



Orientation and Installation Guide
for the Ingate SBC and E-SBC
Software SIParator[®] / Firewall[®]
for Virtual x64 Machines and Cloud

For the Ingate Software SIParators using software release 6.2.1 or later

Revision 19E

May 15th, 2019

Frequently Asked Questions

- Q Does the Ingate software SIParator/Firewall SBC have the same functions as the Ingate SIParator/Firewall appliances S21, S52, S95... etc.?** Yes, they even use the same software revisions. The differences are related to the hardware (e.g. performance, number of physical ports, etc.).
- Q Should I select the software SBC (the SIParator/Firewall, here also named SIParator or E-SBC), just because I can or because I have such virtual CPU power available (instead of a hardware appliance S21, S52, S95... etc.)?** No! Remember that a virtual machine installation adds extra steps that require both knowledge and competence to succeed. Also, notice that a real SBC¹ (Session Border Controller), like the Ingate SIParator performs NAT/firewall, routing and security functions¹ at the physical border between a private network and an outside network (often the Internet). It must be installed at that security critical border, which often is easier pinpointed and done with an appliance having physical ports ready to use.
- Q What about selecting the cloud to install SIParator Software SBC?** SIParator is available in the most popular Cloud Providers, including AWS, Azure and Google Cloud. It is also available to be installed in most Cloud infrastructures supporting NFV/OpenStack.
- Q For whom is the software SBC a good choice?** Advanced system integrators installing other software on virtual machines, gets a good total solution by also adding the SBC to the existing hardware. For PBXs, UCs or call centers running on virtual machines, it may be an obvious solution to add the SBC to their networking machine. Access delivery devices (e.g. level 2/3 Ethernet CPEs) having virtual x86 machine capacity, is another obvious host for the software SIParator.
- Q What performance do I get and how many virtual CPUs do I need to allocate?** The short and simple answer is that you CAN get the same high performance as running natively on the underlying hardware (beyond 20 000 concurrent voice calls), but it is dependent on the CPU and network support and performance – see section 3.4 for more information.
- Q The short and simple answer, is that if you allocate two virtual CPUs, on a high performance x86/x64 hardware (> 3GHz maximum (turbo) clock speed), it can handle up to 2 000 concurrent calls (20 ms, G.711, RTP media) and call setup rates of 100 calls per second. Since version 6.2 we can reach very similar performance on VM's that we get on bare hardware with same specs. In our labs we have confirmed we keep getting higher number of simultaneous calls as we increase Memory and vCPU's. A formal benchmark is being conducted and a capacity planning table will be soon published.**
- Q Does the software Ingate run on every virtual machine?** There can of course be no such guarantee, but it should work on all hypervisors properly emulating x86 CPUs and hardware. Ingate's software SIParator/Firewall is regularly tested on VMware, Microsoft's HyperV, Oracle's VirtualBox and Linux KVM. Other Hypervisors are less regularly tested and may only run in their standard mode, not in their special optimized (paravirtualized) modes.
- Q Why are hypervisors asking about operating system and which should I select?** Simply select Linux 2.6 / 3.x / 4.x (64 bit) or similar if you get such question. (This selection assists further selections but is seldom critical since software for virtual machines come with their own operating system.) Such

¹ There are (non Ingate) devices called SBCs, missing network security functions (maybe only providing some SIP fixup or gateway function), claiming they can run anywhere or “in the cloud” – They may be able to do so, but then one has to question whether they actually fulfill your need, or depend on another firewall (or a real SBC) adding the security and NAT/firewall traversal functions required at the border of the private network.

question/selection does NOT mean that the software runs as an application under the selected operating system. Security and router devices (like the Ingate SBC) must contain their own hardened operating system that is not exposed to the user.

- Q Does the fault tolerant or failover modes in some hypervisors work with Ingate's software SBC?**
Generally, they do, e.g. VMware's FT (Fault Tolerant) works, but their HA does not since it requires special inclusions in the software used. (However, note that hypervisor's failover mechanisms may be too stateful – only protecting against hardware errors, but not against software lockups, since exactly the same states are copied to the failover machine.) VMware's vMotion has also been verified to work as expected, but for migration, the MAC addresses of the virtual Ethernet adapters must be preserved (needed for license checks).
- Q Does Ingate's failover (where only long-term states are maintained and therefore also protects against software lockups) work on virtual machines?** Yes, two of Ingate's software SBCs can be installed on two separate x86 machines with an Ethernet cable in between to form a fail-over pair.

Ingate SIParator[®]/Firewall[®] for Virtual Machines

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1 Ingate Software SIParator®/Firewall® for Virtual Machines

Since software version 4.10.1 and later of the Ingate SIParator/Firewall can be installed and run on virtual machines with x86 architecture. This description is for the current software release 6.2.1 and later. Customers/developers/testers can, after receiving a license code, download the software from the Ingate web site and install it following this description. Since release 6.0.1 SIParator is fully built on x64 architecture. You also need the license code to be able to use the software.

Please note:

- You are assumed to be familiar with the virtual machine and hypervisor you will use. Ingate may not be able to support or take responsibility for that part.
- With high number of simultaneous calls, an SBC like the Ingate SIParator is routing intensive. With the right hardware and network and driver support, you can use the Ingate SIParator to what the native hardware which is beyond 20 000 concurrent calls (with voice media through the SIParator).
- The software should work on most virtual machines (hypervisors). It has recently been tested with VMware ESXi 5.5.1 using VMXnet3 network adapter, running at 4/8 Core Xenon CPU at 3.3 GHz top speed, passing through 2000 concurrent calls (20 ms, G.711, RTP media) with no packet drop. Microsoft's HyperV running on an Intel Core i7-4790 @ 3.6 GHz CPU using network adapter hv_netvsc passed through 1900 concurrent calls. VirtualBox, KVM and XEN (using network adapter Realtek 8139) are also known to work. Allocating more than two virtual CPUs does not increase performance. [Update!]
- The software can also run directly on x64 hardware *without any virtual machine*, but Ingate makes no guarantee of performance and working on other than Ingate's own appliances.
- CPU frequency allocation is only a minimum to avoid startup lock-ups hardly ever occurring and we recommend minimum 50MHz reservation to ensure at least some SIP functionality and access to web interface. The use of high CPU reservation values is discouraged, in favor of shares mechanisms.
- We discourage the use of snapshots as a mean for long-term backups. It is meant to be used for "testing software with unknown or potentially harmful effects" and not for production systems, as the disk performance may be degraded.
- The software can only be installed on one machine and only once. To switch machine or reinstall, you must contact Ingate to get a new license code. However, you can make (and redo) a full installation up until you see the web administration GUI of the SIParator working in the installed software SIParator (3.7 below), before "using up" the license.
- Ingate's licensing prohibits the use of cloning. Each VM must be properly installed, including the licensing procedure. Adding more memory or CPUs to host machine is no problem.
- Your account and license information will be displayed on the About page in the SIParator GUI.

2 Getting Up and Running – In Short

These are the steps to get a software SIParator/Firewall up and running on a virtual machine. A detailed description of each step follows. The Ingate web referred to in this description is <http://www.ingate.com>.

