VisibleThread

VT Docs - Server Configuration Help

Version 4.4.3 (June 2022)

Trademarks

Table of Contents

1   Introduction & general notes

VisibleThread has two components;

1. **Web-based dashboard**: browser-based interface used for displaying metrics for projects (known as document sets) and documents as well as editing reference models (known as Reference/Best Practices)

2. **VisibleThread Server:** used to analyze documents, handle user interactions, act as a repository for both documents and associated analysis files

This help file is for people who are deploying the VisibleThread Server on-premise behind a corporate firewall.

For other help files or updates to this help file, please refer to the documentation section of the VisibleThread web site at: https://support.visiblethread.com/hc/en-us/categories/201832466-VT-Docs

1.1 VisibleThread Logical View

From a deployment perspective, the VisibleThread Appliance handles:

a. serving pages to the VisibleThread **Dashboard** and processing dashboard requests
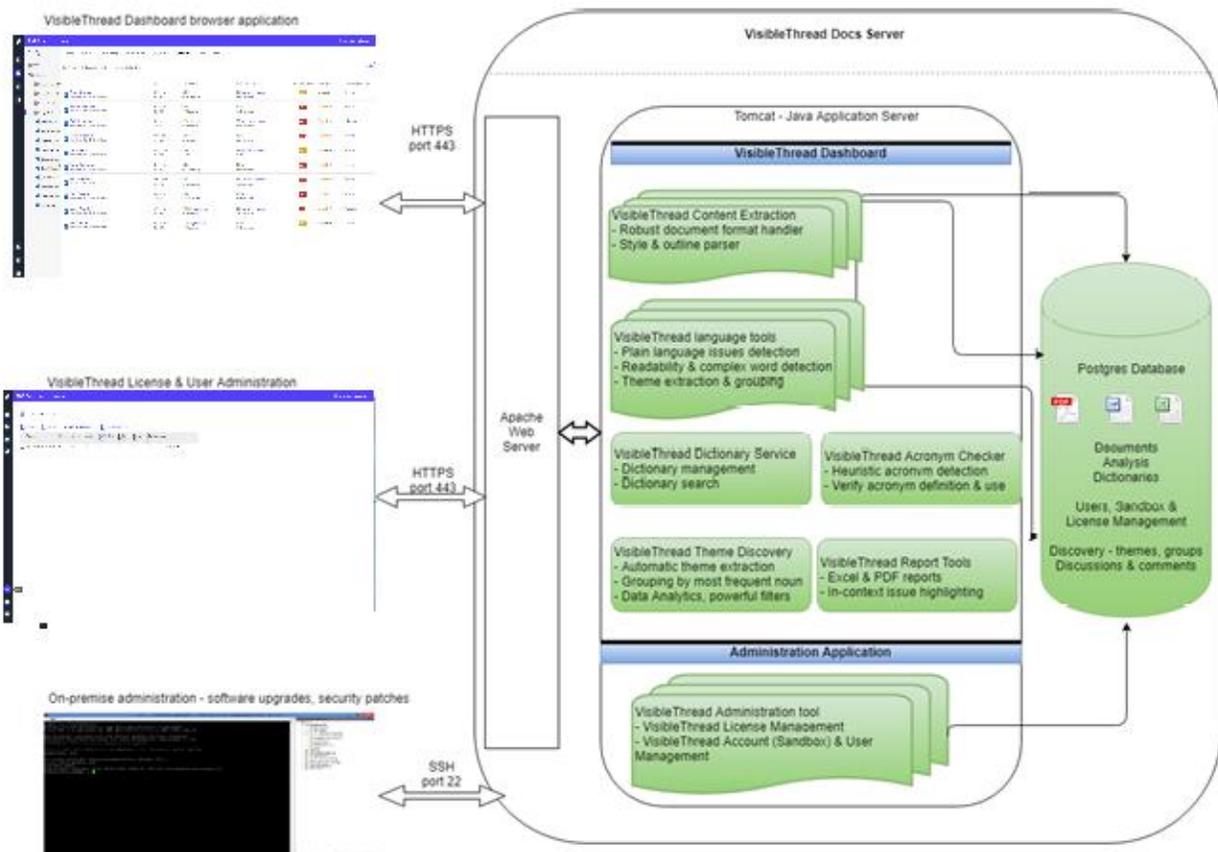
b. user management and licensing

Figure 1 - Logical View of VisibleThread components

A note on Ports: The VisibleThread appliance uses the following 2 ports for all communication outside of the appliance:

- **443:** All communication between the end user browser and the appliance is over HTTPS on port 443.
- **22:** Port 22 is used for SSH access and Secure FTP to upload new software upgrades to the appliance.

The VisibleThread Virtual Appliance does not require the use of any other ports.

1.2 Deployment Mechanics

We provide two ways to deploy VisibleThread software on-premise:

- A **Red Hat package** (a visiblethread-xxx-.rpm file) that you install into your Red Hat Operating System.

- A pre-packaged **Virtual Appliance** (a Virtual Machine (VM)) that you import into your virtualization infrastructure. The VM contains a pre-installed Ubuntu Operating System plus VisibleThread components. All support for anything internal to the appliance (OS, Webserver etc., VT software proper) is handled by us once we're deployed. This means your IT support team need have no worries on supporting our core infrastructure. The Virtual Appliance consists of :
  - o Ubuntu 20.04 LTS 64-bit operating system
  - o Apache 2.4 Web server
  - o Tomcat 8.5 servlet container
  - o PostgreSQL 12 RDBMS
  - o VisibleThread web application

2   Deploying VisibleThread using a pre-packaged Virtual Appliance

The **Virtual Appliance** runs the VisibleThread server software and all internal components. The appliance is distributed as a VMware image. It can be deployed in several ways:

1. If you run **VMware ESX** type infrastructure (e.g. vSphere, vCenter, ESXi) internally, you can deploy our virtual appliance to that

2. You may deploy the VisibleThread on a specific dedicated box using VMWare Workstation. This is recommended only in the case where you wish to evaluate the product or are deploying on a temporary basis.

