

INTRAFIND



iFinder Confluence Search - Data Center Edition

5.7.0

Technical documentation

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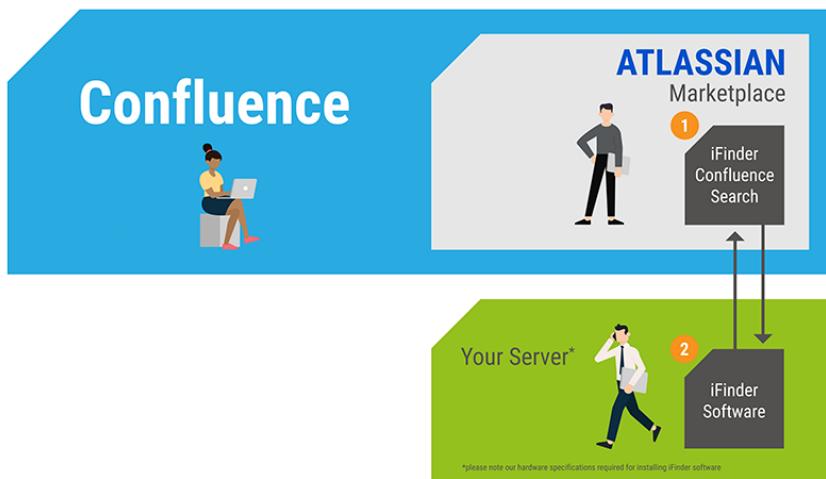
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1 Introduction

iFinder Confluence Search Data Center edition integrates seamlessly into Confluence. The app replaces the Confluence search with the iFinder Search. When a user clicks in the search field, the iFinder searchbar launches and allows to do search queries, filter and more functions provided by iFinder. The app indexes the standard Confluence content types (spaces, pages, blog posts, attachments). The app retrieves the permissions from Confluence and only shows content, for which the current user has the necessary access permissions.

iFinder Confluence search consists of two components that are installed and configured separately:

- **iFinder Confluence Search app**
- **iFinder Server**



2 iFinder Confluence Search app

The iFinder Confluence Search app is available in the [Atlassian Marketplace](#). It provides the integrated searchbar that enables users to search Confluence and if licensed also other data sources. It takes care of indexing Confluence content like spaces, pages, blog posts, comments as well as attachments including their access permissions.

3 iFinder server

The iFinder server can be installed on a separate hardware, virtual machine or on the same host as Confluence. It provides the services and tools for indexing and searching. It is part of iFinder Confluence Search at no additional cost.

4 Prerequisites

Before you install iFinder Confluence Search, make sure that your system meets the following prerequisites and that you have the permissions to carry out the installation and configuration.

4.1 Confluence

- Administration permissions for Confluence
- Administration user with read permissions to all content for iFinder indexing

⚠ Java compatibility

Java 8: Confluence up to version **7.19.4** or older supports Java 8. iFinder Confluence Search (Plugin and Server) supports Java 8 up to version **5.5.3** or older.

Java 11: iFinder Confluence Search (Plugin and Server) from version **5.5.4** and newer only run on Confluence with **Java 11**.

Java 17: Starting from version **8.3** Confluence is packaged with Java 17. iFinder Confluence Search (Plugin and Server) version supports Java 17 from version **5.7.0** and newer.

Whenever possible, we recommend to upgrade your Confluence instance to Java 17 and install the latest iFinder Confluence Search.

4.2 iFinder Server

- iFinder server (services and tools) can be installed on the following operating systems:
 - Microsoft Windows Server Microsoft Windows Server 2012 to 2022
 - Long Term Support edition of Linux Red Hat, SuSE, CentOS or Ubuntu
- Alternatively, you can install the iFinder software on the Confluence server. Make sure the **hardware requirements** are met.
- The iFinder server does not need access to the internet.

❗ Important:

If disk space (Index partition) has less than 20% of free disk space free, the system stops indexing!

4.3 iFinder license

- The iFinder server includes a trial license key which is valid for **100 days**. You will receive a new valid key after purchasing **iFinder Confluence Search** in the Atlassian Marketplace.
- The trial license key for iFinder server is limited to one million index documents (for example: sites, attachments). If you plan to index more documents, contact us for an extended free license at atlassian@intrafind.com.



To retrieve the Confluence objects go to [Administration > System Information > Confluence Usage](#). The sum of the following numbers is relevant:

- Total spaces
- Content (Current Versions)



4.4 Hardware requirements for iFinder server

Users	Documents			
	< 1 M	< 10 M ⁽¹⁾	< 20 M ⁽¹⁾	< 50 M ⁽¹⁾
< 1.000	Server ⁽²⁾ : 1 Cores: 8 RAM per Server: 16 GB ⁽⁴⁾ Index Disk Size (SSD): 120 GB Additional Disk Space ⁽³⁾ : 50 GB	Server ⁽²⁾ : 1 Cores: 12 RAM per Server: 32 GB Index Disk Size (SSD): 400 GB Additional Disk Space ⁽³⁾ : 50 GB	Server ⁽²⁾ : 1 Cores: 16 RAM per Server: 48 GB Index Disk Size (SSD): 800 GB Additional Disk Space ⁽³⁾ : 50 GB	Server ⁽²⁾ : 2 Cores: 24 RAM per Server: 64 GB Index Disk Size (SSD): 2.000 GB Additional Disk Space ⁽³⁾ : 50 GB
< 10.000	Server ⁽²⁾ : 1 Cores: 8 RAM per Server: 16 GB ⁽⁴⁾ Index Disk Size (SSD): 120 GB Additional Disk Space ⁽³⁾ : 50 GB	Server ⁽²⁾ : 1 Cores: 12 RAM per Server: 32 GB Index Disk Size (SSD): 400 GB Additional Disk Space ⁽³⁾ : 50 GB	Server ⁽²⁾ : 1 Cores: 16 RAM per Server: 64 GB Index Disk Size (SSD): 800 GB Additional Disk Space ⁽³⁾ : 50 GB	Server ⁽²⁾ : 2 Cores: 24 RAM per Server: 128 GB Index Disk Size (SSD): 2.000 GB Additional Disk Space ⁽³⁾ : 50 GB
< 20.000	Server ⁽²⁾ : 1 Cores: 12 RAM per Server: 24 GB Index Disk Size (SSD): 120 GB Additional Disk Space ⁽³⁾ : 50 GB	Server ⁽²⁾ : 1 Cores: 16 RAM per Server: 48 GB Index Disk Size (SSD): 400 GB Additional Disk Space ⁽³⁾ : 50 GB	Server ⁽²⁾ : 1 Cores: 16 RAM per Server: 64 GB Index Disk Size (SSD): 800 GB Additional Disk Space ⁽³⁾ : 50 GB	Server ⁽²⁾ : 2 Cores: 24 RAM per Server: 192 GB Index Disk Size (SSD): 2.000 GB Additional Disk Space ⁽³⁾ : 50 GB
< 50.000	Server ⁽²⁾ : 1 Cores: 16 RAM per Server: 32 GB Index Disk Size (SSD): 120 GB Additional Disk Space ⁽³⁾ : 50 GB	Server ⁽²⁾ : 1 Cores: 16 RAM per Server: 48 GB Index Disk Size (SSD): 400 GB Additional Disk Space ⁽³⁾ : 50 GB	Server ⁽²⁾ : 1 Cores: 24 RAM per Server: 128 GB Index Disk Size (SSD): 800 GB Additional Disk Space ⁽³⁾ : 50 GB	Server ⁽²⁾ : 2 Cores: 32 RAM per Server: 254 GB Index Disk Size (SSD): 2.000 GB Additional Disk Space ⁽³⁾ : 50 GB

Notes

(1) The iFinder Server license key is limited to 1 million documents (for example: sites, attachments). Please contact us at atlassian@intrafind.com for a new free license if you require more documents to be indexed.

(2) iFinder Server is available for Windows Server 2012 R2 - 2022 and Linux Server (LTS) Red Hat, SUSE, CentOS and Ubuntu operation systems.

(3) Additional disk space for iFinder program files and log files.

(4) ! 16 GB RAM is the minimum requirement for iFinder Server. Start the installation only if this requirement is met!

4.5 Network and ports

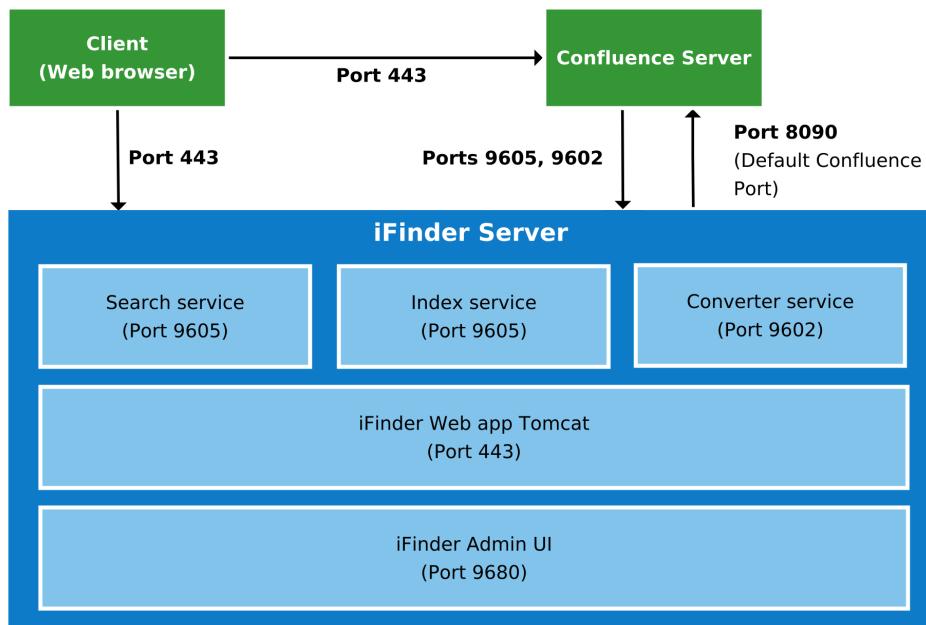
Make sure that the connection between your Confluence system and the iFinder server works.

- **Reverse proxy:** If you use a reverse proxy, add the iFinder server to the whitelist. iFinder connects to the Confluence server in several ways, for example like a user with a browser in order to create screenshots.
- **SSL:** If you use SSL for your Confluence server, additional ports must be opened.

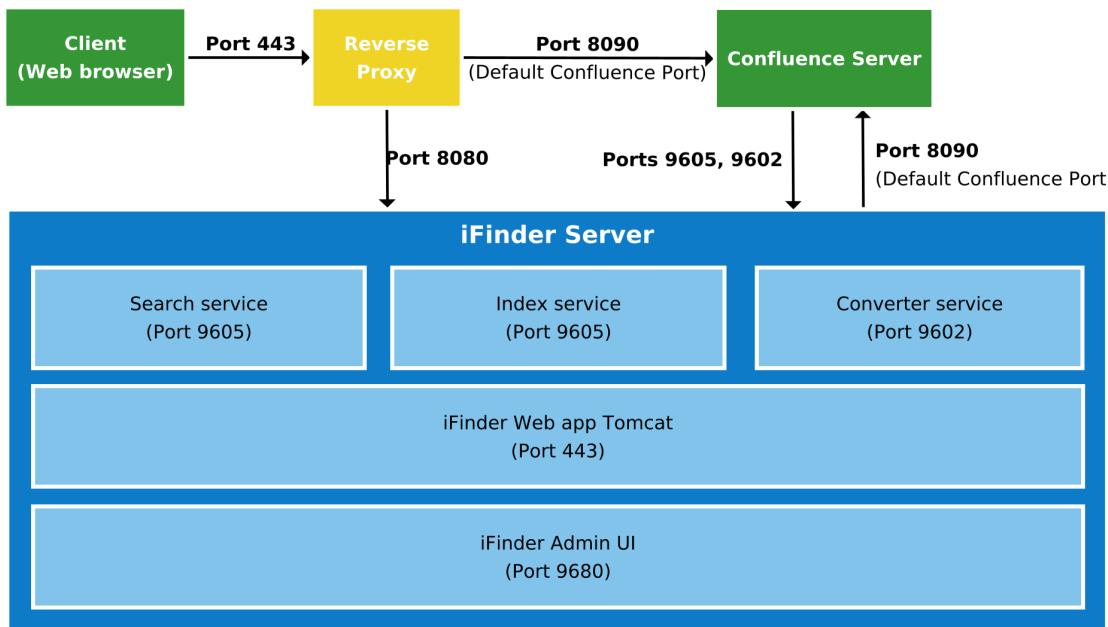


If you want to change the ports of iFinder server, contact us at atlassian@intrafind.com.