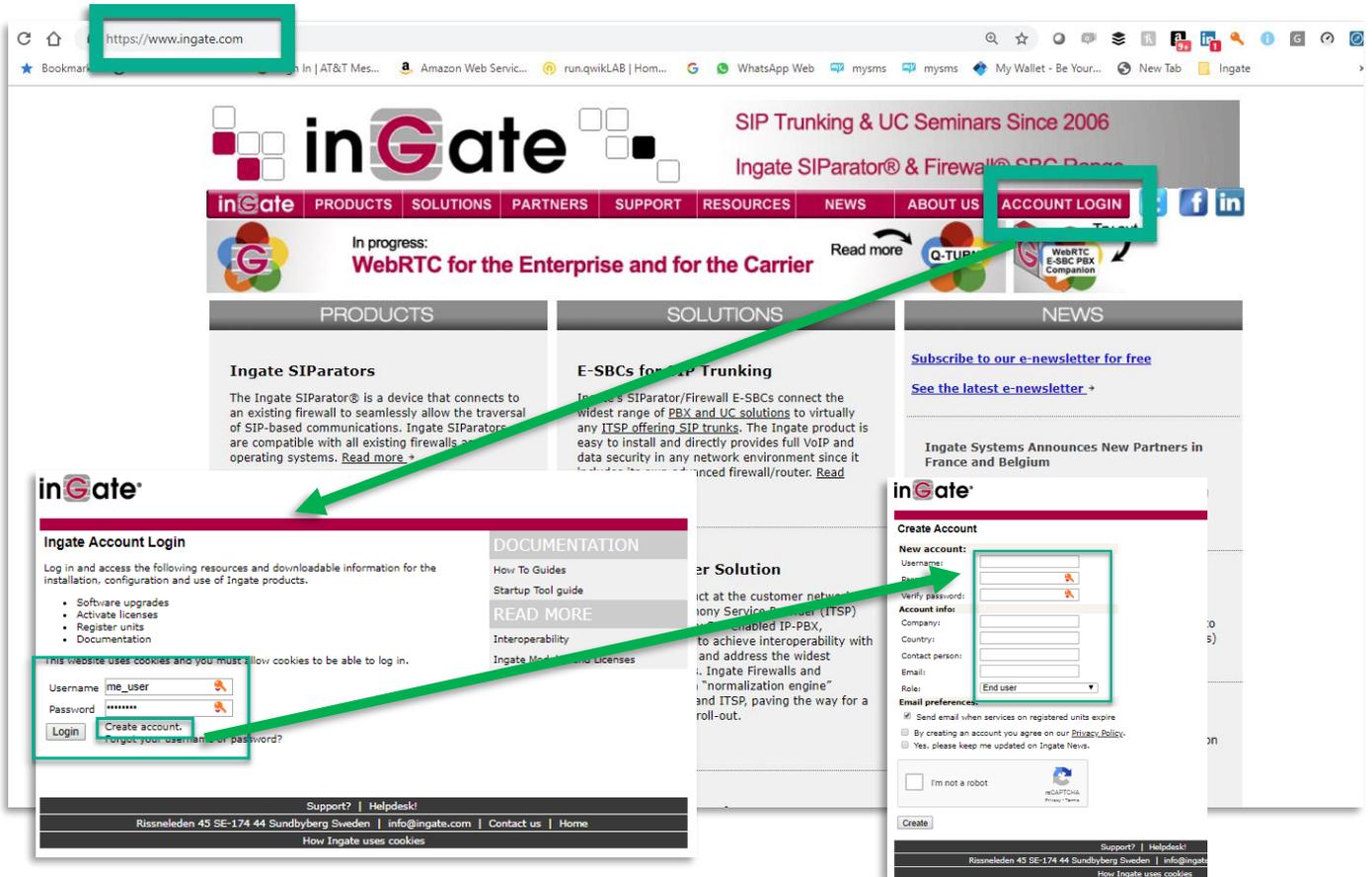
- 1) Create an account at the Ingate web, http://www.ingate.com/Register_Account.php, in case you don't already have one.
- 2) Get a License Code from Ingate.
- 3) Download an ISO file (CD image) with the SIParator/Firewall software and installation program from the Ingate web.
- 4) Create a virtual machine and define its Ethernet ports.
- 5) Start the virtual machine, booting from the ISO file.
- 6) An installation program will start up and install the SIParator/Firewall.
- 7) Surf into the web GUI of the SIParator/Firewall – Only the Administration>Upgrade page will be shown.
- 8) Register the SIParator/Firewall on the Ingate web under your account, using the serial number and other information displayed on the Administration>Upgrade page in the web GUI of the SIParator/Firewall.
- 9) Activate the License Code at the Ingate web and you will get a License Key file.
- 10) Apply the License Key file on the Administration>Upgrade page in the SIParator web GUI.

The machine will reboot, and the Ingate SIParator/Firewall should thereafter be fully functional.

3 Installing the SIParator®/Firewall® on a Virtual Machine

3.1 Create an Account at the Ingate Web

Create an account at the Ingate web site <http://www.ingate.com>. You will get confirmation via email.



3.2 Get a License Code from Ingate

Reading this document, you have probably already got a License Code from Ingate. Otherwise, contact sales to get the License code including the licenses you need. The License code has the form XXXX-XXXX-XXXX and is required to install the SIParator/Firewall software. It includes a base license and typically CCS (Concurrent Calls SIP Trunk Session) licenses for how many simultaneous calls with media that can pass the SBC. It can also include Registrar and Remote Users.

If you are uncertain, whether your virtual machine (or x64 hardware without virtualization software) will run the Ingate SIParator/Firewall software, you can run the installation up until 3.7 below. Incompatibility will show itself during the installation, before any license is used up.

3.3 Download an ISO file (CD image) with the SIParator®/Firewall® software

The Download, Registration and Activation steps are located at an Ingate web site at <http://www.ingate.com>.

Click **Account login** and log in with your own credentials from 3.1. Click the Download the SIParator/Firewall Software link shown below.

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InGate Account Home Page

Manage Account

- [Change contact information or password](#)

Manage InGate Appliances

- [Register a new unit](#)
- [Download upgrades](#)
- [Download IDS/IPS Rulepacks](#)
- [Activate licenses](#)

View Documentation

- [Product Manuals](#)
- [Application Notes and How to Guides](#)
- [InGate Startup Tool Guide](#)

Software SIParator/Firewall - For Use on Virtual Machines

- [Download the Software SIParator/Firewall](#) (3 downloads made)
- [Register the Software SIParator/Firewall after installation](#)
- [Activate licenses for a Software SIParator/Firewall](#)

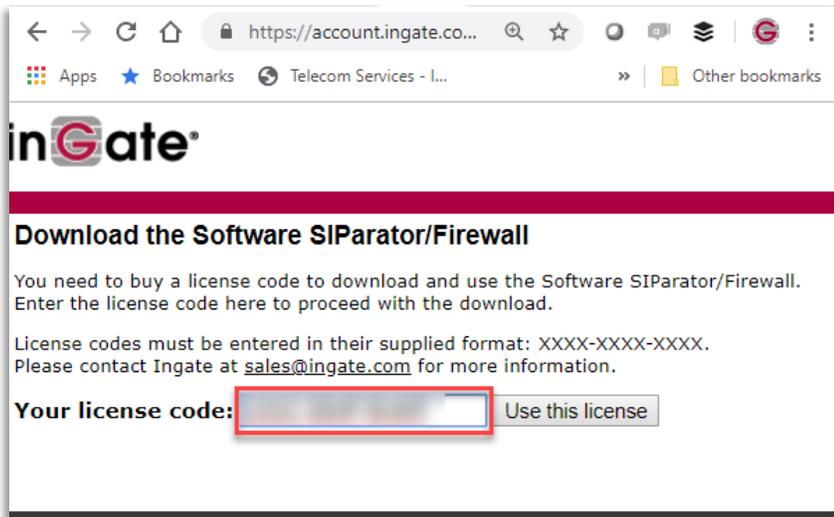
Startup Tool

- [Download new Startup Tool TG \(SUT TG\) \[Recommended\]](#)
- [Download previous Startup Tool \(SUT\) \[No longer recommended\]](#)
- [InGate Startup Tool Guide](#)

My InGate Units

Note: Purchase of a year of upgrade rights does not give entitlements of one additional current expiry.

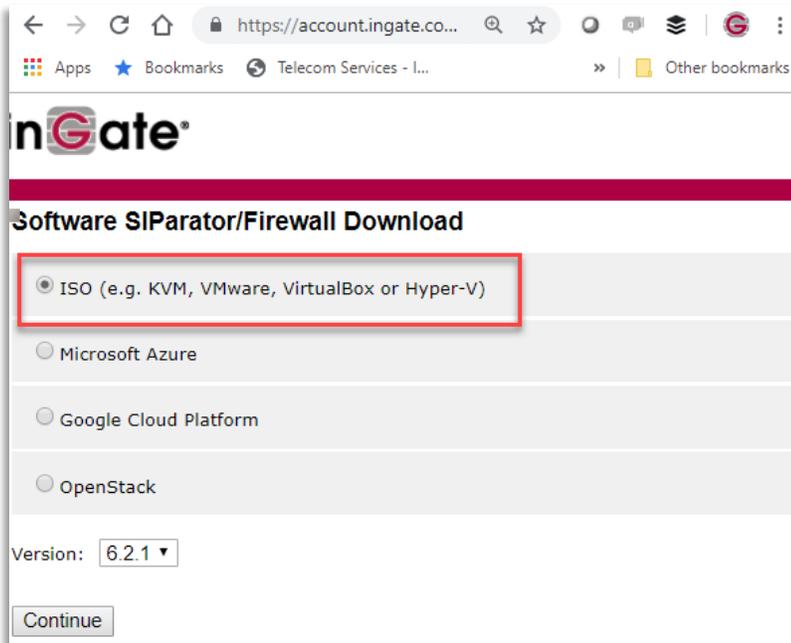
The system will ask you to enter the InGate license code you have received



Enter the license code and click the “Use this license” button.

Once the End User License Agreement has been accepted you will get access to a menu to select your download

3.3.1 Standard ISO for known Hypervisors



Select ISO option. The ISO file (around 50 MByte) software and installation program.

Software SIParator/Firewall Download

[Download ISO...](#)

The following checksums can be used to verify your downloaded file.

SHA256

e7bb5fdf7c84b65a90ca21026278ce3f9b26bcf9580baa85ee2e66232ad37963

Documentation

[How to Setup the Software SIParator/Firewall on VMware.](#)

[Go to the Account Home Page >>>](#)

[Support?](#) | [Helpdesk!](#)

Rissneleden 45 SE-174 44 Sundbyberg Sweden | info@ingate.com

[How Ingate uses cookies](#)

Once downloaded, you can proceed to use the ISO file with your hypervisor. You can see as an example, the manual referred in the Documentation link showing the process for VMware.

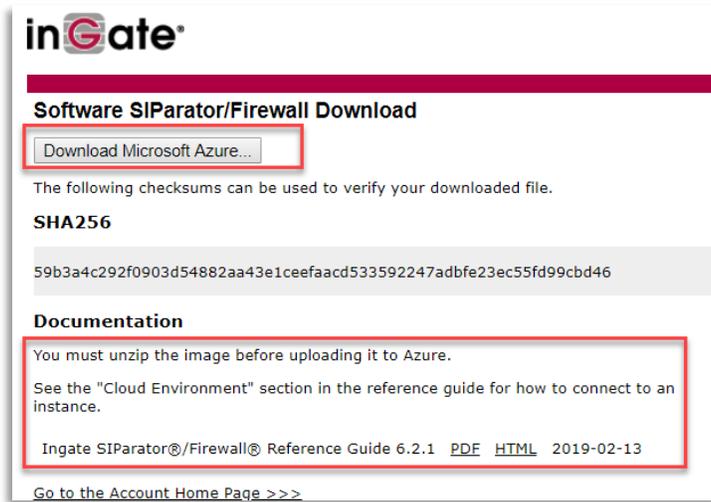
The downloaded software will later be individualized (e.g. given a unique serial number) when the Software SIParator base license is applied to started up SIParator.