Running VisibleThread under VMware ESX:

If you run an ESX virtualized environment,
   a. You will need to convert/upload the **Virtual Appliance** using the VMware Converter utility
   b. You will need to allocate **4Gig memory** to the **Virtual Appliance**.
   c. You will need to 'Add to Inventory'

Running VisibleThread on a dedicated machine

If deploying to a dedicated machine you can deploy on VMWare Workstation:

a. Download VMware Workstation from [here](#)..
b. You need a machine with at least **6 GB memory**, this is a key requirement.
c. Ordinarily, our customers take one of two approaches when allocating a machine:

Identify an existing desktop or laptop that will be used and purchase additional memory if it doesn't already have 6Gb.

Or buy a new machine with the required memory footprint.

Running VisibleThread in a private cloud

Please contact our support team at support@visiblethread.com for details on running VisibleThread in a private cloud.

2.1 Downloading the VisibleThread Virtual Appliance

You can download the VisibleThread Appliance using your **web browser** (over http) or using an **FTP client** application. For step-by-step instructions see [How to download the VisibleThread software](#)

After you've downloaded the VisibleThread Appliance (which is packaged as a zip file) you should extract its contents to a temporary directory on your hard drive.

2.2 Deploying the Virtual Appliance to ESX

Read this section if deploying to an internal **VMware ESX** type infrastructure (e.g. vSphere, vCenter, ESXi).

If you run an ESX type virtualized environment:

a. You will need to convert/upload the **Virtual Appliance** using the VMware Converter utility

b. You will need to 'Add to Inventory' our virtual appliance and allocate **4Gig memory**.

For step-by-step instructions see [Deploying VisibleThread on VMWare ESX](#).

2.3 Deploying the Virtual Appliance to VMware Workstation on a dedicated machine

For step-by-step instructions see [Deploying VisibleThread using VMWare Workstation.](#)

2.4 Logging on to the VisibleThread Virtual Appliance for the first time

For the purposes of illustration, we will use screenshots showing VMware Workstation; however, all steps apply to an ESX deployment.

The VisibleThread VMware image is a virtual appliance running Ubuntu 20.04 OS (Operating System). A default user (note this is case sensitive) account exists on the OS:

- User Id: visiblethread
- PWD: password

This account has root privileges for the appliance.

NOTE: The password for this account has been initially set to 'password' however it should be changed at the earliest possible convenience as this user has full access to configure the VisibleThread server.

When the console window opens enter the default username and password outlined above to log in to the system.
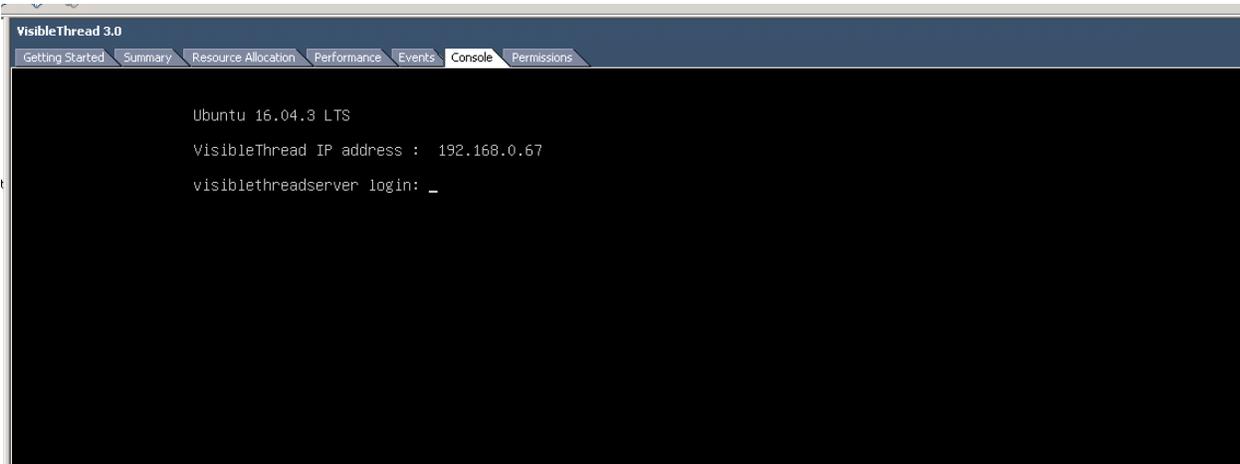
Figure 2 Log in to the VisibleThread console

2.5 Configuring networking on the VisibleThread Virtual Appliance

In order to access the VisibleThread appliance from within your network, the Virtual Appliance must acquire an IP address. Out of the box, VisibleThread tries to get an IP address dynamically using DHCP.

> **NOTE:** Individual corporate environments differ in terms of network policy. It is recommended to consult with your network administrator to complete the remaining configuration in this section. Specific corporate policies and environment configurations make explicit guidance beyond the remit of this help guide.

The following outlines the basic steps that may work; however, as stated in the note above you should consult your network administrator if in doubt.

The default configuration of Ubuntu on the Virtual Appliance is as follows:

- Hostname: visiblethreadserver

- IP Address: IP address is assigned automatically (see "VisibleThread IP address" in Figure 2 Log in to the VisibleThread console)

To check the Virtual Appliance network connection, use the steps outlined below.

2.6 Checking the Virtual Appliance network connection:

1. Log on to the Virtual Appliance console using the default account described above.

2. Type the following command 'ifconfig'.

3. This will list the network configuration on the VisibleThread Virtual Appliance. You should see a result similar to below:

```
eth0     Link encap:Ethernet  HWaddr 40:40:2d:ef:41:54

         inet addr:192.168.1.11   Bcast:192.168.1.255  Mask:255.255.255.0

         inet6 addr: fe80::4240:2dff:feef:4154/64 Scope:Link

         UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1

         RX packets:17632221 errors:0 dropped:0 overruns:0 frame:0

         TX packets:14928547 errors:0 dropped:0 overruns:0 carrier:0

         collisions:0 txqueuelen:1000

         RX bytes:8069857778 (8.0 GB)  TX bytes:17026117038 (17.0 GB)
```

```
lo          Link encap:Local Loopback
            inet addr:127.0.0.1  Mask:255.0.0.0
            inet6 addr: ::1/128 Scope:Host
            UP LOOPBACK RUNNING  MTU:16436  Metric:1
            RX packets:27803287 errors:0 dropped:0 overruns:0 frame:0
            TX packets:27803287 errors:0 dropped:0 overruns:0 carrier:0
            collisions:0 txqueuelen:0
            RX bytes:22318641533 (22.3 GB)  TX bytes:22318641533 (22.3 GB)
```

4. If you see an IP address listed for section 'eth0' (as highlighted in red above) it means the Virtual Appliance has successfully acquired an IP address. If you do not see a section labelled 'eth0' contact your network administrator.

