Host Access Analyzer 1.1

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Installing HAA on Linux

Introduction

The Host Access Analyzer (HAA) installer for Linux is a `tar.gz` file that contains docker images for all required components as well as installation scripts and certificate components.

Terminology

The following terminology is used in this guide:

Single machine	When installing HAA on a single machine, the machine is referred to as *Manager*.
Three machines	When installing HAA on three machines, the machines are referred to as: • *Manager* • *Node 1* • *Node 2* Services are distributed between three different machines, including the one where setup is run.

Prerequisites

Supported operating systems:

- RHEL 7.4 and later, RHEL 8.*x*
- SUSE SLES 12, SUSE SLES 15

Hardware:

Each machine requires a minimum of:

- 16 GB RAM
- 4 CPUs

Software:

- Docker engine (minimum version 18.09.0) and docker-compose tool (minimum version 1.22.0)

Firewall:

- The following ports must be available:
  - TCP port 2377 for Manager node.
  - TCP and UDP port 7946 for all nodes.
  - UDP port 4789 for all nodes.

  Any firewall should be configured correctly. On the Manager machine, the firewall must allow either default SSL port 443, or a custom port you provide during setup, as well as port 6566.

Enhanced security features:

Enhanced security features should be turned off.

Certificates:

If you intend to replace the supplied self-signed certificates in the `cert` directory, you must prepare your own certificates.

Virtual memory for Elasticsearch node

By default, Elasticsearch uses a `mmapfs` directory to store its indexes. The default operating system limits on mmap counts is likely to be too low, which may result in out of memory exceptions. On Linux, you can increase the limits by running the following command using administrator permissions on the node where Elasticsearch is going to be installed:

```
sysctl -w vm.max_map_count=262144
```

To set this value permanently, update the `vm.max_map_count` setting in the `/etc/sysctl.conf` file. To verify after rebooting, run `sysctl vm.max_map_count`.

Memory lock limits for Elasticsearch node

Elasticsearch tries to lock memory to improve performance. We recommend removing memory lock limits to enable this. Use administrator permissions to remove the limit for docker on the Elasticsearch node:

1. Add the line `LimitMEMLOCK=infinity` to the `[Service]` section of the `/usr/lib/systemd/system/docker.service` file and `containerd.service` (if it exists).
2. Run `systemctl daemon-reload`.
3. Run `systemctl restart docker` and `containerd` (if it exists).
4. Restart HAA by running `./stop.sh` and `./start.sh` on the Manager node if it was already running.

Preparing for installation

Run `tar -xf <filename>.tar.gz` to extract the content.

Setup Script

`setup` script contains different parameters you can use. To see the usage guide, run `./setup.sh` without parameters.

--single-machine	Triggers single machine installation.
User1@HostName|IP User2@HostName|IP	Triggers swarm installation on three defined machines (current machine plus additional supplied machines.)
--tempdir	Specifies where the files are uploaded on the node machines. Optional. If provided, `tempdir` should be located on all nodes. If omitted, the `/tmp` directory is used by default.
--hostname	Full public host name of the Manager machine. For example, `foo.myorg.com`. Optional. If omitted, you are prompted during setup.
--port	Desired SSL port. Optional. If omitted, you are prompted during setup. Defaults to `443`.
--certfile	`/path/to/your/file.crt`. Optional. The installer supplies a self-generated certificate file. If omitted, you are prompted during setup.
--keyfile	`/path/to/your/file.key`. Optional. The installer supplies a self-generated key file. If omitted, you are prompted during setup.
--eula-accepted	Optional. If omitted, you are prompted to accept the End User License Agreement during setup.

Installing HAA Server on three machines

This is the recommended method of installing HAA Server.

Use the supplied `setup.sh` script to install HAA Server on the manager node and two specified nodes.

```
./setup.sh <User>@<NODE 1(HostName|IP)> <User>@<NODE 2(HostName|IP)> [--tempdir=<dir>>] [--hostname=<full_public_host_name_of_machine>] [--port=<port>] [--certfile=</path/to/your/file.crt>] [--keyfile=</path/to/your/file.key>][--eula-accepted]
```

During the process you might be prompted to accept the End User License Agreement, as well as for `hostname/port` and the `crt/key` file path if not entered in advance.

You might also be prompted for passwords to the other nodes.

Note: Installation starts the service automatically.

Stop service

To stop the services, run the `./stop.sh` script.

Start service

To start previously stopped services, run the `./start.sh` script.

Installing HAA Server on a single machine

Use the supplied `setup.sh` script to install HAA Server on a single machine.

```
./setup.sh --single-machine [--tempdir=<dir>>] [--hostname=<full_public_host_name_of_machine>] [--port=<port>] [--certfile=</path/to/your/file.crt>] [--keyfile=</path/to/your/file.key>][--eula-accepted]
```

During the process you might be prompted to accept the End User License Agreement, as well as for `hostname/port` and the `crt/key` file path if not entered in advance.

You might also be prompted for passwords to the other nodes.

Note: Installation starts the service automatically.

Stop service

To stop the services, run the `./stop.sh` script.

Start service

To start previously stopped services, run the `./start.sh` script.

Accessing the server

Configuring users

For user integration with LDAP, see *LDAP configuration* on page 15.

For manual user configuration, see *Manual user configuration* on page 15.

Configuring the client

Use the Manager node IP address with port 6566.