Name of the file will look like:

ingate-6-2-1-201902131512.iso

3.3.2 Microsoft Azure

Select the Azure option, confirm release version and press continue.



Press Download Microsoft Azure and follow instructions shown in “Documentation”

Notice for Azure you will need to uncompressing the file before loading it into Azure.

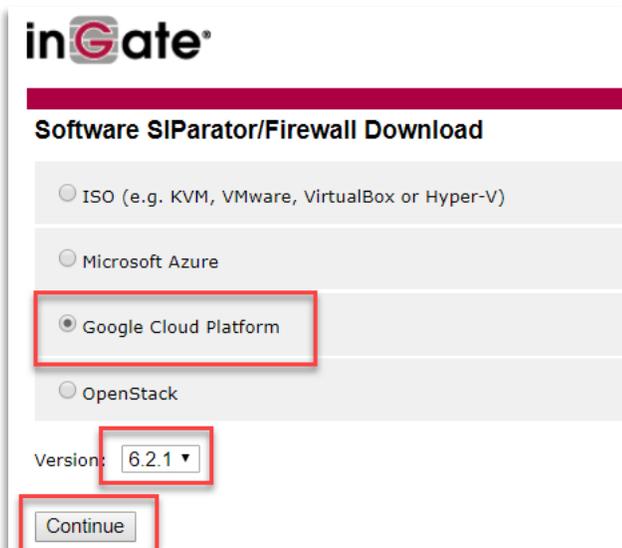
Name of the file will look like:

ingate-siparator-6-2-1-azure-201902131556.vhd.zip

Refer to Azure documentation to find the best way to create your VM from this vhd file. You will need most likely to follow these steps:

- 1) Download the vhd file to one of your storage accounts under a BLOB Container folder
- 2) Create an image from this file
- 3) Create your new VM form the recently create Image File.

3.3.3 Google Cloud



Select Google Cloud Platform, confirm release version and press continue.

Software SIParator/Firewall Download

Download Google Cloud Platform...

The following checksums can be used to verify your downloaded file.

SHA256

5e6e9e1c362e8184b6c50975308d0bc4ac70bbbd19c81b8cd538c79b74ea328

Documentation

See the "Cloud Environment" section in the reference guide for how to connect to an instance.

Ingate SIParator®/Firewall® Reference Guide 6.2.1 [PDF](#) [HTML](#) 2019-02-13

[Go to the Account Home Page >>>](#)

Download the file and follow instructions in the “Documentation” section

Name of the file will look like:

ingate-siparator-6-2-1-gcp-201902131607.tar.gz

You will need most likely to follow these steps:

- 1) Upload the file to one of your storage buckets. If you don't have one, you can create it in the Storage Section of your GGC Console.
- 2) Once the file is uploaded, select it and use the Create Instance link.
- 3) This will launch your instance and you will be able to access the GUI via https.
- 4) The default admin password is set to the ID of the instance. The ID can be found by entering the Cloud Shell. Enter the shell by clicking the >_ icon in the upper right. Enter the following command in order to retrieve the id:

```
$ gcloud compute instances describe <> --zone <> | grep "id: "
```

where <> is the name of the instance and <> is where the instance was started. Please change the password after the first login.

It can also be found Looking and expanding in the View Logs Options for the instance.

3.3.4 OpenStack

Unlike AWS, Azure and Google Cloud, OpenStack is a cloud operating system that controls large pools of compute, storage, and networking resources throughout a datacenter, all managed and provisioned through APIs with common authentication mechanisms.

SIParator/Firewall Software ability to run on OpenStack, opens the possibility to use it in many Public Clouds that are actually using OpenStack, or in many private cloud's initiatives in the Enterprise market.

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Software SIParator/Firewall Download

ISO (e.g. KVM, VMware, VirtualBox or Hyper-V)
 Microsoft Azure
 Google Cloud Platform
 OpenStack

Version: **6.2.1**

Continue

Select OpenStack option, confirm release version and press continue

inGate®

Software SIParator/Firewall Download

Download OpenStack...

The following checksums can be used to verify your downloaded file.

SHA256

666cadfbccd7290fcdc2d0e0e7e627a4f0b91d4e0042880964043b02a625291f

Documentation

See the "Cloud Environment" section in the reference guide for how to connect to an instance.

Ingate SIParator®/Firewall® Reference Guide 6.2.1 [PDF](#) [HTML](#) 2019-02-13

[Go to the Account Home Page >>>](#)

Download the file and follow any additional instructions in the “Documentation” section.

Downloaded file name will look like:

ingate-siparator-6-2-1-openstack-201902131519.qcow2

You will need to:

- 1) Upload the image in a Storage Service in your cloud
- 2) Launch a new instance from the image you recently Uploaded
- 3) Start configuring your SIParator accessing via https.

For more details refer to the links indicated before and OpenStack documentation available.

3.3.5 Amazon Web Services (AWS)

Amazon Web Services, has a different way to install Software SIParator/Firewall. It does not need download any file from the portal. Ingate automatically deploys an AMI (Amazon Machine Image) on each Region worldwide, and you have access to these AMI’s in AWS Marketplace. For more details you can refer to this manual:

→ [Orientation and How to Install SIParator on AWS](#)

3.4 Create a Virtual Machine and Define its Network Adapters

(NOTE: DO NOT APPLIES TO AWS, Azure, Google Cloud and OpenStack)

There is a lot of flexibility and options you can select from. Here is a list of good to know points and guidelines that will help you to find the best performance setup:

- We assume you are familiar with the hypervisor, virtual machine or cloud platform you will use.
- You will not need much hard disk space – 1 GB is enough for non-persistent logging. If you need persistent logging to hard disk, select minimum 8 GB. Use this information when creating your VM or configuring launching the instance in your Cloud Platform
- Hypervisors and Cloud may have many settings – most works with the Ingate software. Here are some guidelines of what to select:
- Hypervisors:
 - You can usually leave the hard disk controller (IDE, SATA and SCSI are supported) at its default setting. (For VMware that uses SCSI by default, VMware’s paravirtualized controller PVSCSI can be used, but for earlier versions of the SIParator than 5.0.6, controller “LSI Logic SAS” had to be selected.)
 - Base memory (RAM) of 1 GB is recommended (even though 256 MB can be enough for 50 concurrent calls (“sessions”).
 - Select Linux 2.6 / 3.x / 4.x (64 bit) or similar as the operating system. (Version 6.0.1 and higher requires 64 bit support).
 - Network Adapters (Ethernet ports) required for your SIParator/Firewall installation needs to be set up. You get best performance with the direct virtual support (“paravirtualized” instead of selecting a specific emulation like an E1000 compatible card that usually is available and supported. Select VMXnet3 for VMware and Virtio for KVM and some other. For Xen or XenServer, select Realtek 8139. For Microsoft’s HyperV, do NOT select “Legacy Network Adapter” (it gives very poor performance) – select Network Adapter hv_netvsc instead.
 - Selecting PCI pass through or simply “Bridged” will assign a physical Ethernet ports for use with the Ingate software and should give high routing performance.
 - Modern high-performance servers and their network adaptors having the correct hardware and driver support, allows the SIParator to reach the same performance as running “on the metal” (without a hypervisor). Here follow some guidelines (which availability, enabling and configuration may vary).
 - To maximize network routing performance and flexibility the two techniques SR-IOV (Single Root I/O Virtualization and (IOMMU/VT-d) I/O Memory Management Unit should be used. These techniques require hardware (CPU/Motherboard/NICs) and hypervisor software support.
 - When using SR-IOV physical network port(s) (PFs or Physical Functions) can be configured as multiple VF network ports (Virtual Functions). The VFs can then be assigned to individual VMs (Virtual Machines).
 - With IOMMU/VT-d network ports can be directly assigned (PCI-Passthrough) to a VM in a way that the hypervisor’s network stack is bypassed, which will give you near-native performance.

- Combine these technologies you will have both flexibility/convenience and near-native network performance.
 - The Software SIParator supports the following SR-IOV drivers: ixgbevf, igbvf and i40evf. Furthermore, the Ingate software supports the most common network adapters for PCI-Passthrough, including e1000e, igb, i40e, ixgbe, bnx2 and bnx2x.
 - Most hypervisors allow you to allocate several virtual CPUs (vCPUs). This is only the minimum that will be reserved to the SBC. On modern high-performance x64 servers, you typically reach 2000 concurrent G.711 voice sessions by allocating two vCPUs. For a maximum of two hundred sessions, one CPU is usually enough. With support for above discussed technology, you can get 2000 additional concurrent calls for each CPU added and 1 Gig RAM. SIP signaling, stays at 100-200 call setups per second.
- ➔ You must create at least two Ethernet ports (network adapters) for the Ingate software. You cannot create more Ethernet ports after the finalized installation, so we advise to enable some extra Ethernet ports (e.g. 3 or 4 ports). You will need 3 ports for the DMZ, LAN and WAN SIParator modes and a failover pair requires an additional physical Ethernet port to connect the two SIParators (which should run on different hardware) to each other.
- ➔ Note that you may only get access to the SIParator/Firewall web GUI through the first Ethernet port defined. That is the default initial setup for GUI access. There are specific instructions for initial access in Cloud platform in the Cloud Section of SIParator Reference Guide.