4.5.1 Default ports



4.5.2 Ports with reverse proxy



5 Install and set up iFinder server

We recommend to install iFinder server on a separate host. Both Windows and Linux are supported. If this is not possible, you can also install iFinder server on the same host as Confluence server.

5.1 Download iFinder server

1. In Confluence, navigate to **Administration > Manage Apps > iFinder Confluence Search > Configure**.
2. Under **Download iFinder**, click the link to download the iFinder software.
3. After registration, select if you want to download the Windows or the Linux edition.
4. You will receive a link to download the iFinder software.

5.2 Prepare the server

⚠ Important

iFinder Server comes with its own Apache Tomcat and uses port 8080. If you install iFinder server on the Confluence host, make sure that the iFinder Apache Tomcat does not use the same ports as the Confluence Apache Tomcat!

- **Windows:** Ports **9605**, **9602** and **8080** must be open in Firewall of the iFinder server. Use the provided **SET_Firewall_Rules.bat** script to open them, or do this manually.

- **Linux:** Ports **9605**, **9602** and **8080** must be open. If the Linux server is accessible on the internet, make sure that ports **9200** and **9300** are closed.
- **iFinder Administration:** To access the administration tool over the network, open also port **9680**. Alternatively, you can access iFinder Administration directly on the server via localhost: <http://localhost:9680/resource/login.html>

5.3 Installation on Windows

1. Download the **.zip archive** as described in [2023-08-25_10-49-49_Installing iFinder Confluence Search](#).
2. Unzip the **.zip archive**.
3. Log on to the server, with a local administrator user.
4. Copy the provided file and unpack it to a local folder, for example **C:\IntraFind**.



Do not install the software directly in C:/Windows. Always create a subdirectory for the installation. The installation path must not contain any spaces. In the following documentation, this directory is referred to as **<Installation_directory>**.

5. Run the installation script **<Installation_directory>\1_Install-iFCS.bat** as administrator. To do this, open the Context menu and select **Start as administrator**.
 6. Select the protocol of your Confluence system: **HTTP** or **HTTPS**. Enter **1** for HTTP and **2** for HTTPS.
 7. Enter your Confluence hostname.
 8. Enter your Confluence port number. The default port number is **8090 or 8443**.
 9. Enter your Confluence Admin user login. This is a Confluence administration user with read permissions to all content for iFinder indexing.
 10. Select the preferred authentication type for indexing process:
 - Enter **1** for **AccessToken**
 - Enter **2** for **Basic** authentication
 - Enter **3** for **Windows** authentication
 11. Enter your Confluence password.
 12. Repeat your Confluence password.
 13. After successful installation, the **iFinder Administration** is opened automatically.
In the iFinder Administration you can verify the settings. Log in with the default user **ifconfluence** and the default password **iFinderSuperAdmin**.
 14. Bookmark the **iFinder Administration** for later use.
 15. Run the script **<Installation directory>\2_SSL_Import.bat** and select your root SSL Certificate.
-
- If you can't choose a certificate, installation was unsuccessful. Host is not reachable.
16. Run the script **<Installation directory>\7_Restart.bat**
 17. If you want to enter the configuration data again, please start the **3_Configuration.bat**.

5.4 Installation on Linux

1. Make sure that the user for installation has **sudo** permissions.
2. Make sure that Python (at least version 3.5 or higher) is available in your system:

```
python3 --version
```

3. Create an **intrafind** user and provide **sudo** permissions to this user:

```
sudo useradd -r -U -c 'ifinder user' -m intrafind
```

Only use this user for installation!

4. Add a password for this user:

```
sudo passwd intrafind
```

5. Add **sudo** permissions to the **intrafind** group. Open the file **/etc/sudoers**:

```
visudo
```

And add the following to it:

```
%intrafind ALL=(ALL) ALL
```

You can remove this permission after the installation, as the **intrafind** user is not required to have permanent **sudo** rights.

6. Download the ZIP file as described in [2023-08-25_10-49-49_Installing iFinder Confluence Search](#).

7. Log on with the **intrafind** user. (With the **root** user, the installation will not work.)

8. Unzip the installation file to **/home/intrafind**.

9. Start the installation with the following command. This creates all relevant directories automatically.

```
sudo ./install_ifcs.sh -d /opt/intrafind
```

If you cannot execute **install_ifcs.sh**, run the command **chmod +x install_ifcs.sh** to make the file executable.

10. After successful installation, the **iFinder Administration** link is displayed. Save and bookmark it for later use.

5.4.1 Configure Linux iFinder

The iFinder Administration tool can be used with **Google Chrome** or **Mozilla Firefox**. **Microsoft Internet Explorer** or **Microsoft Edge** are not supported.

After the installation, **iFinder Administration** opens. If it does not open automatically, you can open it at http://my_ifinder_server:9680/resource/index.html. For Linux, you can use the link that is displayed after installation. It may take some minutes until the server is up and running and this link is available.

1. Log in with the default user **ifconfluence** and the default password **iFinderSuperAdmin**.
2. Change the password of the **ifconfluence** user.
3. In **Tools > Password encryption**, enter the password of a **Confluence user** with full administration permissions. iFinder Server connects to Confluence with this user.

Special use case personal access token:

If your Confluence system is configured for personal access tokens, enter the personal access token.

4. Click **Encrypt** and copy the encrypted phrase to the clipboard.
5. Open **Tools > Extended configuration**.

Key	Value	Group
confluence.url	http://iji-confluence:8090	Confluence
confluence.user	admin	Confluence
confluence.user.password	DFo7y2/xAQuwoh+cXONQLg8uj7YAVNJZdk0RjMto54a/SyBu6Ef2zw	Confluence
searchbar.api.cors.whitelist	Sets.of('http://iji-confluence:8090')	Confluence

6. In the list, search for **confluence.user.password** and click **Edit**.
7. Paste the encrypted phrase from the clipboard in the **Value** field and click **Save settings**.

ⓘ Special use case personal access token

If your Confluence is configured for personal access tokens, at the top right click Add and add the following key to be used instead of `confluence.user.password`:

Key	Value
<code>svsearch.permissionsearch.retriever.confluence.token</code>	Encrypted personal access token

- Also change the other keys and values listed in the following table according to your requirements. For each key, click Edit, enter the desired value, and click **Save settings**:

Key	Value
<code>searchbar.api.cors.whitelist</code>	Enter the following with the value for your Confluence server here. If you add multiple values, separate them with a comma. <code>Sets.of(' https://my-confluence-server.com:port ')</code>
<code>confluence.url</code>	Enter the Confluence URL. For example: <code>https://my-confluence-server.com:port</code>
<code>confluence.user</code>	Enter the Confluence administrator username to connect to Confluence.

5.4.2 Configure Apache Tomcat server for CORS (Linux only)

The iFinder software includes an Apache Tomcat server. To access iFinder from your Confluence server, the Apache Tomcat must be configured accordingly. To do this, modify the CORS settings in the `web.xml` file of the Apache Tomcat server on which iFinder is installed:

- Open the `<installation directory>\services\if-sv-tomcat-1\webapps\ifinderconfluence\WEB-INF\web.xml` file in an editor.
- Search for the `cors.allowed.origins` parameter and add your Confluence server URL in a `<param-value>` element. For example: `https://my-confluence-server:port`
You can add multiple URLs comma-separated. For example: `https://my-confluence-server:port1,https://my-confluence-server:port2`

```

<filter>
    <filter-name>CorsFilter</filter-name>
    <filter-class>org.apache.catalina.filters.CorsFilter</filter-class>
    <init-param>
        <param-name>cors.allowed.origins</param-name>
        <param-value>PROTOCOL://CONFLUENCE_SERVER:PORT</param-value>
    </init-param>
</filter>

```

- To enable the settings, restart the iFinder server after finalizing the installation and configuration. See [Finalize iFinder installation](#).

5.4.3 Finalize Linux iFinder installation

To enable all settings:

- If your Confluence system is configured for HTTPS :
- In the iFinder installation directory, run the following command:

```
./ssl_import.sh <hostname> [<port>]  
g.: ./ssl_import.sh confluence-wiki:8443
```

- When asked for the certificate, select the **root** certificate, which typically has the same issuer and subject.
- Execute the <Installation directory>\restart.sh

6 Install and set up iFinder Confluence Search app

Updating from an older version

Before updating the app from an older version, do the following:

1. Go to the **Confluence administration > Scheduled Jobs** and disable the job **Flush Content Index Queue (iFinder)**.
2. If it is currently running, wait for the state to change to **Disabled** (reload the page to see state changes).
3. After the update, re-enable the job.

6.1 Install the app in Confluence

1. In Confluence, open **Confluence Administration > Manage apps > Find new apps > Search in Marketplace**.
2. Search for **iFinder Confluence Search**, install it and license it (trial or purchase).
3. Configure the connection settings and the group information in the **iFinder Confluence Search** app in Confluence.



For this configuration, **iFinder server** must be installed and configured.

6.2 Next steps

When the iFinder Server and the iFinder Confluence Search app are installed and set up, continue with the configuration as described on the following pages.

6.3 General configuration

To carry out this configuration, go to **Confluence Administration > Manage Apps > iFinder Confluence Search > Configure** and select the **Configuration** tab.

6.3.1 Download iFinder

Here you can download the iFinder server. The link redirects you to the download page, where you can select the desired operating system, Confluence edition and version.

6.3.2 iFinder configuration

1. In the field **iFinder server base URL**, enter the URL for your iFinder server. The port is typically **8080**:

```
http://MY_IFINDER_SERVER:PORT/ifinderconfluence
```



Click the **Check connection** button at the bottom of the page to test the connection to all iFinder backend services at once.

2. If necessary, the URL and ports of these Services can be change manually in the **Expert settings** tab.

3. Under **Connection to iFinder Server** define how you want to connect to iFinder server:

- **Access via Confluence (default)**: This setting works in both - HTTP and HTTPS.



If you are use a reverse proxy (for example **nginx**) in front of your iFinder server, make sure that the proxy uses HTTP protocol version 1.1.

- **Access to iFinder server with SSL**: Secure setting for Confluence in HTTPS environment. For additional required settings, see **Full SSL configuration**.

4. In the **Authenticated Confluence groups** field, add a comma-separated list of the **Confluence user groups** that you want to enable to use iFinder Confluence Search.

- Everyone who is a member of at least one group will see iFinder Confluence Search instead of the standard Confluence search.
- You can add Confluence groups and Active Directory groups if your Confluence system is configured accordingly.

Alternatively or in addition, you can add single users. To do this, create the **ifinder_group** in Confluence Administration and add users to it. This group is automatically taken into account. It is not necessary to add it here.

6.3.3 Anonymous user

1. In the **Anonymous user** section, define if you want to enable anonymous users to use **iFinder Confluence Search**. Likewise, Confluence must be configured for anonymous users.

6.4 What to index?

To carry out this configuration, go to **Confluence Administration > Manage Apps > iFinder Confluence Search > Configure** and select the **What to Index** tab. In addition to the basic required settings described before, you can define which spaces are indexed and which content types are excluded from indexing.



If you change the indexing settings after the initial index run, you must delete the iFinder index and reindex your Confluence for the settings to become effective: [Delete the iFinder index](#).