Accessing the portal

Enter the following into a browser:

```
https://<manager_host_name>[:<Non-Default User Defined SSL Port>]
```

Accessing Identity and Access management

1. To access the **Identity and Access Management** page, enter the following URL in your browser:

   ```
   https://<manager-host-name>[:<user_defined_SSL_port>]/auth
   ```

2. Enter the following credentials:

   ```
   admin
   ```

   and:

   ```
   admin
   ```

   Change these after your first login.

Installing HAA on Windows

Introduction

The Host Access Analyzer (HAA) installer for Windows is an `.msi` file.

The `.msi` file is used to install all HAA components:

- JAVA
- HAA Server
- HAA Portal
- RabbitMQ
- Traefik Proxy
- Elasticsearch
- Kibana
- PostgresSQL
- Identity and Access Management

When you run the file, the installation files for each component are extracted to a location you select.

Installation methods

There are two ways to install HAA Server:

msi installation When asked to run an msi installation, double-click the `.msi` file. This starts the installation wizard.

Batch installation When asked to run a batch install, double-click the batch file with default parameters. You can also use the command prompt to run the same batch file and supply arguments based on this manual.

Note: Ensure you close the command prompt window for each completed batch execution before proceeding to the next installation step.

Terminology

The following terminology is used in this guide:

Single machine When installing HAA on a single machine, the machine is referred to as *Manager*.

Three machines When installing HAA on three machines, the machines are referred to as:

- *Manager*
- *Node 1*
- *Node 2*

Prerequisites

Each machine requires a minimum of:

Hardware:

- 16 GB RAM
- 4 CPUs

Software:

- Windows Server 2016 or 2019

Open firewall ports

If you are not using Windows firewall, you must open the following ports:

Note: For single machine installation, all the ports should be open for the Manager node.

Manager node	Traefik port (default 443) GRPC Port (default 6566) RabbitMQ Ports (5672 & 15672)
Node 1	ElasticSearch Port (default 9200) Kibana Port (default 5601)
Node 2	IAM Port (8081) Portal port (8080)

Installing HAA Server

Enabling .NET 3.5

Note: For 3-node setup, install on all nodes.

1. Open Server Manager from `: start Server Manager`
2. Select **2 Add roles and features**.
3. Click **Next >** four times.
4. Check **.NET Framework 3.5 Features**.
5. Click **Next >**.
6. Click **Install**.
7. When installation is complete, close the window.

Installing Java

Note: For 3-node setup, install on all nodes.

In the JAVA folder, double-click the `Install_JAVA.bat` file.

The batch file installs JAVA on the machine.

There are no arguments for this file.

Close the command prompt window when execution completes.

Installing Elasticsearch

Note: For 3-node setup, install on Node 1.

In the `Elasticsearch` folder, double-click the `Install_ES.bat` file.

The batch file installs Elasticsearch on the machine.

The following arguments can be configured:

-Folder	Sets the installation directory. Default is `Program Files`.
-Port	Sets the service listening port. Default is 9200.

To configure these arguments, run the following from a command prompt:

```
Install_ES.bat [-Folder <folder>] [-Port <port>]
```

Close the command prompt window when execution completes.

Installing Kibana

Note: For 3-node setup, install on Node 1.

In the `Kibana` folder, double-click the `Install_Kibana.bat` file.

The batch file installs Kibana on the machine.

The following arguments can be configured:

-Folder	Sets the installation directory. Default is `Program Files`.
-Port	Sets the service listening port. Default is 5601.
-Elasticsearch	Sets the Elasticsearch endpoint (host:port). Default is `http://localhost:9200`.

To configure these arguments, run the following from a command prompt:

```
Install_Kibana.bat [-Folder <folder>] [-Port <port>] [-Elasticsearch
<endpoint>]
```

Close the command prompt window when execution completes.

Installing RabbitMQ

Note: For 3-node setup, install on the Manager node.

1. In the `RabbitMQ` folder, install the RabbitMQ prerequisite Erlang using the `otp-22.1-win64.exe` installer file. Use all installation defaults.

   Note: You might be prompted to install Visual studio 2013 redistributable package. If so, install it by clicking install on the machine.
2. Install RabbitMQ using the supplied `rabbitmq-server-3.7.20.exe` installer file. Use all installation defaults.
3. Double-click `Configure_RabbitMQ.bat`.

   This configures RabbitMQ on the machine. No arguments are available for this file.
4. Close the command prompt window when execution completes.

Installing HAA Server

Note: For 3-node setup, run the installer twice: once on the Manager node and once on Node 2.

1. In the `Server` folder, double-click the `HAA Server-<ver>.msi` file.

   Follow the instruction up to the **Settings** page.
2. Enter the ElasticSearch host you installed ElasticSearch on, and the port you used for the installation. Default ElasticSearch port is 9200.
3. Enter the RabbitMQ host you installed RabbitMQ on. Keep the default port 5672.
4. *For 3-node setup, perform this step only on the Manager node:*

   Check **Producer Mode** and use `6566` as the default **GRPC Port**.
5. *For 3-node setup, perform this step only on Node 2:*

   Check **Consumer Mode**.
6. *For single-node setup:*

   Check **Producer Mode** and **Consumer Mode**.
7. Click **Next**, then **Install**.
8. Click **Finish** to exit the setup wizard.

Installing PostgreSQL

Note: For 3-node setup, install on Node 2.

1. In the `Postgres` folder, double-click `Install_postgres.bat`.
2. When prompted for a password, enter:

   `postgres`
3. Close the command prompt window when execution completes.

Installing Identity and Access Management

Note: For 3-node setup, install on Node 2.

1. In the `IAM` folder, run the following file:

   `Install_Iam.bat [-Folder <folder>]`

   where:

   `<folder>` specifies the installation folder. Default is `C:\IAM`.