3.5 Start the Virtual Machine, Booting from the ISO file

(NOTE: DO NOT APPLIES TO AWS, Azure, Google Cloud and OpenStack)

In the hypervisor, point out the downloaded ISO file as a CD boot device for the newly created virtual machine. Then start that virtual machine!

If you are not able to boot directly from the ISO file, e.g. when installing directly on a supported hardware with x86 architecture (instead of on a virtual machine), you can instead write the ISO file to a CD-ROM or USB-device and make that bootable, see section 6 Appendix B: How to Write Ingate ISO file to USB Drives or CD-ROM Devices for more information.

3.6 The Installation Program will Install the SIParator®/Firewall® Software

(NOTE: DO NOT APPLIES TO AWS, Azure, Google Cloud and OpenStack)

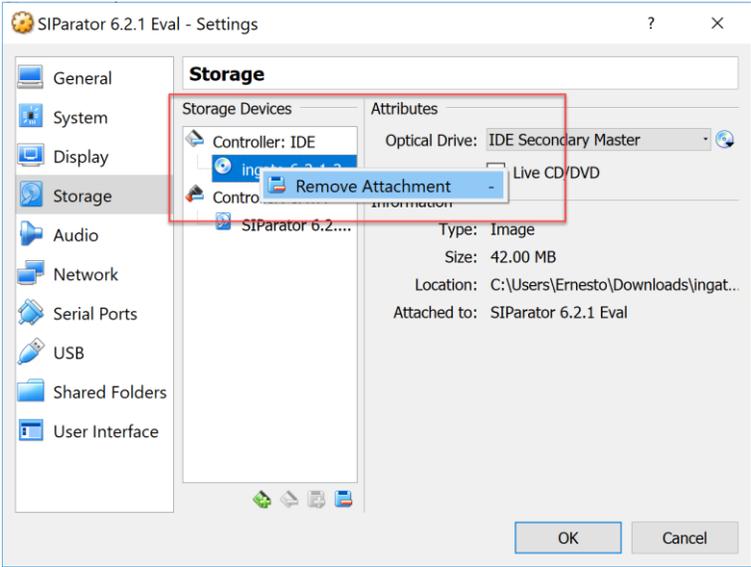
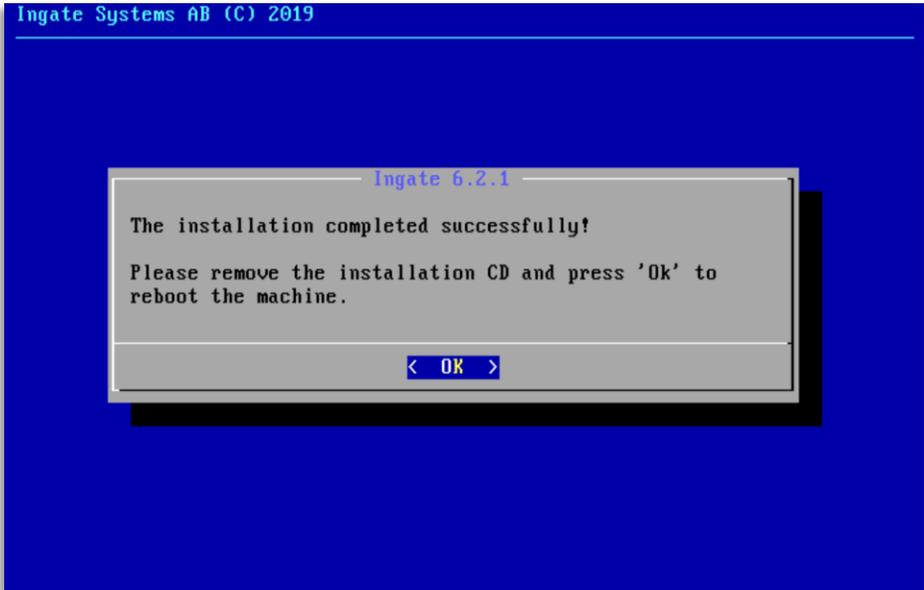
The installation will automatically start when booting up the virtual machine. It will guide you and install the Ingate SIParator/Firewall software.

Use the arrow and tab keys in the installation program (the mouse will not work).

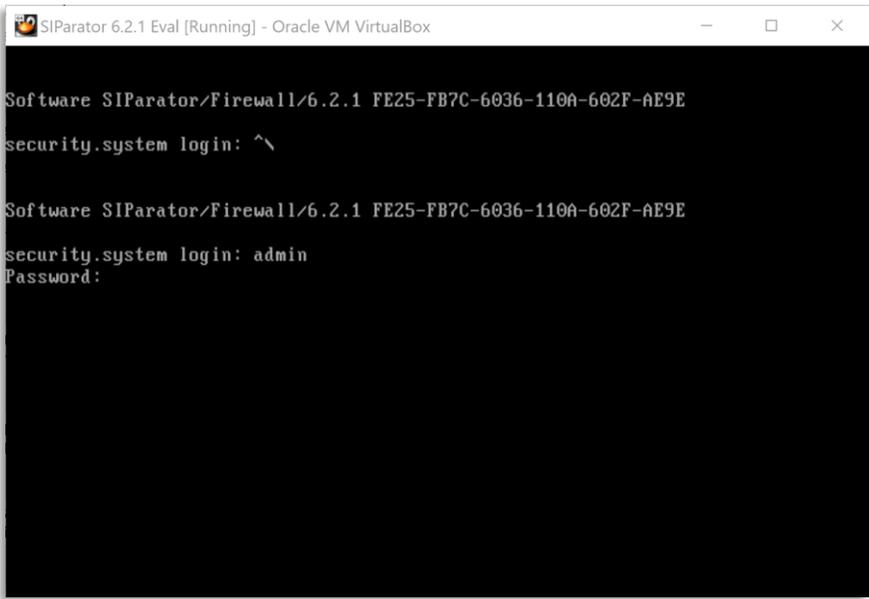
You will be asked to confirm some questions, which for a simple local installation has obvious answers. Please note:

You can switch between SIParator and Firewall mode also after the installation. In SIParator mode, you only find handling of SIP (VoIP) traffic in the admin GUI, while in Firewall mode, data traffic is also handled.

Write down the IP address and admin password you assign to the SIParator/Firewall– You will need that later!



After removing your virtual CD you can turn on your VM and confirm the console prompt responds to admin login:



```
SIParator 6.2.1 Eval [Running] - Oracle VM VirtualBox
Software SIParator/Firewall/6.2.1 FE25-FB7C-6036-110A-602F-AE9E
security.system login: ^\
Software SIParator/Firewall/6.2.1 FE25-FB7C-6036-110A-602F-AE9E
security.system login: admin
Password:
```

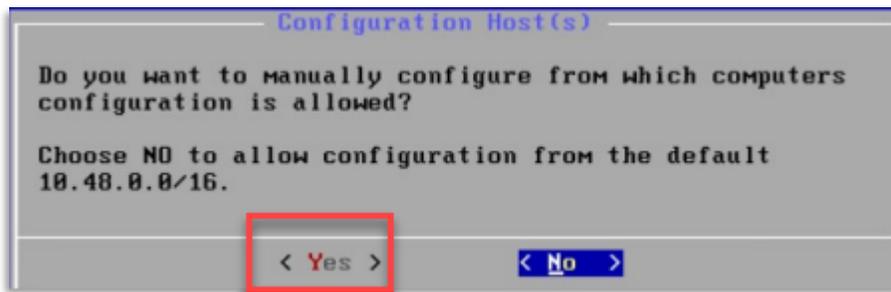


```
SIParator 6.2.1 Eval [Running] - Oracle VM VirtualBox
Administration
=====
(Navigation tip: You may use Ctrl-d to skip back to this menu.)

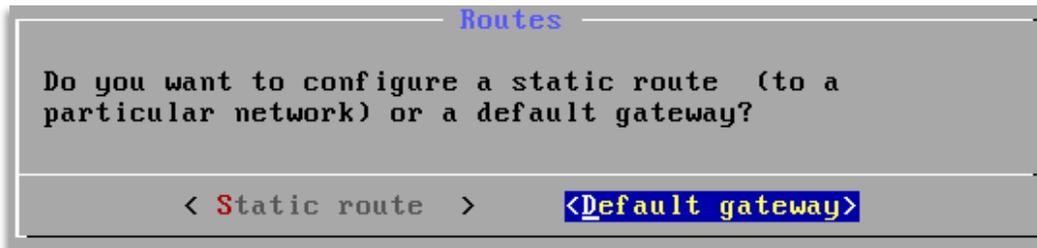
1. Basic configuration
6. Set password
7. Command line interface
8. Clear the log database
a. About
reboot. Reboot
reset. Factory reset
q. Exit admin
==>
```

