IP addresses.

- **Pool**: An optional fourth level of the IPAM hierarchy, it contains IP addresses. It allows to configure common options to a range of IP addresses. They can be created to manage IPv4 or IPv6 addresses.

- **IP addresses**: The lowest level of the IPAM hierarchy. They can be organized through terminal networks and/or pools, depending on your needs. Within your spaces, each IP address must be unique.

The IPAM is one of the most important modules as it allows to set the IP address management strategies and creates a link between the DNS and DHCP modules. For more details, refer to the Administrator Guide.

Adding a Space

Before configuring any addressing in the IPAM, you need to create a space. It can hold as many IP addresses as you want, organized in as many block-type networks, subnet-type networks and pools as needed. The space is simply a container that does not correspond to any IP address, it contains them. Keep in mind that, to use the same IP address twice or more, they must be part of different spaces.

To add a space

1. In the sidebar, go to ♣ **IPAM** > **Spaces**. The page **All spaces** opens, the only space listed is *Local*, the default space.

2. In the menu, click on ✚ **Add**. The wizard **Add a space** opens.

3. In the list **VLSM parent space**, select *None*.

4. Click on NEXT. The next page of the wizard opens.

5. In the field **Space name**, name the space.

6. In the drop-down list **Advanced properties**, select *All*.

7. Configure the **DNS properties**:

   a. In the drop-down list **DNS server**, select your smart architecture. The page refreshes.

   b. In the field **Domain list**, double click on your zone. It is now listed in the **Selected domains list**.

c.   In the drop-down list **Default domain**, select your zone.

d.   In the drop-down list **DNS server for reverse zones**, select your smart architecture. The page refreshes.

e.   Tick the box **Update DNS** to automate the retrieval of IPAM data from the DNS server.

8.   Configure the **DHCP properties**:

a.   In the field **DHCP cluster**, select the failover channel *failover-<your-smart-server>*. The page refreshes.

b.   Tick the box **Create DHCP static** to automate the creation of statics for every assigned IP address.

9.   Click on OK to commit the creation. The report opens and closes. The new space is listed.

Now you must add a block-type network in your space.

Adding a Block-type Network

The block-type network is the second step towards your IP addresses organization. You can create IPv4 and IPv6 block-type networks in the same space. In this guide we focus on the global logic of IPv4 addressing within SOLIDserver. For more details regarding the IPAM options or the IPv6 addressing possibilities, refer to the Administrator Guide.

To add a block-type network

1.   From the page **All spaces**, click on the **Name** of your new space. The page **All networks** opens, it is empty. On the right-end side of the menu, make sure that the button **V4** is black.

2.   In the menu, click on ✚ **Add**. The wizard **Network type selection** opens.

3.   In the drop-down list **Network type**, select *Block*.

4.   Click on NEXT. The wizard **Add an IPv4 Network** opens.

5.   In the field **Network Name**, name the network.

6.   In the field **Address**, type in the start IP address *192.168.0.0* .

7.   In the drop-down list **Prefix**, select *16 [CIDR]*. The content of the field **Netmask** automatically changes to *255.255.0.0 [CIDR]*.

8.   In the drop-down list **Advanced properties**, select *All*.

9.   In the sections **DNS properties** and **DHCP properties** the data configured at space level is already applied to your block-type network.

10. Click on OK to commit the creation. The report opens and closes. The network is listed.

Now you must add a terminal network in your block-type network.

Adding a Subnet-type Network

Finally, we add an IPv4 terminal network, a subnet-type network, to manage the IP addresses.

To add a terminal network

1.   From the page **All networks**, click on the **Name** of your block-type network you just created. The page **All networks** opens, it is empty.

2. In the menu, click on ✚ **Add**. The wizard **Add an IPv4 Network** opens.

3. In the field **Network Name**, name the subnet-type network.

4. In the field **Address**, type in *192.168.42.0*. The content of the fields **Netmask** and **Prefix** automatically change to configure a */24* subnet with the netmask *255.255.255.0* .

5. Click on ⌨OK to commit your creation. The report opens and closes. The subnet-type network is listed.

After that addition, we invite you to go to the modules DNS and DHCP to fully understand the advantages of configuring the advanced properties between these three modules. Th space is configured to automatically update the DNS and DHCP as follows:

In the DNS
Go to the page **All servers** and click on the *Name* of the smart architecture to display its zones, a reverse zone was created. In the breadcrumb, click on **All RRs**. New records were created for the reverse zone (a PTR, an NS and the SOA) and an A RR that matches the terminal network *Gateway* address.

In the DHCP
Go to the page **All servers** and click on the *Name* of the smart architecture to display its scopes, a scope named after your subnet-type network and matching its start and end address was created.

The quick start continues, and finishes, in the module NetChange.

NetChange Basic Configuration

NetChange offers an overview and management tools of your network devices. Once you added one network device, you can use neighboring protocols to automatically discover all the devices it is connected to.

Once added, NetChange collects information on each device via SNMP. Therefore, the quantity and the quality of the collected information depend on the number of imported network devices and on the SNMP MIBs.

Within SOLIDserver, you can manage network devices and the ports, routes, VLANs, and/or configuration files they contain. A page is even dedicated to all discovered items on the network, it provides useful information on where and when a device (IP or MAC address) has been connected, on which device and port, in which VLAN, etc. For more details, refer to the Administrator Guide.

Adding Network Devices

Like we just saw, you need to add one of your network devices and then find the other devices connected to your network through CDP (Cisco Discovery Protocol), NDP (Neighbor Discovery Protocol) and LLDP (Link Layer Discovery Protocol).

To add a network device

1. In the sidebar, go to ▦ **NetChange** > **Network devices**. The page **All network devices** opens.

2. In the menu, click on ✚ **Add**. The wizard **Add network devices** opens.

3. In the field **IP Address**, type in the IP address of the device you want to add.

4. In the drop-down list **Target space**, select the space you added earlier.

5. Click on **OK** to commit the addition. The report opens and takes a while before closing. The device is listed.

If you click on the network device *Name*, you can display all the objects it contains.

Now we will import the rest of the devices on your network.

To import other network devices using CDP/NDP/LLDP

1. From the page **All network devices**, tick the device you just added.

2. In the menu, select **K⬅ Import** > **Using CDP/NDP/LLDP**. The wizard **Add network device** opens.

3. In the drop-down list **Target space**, select the same space again.

4. Click on **OK** to commit the network sweep. The report opens and takes a while before closing. The new devices are listed.

In the IPAM, the *Target space* selected for the device updates the IP address database if the IP addresses match the ones configured on your network.