6.4.1 Which content types and file types are indexed?

Field	Description
Spaces	You can exclude Confluence content types from indexing. For the types that you want to index, select Enabled . For others, select Disabled .
Pages	If you change the settings to Disabled <i>after the initial indexing</i> , a deletion of the iFinder index and complete reindexing is required: Delete the iFinder index
Attachments	For spaces , note the following: This setting relates only to the meta tags of the spaces. If the space name and the corresponding start page have the same name, this can lead to duplicate search results that look identical.
Blog posts	
Comments	
Personal info	
Archived spaces	Select Enabled if you also want to index archived spaces. The resulting documents are marked with a special value in the field <code>_str.status</code> or <code>_facet.status</code> (ARCHIVED or CURRENT). If you change these settings to Disabled <i>after the initial indexing</i> , a deletion of the iFinder index and complete reindexing is required: Delete the iFinder index
Markup	Enter true if you want the Confluence markup to be indexed to a specific field. This could be relevant if you have additional content in Confluence macros, for example, drop-down menus, which would not be indexed otherwise. If you change this setting to Disabled <i>after the initial indexing</i> , a deletion of the iFinder index and complete reindexing is required: Deleting the iFinder index.
Regular expression for excluding files	Regular expression for attached files that should not be indexed. Leave this field empty if you want to index all files. If a file name of an attachment complies with one of the regular expressions, this attachment is excluded from indexing. Multiple regular expressions may be configured, separated by semicolon. Example: Exclude attachments with the file extensions <code>.png</code> and <code>.jpg</code> and the file <code>do_not_index.txt</code> .
	(?i) .+\.(png jpg exe zip log);do_not_index.txt

6.4.2 Which spaces are indexed?

There are two ways to define, which spaces are indexed with iFinder Confluence Search. This is done in **Space indexing**:

In the General administration

As a Confluence administrator, you can define in the **What to index** tab which spaces are indexed. This is the default. To use this option, select:

- (default) Index the content based on the settings below. If no settings are defined here, all content is indexed.

Optionally, you can include/exclude spaces from indexing. If you do not enter any space key in **Spaces to index** or **Excluded spaces**, all Confluence content is indexed (default):

Field	Description
Spaces to index	A case-insensitive list of spaces to be indexed, separated with commas or semicolons. Enter the unique keys of the spaces that you want to index. If nothing is defined here or in the list of excluded spaces, all spaces are indexed. If you remove spaces after the initial indexing, a deletion of the iFinder index and complete reindexing is required: Delete the iFinder index . This is not necessary if you add spaces. Example: PUBLICSPACE, COMMONSPACE
Excluded spaces	A case-insensitive list of spaces that are excluded from indexing, separated with commas or semicolons. Enter the unique keys of the spaces that you want to exclude from indexing. If a list of excluded spaces is defined, the defined list of spaces to index is ignored completely. If you add spaces to be excluded after the initial indexing, a deletion of the iFinder index and complete reindexing is required: Delete the iFinder index . Example: SECRETSPACE

In the Space administration

Space administrators can configure the indexing in their spaces. To use this option, select:

- Space administrators can enable or disable indexing for their spaces

If you select this option, search results are only available if a space administrator has activated indexing for a space in space tools. Otherwise, nothing will be indexed.

To enable space indexing, open the space administration in the space that you want to index:

1. Go to Space tools > Integrations > iFinder Confluence Search.

2. Under Index this space, select Enabled.
3. Save.

Notes:

- Only the content types defined by the Confluence administrator are indexed.
- Only when the index run for one space is finished, another space can be indexed. It is not possible to activate multiple spaces for indexing at the same time.
- If the space administrator disables space indexing, the content is deleted from the index and are no longer available as search results.

6.5 Application support (Atlassian Marketplace)

To carry out this configuration, go to **Confluence Administration > Manage Apps > iFinder Confluence Search > Configure** and select the **Application support** tab. You can find further information about the application configuration in the [Application support configuration](#) documentation. In the **Application support** section, you can configure iFinder Confluence Search for the following applications:

- Linchpin Intranet Suite
- Linchpin User Profiles
- Metadata for Confluence (Communardo)



The above Confluence apps must be purchased separately from the Atlassian Marketplace.

6.6 Expert settings

To carry out this configuration, go to **Confluence Administration > Manage Apps > iFinder Confluence Search > Configure** and select the **Expert settings** tab. Ask the IntraFind support if you need to adjust these settings.

6.6.1 Use cases

Expert settings only need to be adjusted in the following use cases:

1. LDAP Connection
2. Performance Optimization
3. Multiple Confluence Instances
4. Connect other sources
5. If Confluence runs behind a proxy → configure Network Proxy Settings

7 Indexing and searching with iFinder Confluence Search

After the iFinder Confluence Search app is configured and you have performed a successful connection test you can index the Confluence contents. After the indexing is complete, users can search Confluence with iFinder Confluence Search.

7.1 Starting initial indexing

1. In Confluence, navigate to **Administration > Content Indexing (iFinder)**.
2. Click on **Start indexing**.
3. All selected content types are crawled and indexed into the iFinder index.

7.1.1 System performance checks

After the first indexing, check that there is enough disk capacity on the iFinder server. If there is **less than 20% free disk space**, the system will not work anymore and indexing of new content cannot be performed. Also add the log files to your monitoring routines.

If more than one million index objects are counted during indexing, you need a different license key. Contact atlassian@intrafind.com to request the free license key. You can retrieve the number of Confluence objects at: **Administration > System Information > Confluence Usage**. The sum of the following numbers is relevant:

- Total spaces
- Content (Current Versions)



Initial indexing or re-indexing of the complete content can affect the performance of your instance; for larger instances, the process can take hours. The indexing time can be significantly minimized if enough RAM is available to iFinder server.

To provide temporarily more RAM, do the following:

1. Edit the file `/opt/intrafind/services/if-elasticsearch7/config/jvm.options`.
2. Increase the values for `Xms` and `Xmx`. The values must be identical.
3. Restart the service **IntraFind elasticsearch7 Service**. **Warning: Do not restart the service during an ongoing Confluence indexing!**

7.2 Searching Confluence with iFinder

After successful configuration, the **iFinder search** field displays in Confluence:



To search with **iFinder Confluence Search**:

1. Click on the **iFinder search** field. Alternatively, you can start searching with the keyboard shortcut gg.
2. Enter a search term. For a quick overview of the documents, for which you have read permissions, you can enter an asterisk * instead of a search term.
3. Start searching with the **Enter** key or click on .
4. For detailed information, see the online help. To open it, click on  in the header bar.

If you do not see **iFinder search** in the search field, you are not in a group that is allowed to use with iFinder Search for Confluence. Instead, you are searching with the default Confluence search.

8 Integrating the iFinder Search Macro into pages

The iFinder Search Macro adds a resultlist for a defined search query to a page. The results are generated dynamically in real time when a page is viewed. Users only see the results that they are allowed to see. Optionally, you can display the search input field and facets.

8.1 Define the search query

Before you add the macro, you must define the search query that you want to use in the macro. Do the following:

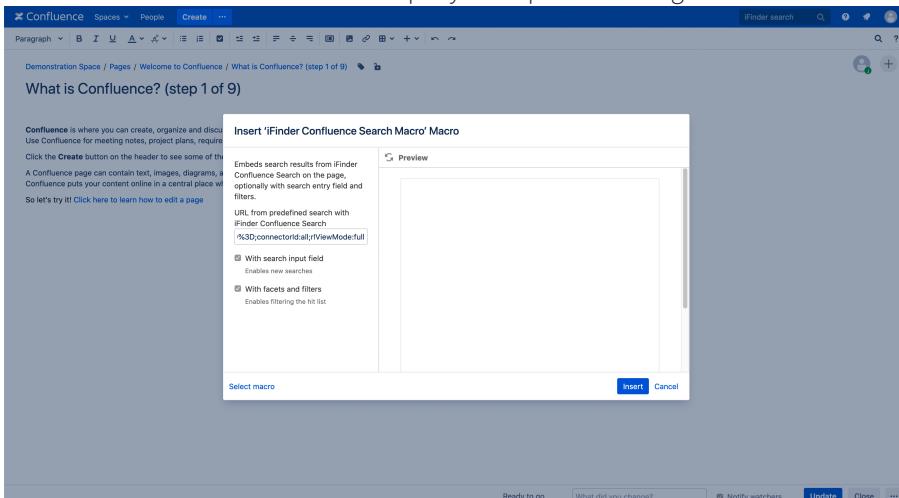
1. In the search input field in iFinder Confluence Search, enter your search request.
 - If you do not want to use a specific search term, enter * (asterisk).
 - You can use search operators such as AND, OR, NOT.
 - You can define advanced search settings with  **Extended search**.
 - For detailed information on searching, see the online help .
2. Start searching with  or press ENTER.
3. In the result list, apply the desired filters.
4. In the Click  to open the actions menu, and click  to copy the URL to the clipboard. You need this URL in the **macro configuration**.

8.2 Add the macro to a page

To add the iFinder Search macro, do the following:

1. Edit the page where you want to integrate the macro.
2. Open the **Macro browser** and search for **iFinder Search Macro**.
3. Click **Insert**.

4. Edit the macro and enter the desired query and optional settings:



URL from predefined search with iFinder Confluence Search	Paste here the URL from the search query .
With search input field	Select this field to show a search field. Users can perform their own searches in the macro.
With facets and filters	Select this field to show the sidebar with facets and filters.

5. Save your changes.

8.3 Result

On the Confluence page, the macro displays the iFinder searchbar, hit list, facets and filters:

Date	Application	Scope	Labels
Mar 12, 2021, 9:33:06 AM	HTML	iFinder	None
Mar 12, 2021, 9:33:01 AM			



You can also find more information about this in our [article in the Atlassian Community](#).

9 iFinder Server Administration

The following tasks are performed in the iFinder Administration or directly on the iFinder server. See also the [Checklists and troubleshooting](#) documentation.

9.1 Delete the iFinder index

This procedure deletes only the index of iFinder Server. The standard Confluence index and the content in Confluence are not affected. To rebuild the iFinder index, you have to start the re-indexing in Confluence administration.

9.1.1 Steps to perform

1. Open iFinder Administration at http://my_ifinder_server:9680/resource/index.html.
2. Go to **iFinder Administration > Select a product > Tools > Index analyzer > Index viewer**.
3. In the `_facet.indexname` field, enter **Confluence**.
4. Click the **Search** button.
5. Scroll down to **Delete index data**.
6. Click **Delete**.
7. Reindex your Confluence contents as described in [Indexing and searching with iFinder Confluence Search](#).

9.2 Update license on iFinder server

When you purchase iFinder Confluence Search in the Atlassian Marketplace, you receive an **additional license file** for iFinder server from IntraFind. To issue the license file, IntraFind needs the **host ID** of your iFinder server. If you update your iFinder Confluence Search, you must install a new license file.

9.2.1 Retrieve host ID

To retrieve the host ID, do the following:

1. Execute the `6_GET_HostID.bat` (Windows) or `get_hostid.sh` (Linux) as administrator.
2. Send the host ID to atlassian@intrafind.com.

9.2.2 Update license

Proceed as follows to install a new iFinder license on the productive iFinder server for iFinder Confluence Search:

Step 1: Store the new license

1. Connect to the iFinder server on which the license should be installed.



With a 3-node cluster, you must install the license on all three productive servers!

2. **For Windows:** Copy the .lic file attached in this email to the <Installation directory>\ on the iFinder server.
For Linux: Copy the .lic file attached in this email to the iFinder server into the home directory of the user **Intrafind** or the user under which the IntraFind Services are running.
3. Rename this license to **intrafind.lic**. You can delete the original file.

Step 2: Restart the iFinder server

1. Log in as a user with administration rights.
2. Start the **7_Restart.bat** script (Windows) or **restart.sh** script (Linux) to stop and start all relevant services.
3. Info for servers: A message of success should be sent back for all started and stopped services.
4. The license is now activated.

Step 3: Check if search works

1. Is the search input field still there?
2. Can you perform a search and get a hit list?
3. Are the known functions still available (e.g. search dropdown/quicksearch)?