5. On the machine that is hosting the Virtual Appliance try to ping the IP address listed in step 4. In this example that IP address is 192.168.1.11. If the ping is successful, the Virtual Appliance has successfully connected to the network and can be connected to successfully by dashboard.

2.7 Configuring the VisibleThread Virtual Appliance to use a static IP address

The VisibleThread Virtual Appliance is configured to acquire an IP address automatically using DHCP. Depending on your networking policies you may wish to configure the Virtual Appliance to use a specific fixed IP address. You can do so using the following steps:

1. Log on to the Virtual Appliance console using the default account described above

2. Open the /etc/network/interfaces file using the pico editor:

    ```
    sudo pico /etc/network/interfaces
    ```

3. In this file you should see the following line:

    ```
    iface eth0 inet dhcp
    ```

4. Replace the word 'dhcp' with the word 'static' and add the relevant information for your network settings (ip address, gateway etc..), for example:

    ```
    iface eth0 inet static
    address 192.168.1.100
    netmask 255.255.255.0
    network 192.168.1.0
    broadcast 192.168.1.255
    gateway 192.168.1.1
    ```

5. Save and close the /etc/network/interfaces file. To save the file type Ctrl-O i.e. control key and the letter o (which will prompt to save the file), then hit enter. Then to exit to the console type ctrl-x.

6. Restart the networking service on the Virtual Appliance:

    ```
    sudo reboot
    ```

2.7.1   Using SSH to access the VisibleThread Virtual Appliance

The VisibleThread Virtual Appliance console can be accessed via SSH (Secure SHell) using port 22. Using freely available SSH tools (e.g. putty http://www.putty.org/) can be an easier way of working with the console than via the VMware Server console utility.

3   Deploying VisibleThread on Red Hat using an rpm file

For details on how to install VisibleThread Docs on Red Hat, please see https://support.visiblethread.com/hc/en-us/articles/214225406

4   VisibleThread Initial Configuration

To complete the setup of the VisibleThread Virtual Appliance, open a web browser and enter the following address in the address bar: "https://<VisibleThread Virtual Appliance IP Address>" .

Since this is the first time the application has been accessed, you will be redirected to the VisibleThread administration site to complete the server configuration. To access the VisibleThread administration site you will require a username and password. By default the username is 'visiblethread' and the password is 'password'.

Note: If you are using Internet Explorer, you may see a warning relating to website security certificates. It is safe to ignore this warning. Refer to section 8 SSL Security Certificates for more information.

4.1 Uploading a license file

The first time you point your browser at https://<VisibleThread Virtual Appliance IP Address> you will be prompted to upload a VisibleThread license file. You should have received a VisibleThread license file as part of your welcome email. If you did not receive one, contact our support team at support@visiblethread.com.
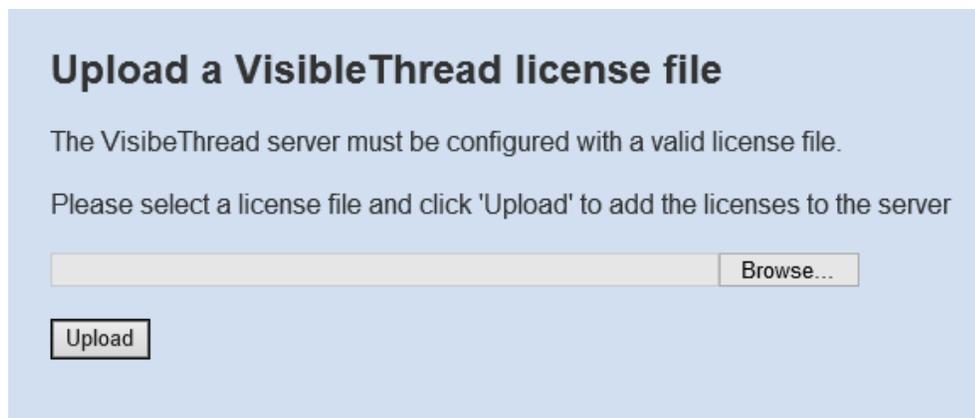

Figure 3 Upload License File

1. Hit the 'Browse' button to select the license file from your PC.

2. Click on the 'Upload' button to upload it to the server.

3. Once the upload has completed, click on the 'Continue' button.

4.2 Configuring VisibleThread users

Once a valid license file has been uploaded you will be brought to the VisibleThread administration site.

> **NOTE:** It is worth bookmarking this page, as this site allows a system administrator to maintain VisibleThread users and licenses.
>
> This site can be accessed at any time by entering "https://<VisibleThread Virtual Appliance IP>/sandboxAdmin" in your browser.

VisibleThread users are defined in terms of sandboxes. A VisibleThread sandbox is a shared workspace for a set of users. A sandbox allows multiple users work on the same set of documents.

The VisibleThread server contains a pre-configured 'Default Sandbox'. For typical deployments, all users in VisibleThread will exist within this sandbox.

Figure 4 VisibleThread sandbox administration

4.2.1 Creating a VisibleThread user

To create a user, click on the 'Click to Add/Remove users' link beside the 'Default Sandbox'.

Detailed instructions on adding and editing user details can be found here:

http://support.visiblethread.com/entries/22195103-How-do-I-add-remove-users-from-VisibleThread

4.2.2 Sandbox user limits and password expiration policies

You can set a user limit on any sandbox. This allows you create sandboxes for various business units in your organisation, but control license allocation centrally. This prevents users from one business unit taking up all the licenses on the system.