   During installation you might be prompted to press any key to continue.
2. After installation is complete, close the command prompt window.
3. Open a browser window on the node and navigate to:

   `http://localhost:8081`
4. Click **Continue**.
5. Enter the following credentials:

   User: `admin`

   Password: `admin`

6. Hover over **Master** and click **Add Realm**.
7. Next to **Import,** click **Select File**.
8. Select the `haaRealm.json` file supplied in the `IAM` folder.
9. Click **Create.**
10. After the realm is created, navigate to the **Themes** tab.
11. Next to **Login Theme**, **Account Theme**, and **Admin Console Theme**, select **haa** from the drop-down list.
12. Click **Save**.

For user integration with LDAP, see *LDAP configuration* on page 15.

For manual user configuration, see *Manual user configuration* on page 15.

Installing the HAA Portal

Note: For 3-node setup, install on Node 2.

1. Install the server using the `HAA Portal-`*`<ver>`*`.msi` file.

   Follow The instruction up to the **Settings** page.
2. In the **Proxy** frame, type the Manager node IP. Use 443 for the port.
3. Keep the **Port Field** as `8080`.
4. Click **Next**, then **Install**.
5. Click **Finish** to exit the setup wizard.

Installing Traefik Proxy

Note: For 3-node setup, install on the Manager node.

In the Traefik folder, locate the `env.properties` file. Use your preferred text editor to edit the file.

```
#Set the host and port of the server where Kibana  is installed.
#Example : host:5601
KIBANA_HOST_PORT=
#Set the host and port of the server where Identity Access Manager is
installed
IAM_HOST_PORT=
#Set the host and port of the server where HAA Portal is installed
PORTAL_HOST_PORT=
#Set the public host and port of the server where HAA PRODUCER server is
installed
#Default port is 6566
HAA_PRODUCER_SERVER_HOST_PORT=
```

1. After `KIBANA_HOST_PORT` add

   <Manager_Node_DNS_for_single_node_or_node_1_DNS_for_3_node_setup>:<kibana_port>

   Default Kibana port is 5601.
2. After `IAM_HOST_PORT` add

   <Manager_Node_DNS_for_single_node_or_node_2_DNS_for_3_node_setup>:<iam_port>

   Default IAM port is 8081.
3. After `PORTAL_HOST_PORT` add

`<Manager_Node_DNS_for_single_node_or_node_2_DNS_for_3_node_setup>:<portal_port>`

Default HAA Portal port is 8080.

4. After `HAA_PRODUCER_SERVER_HOST_PORT=` add

   <Manager_Node_DNS>:*<server_producer_port>*
5. Save the changes and close the editor.
6. Install Traefik using the `Install.Traefik.bat` file.
7. Close the command prompt window when execution completes.

Accessing the server

Configuring the client

Use the Manager node IP address with port 6656.

Accessing the portal

Enter the following into a browser:

`https://<Manager_Node_IP>`

Configuring Identity and Access Management

Opening the Identity and Access Management console

Enter the following URL in your browser:

https://*<manager-host-name>*[:*<User_Defined_SSL_PORT>*]/auth>

User: `admin`
Password: `admin`

Change these defaults after you first log in.

LDAP configuration

1. Open the **Identity and Access Management** console.
2. On the **Realm Settings** page, verify that the **haa** realm is selected from the top left drop-down.
3. Click **Clients** and verify that **haa-portal** appears in the list.
4. Click **User Federation**. On the **Settings** page:
   a) Add a **User Federation** provider of type **ldap**.
   b) For **Vendor**, select **Active Directory**.
   c) Populate the required fields with information provided by your system administrator.
5. To use the domain user name in portal authentication, replace the value **cn** with **sAMAccountName** in the following fields:

   Username LDAP attribute
   RDN LDAP attribute
6. Click **Save**.
7. Click **Synchronise all users** to import all Active Directory users into Identity and Access Management.

Manual user configuration

1. From the left menu select **Users**.
2. Click **Add user**.
3. Type **user** for **User Name** and click **Save**.
4. Navigate to the **Credentials** page.
5. Type **user123** in the **New Password** and **Password Confirmation** fields.
6. Toggle **Temporary** to **OFF**.
7. Click **Reset Password**.
8. Select **Change Password** from the pop-up menu.

Installing and Configuring the HAA Client

System Requirements

Operating systems, applications, and environments

Host Access Analyzer operates on PCs with the following operating systems, applications, and environments:

- Windows 7, 8.1, and 10

Prerequisite software

The following software is required for Host Access Analyzer Client to install:

- Microsoft .NET Framework 4.5

  If not already installed, Host Access Analyzer installs it automatically, if the installer is able to download the required files.
- Microsoft Visual C++ 2015-2019 Redistributable (x86 and/or x64)

  If not already installed, Host Access Analyzer installs it automatically.

Installation

The installer automatically installs a new service, Host Access Analyzer Service, which runs under the System account.

The Host Access Analyzer client installer for windows is a `.exe` file that allows both silent and wizard installation.

In silent installation mode, you can use a command line parameter to avoid starting the service automatically after installation. For example, to allow configuration modifications to be made first. In this case, the service either starts after the next reboot or can be started manually.

Installing the service silently

Run `haa-client-installer-<ver>.exe` as an administrator.

Command line parameters

<*haa-server-hostname*> The IP or host name of the HAA producer server.
<*haa-server-port*> The port of the HAA producer server.
<*silent*> Runs installation without user interaction with the installation progress window displayed.
<*verysilent*> Runs installation without user interaction, without the installation progress window displayed.
<*nostart*> Does not start the service automatically after installation.
<*norestart*> Does not restart Windows, even if the installer requires a system restart.