9.3 iFinder Operation & Maintenance

For a continuous and performant operation of the iFinder server, we recommend that you carry out regular maintenance of iFinder Confluence Search.

9.3.1 Download maintenance instructions

You can download it here: [IntraFind_iFinder_Maintenance.pdf](#). This document describes the maintenance steps, how to set up backup and monitoring for your system, and gives tips for troubleshooting.

9.4 Uninstall iFinder

To remove iFinder Confluence Search, you must uninstall the app and the server.



Disable iFinder Confluence Search temporarily

If you want to run Confluence without iFinder Confluence Search for testing purposes or due to technical problems, you can disable iFinder Confluence Search temporarily. Go to **Confluence administration > Manage apps > iFinder Confluence Search > Deactivate**.

9.4.1 Uninstall iFinder Confluence Search in Confluence

1. Go to **Manage apps > iFinder Confluence Search**.
2. Click on **Uninstall**.

3. Confirm if required.
4. If you had created the user group ifinder_group in confluence, you can delete it now.

9.4.2 Uninstall iFinder server

1. Log on to your iFinder server with a user with administration access.
2. Start the <Installation directory>\9_UNINSTALL.bat file as administrator: Context menu > Start as administrator (Windows) or uninstall.sh (Linux).

10 Checklists and troubleshooting

These checklists and troubleshooting tips help you to maintain iFinder Confluence Search and resolve problems.

10.1 Content

10.2 Checklists

While installing and configuring, use the following checklist in order to make sure that you do not miss any important points.

Checking prerequisites	System	More information
Are the requirements for Confluence (version, permissions) met?	Confluence	Prerequisites
Is the app license key sufficient?	Confluence	Prerequisites
Are the hardware requirements for iFinder server met?	Server for iFinder server	Prerequisites
Are the software requirements for iFinder server met?	Server for iFinder server	Prerequisites

Installing the app	System	More information
iFinder Confluence Search is installed and licensed	Confluence	2023-08-25_10-49-49_Installing iFinder Confluence Search
Is the access for users defined with ifinder_group or by adding groups?	Confluence	General configuration
Is the app configured with the correct base URL of iFinder server?	Confluence	General configuration

Setting up iFinder server	System	More information
Have you downloaded the iFinder software for installation?	iFinder server	2023-08-25_10-49-49_Installing iFinder Confluence Search
Is the ZIP file installed?	iFinder server	Install and set up iFinder server
Is iFinder server configured (password encryption, extended configuration)?	iFinder server - Administration	Install and set up iFinder server
Is Apache Tomcat on iFinder server configured for CORS and restarted?	iFinder server - Apache Tomcat	Install and set up iFinder server
Is the Converter service configured and restarted?	iFinder server	Install and set up iFinder server
If Confluence is configured for SSL: Is Apache Tomcat configured accordingly with signed certificates?	iFinder server - Apache Tomcat	If Confluence is configured for HTTPS

Finalizing configuration in Confluence	System	More information
Are the URL of iFinder and the services defined in Confluence in the iFinder Confluence Search configuration?	Confluence	General configuration
Has initial indexing been started?	Confluence	Indexing and searching with iFinder Confluence Search
Can Confluence be searched with iFinder?	Confluence	Indexing and searching with iFinder Confluence Search

10.3 Troubleshooting

We are happy to help. If you have problems with the configuration, please contact us at atlassian@intrafind.com. Ideally with a short error description and a date proposal. We support from Germany, Munich, in the time zone UTC +1.

10.3.1 Restart iFinder server

If you experience any problems with the iFinder Confluence Search, restart the iFinder server and check if the problem persists. Restarting the server restarts all services. Proceed as follows:

1. Log on to your iFinder server as a user with administration access.
2. Restart iFinder server:
 - Windows: Start the <Installation directory>\7_Restart.bat file as administrator: **Context menu > Start as administrator**.

- Linux: Start the <Installation directory>\restart.sh script:

```
sudo restart.sh
```

10.3.2 Retrieve log files

For information on retrieving log files, see the Confluence documentation: <https://confluence.atlassian.com/display/CONF58/Working+with+Confluence+Logs>.

10.3.3 Problems with Linux installation script

The installation scripts cannot be executed.

Solution: Make the scripts executable with the following commands:

```
chmod +x install_ifcs.sh  
chmod +x restart.sh  
chmod +x uninstall.sh
```

10.3.4 Error with status 503 code

Status 503 occurs in **atlassian-confluence.log**.

Possible reasons: Confluence server may be configured to communicate via a proxy.

Solution: Check if the Confluence server accesses the iFinder services via a proxy. If yes, configure the proxy in a way that communication with the iFinder services is possible by whitelisting the iFinder URL.

10.3.5 Confluence search instead of iFinder Confluence Search

Some Confluence users do not see iFinder Confluence Search, but only the default Confluence search in the header bar.

Possible reasons:

- The users are not logged on
- The user does not have the permission to access iFinder Confluence Search.
- iFinder server is offline
- The user's computer cannot access iFinder server because of the firewall, proxy, SSL or VPN settings.

Solution:

- Add the user to a group that has access to iFinder Confluence Search (**ifinder_group** or any defined group with access). Delete the user's computer browser cache manually. Instruct the users to log on to Confluence again.
- Make sure that iFinder server is online and available to the user's computer. Check the firewall, proxy and SSL settings.

10.3.6 Empty search page

Possible reasons: Communication between Confluence and iFinder does not work correctly.

Solution:

- Make sure that all references to Confluence are configured with the correct ports that Confluence uses for communication.
- Start the **2_SSL_import.bat** file again and select a different entry.
- Run the **7_Restart.bat/restart.sh** file on iFinder Server.

10.3.7 Missing content

Possible reasons:

1. iFinder wouldn't get Confluence user groups for user rights check.
2. Your Confluence admin account, which you use at the initial iFinder indexing process, has maybe not the user rights for all Confluence content.

Solution:

1. Start the **2_SSL_import.bat** file again and select a different certificate.
2. Delete the iFinder index for Confluence.
3. Run the **7_Restart.bat/restart.sh** file on iFinder Server.
4. Reindex your Confluence contents as described in Indexing and searching with iFinder Confluence Search.

10.3.8 Confluence database cleanup

1. Uninstall plugin.
2. Connect to Confluence database and run the following **SQL** statement:

```
SELECT COUNT(bandanaKey) FROM bandana WHERE bandanaKey like 'if%';
```

3. Note the number of rows.
4. Run the **delete** statement:

```
DELETE FROM bandana WHERE bandanaKey IN ('ifUseJournalBasedIndexing', 'ifShowSearchbar', 'ifControlSpaceIndexingGlobally', 'ifCommunardoRestApiPath', 'ifLocalSpaceWhitelist', 'ifProxyEndpointUrl', 'ifUniversalSearchSecurityLevel', 'ifIndexBatchSize', 'ifCommunardoUser', 'ifIFinderIsAnonymousSearchEnabled', 'ifIndexJobMaxEntries', 'ifIndexJobThreadCount', 'ifConverterMaxLength', 'ifBlacklist', 'ifConverterTimeout', 'ifWorldReadable', 'ifTenant', 'ifSpaceWhitelist', 'ifSpaceBlacklist', 'ifIndexAttachments', 'ifIndexBlogPosts', 'ifIndexSpaces', 'ifIndexPages', 'ifIndexArchivedSpaces', 'ifIndexMarkup', 'ifIndexComments', 'ifIndexPersonalInfo', 'ifuser', 'ifpassword', 'ifSemanticFields', 'ifConverterServiceUrl', 'ifLinchpinRestApiPath', 'ifProxyServer', 'ifProxyPort', 'ifProxyUser', 'ifProxyPw', 'ifcsGroups', 'ifIFinderPrivateKeyPath', 'ifIFinderDomain', 'ifConnectorId', 'ifIndexname', 'ifUniversalSearchUrl', 'ifIndexServiceUrl', 'ifSearchServiceUrl', 'ifCommunardoPassword');
```

5. Compare the number of records with step #3 – they should match.
6. Restart Confluence (see [Confluence documentation](#) for detailed steps).
7. Check that Confluence started without errors.
8. Check atlassian-confluence.log file for error messages related to plugin iFinder Confluence Search (iFCS).

11 Appendix

11.1 Upgrade to iFinder Enterprise Search

Further data sources and applications such as JIRA, file shares, websites, mail, document management and ERP systems or Office 365 and many more can easily be added. For this purpose IntraFind offers more than eighty different connectors. The user interface can be extended with facets and filters which are customized for these additional sources.



The connection of further sources is subject to license fees. Also, the integration can not be done by without support. Our Professional Service Team will do the configuration together with you in a remote session.

Confluence can be extended to a digital workplace and central knowledge platform.



iFinder 5 elastic

Fileshares	SharePoint	Cloud Repositories & Apps	Collaboration & Portals	Intranet / CMS	NetApp ONTAP
Office 365	Exchange	Content Service Plattforms	E-Mail	DMS & ECM	Websites
ERP	Database-Apps	Archives	PDM	Deep Web	Federation

In advance we need the following information from you:

- Name and version of the application / source
- Number of index objects per source (for example pages, files, documents, tickets)
- Integration of further facets/filters per source
- Logon type / authorization system (for example LDAP, SSO, 2Factor)

11.2 Search Query Language

While typing your search query you can combine it with a search filter.

11.2.1 Confluence Query Language (CQL)

The **iFinder Confluence Search** comes with pre-configured field aliases that allow users to enter search queries with the used Confluence field names. The iFinder detects and interprets the Confluence Query Language (CQL) syntax used for these queries. Currently, there are field aliases **favourite/favorite**, **label**, **parent**, **space** and **space.category**.

11.2.2 Field names in iFinder Confluence Search

When searching, you can also search in specific fields of the index document.

Syntax: *fieldname:query*

Example for searching for a search term in a specific space:

```
_facet.space:MY_SPACE SEARCHTERM
```

The following are Confluence-specific fields. It also depends on your configuration, which fields are available.

- ⓘ For a list of other fields, see the online help. To open it, click on in the header bar.

Field name	Description	Example
_facet.lastmodified	Last modified date	_facet.lastmodified:2016-07-12
_facet.label	Label	_facet.space: release
_facet.favourite	Added to favourites	_facet.favourite: yes
_facet.status	Status of the page	_facet.status: draft
_facet.space	Name of the space	_facet.space: myspace
_facet.category	Category of the document	_facet.category: page checklist
_facet.parentcategory	Category of the parent	_facet.parentcategory: page
_facet.parent	Parent of the document	_facet.parent: manual
_facet.person	Person name	_facet.person: Peter

11.2.3 Optional: Add aliases for iFinder fields

Aliases can be defined for iFinder document fields and facets to make search query operands more descriptive and easier to understand. Aliases work as a mapping of the default name to the alias. The iFinder Confluence Search comes with a default set of aliases. You can add your own aliases as follows:

1. In the iFinder Administration, open the **Select a product** menu and select **iFinder5**.
2. Open the **Search options** menu and select **Query preprocessing**.
3. In the **Field aliases**, scroll to the end and add your own aliases. For example:

```
"space": "_facet.space"
```

4. Click **Save settings**.

You can now enter in a searchbar a query like: space:<Space name to search>. The search returns all the documents in the respective Confluence space.

- ⓘ The space name must be written in double quotes. The alias name must not have spaces. For example, a "Last Modified" field of Confluence document can have an alias "lastmodified", but not "last modified".

⚠ Known limitations

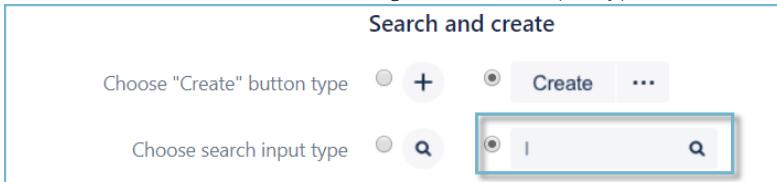
- (1) It is only possible to configure a 1:1 mapping. You cannot map one alias to multiple fields.
- (2) Built-in CQL date functions like `endOfDay()` and others are not supported. For a list of these functions, see <https://developer.atlassian.com/server/confluence/cql-function-reference>.