More details can be found here:

https://support.visiblethread.com/hc/en-us/articles/214225506-How-to-create-sandboxes-add-users-and-upload-licenses

4.3 Testing the deployment

To verify VisibleThread has been configured correctly, you can attempt to log on to the application using the username and password of a user you created in the previous step.

Point your browser at https://< VisibleThread Virtual Appliance IP Address> and you will be presented with the dashboard sign-in screen. Enter the details of a VisibleThread user created in the previous step.
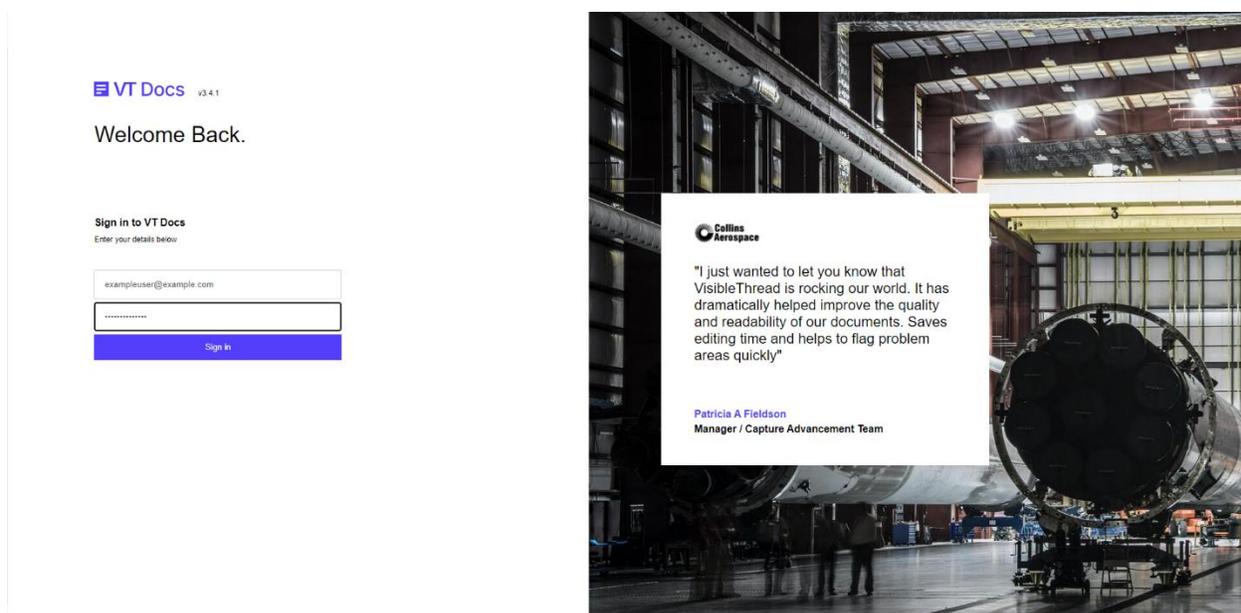
Figure 5 Signing in to the dashboard

If the sign-in has been successful, you should see the VisibleThread dashboard as per the screenshot below.
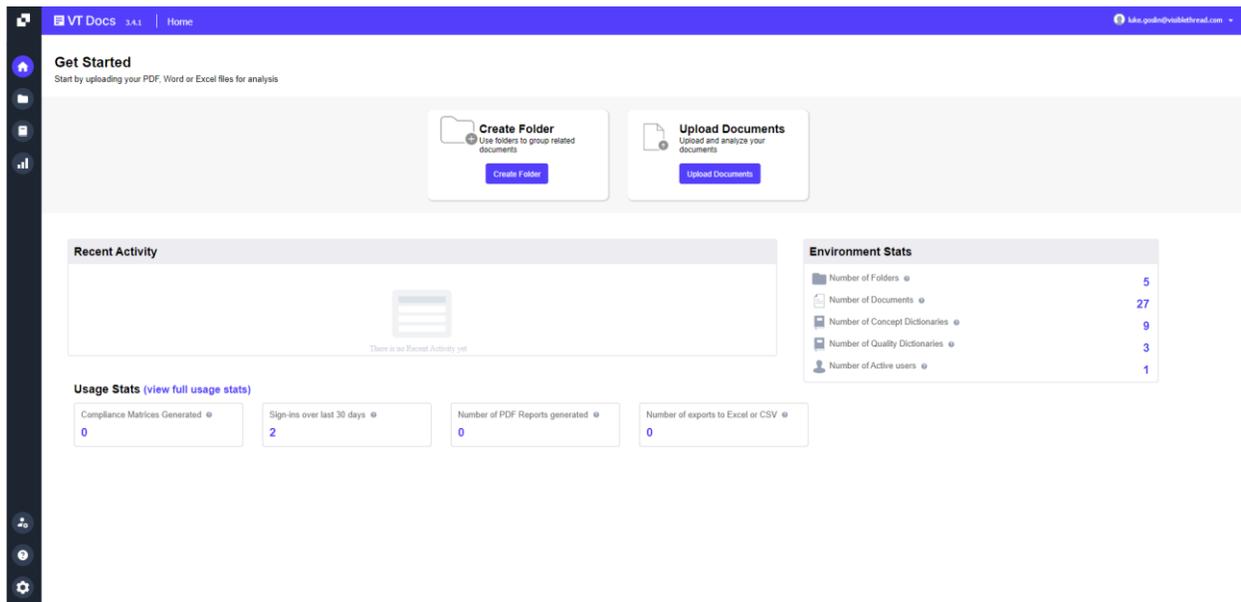

Figure 6 Successful sign-in to dashboard

4.4 Upload a Test Document

In order to verify that the VisibleThread analysis service has been installed correctly, you should upload a test document.

Sign in to the dashboard as described in the previous step. Select the ▇ button in the tree on the left. This will bring you into the folder view. From here, select the folder 'Examples' and click on the ▇ button to add a new document. Click on the 'Add' button and use the file chooser to select a document to upload.