For more parameters, see *https://jrsoftware.org/ishelp/index.php?topic=setupcmdline*.

Examples:

```
haa-client-installer-<ver>.exe /haa-server-hostname=10.10.13.102 /haa-server-port=6566 /silent /nostart
```

This installs silently with progress displayed with the provided hostname and port.

```
haa-client-installer-<ver>.exe /silent
```

This installs silently with progress displayed. If a restart is required, a restart message prompt is displayed at the end.

`haa-client-installer-<ver>.exe /silent /norestart`

This installs silently with progress displayed. No restart message prompt is displayed at the end, even if needed by the installer.

`haa-client-installer-<ver>.exe /verysilent /norestart`

This installs silently without progress displayed. No restart message prompt is displayed at the end, even if needed by the installer.

`haa-client-installer-<ver>.exe /verysilent`

This installs silently without progress displayed. If required, the system restarts automatically without a message prompt.

Uninstalling the service silently

From the install location, run the following command:

`unins000.exe /silent`

Installing the service using the wizard

Double-click the `haa-client-installer-<ver>.exe` file.

Modifying configurations

Note: To change client configurations on all clients, refer to the HAA Portal Guide.

To modify individual client-side behavior manually (for example, for debugging purposes):

In the install location, edit the `HostAccessAnalyzerService.exe.config` file and set `ConfigurationUpdaterFeature` to false (to prevent overrides by the configuration stored on the server).

Edit the configuration files, followed by a service restart.

There are three separate configuration files, controlling server connectivity, service-wide configurations, and user-specific configurations.

Note:

Product configurations and logs can be found under the product configuration location at `%ProgramData%\Micro Focus\HostAccessAnalyzer`.

User configurations are located in the user's private dir, `C:\Users\<user_name>\AppData\Local\Micro Focus\HostAccessAnalyzer`.

The default product installation location is `%ProgramFiles(x86)%\Micro Focus\Host Access Analyzer`.

Note: Any configuration change requires a service restart to take effect.

Server configuration

The server configuration defines how the client connects to the server.

The `HostAccessAnalyzerUserConfiguration.conf` file in the *product configuration location* contains the default server configuration. The following shows an example configuration:

```
{
  "Host": "10.141.11.231",
  "Port": 6566,
  "Security": {
    "EnableSSL": true,
    "HostOverride": "haa",
    "CertificatePath": ""
  }
}
```

The host and port are assigned during installation. The connection is set to be secured by default. Otherwise, you need not change anything.

Service configuration

The service configuration includes tasks for uploading scan results and monitoring TCP connections to specific hosts.

Uploading scan results

The `HostAccessAnalyzerUserConfiguration.conf` file in the *product configuration location* contains the service configuration:

```
{
    "tasks": [
        {
            "cronSchedulerExpression": "0 0 2 * * ?",
            "offsetInHours": 3,
            "uploadImmediately": false,
            "taskConfiguration": {
                "@type": "type.googleapis.com/
com.microfocus.tecom.rpc.api.management.MessagesUploaderTaskConfiguration"
            }
        }
    ],
    "connectionMonitoring": {
        "enabled": true,
        "monitoredHosts": {},
        "connectionPollingInterval": 5
    },
    "tempMessagesStorageLocation": "%programdata%\\Micro Focus\
\HostAccessAnalyzer\\Requests"
}
```

`cronSchedulerExpression` defines the task schedule:

This value ...	Starts the schedule ...
0	After 0 seconds.
0	After 0 minutes.
2	At 2 AM.
*	Every day.
*	Every month.
?	Any year.

`MessagesUploaderTaskConfiguration` defines when to upload scan results to the server (see *User Configuration*). By default, the task runs at 2 AM each day, as defined by `cronSchedulerExpression`, then picks a random time from zero minutes to 3 hours (`offsetInHours`) and begins uploading. The aim is to reduce network load while uploading across the organization. You can modify this as desired.

Note: If a task misses its schedule, for example, if a machine is offline, it runs automatically at the first available opportunity.

Monitoring connections

HAA monitors all TCP connections to a set of defined hosts. The hosts list is configured at the machine level in the `HostAccessAnalyzerServiceConfiguration.conf` file in the *product configuration location*.

To add hosts to the list, edit the file and apply your changes to the `monitoredHosts` entry. For example:

```
    "connectionMonitoring": {
    "enabled": true,
    "monitoredHosts": {
        "Popeye": "*",
        "Olive": "23",
        "Bluto": "22, 23",
        "Wimpy": "20 - 30",
        "10.10.10.100": "*"
    },
    "connectionPollingInterval": 5
}
```

where:

This line ...	Means ...
`"enabled": true,`	Enable/disable all connection monitoring.
`"Popeye": "*",`	Monitor all ports of a host.
`"Olive": "23",`	Monitor a specific port of a host.
`"Bluto": "22, 23",`	Monitor a comma-separated list of ports of a host.
`"Wimpy": "20 - 30",`	Monitor a range of ports of a host.
`"10.10.10.100": "*"`	Monitor all ports of a host address.

Notes:

- If a task misses its schedule, for example, if a machine is offline, it runs automatically at the first available opportunity.
- To turn off monitoring, you can either delete all hosts from this list or change the `enabled` setting to `false`.
- `connectionPollingInterval` is a setting that applies to how often, in seconds, monitoring TCP connections executes on Windows 7. It should be left unchanged unless a valid reason exists to the contrary.