11.3 Application support configuration

11.3.1 Linchpin Intranet Suite

If you use iFinder Confluence Search together with a Linchpin header, you can optimize the styling of the search integration.

1. In Confluence, go to **General configuration > LINCHPIN THEME > Configuration** and open the **Header** section.
2. In the **Search and Create** area, change the search input type to the following:



3. On the same page, open the **Advanced** section.
4. Add the following, in the **Custom CSS (use at own risk)** field:

```
.ifc-searchreplacer {
    margin: 0 !important;
}
```

5. Save your settings.

11.3.2 Linchpin User Profiles

You can use iFinder Confluence Search to index user profiles expanded with the Linchpin User Profiles app (<https://marketplace.atlassian.com/apps/1211696/linchpin-user-profiles?hosting=datacenter&tab=overview>).

To be able to access the profiles, you have to add a Confluence administration user and the encrypted password.

You can access the setting in Confluence at **Administration > Manage Apps > iFinder Confluence Search > Configure**.

On the **Application Support** tab, in the **Linchpin User Profiles** section, you can define the relevant Linchpin settings. These are expert settings.

Field	Description
Index Linchpin Userprofiles (e.g. rest/cup/1.0)	Interface for Linchpin User Profiles. If you do not have Linchpin User Profiles installed, the setting is irrelevant. Can be different for a later Linchpin version. Default value: rest/cup/1.0

Field	Description
Linchpin administrator	Administrator user who is in the group of Confluence administrators to access the Linchpin interface.
Linchpin password	Password for the administrator user encrypted with iFinder Administration > Tools > Password encryption .

11.3.3 Metadata app Communardo

You can find information about the Metadata app Communardo in the separate documentation: [Communardo Metadata for Confluence](#)

11.4 Expert settings for searching and indexing

You can access the configuration in Confluence at **Administration > Manage Apps > iFinder Confluence Search > Configure**.

On the **Expert setting** tab, you can define the special settings.



The following settings are only relevant for the IntraFind support team and very experienced administrators. Only change the settings in coordination with IntraFind support.

Field	Description
Show searchbar	Under Searchbar configuration , define if you want to enable the searchbar to users (default). You can disable the Show searchbar option if you only want to use iFinder Confluence Search to index your Confluence contents without enabling users to search from within Confluence.
iFinder Services	Click the “ Manual URL configuration of iFinder services ” checkbox and modify a URL for every iFinder service (index , search , converter). The default values are: http://my_ifinder_server:9605/hessian/index http://my_ifinder_server:9605/hessian/search http://my_ifinder_server:9602/hessian/converter
Authentication	<p>Authentication (optional)</p> <p>User domain <input type="text"/> User domain in the LDAP user directory. Only necessary for an LDAP based iFinder installation.</p> <p>File path to the private key file <input type="text"/> Absolute file path to the private key file. Please note: The file has to be readable for Confluence.</p>
Connector ID	Do not change. Unique ID for the connector. Default value: Confluence

Field	Description
Index name	Do not change. Search scope at which the data is displayed in iFinder5 elastic. Default value: Confluence
Proxy server	Optionally, you can use a proxy server. Default value: Confluence
Proxy port	Port for the proxy server.
Proxy user	User for the proxy server.
Proxy password	Password for the user. The password is stored encrypted.
Maximum number of entries to process in each scheduled job run	Maximum number of entries to process in each scheduled job run Default value: 1000
Number of parallel processors for the scheduled job	Number of parallel processors for the scheduled job Default value: 2
Size of an index batch which are sent to index at the same time	Size of an index batch which are sent to index at the same time Default value: 10
Converter service timeout	Timeout for the converter service. Default value: 30
Converter service maximum field length	Maximum length in characters of attachments that are sent to the converter. Longer attachments are cut off. Default value: 524288
World readable permission group	General user group with all the users. Default value: S-1-1-0
Tenant	The iFinder5 elastic supports multi-tenancy. Tenants are an additional option to authorize content by logically dividing the index. If no specific tenant is to be used, the default value public should be defined here. Default value: public
Fields with semantically significant terms	You can insert a script that defines fields as semantically significant terms. For example, you can copy individual fields completely or edit or filter their values. Default value: _str.label; _str.space; _str.title

11.5 Customizing the layout of iFinder Search UI

You can customize the styling of the iFinder Search directly in Confluence by adding a global stylesheet in the Confluence Administration.

11.5.1 Use Sass (SCSS) to overwrite styles

iFinder uses the more advanced SCSS syntax to style UI elements. In the following stylesheet, you find all styles that can be replaced at root level with your own styles.

To customize the styles, do the following:

1. In Confluence, open **General administration** and go to **Look and Feel > Stylesheet**.
2. Click **Edit** to add your own CSS file. The styles that you enter here overwrite the default search bar CSS file.
3. Replace the styles with your values:



For more advanced settings, you can use the advanced iFinder configuration.

```
1 .ifmodal-wrapper, .ifs-aria-wrapper, .ifs-feature-tour, .ifs-main, .ifs-
2 toaster, .pika-single, .shepherd-modal-overlay-container, :root {
3   --main-color: #8fbc8f; // i.e. header, Filters, headlines, hover,
4   searchbar outline
5   --second-color: #374737; // i.e. Tabs, hover search suggestion
6   --tag-bg-color: #0f73f5; // semantic search bar, global news bar,
7   chips
8   --grey-light: #f0f0f0; // i.e. button outline, button background in
9   edit label modal, scrollbar background
10  --grey-medium: #dedede; // i.e. scrollbar thumb
11  --main-color-dark: #264754; // i.e.
12  --main-color-transparent: rgba(68,126,151,.5);
13  --main-color-background: #fff;
14  --light-color: #b0d6fc;
15  --lighter-color: #cee6fd;
16  --lighter-color-transparent: rgba(191,222,232,.7);
17  --lightest-color: #f5f8f9;
18  --grey: #848484;
19  --grey-light-lightest: #f5f5f5;
20  --main-border-color: #c7c7c7;
21  --main-font-color: #000;
22  --medium-font-color: #4a4a4a;
23  --ci-font-color: var(--main-color);
24  --disabled-font-color: #cfcfcf;
25  --favorite-star-color: var(--main-font-color);
26  --tab-color: var(--main-color);
27  --facet-button-text-color: var(--main-font-color);
28  --facet-button-bg-color: #dedede;
29  --active-facet-button-text-color: #fff;
30  --active-facet-button-bg-color: var(--main-color);
31  --mxixin-triangle-color: var(--main-font-color);
32  --font-standard: LatoLatinWeb;
33  --font-bold: LatoLatinWebSemibold;
34  --font-semi-bold: LatoLatinWebBold;
35  --menu-colored-hover-color: var(--lighter-color-transparent);
36  --bottom-tab-hover-color: #daedf1;
37  --bottom-tab-selected-color: #e5f1f5;
38  --bottom-tabs-toolbar-height: 40px;
39  --focus-color: #c3dae4;
40  --search-focus-shadow-color: var(--focus-color);
41  --focus-outline: var(--focus-color);
42  --semantic-wordcloud-focus: var(--focus-color);
43  --warning-color: #ff5f00;
44  --error-color: #ff1212;
45  --confirm-color: #00990b;
46  --scrollbar-thumb: var(--grey-medium);
```

```

43    --scrollbar-channel: var(--grey-light);
44    --button-bg-color: hsla(195, 25%, 97%, 1);
45    --button-color: var(--main-font-color);
46    --button-color-hover: #fff;
47    --button-color-pressed: #fff;
48    --button-color-confirm: #fff;
49    --button-bg-color-hover: var(--main-color);
50    --button-bg-color-pressed: var(--main-color);
51    --button-bg-color-confirm: var(--main-color);
52    --knowledgemap-background-color: #a1bbc9;
53    --default-border-radius: 4px;
54 }
55
56 // Detail button in hit result
57 .ifs-rl .ifs-media-details>.ifs-media-details-row .ifs-media-details-
button:not(:hover) {
58   background-color: #0FAA90FF;
59 }
```

11.6 User authentication with LDAP directory

If your iFinder Server user management is based on a directory service (for example LDAP), you must define the domain settings and also configure iFinder accordingly.

This is only relevant if you already have an iFinder Server running with users provided by a directory service (for example LDAP) and connect to other data sources.

11.6.1 Defining domain settings in Confluence

1. In Confluence, navigate to **Administration > Manage Apps > iFinder Confluence Search > Configure**.
2. On the **Expert settings** tab, in the **Authentication** section, enter the user domain.

11.6.2 Configuring iFinder connection to a directory service (LDAP)

In iFinder Administration, configure the following:

- Connection at **User administration > Directory services > Connection**
- Groups assignment at **User administration > Directory services > Groups**

For more information, see online help in iFinder Administration.

11.7 Full SSL configuration

If your Confluence system is configured for HTTPS, there are two different options to access your iFinder server. These options will be displayed in the Confluence plugin <Confluence Administration > Manage Apps > iFinder Confluence Search > Configure > Configuration tab.

1. Access via Confluence (default)

This is the easiest way and recommended for a first trial in development environments.

This works for both protocols. Confluence in environments with HTTP or HTTPS.

Note that in this case, data traffic between the app and iFinder server is not protected. If you are using a reverse proxy (e.g. nginx) in front of your iFinder server, make sure that the proxy uses HTTP protocol version 1.1

2. Access to iFinder server with SSL

Secure setting for Confluence in an HTTPS environment

In a productive environment, also the Tomcat server of the iFinder middleware must be configured for HTTPS. For configuring SSL, you have to install a signed SSL certificate on the iFinder middleware Tomcat server.



The following gives a simplified instruction. For detailed information, see the official Tomcat documentation at <https://tomcat.apache.org/tomcat-9.0-doc/ssl-howto.html>.

Perform the following steps:

11.7.1 Generating a key and certificate

If you already have a private signed certificate available, continue with [Configuring Apache Tomcat for SSL](#).

1. Create a directory, where your certificate will be stored:

<Installation directory>\cert

2. For SSL to function properly, you will have to provide all the DNS Names that your server is set up with. This includes the fully qualified hostname of the machine.

Example: If your corporate domain is **corp** and your iFinder middleware is installed on server **machine101** and available under the DNS name **ifinder** your list of DNS names will include:

machine101.acme.corp

ifinder.acme.corp

Also, add any additional DNS names for the machine.

3. Create a Java Keystore with the command using the list of DNS names:

```
keytool -genkeypair -keyalg RSA -keysize 4096 -alias tomcat -ext  
"SAN=dns:machine101.acme.corp,dns:ifinder.acme.corp" -keystore <Installation  
directory>\cert\keystore.p12 -storetype PKCS12
```

4. Note down the password you used.

11.7.2 Generating a Certificate Signage Request (CSR)

The newly created certificate needs to be signed by your corporate certificate authority (CA) so that the browsers in your organization are able to navigate to the iFinder middleware.

1. Generate a CSR file with the following command. Again, you will need the list of DNS Names:

```
keytool -certreq -file <Installation directory>\cert\ifinder.csr -keystore
<Installation directory>\cert\keystore.p12 -alias tomcat -ext "
SAN=dns:machine101.acme.corp,dns:ifinder.acme.corp "
```

2. On success, the CSR file **ifinder.csr** is available in the **<Installation directory>\cert** folder.
3. Send this file to your corporate CA for signing.