3.6.1 Installing from Another (non Local) Network - If that is the case

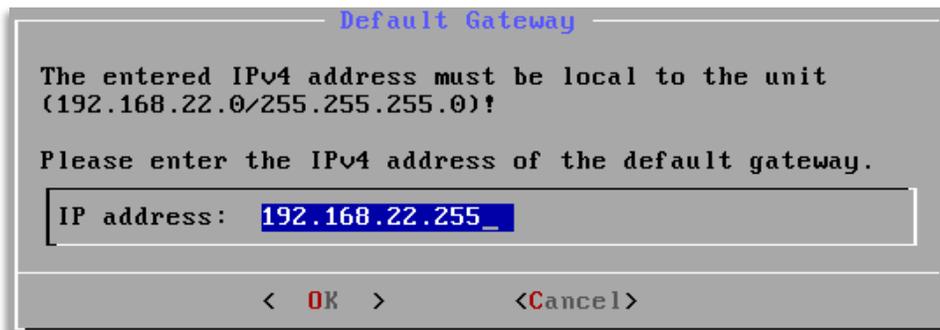
You need to be able to access the SIParator's http(s) admin GUI at Ethernet 0 port after the installation. If you are not installing from a local network of the virtual machine, routing rules must be setup in the SIParator, which are done by answering **Yes** to the following question during the installation process:



and further, you will be given the options:



and then prompted to enter:



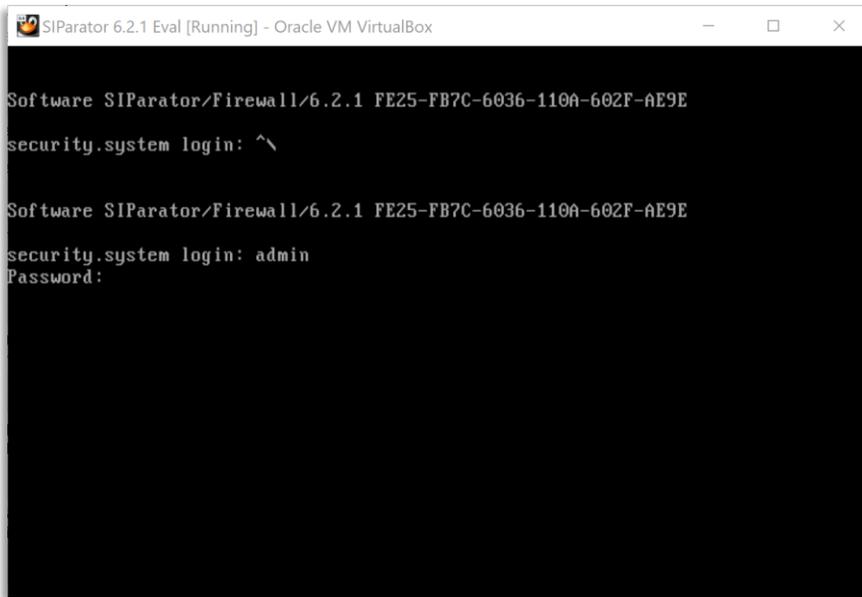
for example, where error checking will guide you to correct settings, allowing you to access the SIParator from a remote network.

3.6.2 The Virtual Machine will Reboot and the SIParator Started

After OKing (remember to unselect the ISO file boot before):



the virtual machine reboots, starts the SIParator and should show the bootup process until prompts for login:

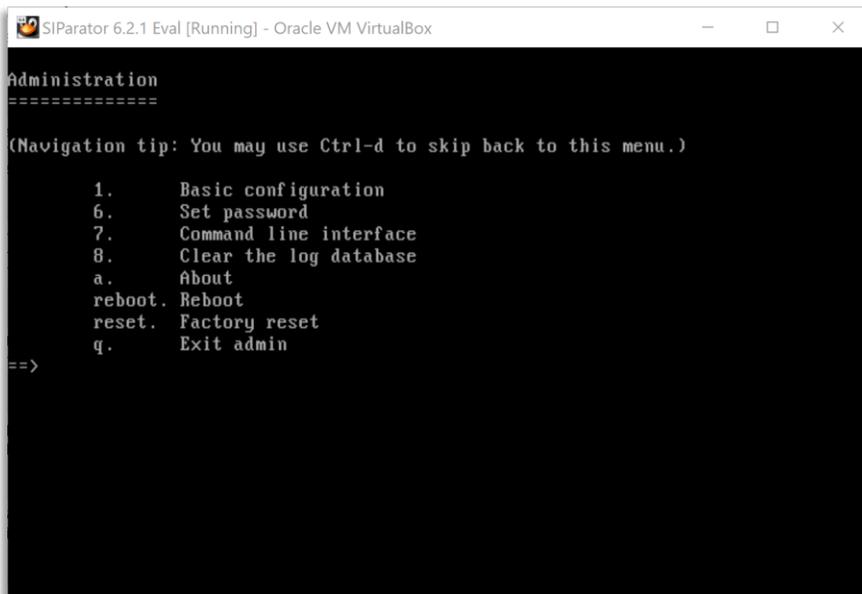


```
SIParator 6.2.1 Eval [Running] - Oracle VM VirtualBox
Software SIParator/Firewall/6.2.1 FE25-FB7C-6036-110A-602F-AE9E
security.system login: ^\

Software SIParator/Firewall/6.2.1 FE25-FB7C-6036-110A-602F-AE9E
security.system login: admin
Password:
```

in the console window.

If you enter “admin” and the password you had set during the installation, you will get:



```
SIParator 6.2.1 Eval [Running] - Oracle VM VirtualBox
Administration
=====
(Navigation tip: You may use Ctrl-d to skip back to this menu.)

1. Basic configuration
6. Set password
7. Command line interface
8. Clear the log database
a. About
reboot. Reboot
reset. Factory reset
q. Exit admin
==>
```

a small admin shell menu, but you don’t have to use it. Instead you can now surf into the web admin GUI.

3.7 Surf to the Web GUI of the SIParator®/Firewall®

As shown above, you should have seen a command window with text during and after a reboot. Do nothing! – Just leave the command window open.

Using a web browser, type in the IP address you assigned to the SIParator/Firewall and you will reach its web GUI. Login with “admin” and the password you gave during installation or if you are installing in one of the Clouds, use the credentials explained in the Cloud section of the reference guide.

If you are installing in AWS, Google Cloud, Azure or OpenStack, the only allowed GUI access method is https

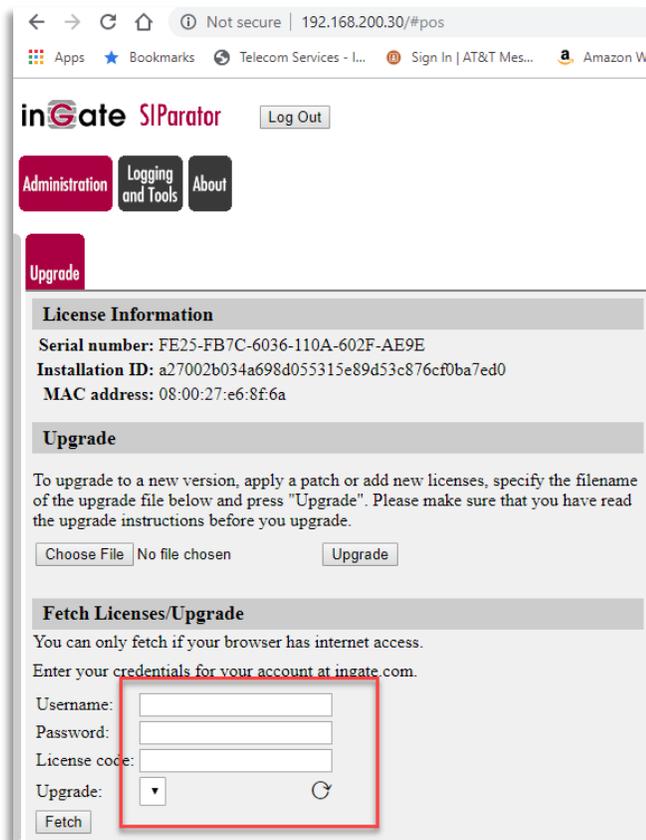
In the SIParator/Firewall, only the Administration>Upgrade page is available (until you apply the license as described below).

There you see the Serial Number, Installation ID and MAC address needed in the next step.

(Also, later in step **Error! Reference source not found.**, you will enter the License Key file at the bottom of this page to finalize the installation.)

3.8 Register the SIParator®/Firewall® at the Ingate Web / Activate License

Since release 6.1.0 registration and activation happens and can be done directly from the SIParator GUI. You only need to provide your portal user account credentials along with the License Key provided already.



Fetch Licenses/Upgrade

You can only fetch if your browser has internet access.
Enter your credentials for your account at ingate.com.

Username:

Password:

License code:

Upgrade:

After pressing Fetch, as far as your Browser has internet access, License will be activated, and this unit will be assigned a unique serial number and license file downloaded.

Some intermediate questions could be done, for instance to assign CCS to each Trung Group.

Administration Logging and Tools About

License, Step 2

Processed license 1022702.
The following actions will be taken when the license is applied:

- Install 10 Concurrent Calls SIP Trunk Sessions to SIP Trunk 1-2:
- Install 10 Concurrent Calls SIP Trunk Sessions to SIP Trunk 1-2:

Selecting 1-2 will add a new SIP Trunk Group page.