User configuration

User configuration defines which terminal emulator content should be collected for the specific user, Initially, for each user a copy of the default user configuration file, `HostAccessAnalyzerUserConfiguration.conf` is placed in the *user's private directory*.

This is the default user configuration:

```
{
  "tasks": [
    {
      "cronSchedulerExpression": "0 0 12 2 * ?",
```

```
      "offsetInHours": 0,
      "uploadImmediately": true,
      "taskConfiguration": {
        "@type": "type.googleapis.com/
com.microfocus.tecom.rpc.api.management.InstalledProductsTaskConfiguration",
        "filters": [
          {
            "vendorNameRegEx": [
              "(?i)(Micro Focus|Attachmate)"
            ],
            "productNameRegEx": [
              "(?i)(.*)?Extra!(.*)?"
            ],
            "addon": false,
            "mappedFamily": {
              "microfocus": {
                "product": "EXTRA"
              }
            }
          },
          {
            "vendorNameRegEx": [
              "(?i)(Micro Focus|Attachmate)"
            ],
            "productNameRegEx": [
              "(?i)(.*)?Infoconnect(.*)?"
            ],
            "addon": false,
            "mappedFamily": {
              "microfocus": {
                "product": "INFOCONNECT"
              }
            }
          },
          {
            "vendorNameRegEx": [
              "(?i)(Micro Focus|Attachmate)"
            ],
            "productNameRegEx": [
              "(?i)(.*)?Reflection(?!((.*)FTP))(.*)?"
            ],
            "addon": false,
            "mappedFamily": {
              "microfocus": {
                "product": "REFLECTION"
              }
            }
          },
          {
            "vendorNameRegEx": [
              "(?i)(Micro Focus|Attachmate)"
            ],
            "productNameRegEx": [
              "(?i)(.*)?Reflection(.*)FTP(.*)?"
            ],
            "addon": false,
            "mappedFamily": {
              "microfocus": {
                "product": "REFLECTION_FTP_CLIENT"
              }
            }
          },
          {
            "vendorNameRegEx": [
```

```
              "(?i)Micro Focus"
            ],
            "productNameRegEx": [
              "(?i)(.*)?Rumba(?!((.*)FTP|(.*)VB|(.*)Script engine)|(.*)TP
Director|(.*)Developers Edition)(.*)?"
            ],
            "addon": false,
            "mappedFamily": {
              "microfocus": {
                "product": "RUMBA"
              }
            }
          },
          {
            "vendorNameRegEx": [
              "(?i)Micro Focus"
            ],
            "productNameRegEx": [
              "(?i)(.*)?Rumba(.*)FTP(.*)?"
            ],
            "addon": false,
            "mappedFamily": {
              "microfocus": {
                "product": "RUMBA_FTP_CLIENT"
              }
            }
          },
          {
            "vendorNameRegEx": [
              "(?i)Micro Focus"
            ],
            "productNameRegEx": [
              "(?i)(.*)?Rumba((.*)VB|(.*)Script engine|(.*)TP Director|
(.*)Developers Edition)(.*)?"
            ],
            "addon": true,
            "mappedFamily": {
              "microfocus": {
                "product": "RUMBA"
              }
            }
          },
          {
            "vendorNameRegEx": [
              "(?i)IBM"
            ],
            "productNameRegEx": [
              "(?i)(.*)?IBM Personal Communications(.*)?"
            ],
            "addon": false,
            "mappedFamily": {
              "ibm": {
                "product": "PCOMM"
              }
            }
          }
        ]
      }
    },
    {
      "cronSchedulerExpression": "0 0 12 2 * ?",
      "offsetInHours": 0,
      "uploadImmediately": false,
      "taskConfiguration": {
```

```
        "@type": "type.googleapis.com/
com.microfocus.tecom.rpc.api.management.FileSystemScanTaskConfiguration",
        "includesExpression": [
          "%localDrives%"
        ],
        "excludesExpression": [
          "%windir%",
          "%recycleBins%",
          "%networkDrives%",
          "**node_modules**"
        ],
        "maxFileSize": 50
      }
    }
  ],
  "pluginFamilies": [
    {
      "microfocus": {
        "product": "RUMBA"
      }
    },
    {
      "microfocus": {
        "product": "EXTRA"
      }
    },
    {
      "microfocus": {
        "product": "REFLECTION"
      }
    },
    {
      "microfocus": {
        "product": "INFOCONNECT"
      }
    },
    {
      "ibm": {
        "product": "PCOMM"
      }
    }
  ]
}
```

`cronSchedulerExpression` defines the task schedule:

This value ...	Starts the schedule ...
`0`	After 0 seconds.
`0`	After 0 minutes.
`12`	At noon.
`2`	On the 2nd of each month.
`*`	Every month.
`?`	Any year.

Note: Host Access Analyzer currently covers Micro Focus (Rumba+ Desktop, Extra!, InfoConnect, and Reflection) and IBM (PComm) terminal emulator products.

By default, the user configuration file includes several sections:

- A periodic task to scan for installed terminal emulator products. This task is currently set to execute monthly (at noon on the 2nd of the month).

- A periodic task to scan for the terminal emulator files (workspaces, sessions, macros, keyboard maps, and toolbar definitions). All files are verified before being uploaded to the server.

  This task is currently set to execute monthly (at noon on the 2nd of the month). To specify the search or exclude locations for this task:

  - You must specify one or more locations, separated by commas.
  - Escape explicit paths. For example,

    `C:\\Temp`
  - Ant Path format is supported. For example, `C:\\**\\Macros`.
  - You can use environment variables (inside %%), as well as these predefined tokens:

    ```
    %localDrives%
    %networkDrives%
    ```
- A list of the enabled terminal emulator products to monitor. For example, Rumba+ Desktop and Reflection. You can change the list to enable and disable monitoring of specific products.