11.7.3 Importing the signed certificate

1. After you have received your signed certificate from the CA place it in the **<Installation directory>\cert** folder under the name **ifinder.crt**.
2. Ask your CA for the root and intermediate certificates.
3. Place these in **<Installation directory>\cert** with the names **root.crt** and **intermediate.crt**.
4. Import the root and intermediate certificates using the following commands:

```
keytool -importcert -trustcacerts -keystore <Installation
directory>\cert\keystore.p12 -file root.crt -alias root
keytool -importcert -trustcacerts -keystore <Installation
directory>\cert\keystore.p12 -file intermediate.crt -alias intermediate
```

5. Import the certificate into your Keystore using the following command:

```
keytool -importcert -trustcacerts -keystore <Installation
directory>\cert\keystore.p12 -file root.crt -alias root
keytool -importcert -trustcacerts -keystore <Installation
directory>\cert\keystore.p12 -file intermediate.crt -alias intermediate
```

6. If all went well, you have a complete Keystore available under **<Installation directory>\cert\keystore.p12**.

11.7.4 Configuring Apache Tomcat for SSL

Configure the Tomcat server of iFinder for HTTPS.

1. Open the **<installation directory>\services\if-sv-tomcat-1\conf\server.xml**
2. Enter paths and file names of your keys and certificates. For detailed information, see <https://tomcat.apache.org/tomcat-9.0-doc/ssl-howto.html#Certificate>.
3. In the file this may for example look as follows:

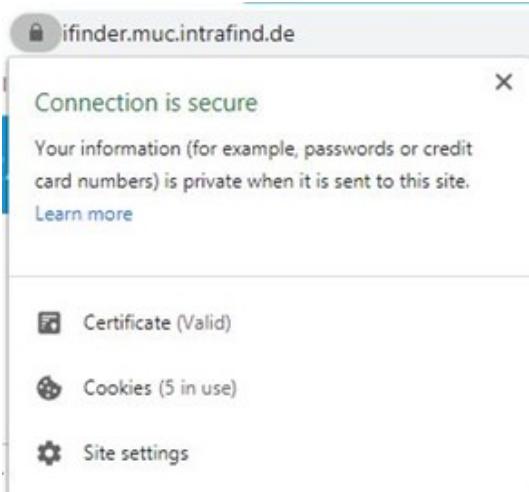
```
<Connector
protocol="org.apache.coyote.http11.Http11NioProtocol"
port="443" maxThreads="200"
scheme="https" secure="true" SSLEnabled="true"
relaxedQueryChars="[,]"
keystoreFile="<Installation directory>/cert/keystore.p12" keystorePass="<yourpassword>"
clientAuth="false" sslProtocol="TLSv1.2+TLSv1.3" compression="on"/>
```

11.7.5 Importing the root certificate

If the Confluence Server is running SSL on the corporate network, it is necessary to import the Confluence server root certificate into the Java Keystore. This can be found in **<IFCS Root Directory>\jdk\jre\lib\security\cacerts**. This is necessary to enable *iFinder Search for Confluence* to view thumbnails and previews of documents. The easiest way to do this is with the **Keystore Explorer** program, which can be obtained here: <https://keystore-explorer.org/>

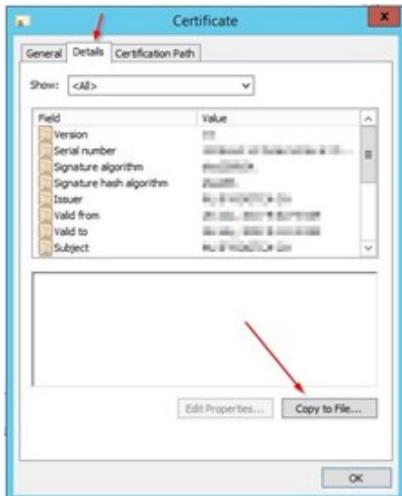
To export the root certificate:

1. Open Confluence in a browser.
2. Click on the small Lock
3. Open the Certificate.



4. Open the root certificate.

- Save the root certificate to a file.



- Repeat steps 4 and 5 with the intermediate certificate.

To import the certificates to the Java key store:

- Open a command line in administrator mode.
- Navigate to <IFCS Root Directory>\jdk\bin.
- Import the root certificate:

```
keytool -importcert -keystore .. -storepass "changeit" -alias "ifcs-root" -file
<file name of the root certificate>
```

- Confirm the question, **Trust this certificate? [No]:** with yes.
- Import the intermediate certificate:

```
keytool -importcert -keystore .. -storepass "changeit" -alias "ifcs-intermediate"
-file <file name of the intermediate certificate>
```

To import with the Keystore Explorer:

- Open the file <IFCS Root Directory>\jdk\jre\lib\security\cacerts.
- Enter the password **changeit**.
- All root certificates included in the delivery are displayed.
- Import tools > Trusted Certificate**
- Select the file to which you exported the Confluence root certificate.
- Also, import the intermediate certificate.
- Save and quit.

11.7.6 Finalizing Apache Tomcat configuration

- To enable all settings:

- Windows: Start the <Installation directory>\7_Restart.bat file as administrator: **Context menu > Start as administrator.**
 - Linux: Start the <Installation directory>\restart.sh file.
2. If it starts, you have successfully configured SSL Encryption. If Tomcat does not start, refer to the Tomcat log files available at <installation directory>\services\if-sv-tomcat-1\logs.

11.8 Configuring JWT for authorization (JSON Web Token)

If you want to encrypt the authentication data with your own keys, you can generate keys and refer to them in iFinder Administration and in the configuration of the plugin. The keys are exchanged between iFinder backend and Confluence based on JSON Web Token (JWT). With this, users are passed on to iFinder. The search is performed with the name of the user who is logged on in Confluence.



Authentication data is encrypted by default. The following is only relevant if you want to use your own keys for encryption.

11.8.1 Generating keys

You can for example generate the keys using **openssl**:

Private key

```
openssl genpkey -algorithm RSA -out if_rsa_private.pem -pkeyopt rsa_keygen_bits:2048
```

Public key

```
openssl rsa -in if_rsa_private.pem -pubout -outform DER -out if_rsa_public.der
```

11.8.2 Configuring the private key in Confluence

1. In Confluence, navigate to **Administration > Manage Apps > iFinder Confluence Search > Configure**.
2. On the **Expert settings** tab, in the **Authentication** section, enter the path to the key for transferring the authentication data.

Sample for Windows path: C:\Confluence\JWTprofile\if_rsa_private.pem

11.8.3 Configuring Apache Tomcat for JWT tokens

For other elements that need to be exchanged between the systems, you must enable the respective CORS filter settings in the web.xml file for Tomcat. Use the IP address or host name of the integrating portal.



When defining CORS settings, use either the settings described below via the **web.xml** file or the setting via the **config.cfg** file as described in Enabling encryption with Java Web Token (JWT) beschrieben.

apache-tomcat-<Version>|conf\web.xml

```

<filter>
    <filter-name>CorsFilter</filter-name>
    <filter-class>org.apache.catalina.filters.CorsFilter</filter-class>
    <init-param>
        <param-name>cors.allowed.origins</param-name>
        <param-value><SERVER></param-value>
    </init-param>
    <init-param>
        <param-name>cors.allowed.methods</param-name>
        <param-value>GET,POST,HEAD,OPTIONS,PUT</param-value>
    </init-param>
    <init-param>
        <param-name>cors.allowed.headers</param-name>
        <param-value>Content-Type,X-Requested-With,accept,Origin,Access-Control-
Request-Method,Access-Control-Request-Headers, Authorization</param-value>
    </init-param>
    <init-param>
        <param-name>cors.exposed.headers</param-name>
        <param-value>Access-Control-Allow-Origin,Access-Control-Allow-
Credentials, Authorization</param-value>
    </init-param>
    <init-param>
        <param-name>cors.support.credentials</param-name>
        <param-value>true</param-value>
    </init-param>
    <init-param>
        <param-name>cors.preflight.maxage</param-name>
        <param-value>10</param-value>
    </init-param>
</filter>
<filter-mapping>
    <filter-name>CorsFilter</filter-name>
    <url-pattern>/*</url-pattern>
</filter-mapping>
```

11.8.4 Configuring JWT tokens in iFinder Administration

1. Save the generated public keys to the iFinder server, for example to *C:\IntraFind\keys\if_rsa_public.der*.
2. In iFinder Administration, navigate to **Tools > Advanced configuration**.
3. In the upper-right part, click **Add**.
4. Add the first key and value from the following table, then click **Save settings**. Repeat this for the second and the third key listed in the table.

Key	Value
ifinder.securefilter.jwt.algorithm	<p>Enter the complete code and modify the path to the JWT key file.</p> <pre>var spec = new java.security.spec.X509EncodedKeySpec(IO.readAll(IO.getInputStream(Configs.CFG.getStr('.ifinder.securefilter.jwt.secret')))) var kf = java.security.KeyFactory.getInstance('RSA') var publicKey = kf.generatePublic(spec) com.auth0.jwt.algorithms.Algorithm.RSA256(publicKey)</pre>
ifinder.securefilter.jwt.secret	<p>Enter the path to the public JWT key file: Sample for Windows path: C:\Intrafind\keys\if_rsa_public.der</p>
searchbar.api.cors.whitelist	<p>Enter the following with the value for your integrating portal server here. If you add multiple values, separate them with a comma. Sets.of('https://my-portal:port')</p>

11.9 Enable document preview service

The preview service will be handled for content in different ways. After installation (see below), you can activate/deactivate it separately at **iFinder Administration/Tools/Extended configuration**.

The installation at next section will activate them automatically.

- **Office Documents:**

- Previews will be generated by the Confluence API
- Key: **document.thumbnail.connectors.disabled**
- Values: false = previews on | * = previews off

- **Confluence Sites:**

- Previews will be generated via user web access to the confluence site.
- Key: **confluence.preview.on**
- Values: true = on | false = off

In some cases, the preview of a Confluence page shows content that users are not intended to see. For example, if you use the Hide If/Show If macro on your Confluence pages with content that is only visible to certain user groups, but not to all users. To prevent users from seeing this content in the preview, it is recommended to disable the preview only for Confluence sites.

11.9.1 Windows: activate document preview service

The preview service for Confluence pages requires a Basic Auth or Token Key access to the Confluence web interface. If you work with special SSO systems or have questions, please contact atlassian@intrafind.com

1. Run the installation script **4_Preview_activation.bat** as administrator. To do this, open the Context menu and select **Start as administrator**.
2. Select the protocol of your Confluence system: **HTTP** or **HTTPS**. Enter **1** for HTTP and **2** for HTTPS.
3. Enter your Confluence hostname.
4. Enter your Confluence port number. The default port number is **8090 (HTTP) or 8443 (HTTPS)**.
5. Enter your Confluence Admin user login. This is a Confluence administration user with read permissions to all content for iFinder indexing.
6. Enter your Confluence password.
7. Repeat your Confluence password.
8. Select the preferred authentication type for Converter Service:
 - Enter **1** for **AccessToken**
 - Enter **2** for **Basic** authentication
 - Enter **3** for **Windows** authentication
9. Run the script <Installation directory>\7_Restart.bat

11.9.2 Linux: activate document preview service

Prepare iFinder Administration

1. Go to the iFinder Administration/Tools/Extended configuration.
2. At the top click and add the key **document.thumbnail.connectors.disabled** with the value **false** and add additional the key **confluence.preview.on** with value **true**.

Configure the converter service

On iFinder server, configure the settings to access Confluence. These settings are used when the Converter service accesses Confluence via the same URL as the user.

1. Go to the directory **/opt/intrafind/services/if-sv-converter** and open the **config.cfg** file in an editor.
2. You can use one of the following authentication methods:
 - Basic authentication
 - Windows authentication
 - Authentication using personal access tokens.
3. The following parameters are relevant:
 - **regex**: Define a Java regular expression for the Confluence URL with the default port, for example **.*wiki\\example\\.com.*** or **.*confluence\\.com.***. Only use lowercase letters. For more information about regular expressions, see <https://docs.oracle.com/en/java/javase/11/docs/api/java.base/java/util/regex/Pattern.html>.
 - **loginUsername**: Confluence administrator user name.
 - **loginPassword**: Encrypted password that you generated before, see here.
 - **authMethod**: WINDOWS or BASIC.
 - **screenshotHandlerBean**: Must be **screenshot** to create screenshots for the preview.