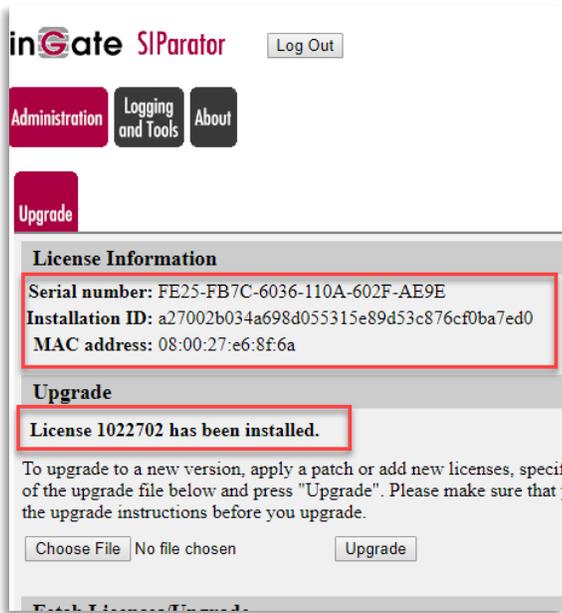
- The unit will have a total of 20 Concurrent Calls SIP Trunk Sessions.
- Install 10 Remote User SIP Sessions.
- The unit will have a total of 10 Remote User SIP Sessions.
- Install 10 SIP Registrar Users.
- The unit will have a total of 10 SIP Registrar Users.
- ~~Install a Base license.~~
- Set the Serial number to IG-200-920-7002-6.

Apply the license **Remove the license**

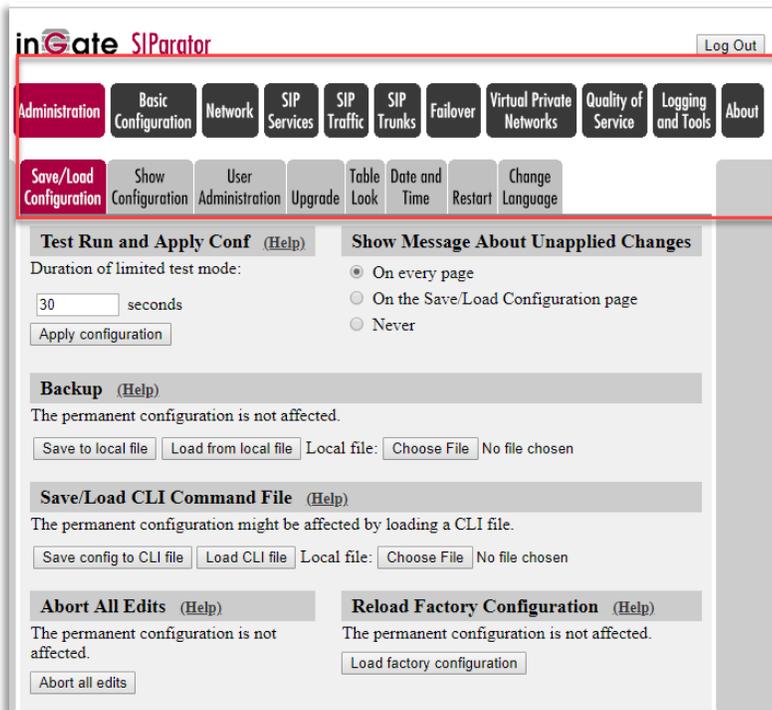
To apply the license you just uploaded, press "Apply license". To remove it, press "Remove license".

Once you responded just Apply the license. (Notice the Serial Number assigned to the unit).

Once it is applied you will see a page confirming your license has been installed:



You can now refresh your browser and will see full access to all GUI options:



4 Ready and Go

4.1 Ready to Configure

After the reboot, the Ingate SIParator/Firewall shall be fully functional and ready to be configured for your application. Logging into the web GUI of the Ingate SIParator/Firewall at the IP address you assigned to the SIParator/Firewall, shall now show all features.

The screenshot displays the Ingate SIParator web GUI. At the top left is the logo 'inGate SIParator' and a 'Log Out' button. Below this is a navigation bar with buttons for Administration, Basic Configuration, Network, SIP Services, SIP Traffic, SIP Trunks, Failover, Virtual Private Networks, Quality of Service, Logging and Tools, and About. A status message reads 'Logged in as admin (Full Access) using local password.' The main content area is organized into a grid of menu items, each with a list of sub-options:

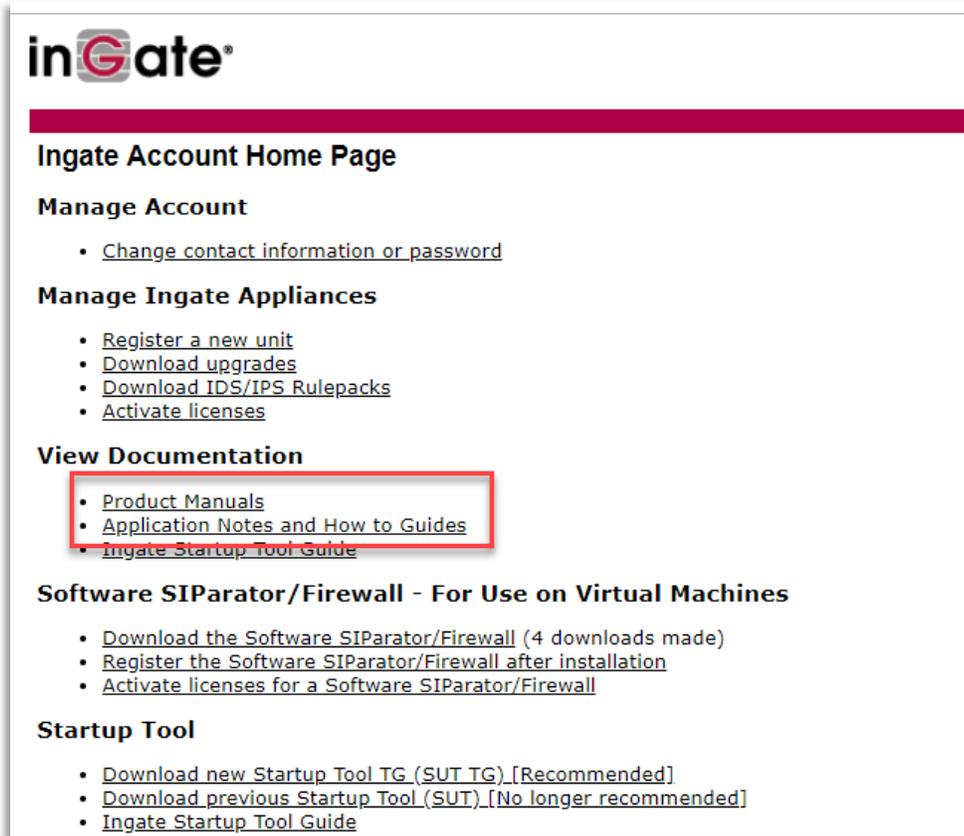
- Administration**
 - Save/Load Configuration
 - Show Configuration
 - User Administration
 - Upgrade
 - Table Look
 - Date and Time
 - Restart
 - Change Language
- Basic Configuration**
 - Basic Configuration
 - Access Control
 - RADIUS
 - SNMP
 - Dynamic DNS Update
 - Certificates
 - TLS
 - Advanced Settings
 - SIParator Type
- Network Configuration**
 - Networks and Computers
 - Default Gateways
 - All Interfaces
 - VLAN
 - Eth0
 - Eth1
 - Interface Status
 - PPPoE
 - Tunnels
 - Topology
- SIP Services**
 - Basic Settings
 - Signaling Encryption
 - Media Encryption
 - Media Transcoding
 - Interoperability
 - Sessions and Media
 - Remote SIP Connectivity
 - VoIP Survival
 - VoIP Survival Status
- SIP Traffic and Users**
 - SIP Methods
 - Filtering
 - Local Registrar
 - Authentication and Accounting
 - SIP Accounts
 - Call Control
 - Dial Plan
 - Routing
 - Time Classes
 - SIP Status
 - IDS/IPS
 - IDS/IPS Status
 - SIP Test
 - SIP Test Status
- SIP Trunks**
 - SIP Trunks
- Failover**
 - Failover Settings
 - Reference Hosts
 - Failover Status
- Virtual Private Networks**
 - IPsec Peers
 - IPsec Tunnels
 - IPsec Advanced
 - IPsec Cryptos
 - IPsec Certificates
 - IPsec Settings
 - Authentication Server
 - IPsec Status
 - PPTP
 - PPTP Status
- Quality of Service**
 - QoS and SIP
 - QoS Classes
 - Services
 - QoS Eth0
 - QoS Eth1
 - TOS Modification
 - All QoS Interfaces
- Logging and Tools**
 - Display Log
 - Packet Capture
 - Check Network
 - Logins Configuration
 - Log Classes
 - Log Sending

Page generated for 'admin' 2019-05-19 23:44:03 +0000.
Software SIParator Firewall 6.2.1. Copyright © 2019 Ingate Systems AB.