Notes:

- If a task has not run before, it runs automatically on launch.
- If a task misses its schedule, for example, if a machine is offline, it runs automatically at the first available opportunity.
- To run all scans again, delete the `HostAccessAnalyzerTaskExecutions.conf` file in the *product configuration location*, and restart the service.

Plug-in configurations

For each plug-in (monitored emulator), the configuration defines which files should be collected for a specific product, and how to verify their relevance before uploading.

The configuration also lists all the processes that the emulator launches, and how they should be monitored.

Note: To modify a plug-in configuration, you must edit the file placed in the install location's `Plugins` directory, not the default file in the *product configuration location*.

This is the default Micro Focus Extra! configuration:

```
{
  "family": {
    "microfocus": {
      "product": "EXTRA"
    }
  },
  "pluginDefinition": {
    "extensions": [
      {
        "ext": "ebm",
        "resourceType": "MACRO",
        "compound": {
          "xpathExpression": "CxMacro"
        }
      },
      {
        "ext": "edp",
        "resourceType": "SESSION_PROFILE",
        "content": {
          "regexExpression": "CPType=SESSION"
        }
      },
      {
```

```
        "ext": "elf",
        "resourceType": "WORKSPACE",
        "content": {
          "regexExpression": "(?i)layout.*Sub Main"
        }
      },
      {
        "ext": "epp",
        "resourceType": "SESSION_PROFILE",
        "content": {
          "regexExpression": "CPType=SESSION"
        }
      },
      {
        "ext": "ekm",
        "resourceType": "KEYBOARD",
        "binary": {
          "tokens": [
            {
              "offset": "0",
              "content": "S01BUA=="
            }
          ]
        }
      },
      {
        "ext": "ebh",
        "resourceType": "MACRO",
        "content": {
          "regexExpression": "(?i)(sub|function|dim)"
        }
      },
      {
        "ext": "etb",
        "resourceType": "TOOLBAR",
        "binary": {
          "tokens": [
            {
              "offset": "0",
              "content": "UVBBRA=="
            }
          ]
        }
      }
    ],
    "processes": [
      {
        "name": "Extra.exe",
        "type": {
          "existence": false,
          "internal": false,
          "connectivity": true
        }
      }
    ]
  }
}
```

Working Offline

If you want to configure clients that do not upload directly to the server, go through the following steps:

1. If needed, set the server IP address in `HostAccessAnalyzerServerConfiguration.conf` to `127.0.0.1`, then restart the service.
2. Work normally. Uploads remain on disk in the `Requests` folder in the Pg. 6 Add a link to the *product configuration location*.
3. When you want to upload, stop the service and move all content from the `Requests` folder to a connected client's `Requests` folder.
4. Edit the connected client's `HostAccessAnalyzerTaskExecution.conf` file and delete the `MessagesUploaderTask` block so the upload task executes immediately.
5. Restart the service.

Using the HAA Portal

Introducing the Host Access Analyzer Web Portal

The Host Access Analyzer (HAA) web portal shows you inventory statistics on the assets, users, and machines installed in your enterprise.

Supported browsers

Supported browsers for the HAA web portal are:

- Chrome Version 78 and later
- Firefox Version 70 and later

Dashboards

General and detailed information is displayed in a series of dashboards.

Overview dashboard

The **Overview** dashboard provides snapshot of the collected assets in your enterprise. The dashboard displays information about:

- **Global Filter**

  Allows you to filter your dashboards by user name, device name, or operating system.

  Notes:

  - Any filter applied to the **Overview** dashboard also applies to the three dashboards below.
  - Filtering within a specific dashboard tab does not affect any other tab nor the **Overview** dashboard.
  - Filtering the **Overview** dashboard overrides the filters in the three dashboards below.

- **Installed Products**

  The number of different products installed.
- **Files**

  The number and type of different files found, such as macros and session profiles. Shows the total amount of assets and the amount of unique assets.
- **Product Connections**

  The number of product connections.
- **Monitored Users and Monitored Devices**

  The number and percentage of monitored users and devices. You can configure the information displayed using the **Edit Coverage Settings** button. When you set the total amount of users or devices, the percentage of the total value appears. If coverage settings are not set, only the number of monitored users or devices appears (no percentage)

Products dashboard

Shows information about installed products.

Patches	Filters the displayed results by product and patch name.
Installed Products	Shows information about the installed products.
Version Split	Shows installed products by version.

Files dashboard

Shows information about the collected files.

Session Types	Shows the number of sessions split by session type. For example, mainframe and AS/400. Also shows the total amount of assets and the amount of unique assets.
Macro Types	Shows the number of macro files split by type. For example, EML and VBA. Also shows the number amount of macros per type and the number of unique macros per type.
Macro Size	Shows the sizes of collected macro files (in bytes). Also shows the distribution of the total number of macros and number of unique macros.

Connections dashboard

Shows the events received from the connection monitor.

Connections by Product and Host	Shows usage by product and host.
Connections by Product Version	Shows the usage for every product, split by product version.
Connections by Host and Port	Shows the usage by host and port.
Connection Distribution by Time of Day	Shows the usage made at a specific time of day, split by product name.
Connection History	Shows the usage of products per day over the defined time frame.

Exporting dashboard data

You can export data from each individual data display of the dashboard. To do this:

1. Hover your mouse over a dashboard panel.

   Three dots appear in the upper right corner.
2. Click the three dots.