- **domain:** (Only Windows authentication) Domain of the Confluence user defined above, for example MUC.ACME.CORP.
- See the following examples for the usage of the parameters:

Authentication method	Configuration
BASIC authentication	<pre>converter.security.mapping: { "urlConfigs": [{ "regex": ".*wiki\\.example\\.com.*", "loginUsername": "my_admin", "loginPassword": "Encrypted_Password", "authMethod": "BASIC", "screenshotHandlerBean": "confluence.screenshot" }] }</pre>
WINDOWS authentication	<pre>converter.security.mapping: { "urlConfigs": [{ "regex": ".*wiki\\.example\\.com.*", "loginUsername": "my_admin", "loginPassword": "my_encrypted_Password", "authMethod": "WINDOWS", "domain": "my_domain", "screenshotHandlerBean": "confluence.screenshot" }] }</pre>

Authentication method	Configuration
Personal access tokens	<p>(1) In your personal profile area, create a personal access token (PAT). For more information, see https://confluence.atlassian.com/enterprise/using-personal-access-tokens-1026032365.html.</p> <p>(2) In iFinder Administration, go to Tools > Password encryption.</p> <p>(3) Encrypt the token together with the phrase Bearer, for example <Bearer 12345678910ABdE>.</p> <pre>converter.security.mapping: { "urlConfigs": [{ "regex" : ".*wiki\\\\.example\\\\.com.*", "headers" : { "Authorization" : "ENCRYPTED_<encrypted phrase 'Bearer <token>'>" } }] }</pre>

4. Save the file.
5. Run the script <Installation directory>\restart.sh

Provide Chrome components for iFinder Converter Service

1. Make sure that **Headless Chrome** is installed on your system.

Alternatively to the following substeps, you can also use an already available Chromium installation in your system.

2. Install the dependencies from the package repository. There are several methods to choose from. For example, direct installation according to your Linux system (here on Ubuntu):

```
wget -q -O - https://dl-ssl.google.com/linux/linux_signing_key.pub | sudo apt-key add -
sudo sh -c 'echo "deb [arch=amd64] http://dl.google.com/linux/chrome/deb/ stable
main" >> /etc/apt/sources.list.d/google.list'
sudo apt update
sudo apt install google-chrome-stable
```

For detailed information about the different systems and the following methods, see Appendix: Install Headless Chrome

- Installing direct dependencies with transitive dependencies, see below.

- Installing all transitive dependencies, see below.
 - Downloading all dependencies to one computer and installing them on another computer.
3. Download a **Chrome driver**. The version must be compatible with your Headless Chrome version. You can retrieve the version with `google-chrome --version`.
- Find the path of the compatible version of `zip` at <https://chromedriver.storage.googleapis.com/index.html> and copy it.
For example: https://chromedriver.storage.googleapis.com/87.0.4280.88/chromedriver_linux64.zip
 - Download chrome driver with the following command:

```
wget https://chromedriver.storage.googleapis.com/<VERSION>/  
chromedriver_linux64.zip
```

- Unzip the file to `./services/if-sv-converter` with the following command:

```
sudo unzip chromedriver_linux64.zip -d /opt/intrafind/services/if-sv-converter/
```

4. Edit the configuration file of **if-sv-converter** to add the path to the Chrome driver. For example, use the `vi` editor as shown here:

```
sudo vi /opt/intrafind/services/if-sv-converter/config.cfg
```

5. Add the paths to Headless Chrome (or your already installed Chromium installation) and to the Chrome driver. You need the binary, not the link.

```
chrome.chrome-path: <Path to the required Headless Chrome from step 1, for  
example /opt/google/chrome/chrome>  
chrome.chromedriver-path: <Path to the Chrome driver from step 2, for example  
chromedriver>
```

6. Save the file.
7. Restart **if-sv-converter** with the following command:

```
sudo systemctl restart if-sv-converter.service
```

Linux Installing Headless Chrome

In the following the different methods to install Headless Chrome on Linux systems are described.

11.9.3 Installing packages directly

Ubuntu

```
wget -q -O - https://dl-ssl.google.com/linux/linux_signing_key.pub | sudo apt-key add -
sudo sh -c 'echo "deb [arch=amd64] http://dl.google.com/linux/chrome/deb/ stable
main" >> /etc/apt/sources.list.d/google.list'
sudo apt update
sudo apt install google-chrome-stable
```

openSuSE

```
sudo zypper ar http://dl.google.com/linux/chrome/rpm/stable/x86_64 Google-Chrome
sudo zypper in google-chrome-stable
```

CentOS

1. Open `etc/yum.repos.d/google-chrome.repo` in a text editor.
2. Enter the following:

```
[google-chrome]
name=google-chrome
baseurl=http://dl.google.com/linux/chrome/rpm/stable/$basearch
enabled=1
gpgcheck=1
gpgkey=https://dl-ssl.google.com/linux/linux_signing_key.pub
```

3. Perform the installation:

```
yum install google-chrome-stable
```

11.9.4 Installing direct dependencies with transitive dependencies

Ubuntu

```
sudo apt install ca-certificates fonts-liberation libappindicator3-1 libasound2  
libatk-bridge2.0-0 libatk1.0-0 libatspi2.0-0 libc6 libcairo2 libcurl3 libdbus-1-3  
libexpat1 libgcc1 libgdk-pixbuf2.0-0 libglib2.0-0 libgtk-3-0 libnspr4 libnss3  
libpango-1.0-0 libpangocairo-1.0-0 libuuid1 libx11-6 libx11-xcb1 libxcb1  
libxcomposite1 libxcursor1 libxdamage1 libxext6 libxfixes3 libxi6 libxrandr2  
libxrender1 libxss1 libxtst6 lsb-release wget xdg-utils
```

openSuSE

```
sudo zypper in R-core SHERPA-MC-devel ShellCheck bash coreutils dosemu figlet fondu  
fox16-example-apps gnu-free-fonts gtkwave hashdeep hmaccalc inn kbd ksh libpfm-devel  
libshine3 libusb-gx-tools lsb-release mailman metamail nmh notepadqq openmpi openmpi-devel  
perl perl-Data>ShowTable perl-String-ShellQuote perl-WWW-Shorten piglit psutils  
python-Shed_Skin python-pyside-shiboken python3-pyside-shiboken rgb ruby2.1-rubygem-unicorn  
ruby2.2-rubygem-unicorn ruby2.3-rubygem-unicorn ruby2.4-rubygem-unicorn  
samba-client sdcc sha1collisiondetection shake shapelib sharutils shigofumi shotcut  
shotwell showfont showfoto shp shutter spdylay syslinux tesseract-ocr update-alternatives v4l-tools vips-tools yast2-devtools
```

CentOS

```
sudo yum install bash libXext redhat-lsb-core expat libXScrnSaver nss dbus-libs  
libXtst cairo at-spi2-atk glib2 alsa-lib libXdamage libXrandr ca-certificates  
libXrender nss-util libXcursor libappindicator-gtk3 libX11 atk chkconfig at-spi2-core  
libXi redhat-lsb-core libgcc libXcomposite gtk3 libXfixes wget pango liberation-fonts  
nspr xdg-utils gdk-pixbuf2 libuuid glibc cups-libs libxcb
```

11.9.5 Installing all transitive dependencies

Ubuntu

```
sudo apt install ca-certificates debconf perl-base dpkg tar libacl1 libattr1 libc6
libgcc1 gcc-8-base libselinux1 libpcre3 libbz2-1.0 liblzma5 libzstd1 zlib1g openssl
libssl1.1 fonts-liberation libappindicator3-1 libdbusmenu-glib4 libdbusmenu-gtk3-4
libatk1.0-0 libatk1.0-data libglib2.0-0 libffi6 libmount1 libblkid1 libuuid1 libgdk-
pixbuf2.0-0 libgdk-pixbuf2.0-common libjpeg8 libjpeg-turbo8 multiarch-support
libpng16-16 libtiff5 libjbig0 libx11-6 libx11-data libxcb1 libxau6 libxdmcp6 libbsd0
shared-mime-info libxml2 libicu60 libstdc++6 libpango-1.0-0 fontconfig fontconfig-
config fonts-dejavu-core ttf-bitstream-vera ucf coreutils sensible-utils
libfontconfig1 libexpat1 libfreetype6 libthai0 libdatrie1 libthai-data libgtk-3-0
adwaita-icon-theme adwaita-icon-theme-full gtk-update-icon-cache librsvg2-common
librsvg2-2 libcairo2 libpixman-1-0 libxcb-render0 libxcb-shm0 libxext6 libxrender1
libcroco3 libpangocairo-1.0-0 libpangoft2-1.0-0 libharfbuzz0b libgraphite2-3 hicolor-
icon-theme ubuntu-mono humanity-icon-theme libatk-bridge2.0-0 libatspi2.0-0 libdbus-1-3
libsystemd0 libgcrypt20 libgpg-error0 liblz4-1 libcairo-object2 libcolord2
liblcms2-2 libudev1 libcups2 libavahi-client3 libavahi-common3 libavahi-common-data
libgnutls30 libgmp10 libhogweed4 libnettle6 libidn2-0 libunistring2 libp11-kit0
libtasn1-6 libgssapi-krb5-2 libcomerr2 libcom-err2 libk5crypto3 libkrb5support0
libkrb5-3 libkeyutils1 libepoxy0 libgtk-3-common dconf-gsettings-backend dconf-
service libdconf1 gsettings-backend libjson-glib-1.0-0 libjson-glib-1.0-common
librest-0.7-0 libsoup-gnome2.4-1 libsoup2.4-1 glib-networking glib-networking-common
glib-networking-services libproxy1v5 gsettings-desktop-schemas libsqlite3-0
libwayland-client0 libwayland-cursor0 libwayland-egl1 libwayland-egl1-mesa libegl1
libegl-mesa0 libdrm2 libdrm-common libgbm1 libwayland-server0 libglapi-mesa libx11-
xcb1 libxcb-dri2-0 libxcb-dri3-0 libxcb-present0 libxcb-sync1 libxcb-xfixes0
libxshmfence1 libglvnd0 libcomposite1 libcursor1 libxfixes3 libxdamage1 libxi6
libxinerama1 libxkbcommon0 xkb-data libxrandr2 libindicator3-7 libasound2 libasound2-
data libnspr4 libnss3 libxss1 x11-common lsb-base libxtst6 lsb-release distro-info-
data python3:any wget libpsl5 xdg-utils
```

openSuSE

```
sudo zypper in Mesa Mesa-libEGL1 Mesa-libGL1 Mesa-libglapi0 aaa_base adwaita-icon-theme at-spi2-core bash ca-certificates coreutils cpio cracklib cups-libs dbus-1 dbus-1-x11 diffutils expat filesystem fillup findutils fontconfig gdk-pixbuf-loader-rsvg gdk-pixbuf-query-loaders gio-branding-openSUSE glib-networking glib2-tools glibc grep gsettings-desktop-schemas gtk3-data gtk3-tools hicolor-icon-theme info insserv-compat krb5 libLLVM libX11-6 libX11-data libX11-xcb1 libXau6 libXcomposite1 libXcursor1 libXdamage1 libXext6 libXfixes3 libXft2 libXi6 libXinerama1 libXrandr2 libXrender1 libXss1 libXtst6 libXxf86vm1 libacl1 libappindicator3-1 libasound2 libatk-1_0-0 libatk-bridge-2_0-0 libatspi0 libattr1 libaudit1 libavahi-client3 libavahi-common3 libblkid1 libbz2-1 libcairo-gobject2 libcairo2 libcap-ng0 libcap2 libcolord2 libcom_err2 libcrack2 libcroco-0_6-3 libdatrie1 libdb-4_8 libdbus-1-3 libdbusmenu-glib4 libdbusmenu-gtk3-4 libdrm2 libdrm_amdgpu1 libdrm_intel1 libdrm_nouveau2 libdrm_radeon1 libedit0 libelf0 libelf1 libepoxy0 liberation-fonts libexpat1 libfdisk1 libffi4 libfreebl3 libfreetype6 libgbm1 libgcc_s1 libgcrypt20 libgdbm4 libgdk_pixbuf-2_0-0 libgio-2_0-0 libglib-2_0-0 libgmodule-2_0-0 libgmp10 libgnutls28 libgobject-2_0-0 libgpg-error0 libgraphite2-3 libgtk-3-0 libharfbuzz0 libhogweed2 libidn11 libindicator3-7 libjasper1 libjbig2 libjpeg8 libjson-glib-1_0-0 libkeyutils1 liblcms2-2 liblzma5 libmodman1 libmount1 libncurses5 libncurses6 libnettle4 libopenssl1_0_0 libp11-kit0 libpango-1_0-0 libpciaccess0 libpcr1 libpixman-1-0 libpng16-16 libproxy1 libreadline6 librest0 librsvg-2-2 libselinux1 libsemanage1 libsepolicy1 libsmartcols1 libsoftokn3 libsoup-2_4-1 libsqlite3-0 libstdc++6 libsystemd0 libtasn1 libtasn1-6 libthai-data libthai0 libtiff5 libudev1 libustr-1_0-1 libutempter0 libuuid1 libverto1 libwayland-client0 libwayland-server0 libxcb-dri2-0 libxcb-dri3-0 libxcb-glx0 libxcb-present0 libxcb-render0 libxcb-shm0 libxcb-sync1 libxcb-xfixes0 libxcb1 libxml2-2 libxshmfence1 libz1 libzio1 lsb-release mozilla-nss mozilla-nss-certs ncurses-utils openSUSE-release openSUSE-release-ftp openssl p11-kit p11-kit-tools pam perl perl-Net-DBus perl-X11-Protocol perl-XML-Parser perl-XML-Twig perl-base permissions pkg-config sed shadow shared-mime-info terminfo-base update-alternatives util-linux wget which xdg-utils
```