When the document has been successfully uploaded and analysed you should see the following screen:
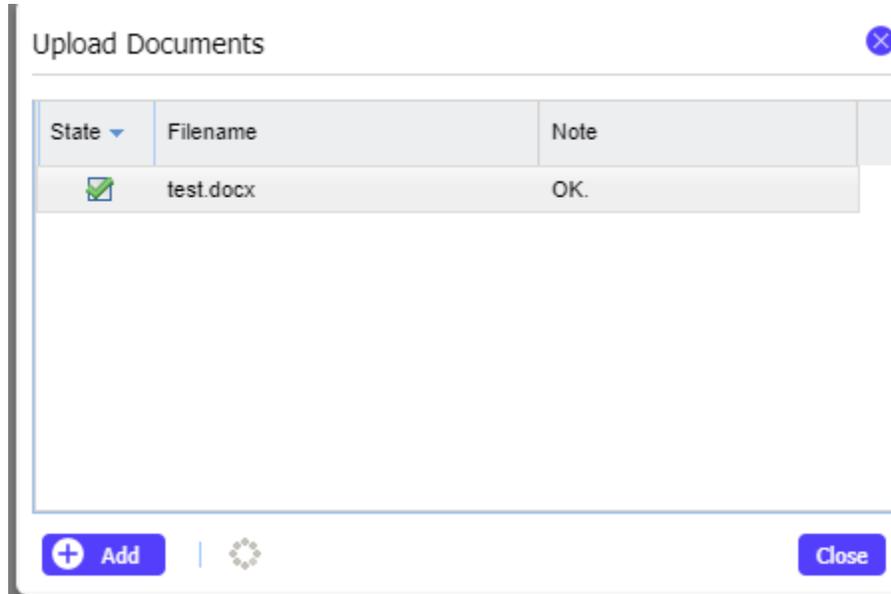
Figure 7 Adding a new document

Clicking the 'Close' button will bring you into the detailed analysis for the document.

5   SSL Security Certificates

VisibleThread uses SSL to encrypt traffic between the web browser and the VisibleThread server. The VisibleThread server uses a self-signed certificate in order to accomplish this. Because the certificate is self-signed, any user accessing the VisibleThread dashboard using Internet Explorer will see a warning similar to the screenshot below the first time they navigate to the dashboard. If you have VisibleThread deployed inside a secured network, it is safe to accept the warnings and continue to the dashboard.
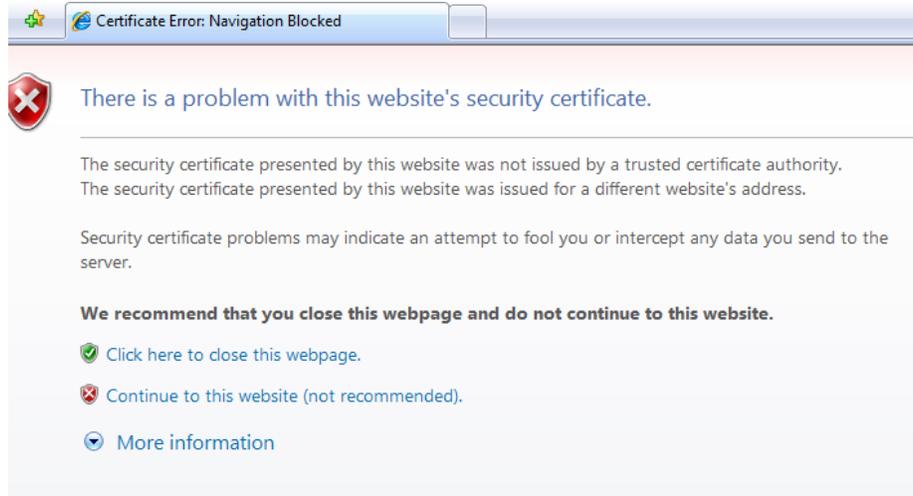
Figure 8 Certificate warning in Internet Explorer 7

You may wish to purchase a certificate signed by a well-known authority and install it on Apache on the VisibleThread Virtual Appliance.

Detailed instructions on how to install such a certificate can be found here:

https://support.visiblethread.com/hc/en-us/articles/214225526-How-to-install-an-SSL-certificate-on-a-deployed-VisibleThread-Server

It is also possible to front VisibleThread Docs with your own web server/load balancer and use your existing SSL certificates. For details contact support@visiblethread.com.

6   Securing the Server

The following steps are recommended to secure your on-premise VisibleThread server.

Note: You will need to login to the Linux terminal either remotely (using SSH e.g. Putty) or have direct terminal access to carry out the following steps.

6.1   Change the password for the OS/Linux users

Out of the box, both root and VisibleThread users have their password set to "password". **Note:** the VisibleThread user has sudo (or root) privileges.

To get started, login to the terminal as the visiblethread user. Then you can:

1.   change the visiblethread user's password: `passwd`
2.   change the root user's password: `sudo passwd root`
3.   **or** disable root user login: `sudo passwd -l root`

6.2   Change the VisibleThread administration site password

VisibleThread contains an administration web application to create sandboxes, upload licenses and administer users. This web app is available at:

"https://<VisibleThread Virtual Appliance IP>/sandboxAdmin"

Out of the box, the credentials to access the administration site are visiblethread/password. To change this credential please see this support article : How-do-I-change-the-default-SandBox-admin-password

7 Backing up VisibleThread data

It is recommended that you back up the VisibleThread server regularly so that in the unlikely event of a system failure, or outage, the system can be restored to a stable state with minimal loss.

It is possible to backup and restore the VisibleThread server in one of two ways:

- backing up or snapshotting the VisibleThread Virtual Appliance using your Hyper-visor (preferred method)

- backing up the VisibleThread data only

As best practice, we suggest backing up the VisibleThread data twice weekly or at other suitably frequent intervals depending on your corporate policy.

7.1 Backing up the entire VisibleThread Virtual Appliance (Ubuntu deployments only)

The easiest way to back up the VisibleThread server is to back up the entire VisibleThread Virtual Appliance. If you are deployed on VMWare ESX or Microsoft Hyper-V this can be accomplished by taking a snapshot of the virtual machine or using other standard features of your virtualization infrastructure.