   A dialog box appears.
3. Click **Inspect**.

   A dialog box appears where you can save the data by exporting it as a `.csv` file.
4. Specify a name for the file and save it.

Customizing your view of data

You can customize the way data is displayed by editing each of the dashboards. Use filters to slice the information in various ways. You can save sets of filters to reuse

Using the time filter

Use the **Time filter** drop-down to select a time range for all dashboard displays. Default is **Last 30 days**.

Using My Views

Use the **My Views** button to create and save different sets of filters that you can reuse.

When you log into the HAA portal, you can apply your own saved filters, change them or create new filters.

Saving a new view

To save a specific, filtered view of the data displayed in the portal:

1. Open the **My Views** list.
2. Click **SAVE AS NEW**.
3. Type a name for the view and an optional description.
4. Click **SAVE**.

   The star icon on the **My Views** button becomes solid and the name of the view replaces **My View** on the button.

When you save a current view, all active filters are saved, including specific dashboard tab filters.

Applying a saved view

To apply a view that you have previously saved:

1. Open the **My Views** list.
2. Select the required view from the list.

   The view is applied. The star icon becomes solid and the name of the view replaces **My View** on the button.

Saving a changed view

Note: When you edit a filter, the star icon changes to half solid.

To save a view that you changed:

1. Open the **My Views** list.
2. Click **SAVE CHANGES**.

The star icon becomes solid.

Clearing a view

To clear the current view, click the cross **X** on the **My Views** button. Filters from all dashboards are removed and the star icon becomes empty.

Editing or deleting a view

To edit or delete a view:

1. Open the **My Views** list.
2. Hover over a saved view to show the **Edit** and **Delete** icons.
3. To edit a view:

a) Click **Edit**.
b) Make your changes, then click **SAVE**.

When you save a current view, all active filters are saved, including specific dashboard tab filters.

4. To delete a view:

a) Click **Delete**.
b) Click **YES** to delete the view.

Searching views

You can search for a saved view by opening the **My Views** list and typing in the **Search** box at the top of the list.

Editing dashboards

You can edit each of the dashboards.

To edit a dashboard:

1. Select the pencil button in the upper-right corner of the detailed dashboards panel.

   A new browser instance opens showing the current dashboard, allowing you to edit and add to the dashboard display.
2. After you have finished editing, go back to the main portal browser window.
3. Click **YES** to refresh the dashboard display and see the changes.

To return to the default view, select **Settings** > **Reset** from the side panel, then click **RESTORE**.

Managing reports

HAA provides a set of predefined reports that you can generate and download to your machine. You can also create your own custom reports by defining them either from the **Reports** tab or directly from the dashboard.

You can create a report in three ways:

- Creating a custom report based on a filtered dashboard pane. This is the quickest way to create a report.
- Creating a custom report from scratch, from the **CUSTOMIZED** list on the **DEFINED REPORTS** page.
- Creating a report from a predefined HAA report definition, available in the **PREDEFINED** list on the **DEFINED REPORTS** page.

Creating a custom report requires three steps:

1. Define the report:
   - What data to use **PRODUCTS**, **FILES**, or **EVENTS**.
   - Decide how to slice the data: which filters to apply on the data.
   - Decide which columns are to be displayed in the report and in what order.
2. Generate the report.
3. Download the report

Creating a report from one of the predefined HAA reports requires only steps 2 and 3.

Note: Although you can generate reports, you cannot edit them. To do this:

1. Create a duplicate of a report by clicking the ellipsis to the right of a report, then clicking **Duplicate**. The report opens in the **Create report definition** window.

2. When you save your changes, a new report definition is added to the **CUSTOMIZED** list.

Defined reports

For each defined report you can:

- Edit existing customized reports (view mode only for the predefined reports).
- Rename customized reports.
- Duplicate customized reports to easily create copy of an existing report.
- Delete single or multiple reports.

Generated reports

For each generated report, you can delete single or multiple reports.

Defining a report from the dashboard

To define a report from the dashboard:

1. Select the **Create report definition** icon at the top right of the dashboards panel.

   The **Create report definition** window appears showing the records relevant for the specific dashboard it was opened from and with the selected filters and time range already applied to the dashboard.
2. You can:
   - Add and remove filters.
   - Select specific columns and their order.
   - Change the time range.
   - Change the name and description.
3. When you have finished, click one of the following:
   - **SAVE**: Adds the report definition to the **CUSTOMIZED** list.
   - **SAVE AND GENERATE**: Creates the report definition, sends it for generation, then adds it to the **GENERATED REPORTS** list.
   - **CANCEL**

Defining a report using the Reporting button

1. Select **Reporting** from the side panel.

   The **DEFINED REPORTS** page appears by default.
2. In the **CUSTOMIZED** list, click the **Add report definition** icon.
3. Select a report from the pop-up menu:
   - **Products**
   - **Files**
   - **Connections**

   The **Create Report Definition** window appears.
4. You can add filters, select specific columns and their order, and change the time range.
5. Click **SAVE** or **SAVE AND GENERATE**.

Generating a report

To generate a report:

1. Select **Reporting** from the side panel.

   The **DEFINED REPORTS** page appears by default.
2. Select the report you want from the **PREDEFINED REPORTS** or **CUSTOMIZED** lists.
3. Do one of the following:
   - Select the options menu of the selected report and click **Generate CSV Report**.
   - Select multiple reports and click the **Generate reports from selected items** icon at the top right of the list.