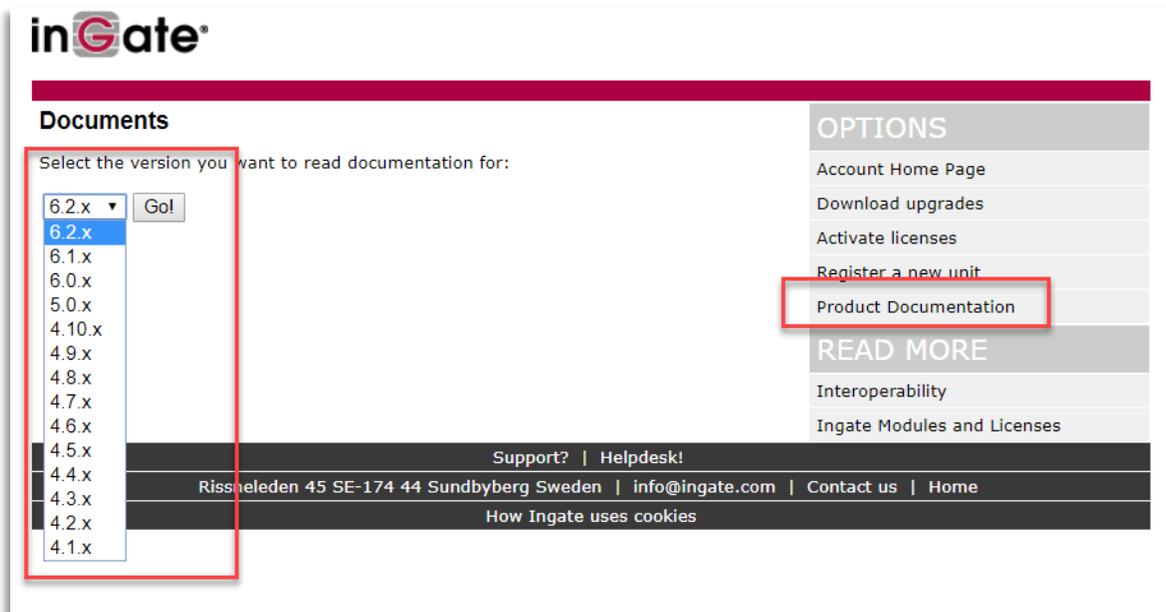
4.2 Setup and Configuration

You will need good documentation and technical information, case studies, etc. There is a lot of good documentation available thru the Account Porta.

At the **Account Home Page**, you find links to Product Manuals,

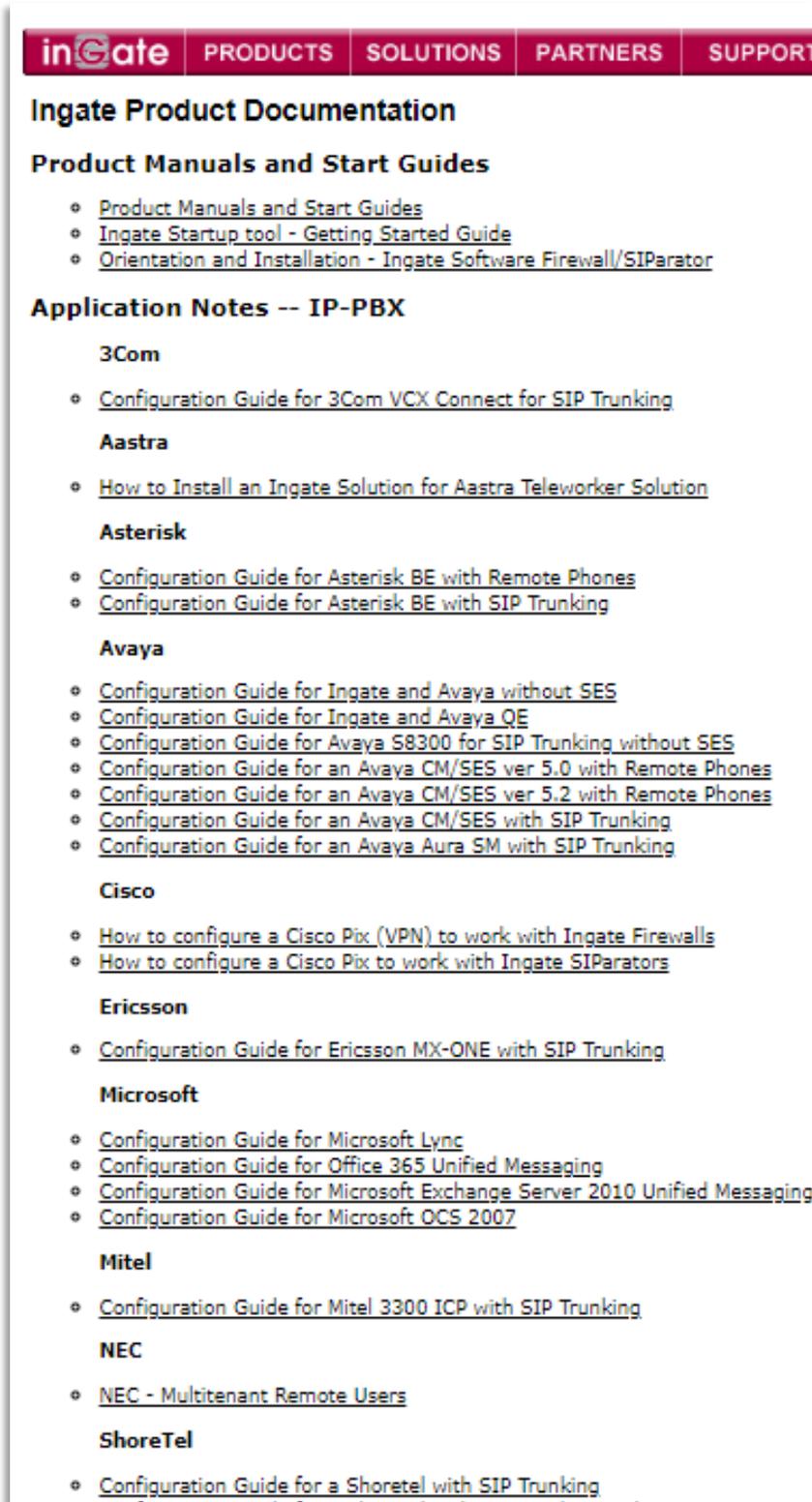


The screenshot shows the InGate Account Home Page. At the top left is the InGate logo. Below it is a red horizontal bar. The main heading is "Ingate Account Home Page". Underneath is the "Manage Account" section with a link to "Change contact information or password". The "Manage Ingate Appliances" section includes links for "Register a new unit", "Download upgrades", "Download IDS/IPS Rulepacks", and "Activate licenses". The "View Documentation" section is highlighted with a red box and contains links for "Product Manuals", "Application Notes and How to Guides", and "Ingate Startup Tool Guide". The "Software SIParator/Firewall - For Use on Virtual Machines" section has links for "Download the Software SIParator/Firewall", "Register the Software SIParator/Firewall after installation", and "Activate licenses for a Software SIParator/Firewall". The "Startup Tool" section has links for "Download new Startup Tool TG (SUT TG) [Recommended]", "Download previous Startup Tool (SUT) [No longer recommended]", and "Ingate Startup Tool Guide".



The screenshot shows the InGate Account Home Page with the "Documents" section highlighted. The "Documents" section has a heading "Documents" and a sub-heading "Select the version you want to read documentation for:". Below this is a dropdown menu with "6.2.x" selected and a "Go!" button. The dropdown menu is highlighted with a red box and lists versions from 6.2.x down to 4.1.x. To the right of the dropdown is a "PRODUCT DOCUMENTATION" section with a red box around the "Product Documentation" link. Below this is a "READ MORE" section with links for "Interoperability" and "Ingate Modules and Licenses". At the bottom of the page is a footer with "Support? | Helpdesk!", "Rissneleden 45 SE-174 44 Sundbyberg Sweden | info@ingate.com | Contact us | Home", and "How Ingate uses cookies".

other useful documentation (Application Notes, How to Guides) for setup and configuration for Ingate products. (You need to be logged in to your Ingate Account to be able to access the documentation.)



inGate PRODUCTS SOLUTIONS PARTNERS SUPPORT

Ingate Product Documentation

Product Manuals and Start Guides

- [Product Manuals and Start Guides](#)
- [Ingate Startup tool - Getting Started Guide](#)
- [Orientation and Installation - Ingate Software Firewall/SIParator](#)

Application Notes -- IP-PBX

3Com

- [Configuration Guide for 3Com VCX Connect for SIP Trunking](#)

Aastra

- [How to Install an Ingate Solution for Aastra Teleworker Solution](#)

Asterisk

- [Configuration Guide for Asterisk BE with Remote Phones](#)
- [Configuration Guide for Asterisk BE with SIP Trunking](#)

Avaya

- [Configuration Guide for Ingate and Avaya without SES](#)
- [Configuration Guide for Ingate and Avaya QE](#)
- [Configuration Guide for Avaya S8300 for SIP Trunking without SES](#)
- [Configuration Guide for an Avaya CM/SES ver 5.0 with Remote Phones](#)
- [Configuration Guide for an Avaya CM/SES ver 5.2 with Remote Phones](#)
- [Configuration Guide for an Avaya CM/SES with SIP Trunking](#)
- [Configuration Guide for an Avaya Aura SM with SIP Trunking](#)

Cisco

- [How to configure a Cisco Pix \(VPN\) to work with Ingate Firewalls](#)
- [How to configure a Cisco Pix to work with Ingate SIParators](#)

Ericsson

- [Configuration Guide for Ericsson MX-ONE with SIP Trunking](#)

Microsoft

- [Configuration Guide for Microsoft Lync](#)
- [Configuration Guide for Office 365 Unified Messaging](#)
- [Configuration Guide for Microsoft Exchange Server 2010 Unified Messaging](#)
- [Configuration Guide for Microsoft OCS 2007](#)

Mitel

- [Configuration Guide for Mitel 3300 ICP with SIP Trunking](#)

NEC

- [NEC - Multitenant Remote Users](#)

ShoreTel

- [Configuration Guide for a Shoretel with SIP Trunking](#)

To ease the configuration of your software Ingate, we recommend you to download and use the Ingate Startup Tool TG found at https://account.ingate.com/Startup_Tool_TG.php

The Startup Tool is especially useful for SIP Trunking, where you can select predefined PBXs and ITSPs.