7.2 Back up the VisibleThread data only

VT Docs contains a backup script that will backup all VisibleThread user accounts and user data. This backup data is placed in an archive file in the /home/visiblethread/VisibleThreadTools/vtbackups (Ubuntu) or /opt/visiblethread/VisibleThreadTools/vtbackups (RedHat) folder. This script is useful as it takes a relatively short amount of time to run.

To run this script, log on to the VisibleThread server and execute the following commands:

```
# Ubuntu
./vt-backup.sh

# Red Hat
sudo -u visiblethread ./vt-backup.sh
```

Note: You may be prompted for the "visiblethread" user password when running this command.

This will create a backup tar.gz file in the /home/visiblethread/VisibleThreadTools/vtbackups (Ubuntu) or /opt/visiblethread/VisibleThreadTools/vtbackups (RedHat) folder.

To restore the VisibleThread data log on to the VisibleThread Virtual Appliance console and execute the following commands:

```
cd VisibleThreadTools
./vt-restore.sh -f vtbackups/<backupfile>
```

Note: You may be prompted for the "visiblethread" user password when running this command.

The <backupfile> parameter is the name of a backup file created using the 'vt-backup' command.

8   Upgrading VisibleThread Docs

Periodically new versions of the VisibleThread server software become available, for instance you may wish to upgrade from Server version 2.x to 2.y

This section is for those performing such an upgrade.

Red Hat and Ubuntu deployments each have a different upgrade mechanism. Each one will be covered below:

8.1   Upgrading a VisibleThread Docs Ubuntu deployment

Upgrade files have an extension of '.tar.gz' so an example file might be 'VisibleThreadServer2.12-Upgrade.tar.gz'. You will have been provided details of where to download this upgrade file from VisibleThread support via e-mail. Mail support@visiblethread.com should you not have received these details.

When you have downloaded your upgrade file, it needs to be added to the /home/visiblethread/VisibleThreadTools/upgrade folder on the VisibleThread Virtual Appliance.

8.1.1   Uploading the upgrade file to the server

You can upload the upgrade file to the server via SSH (Secure SHell) using port 22.

The easiest way to do this is to use one of several freely available tools such as the FileZilla client (http://filezilla-project.org/) or WinSCP (http://www.winscp.net). The next section outlines the detailed steps to complete this:

1. Connect to your server using the following details:
   – IP address
   – Username: visiblethread
   – Password: password (unless changed when completing Section 2.4 Logging on to the VisibleThread Virtual Appliance for the first time
   – Port: 22
2. Once connected, navigate to the /home/visiblethread/VisibleThreadTools/upgrade folder.
3. Upload the upgrade file to this folder.

8.1.2   Back up VisibleThread data

Note: We recommend that you perform a backup of data prior to upgrading, in the event that the upgrade encounters any unforeseen issues.

To do so, follow the steps outlined in section: "7.2 Back up the VisibleThread data only" in order to back up your VisibleThread user accounts and user data.

8.1.3   Applying the upgrade to the Virtual Appliance

The VisibleThread Virtual Appliance contains an upgrade script that will perform an upgrade of the Virtual Appliance

To run this script, log on to the VisibleThread Virtual Appliance console and execute the following commands:

```
cd /home/visiblethread/VisibleThreadTools
./vt-upgrade.sh upgrade/<upgradefilename.tar.gz>
```

Note: You may be prompted for the "visiblethread" user password when running this command.

This will unpackage the archive and deploy the release files, and restart tomcat.

8.2 Upgrading a VisibleThread Docs Red Hat deployment

Upgrades are distributed in the form of a new rpm package. You will have been provided details of where to download this upgrade file from VisibleThread support via e-mail. Mail support@visiblethread.com should you not have received these details.

When you have downloaded your upgrade file, it needs to be added to the /opt/visiblethread/VisibleThreadTools/upgrade folder on the Red Hat server.

8.2.1   Back up VisibleThread data

Note: We recommend that you perform a backup of data prior to upgrading, in the event that the upgrade encounters any unforeseen issues.

To do so, follow the steps outlined in section: "7.2 Back up the VisibleThread data only" in order to back up your VisibleThread user accounts and user data.

8.2.2   Installing the new upgrade

To apply the new upgrade simply install the new RPM:

```
cd /opt/visiblethread/VisibleThreadTools/upgrade
yum install -y visiblethread-docs-3.1-1.x86_64.rpm
```

This will install the new application version and restart the services.

8.3 Testing the Upgrade

To verify the upgrade was performed successfully, check the server version number on the sign-in screen of the dashboard.

Point your browser at https://< VisibleThread Virtual Appliance IP Address> verify the version number is what you expect.
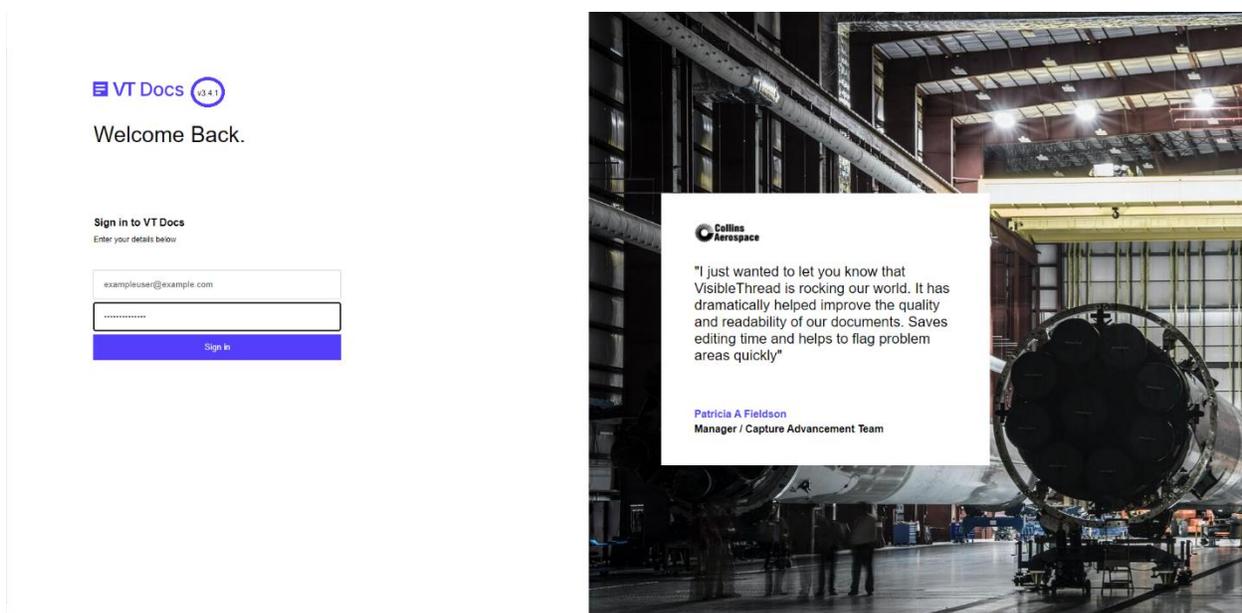
Figure 9 Sign-in screen showing version number