The reports are automatically added to the **GENERATED REPORTS** list with status **Pending**. This changes to **Processing** when the report starts generating. When the report is ready to download, the status changes to **Completed** and the **Download report** icon becomes available.

Downloading a report

To download a report:

1. Select **Reporting** > **Generated Reports** from the side panel.

   The **GENERATED REPORTS** page appears.
2. Click the download icon next to the report you want to download.

   The file is downloaded as ZIPped `.csv` file.

Editing filters

Open the **Create Report Definition** window by selecting the **Create report definition** icon at the top right of the dashboards panel.

You can also open the **Create Report Definition** window from the **DEFINED REPORTS** page, either by adding a new report definition or by editing an existing definition.

There are four ways to edit filters:

Left pane

The left pane contains a list of all available fields:

- Click on a field to open a list of the top five values of the fields in the database.
- Click the magnifying glass icons with plus sign to right of the value to add the value as a filter.
- Click the magnifying glass icon with the minus sign to filter out the table for this value.

Top filters area

Use the filters at the top of the **DEFINE REPORT** dialog to:

- Click a selected filter to open a drop-down list with the following options:
  - **Edit filter**
  - **Exclude results**
  - **Temporarily disable**
  - **Delete**
- Click the **x** button to the right side of the filter removes the filter.
- Click **Add filter** to add a new filter.

Table column values

If at least one column is displayed, hover over a value in the table to show a magnifying glass icon with a plus and minus sign, Use this to filter for or filter out the table for this value.

Table row fields

Click the arrow to the left of a row in the table to show all the fields of that row. Hovering over a field provides the following options:

- **Filter for value**: show only rows with this field equals this value. First icon from the left.
- **Filter out value**: show only rows with this field not equals this value. Second icon from the left.
- **Filter for field present**: show only rows with this field present. Fourth icon from the left.

Editing columns

Open the **Create Report Definition** window by selecting the **Create report definition** icon at the top right of the dashboards panel.

You can also open the **Create Report Definition** window from the **DEFINED REPORTS** page, either by adding a new report definition or by editing an existing definition.

You can edit columns in two ways:

Left pane

The left pane contains two lists: **Selected fields** and **Available fields**,

Hover the mouse over a field from the **Available fields** list. An **Add** button appears to the right of the field. Click **Add** to add this field as a column to the table and also to the **Selected fields** list.

Hover the mouse over a field from the **Selected fields** list. A **Remove** button appears. Click **Remove** remove the column from the table and move the field back to the **Available fields** list.

Table record fields

To add a column, click the arrow to the left of a record to open it. Hover the mouse over the field you want to add as a column, then click **Toggle column in table**.

Click the toggle button again to remove the column from the table. You can also remove a column from the table by hovering over the column header and clicking the **x** button:

To change the order of the columns, hover the mouse over the column header, then click the left arrow to move the column to the left, or the right arrow to move column to the right.

Modifying client configuration files

You can edit the following client configuration files:

- Service configuration
- User configuration
- Configuration files for any installed plug-ins

To edit a configuration file:

1. From the side panel, select **Settings** > **Client Configuration**.

   The **CLIENT CONFIGURATION** page appears.
2. Select the configuration file you want to edit from the drop-down list.

   For information about configuration settings, see *Installing and Configuring the HAA Client*.
3. After editing the configuration with the embedded JSON editor, click **SAVE**.

   The modified configuration is updated on the server and is applied when the client updater service is run by the scheduler. By default, the scheduler runs every 60 minutes.

Side panel

The side panel contains the following elements:

Select this ...	To do this ...
Dashboards	Display the portal dashboards.
Reporting	Define, generate, and download reports.
Settings	
Client Configuration	Modify the HAA client configuration files.
Reset	Revert all dashboard displays to their default state at installation.

Menu options

There are two menu icons in the top right of the HAA portal:

Select this ...	To do this ...
Log out	Log out of the HAA portal.
Help	View the online Help and About information.

Contacting Micro Focus

Our Web site gives up-to-date details of contact numbers and addresses.

Further information and product support

Additional technical information or advice is available from several sources.

The product support pages contain a considerable amount of additional information, such as:

- The *Product Updates* section of the Micro Focus SupportLine Web site, where you can download fixes and documentation updates.
- The *Examples and Utilities* section of the Micro Focus SupportLine Web site, including demos and additional product documentation.
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To connect, enter *https://www.microfocus.com/en-us/support* in your browser.

Note: Some information may be available only to customers who have maintenance agreements.

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- The Micro Focus YouTube channel for videos related to your product. .

Information we need

However you contact us, please try to include the information below, if you have it. The more information you can give, the better Micro Focus SupportLine can help you. But if you don't know all the answers, or you think some are irrelevant to your problem, please give whatever information you have.

- The name and version number of all products that you think might be causing a problem.
- Your computer make and model.
- Your operating system version number and details of any networking software you are using.
- The amount of memory in your computer.
- The relevant page reference or section in the documentation.
- Your serial number. To find out this number, look in the subject line and body of your Electronic Product Delivery Notice email that you received from Micro Focus.

Contact information

Our Web site gives up-to-date details of contact numbers and addresses.

Additional technical information or advice is available from several sources.

The product support pages contain considerable additional information, including the *Product Updates* section of the Micro Focus SupportLine Web site, where you can download fixes and documentation updates. Go to *Micro Focus Product Updates*.

To connect, enter *https://www.microfocus.com/en-us/home/* in your browser to go to the Micro Focus home page, then click **Support & Services** > **Support**. Type or select the product you require from the product selection dropdown, and then click **Support Login**.

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Host Access Analyzer 1.1

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