4.3 Your Account Information and Licenses are Displayed

On the About page in the SIParator/Firewall you will see your account information and the licenses installed.

The screenshot shows the 'About' page of the InGate SIParator. The browser address bar shows '192.168.200.30/#pos'. The page has a navigation menu with buttons for Administration, Basic Configuration, Network, SIP Services, SIP Traffic, SIP Trunks, Failover, Virtual Private Networks, Quality of Service, Logging and Tools, and About (highlighted). The main content area is divided into several sections:

- Device Information:**
 - Model: Software SIParator/Firewall
 - Serial number: IG-200-920-7002-6
 - Software version: 6.2.1
 - Mode: Siparator
 - Hardware model: 200
 - Amount of installed interfaces: 2
 - Persistent logging: No
- Installed Patches:** (Empty section)
- License Information:**
 - Name: Ernesto Casas
 - Email: ernesto@ingate.com
 - Installation ID: a27002b034a698d055315e89d53c876cf0ba7ed0
 - MAC Address: 08:00:27:e6:8f:6a
- Licenses:**
 - 10 SIP Registrar Users
 - 20 Concurrent Calls SIP Trunk Sessions (of max unlimited)
 - 10 Remote User SIP Sessions (of max unlimited)
 - 2 Trunk Groups
 - Trunk Group 1 can have max 10 Concurrent Calls SIP Trunk Sessions
 - Trunk Group 2 can have max 10 Concurrent Calls SIP Trunk Sessions
- Included Modules:**
 - Standard SIP features
 - SIP Trunking
 - Advanced SIP Routing
 - VoIP Survival
 - Enhanced Security
 - VPN (IPsec and PPTP)
 - QoS

Page generated for 'admin' 2019-05-20 00:12:25 +0000.
Software SIParator/Firewall 6.2.1. Copyright © 2019 Ingate Systems AB.

5 Appendix A: Trouble Shooting and Questions

5.1 No hard disk found during installation (ISO Install Case):



Probably caused by the virtual machine setup, e.g. by:

A1) SCSI controller is used (VMware default) but “LSI Logic SAS” has not been selected. (However, from version 5.0.6 of the SIParator, VMware’s paravirtualized controller PVSCSI can also be used and therefore left at the default.)

A2) There is no hard disk available, so under the storage controller selection, you should make sure there is both a controller (IDE, SATA or SCSI) and a hard disk available.

5.2 License key file license.lic file is empty (0 bytes) even though you have downloaded it as suggest in the installation guide:

If you receive a 0 kb file when downloading the license file with your browser (see **Error! Reference source not found.** above), we recommend you to use another browser and download the license file again.

If that does not help and you suspect an error in the License Code, you should contact your sales representative or sales@ingate.com.

5.3 Getting “Error message: This license is not valid for this unit. License not installed.” when applying the License Key file to the SIParator:

See **Error! Reference source not found.** above. The license file is in this stage already bound to an Ingate unit with a certain serial number. Confirm that you are installing the license file to the correct Ingate unit. You see the serial number at the **About** page in the Ingate web GUI.

5.4 I can’t see the serial number of my software SIParator when trying to activate a license:

See 3.8 and **Error! Reference source not found.** above. To activate a license for the SIParator you must first register the SIParator at your account login, <http://www.ingate.com/Show-account.php>.



5.5 I had to install the Ingate again, but although the MAC address is still the same, the installation ID has changed and I cannot apply the license again:

The software SIParator can only be installed once. You can install up to 3.7 above to see the web GUI of the software SIParator, many times without using the license, but applying the license can only be done once – it must be done on the machine you intend to use. Please contact your sales representative or sales@ingate.com.

5.6 I cannot clone a running SIParator Virtual Machine:

Ingate's licensing does not allow cloning and the product prohibit cloning. Each VM must be installed according to the instructions in this document, including the licensing procedure. There is a check that the MAC address has not been changed since the installation.

5.7 Does the software SIParator support VMware's vMotion?

Yes. For migration, the MAC addresses of the virtual Ethernet adapters must be preserved (needed for license checks).

5.8 When trying to download the software SIParator (the ISO file) at my account login at www.ingate.com, I receive following message:



Please contact sales@ingate.com - The ISO files seem to be out of stock and more files needs to be generated by Ingate. Thereafter, you will be able to continue with the download and you will see the following screen where you will insert your license code.

Download the Software Firewall/SIParator

You need to buy a license code to download and use the Software Firewall/SIParator.

Enter the license code here to proceed with the download.

License codes must be entered in their supplied format: XXXX-XXXX-XXXX.
Please contact Ingate at sales@ingate.com for more information.

Your license code:

Use this license

5.9 Using VMware, what is the minimum MHz allocation I should give to the virtual machine?

We recommend 50MHz reservation. If the virtual machine is pressed to this low figure (others dominating), the startup time will be long - 5 minutes or so. But it ensures at least some SIP functionality and access to the web GUI. VMware generally discourages use of high CPU reservation values, in favor of the "shares" mechanism.

5.10 VMware case - Can I do a snapshot of a running SIParator virtual machine?

Yes, but avoid including the memory in the snapshot. VMware discourages the use of snapshots as a mean for long-term backups. It is meant to be used for "testing software with unknown or potentially harmful effects" and not for production systems, as the disk performance may be degraded.

5.11 VMware's DRS (Distributed Resource Scheduler) is not for SBCs:

We do not recommend using the product in a DRS, at least not in automatic mode. This is due to the probability of losing current sessions when a VM is migrated onto another host. The DRS in manual mode can be helpful for spotting bottlenecks, to suggest (manual and controlled) migrations.

5.12 Can VMware's FT (Fault Tolerant) and HA (High Availability) modes be used?

The Fault Tolerant FT mode can be used, but the virtual machine must be powered off and restarted.

The HA mode cannot be used since the VMware tools needed are not built-in into the product. (Such very stateful high availability function, typically only protects against hardware error and not against software lock-ups).

Instead, use two software SIParators on two different host machines with an Ethernet cable in between. Such failover pair, only maintain long time states, and protects against both hardware faults and software lock-ups.

5.13 Can I, after the installation, add virtual CPUs to a SIParator virtual machine?

Yes, typically you can. The VM must be powered off and restarted.

5.14 Can I, after the installation, add RAM (memory) to a SIParator virtual machine?

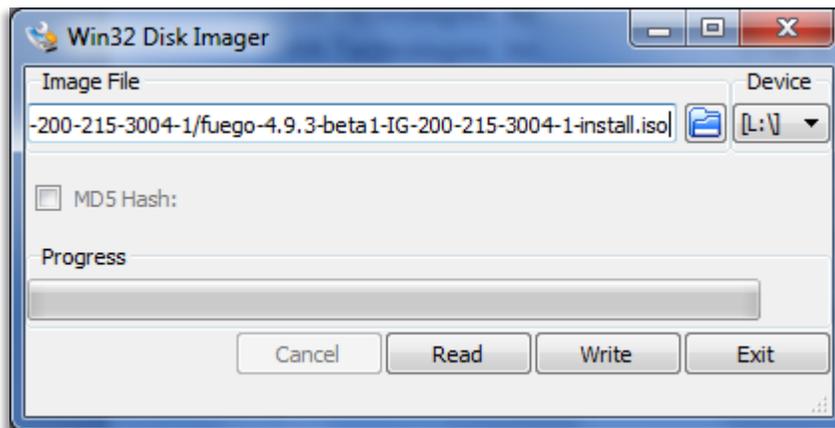
Yes, typically you can. The VM must be powered off and restarted.

6 Appendix B: How to Write Ingate ISO file to USB Drives or CD-ROM Devices

If you are not able to boot directly from the ISO file that you have received, e.g. when install directly on supported PC hardware (instead of on a virtual machine as VMware for example), you can make a bootable CD-ROM or USB-Drive and instead start the installation from that media. Below are some tested examples on how to make a bootable USB- or CD-ROM device, the examples are for Windows but if you only have Linux, you can also use the DD command to make a bootable USB device.

Making a Bootable USB Device using Image-Writer for Windows

1. Download and unpack the latest version of Image-writer from the following link <https://launchpad.net/win32-image-writer>.
2. Insert your USB Device and verify what drive letter it has. Also check that you don't have any important data left on the device.
3. Run the Image-writer executable and browse for the ISO file that you have received from Ingate. In the window for selecting a disk image, you need to change the file type to “*.*”, since Image-writer only lists *.img files as default and not ISO files. Choose save when done.
4. Under “device”, you need to select the drive letter that you noted in step 2. It's important that you choose the correct drive letter, otherwise you might lose data.
5. Press the write button and confirm the shown warning. When done, you should have a bootable USB device and you can continue the Ingate installation.



Making a Bootable CD-ROM Using Imgburn.

1. Download and install Imgburn from the following link: <http://www.imgburn.com/index.php?act=download>
2. Start Imgburn and choose option “write image file to disc”.
3. Under the source section, browse and select the ISO file that you have received from Ingate Systems.
4. Under the destination section choose your CD-writer device and verify that you have a writable CD in the CD-writer device.
5. Press the write button. When done, you should have a bootable CD-ROM and can continue with the Ingate installation.