9   A Summary of VisibleThread configuration settings

9.1 VisibleThread server Virtual Appliance username

The VisibleThread server Virtual Appliance username is configured on initial deployment to be 'visiblethread' with password 'password'.

9.2 VisibleThread sandbox administration site

The url for the VisibleThread sandbox Administration site is https://<VisibleThread Virtual Appliance IP Address>/sandboxAdmin

On initial deployment the credentials for this page are username: 'visiblethread' password: 'password'. These can be modified by changing the settings in the '/home/visiblethread/tomcat6/conf/tomcat-users.xml' file, the relevant line is highlighted below:

```
<tomcat-users>
<role rolename="vtdeploymentadmin"/>
<user username="visiblethread" password="password" roles="vtdeploymentadmin"/>
</tomcat-users>
```

Once you modify this file you must restart tomcat for the changes to take effect.

9.3 Session timeout

By default, VisibleThread user's dashboard sessions will timeout after 30 minutes. That is after 30 minutes of inactivity the user will be asked to log in again. This setting can be configured by modifying the following section in /home/visiblethread/tomcat/conf/web.xml file and restarting tomcat (timeout is in minutes):

```
<session-config>

        <session-timeout>30</session-timeout>

</session-config>
```

9.4 Tomcat Logging

The VisibleThread web application logs all message to the Tomcat Logger. The tomcat logger is configured to log all log messages to the 'catalina.out' file under /home/visiblethread/tomcat/logs.

10 Troubleshooting

If you have any issues or need help, please check our support forum at http://support.visiblethread.com

The VisibleThread server is designed so that it can detect and attempt to repair/recover from any issues it encounters. In unforeseen circumstances where the server cannot recover you can manually force the server to restart by logging on to the VisibleThread Virtual Appliance console and execute the following commands:

```
cd VisibleThreadTools
./vt-restart-server.sh
```

Note: You may be prompted for the "visiblethread" user password when running this command.

If you have issues, please do not hesitate to let us know directly by sending a mail to: support@visiblethread.com.

Any usage queries or bug reports can also be forwarded to the same address.

11 VisibleThread virtual appliance encrypted data at rest

The VisibleThread virtual appliance is available with the option of encrypting all data at rest. This setup keeps all VisibleThread data on an encrypted disk volume using AES (aes-xts-plain64:sha256) with 512-bit keys.

Note: contact support@visiblethread.com to request access to the VisibleThread Docs on-premise Encrypted virtual machine.

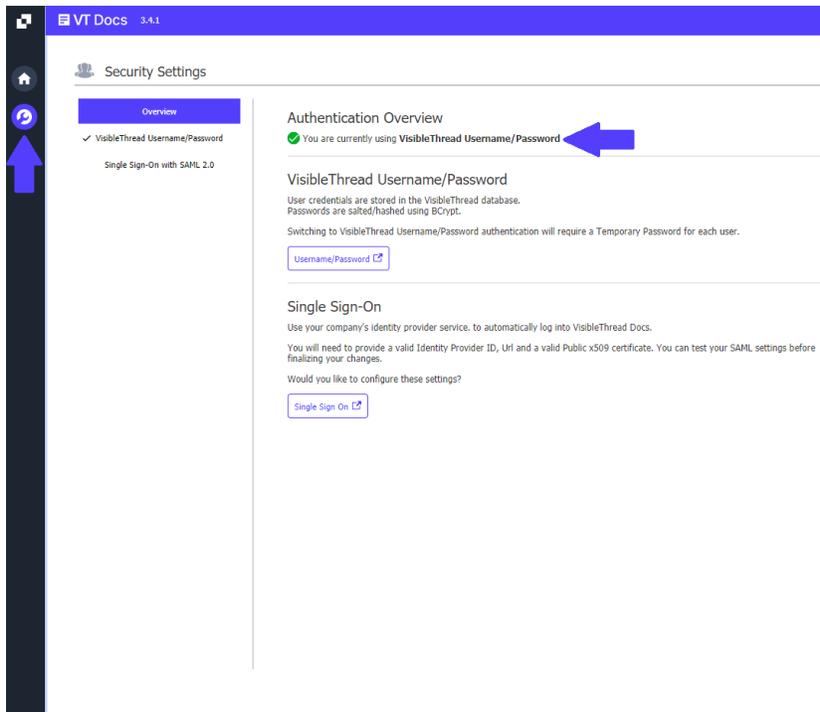## 12 VisibleThread Support and Security Policy

There are roughly two releases of VisibleThread each year. Each release comprises of updates to the VisibleThread application on the Virtual Appliance.

For details on how VisibleThread support patches and updates to the operating on the VisibleThread VM, see our on-premise security policy here.

13 Security Settings
The Security Settings area is a new feature that allows a system administrator for the VisibleThread application to configure SSO with SAML 2.0. To navigate to this area visit https://yourdomain/sandboxAdmin once here you should notice a tab called "Security Settings"(see screenshot below). By default, VisibleThread is setup to use Username and Password authentication. After enabling and configuring SSO, you do have the ability to revert to Username and Password authentication. The default view of the "Security Settings" area looks like this: (Note that it shows that you are currently using VisibleThread Username/Password).

If you wish to enable and configure SSO follow our online support article:
https://support.visiblethread.com/hc/en-us/articles/360038695431-Getting-Started-with-Single-Sign-On-SSO-

To setup SSO for Active Directory and VisibleThread Docs on-prem:
https://support.visiblethread.com/hc/en-us/articles/360038784951-Setup-Single-Sign-On-for-Active-Directory-and-VisibleThread-Docs-on-prem

Switching Back to Username/Password

If for any reason you wish to return to Username/Password navigate to https://yourdomain/sandboxAdmin and click on "Security Settings" > VisibleThread Username/Password. Before enabling, the application will prompt you to create a One Time Password for all users. This password will have to be delegated to users

by the admin of the application.
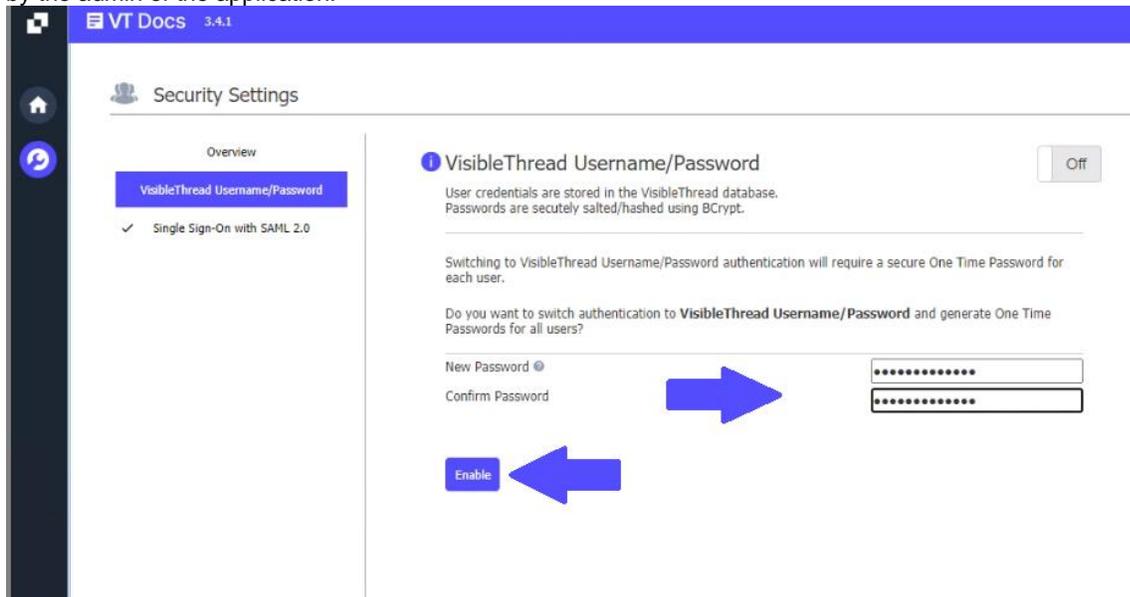
After enabling Username/Password the next time a user logs in they will be prompted to enter the One Time Password you setup and create a new password.
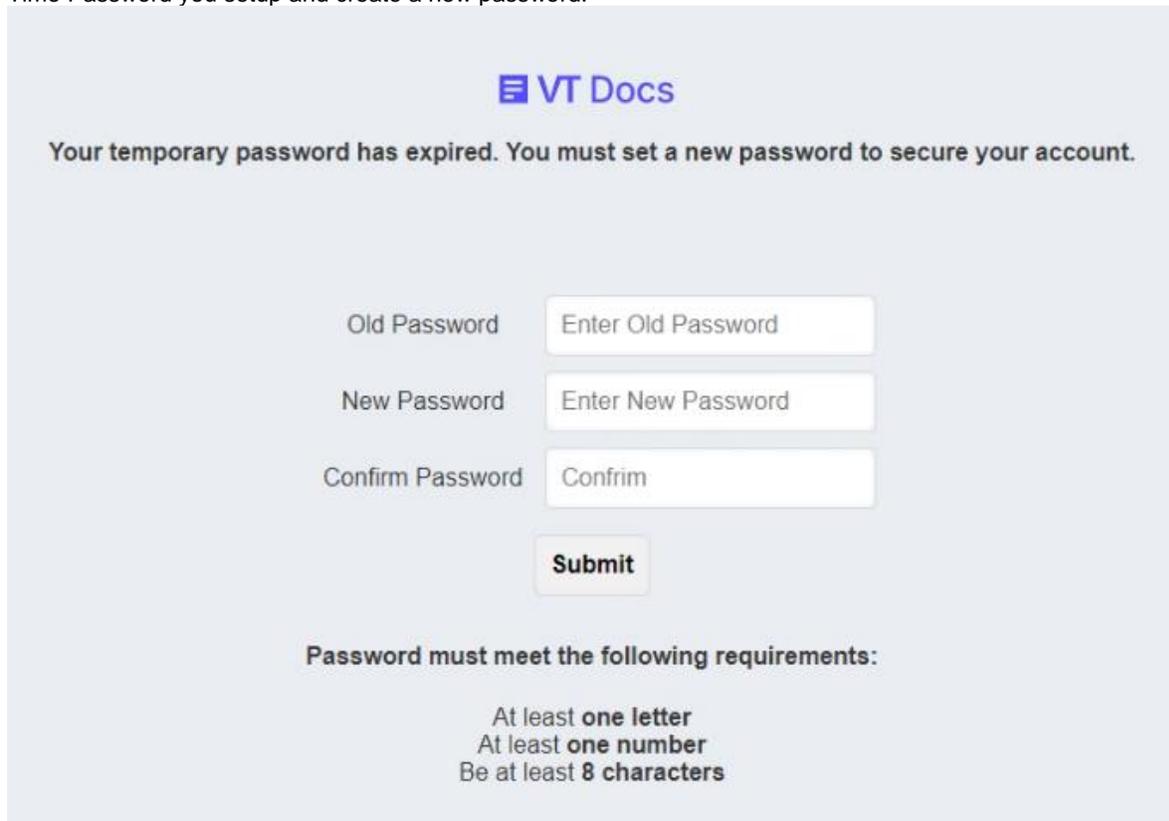
Once the above step is complete the user will be able to log in again!