CentOS

```
sudo yum install device-mapper libXext bc libunistring mesa-libEGL liberation-narrow-fon
ts nss-pem initscripts shadow-utils python libpwquality rpm gsettings-desktop-schemas
freetype file-libs libwayland-server libXtst rpm-libs wget openssl-libs
iptables procmail binutils libselinux dejavu-fonts-common pango libXrandr ca-certificates
at sendmail libepoxy rest libssh2 fribidi libwayland-client libcroco
libdrm krb5-libs adwaita-cursor-theme libpwquality hardlink shared-mime-info mesa-libGL
cracklib xz cyrus-sasl dbus libblkid gmp elfutils-libs time libgcc
libXcomposite groff-base device-mapper-libs libthai libXfixes gettext popt elfutils-libelf
libxshmfence kmod liberation-sans-fonts libmodman bzip2-libs libsoup redhat-lsb-core
crontabs pcre diffutils ncurses libdbusmenu-gtk3 libacl libnfnetlink acl
systemd-libs openldap p11-kit-trust elfutils-<b>default</b>-yama-scope tzdata libffi
findutils libcap-ng glib-networking pkgconfig libsmartcols basesystem libxml2 libgomp
cracklib glibc xz-libs systemd-libs nss-softokn libgcc libverto nss-util libstdc++
alsa-lib nspr json-c libsmartcols liberation-serif-fonts jasper-libs psmisc mesa-libgbm
fontconfig libgcrypt harfbuzz libmount trousers p11-kit keyutils-libs libgusb
qrencode-libs libusbx gettext-libs nss keyutils-libs libwayland-cursor python-libs
at-spi2-atk libpciaccess setup mariadb-libs fontconfig cronie mailx cyrus-sasl gtk3
libdb file libcom_err which krb5-libs gmp libtasn1 diffutils libtasn1 passwd nss nss-tools
lua graphite2 libpipeline libproxy make libXrender cups-libs dconf avahi-libs
pcre bash util-linux audit-libs iutils postfix glib2 fontpackages-filesystem hesiod
mesa-libglapi libXScrnSaver libuuid libglvnd p11-kit-trust gdk-pixbuf2 expat colord-libs
gtk-update-icon-cache ed procps-ng libjpeg-turbo bzip2-libs nspr libxkbcommon
util-linux libdb patch openssl-libs systemd ncurses-libs libX11 jbigkit-libs libcap
libsemanage libuuid openldap elfutils-libs cronie-anacron emacs-filesystem pixman
info libXxf86vm chkconfig procps-ng libuser libnetfilter_conntrack ustr pkgconfig
iproute freetype liberation-fonts-common libmount libgpg-error sqlite ncurses-libs
libpng at-spi2-core redhat-lsb-submod-security mesa-libglapi libacl cairo lz4 gdbm
curl libdb-utils libXinerama lcms2 lz4 libcap-ng m4 cyrus-sasl-lib dejavu-sans-fonts
xdg-utils xkeyboard-config gawk libindicator-gtk3 centos-release cyrus-sasl-lib
libdbusmenu json-glib libgcrypt audit-libs libuser libblkid atk libselinux libsep
sysvinit-tools libidn pam zlib gsettings-desktop-schemas gzip libX11 dbus-libs pam
grep kpartx file-libs libXi cpio glib2 tcp_wrappers-libs hwdata readline libcom_err
ncurses-base less nss-util libXcursor libwayland-egl libappindicator-gtk3 cups-client
expat cairo-gobject libmnl desktop-file-utils filesystem zlib mesa-libgbm libglvnd-glx
libXft spax libXau libgpg-error man-db redhat-lsb-core libcurl liberation-mono-fonts
p11-kit trousers nss-sysinit libglvnd-egl xz-libs hostname gnutls popt hicolor-icon-theme
cracklib-dicts libsep libpol kmod-libs adwaita-icon-theme glibc-common nettle
nss-softokn-freebl dracut cronie-noanacron libXdamage elfutils-libelf liberation-fonts
libtiff tar coreutils libX11-common cryptsetup-libs libdrm mesa-libwayland-egl
libutempter systemd-sysv glibc libcap libxcb sed libattr
```

11.9.6 Downloading all dependencies on one machine and installing them on another machine

Ubuntu

Download the packages (Ignore the message about packages to be installed, they will not be installed)

```
sudo rm -r /var/cache/apt/archives/*
sudo apt install --download-only ca-certificates debconf perl-base dpkg tar libacl1
libattr1 libc6 libgcc1 gcc-8-base libselinux1 libpcre3 libbz2-1.0 liblzma5 libzstd1
zlib1g openssl libssl1.1 fonts-liberation libappindicator3-1 libdbusmenu-glib4
libdbusmenu-gtk3-4 libatk1.0-0 libatk1.0-data libglib2.0-0 libffi6 libmount1
libblkid1 libuuid1 libgdk-pixbuf2.0-0 libgdk-pixbuf2.0-common libjpeg8 libjpeg-turbo8
multiarch-support libpng16-16 libtiff5 libjbig0 libx11-6 libx11-data libxcb1 libxau6
libxdmcp6 libbsd0 shared-mime-info libxml2 libicu60 libstdc++6 libpango-1.0-0
fontconfig fontconfig-config fonts-dejavu-core ttf-bitstream-vera ucf coreutils
sensible-utils libfontconfig1 libexpat1 libfreetype6 libthai0 libdatriel libthai-data
libgtk-3-0 adwaita-icon-theme adwaita-icon-theme-full gtk-update-icon-cache librsvg2-
common librsvg2-2 libcairo2 libpixman-1-0 libxcb-render0 libxcb-shm0 libxext6
libxrender1 libcroco3 libpangocairo-1.0-0 libpangoft2-1.0-0 libharfbuzz0b
libgraphite2-3 hicolor-icon-theme ubuntu-mono humanity-icon-theme libatk-bridge2.0-0
libatspi2.0-0 libdbus-1-3 libsystemd0 libgcrypt20 libgpg-error0 liblz4-1 libcairo-
gobject2 libcolor2 liblcms2-2 libudev1 libcups2 libavahi-client3 libavahi-common3
libavahi-common-data libgnutls30 libgmp10 libhogweed4 libnettle6 libidn2-0
libunistring2 libp11-kit0 libtasn1-6 libgssapi-krb5-2 libcomerr2 libcom-err2
libk5crypto3 libkrb5support0 libkrb5-3 libkeyutils1 libpoxy0 libgtk-3-common dconf-
gsettings-backend dconf-service libdconf1 gsettings-backend libjson-glib-1.0-0
libjson-glib-1.0-common librest-0.7-0 libsoup-gnome2.4-1 libsoup2.4-1 glib-
networking glib-networking-common glib-networking-services libproxy1v5 gsettings-
desktop-schemas libsqlite3-0 libwayland-client0 libwayland-cursor0 libwayland-egl1
libwayland-egl1-mesa libegl1 libegl-mesa0 libdrm2 libdrm-common libgbm1 libwayland-
server0 libglapi-mesa libx11-xcb1 libxcb-dri2-0 libxcb-dri3-0 libxcb-present0 libxcb-
sync1 libxcb-xfixes0 libxshmfence1 libglvnd0 libcomposite1 libxcursor1 libxfixes3
libxdamage1 libxi6 libxinerama1 libxkbcommon0 xkb-data libxrandr2 libindicator3-7
libasound2 libasound2-data libnspr4 libnss3 libxss1 x11-common lsb-base libxtst6
lsb-release distro-info-data python3:any wget libpsl5 xdg-utils
```

Copy the packages to the computer isolated with Air Gap:

```
sudo cp -r /var/cache/apt/archives /path/to/medium
```

Install the packages on the computer isolated with Air Gap:

```
cd /path/to/medium

sudo dpkg -iEG --force-dependencies archives/*.deb
```

openSuSE

Download the packages:

```
sudo rm -r /var/cache/zypp/packages/*

sudo zypper download Mesa Mesa-libEGL1 Mesa-libGL1 Mesa-libglapi0 aaa_base adwaita-icon-theme at-spi2-core bash ca-certificates coreutils cpio cracklib cups-libs dbus-1 dbus-1-x11 diffutils expat filesystem fillup findutils fontconfig gdk-pixbuf-loader-rsvg gdk-pixbuf-query-loaders gio-branding-openSUSE glib-networking glib2-tools glibc grep gsettings-desktop-schemas gtk3-data gtk3-tools hicolor-icon-theme info insserv-compat krb5 libLLVM libX11-6 libX11-data libX11-xcb1 libXau6 libXcomposite1 libXcursor1 libXdamage1 libXext6 libXfixes3 libXft2 libXi6 libXinerama1 libXrandr2 libXrender1 libXss1 libXtst6 libXxf86vm1 libacl1 libappindicator3-1 libasound2 libatk-1_0-0 libatk-bridge-2_0-0 libatspi0 libattr1 libaudit1 libavahi-client3 libavahi-common3 libblkid1 libbz2-1 libcairo-gobject2 libcairo2 libcap-ng0 libcap2 libcolord2 libcom_err2 libcrack2 libcroco-0_6-3 libdatrie1 libdb-4_8 libdbus-1-3 libdbusmenu-glib4 libdbusmenu-gtk3-4 libdrm2 libdrm_amdgpu1 libdrm_intel1 libdrm_nouveau2 libdrm_radeon1 libedit0 libelf0 libelf1 libepoxy0 liberation-fonts libexpat1 libfdisk1 libffi4 libfreebl3 libfreetype6 libgbm1 libgcc_s1 libgcrypt20 libgdbm4 libgdk_pixbuf-2_0-0 libgio-2_0-0 libglib-2_0-0 libgmodule-2_0-0 libgmp10 libgnutls28 libgobject-2_0-0 libgpg-error0 libgraphite2-3 libgtk-3-0 libharfbuzz0 libhogweed2 libidn11 libindicator3-7 libjasper1 libjbig2 libjpeg8 libjson-glib-1_0-0 libkeyutils1 liblcms2-2 liblzma5 libmodman1 libmount1 libncurses5 libncurses6 libnettle4 libopenssl1_0_0 libp11-kit0 libpango-1_0-0 libpciaccess0 libpcre1 libpixman-1-0 libpng16-16 libproxy1 libreadline6 librest0 librsvg-2-2 libselinux1 libsemanage1 libsepolicy1 libsmartcols1 libsoftokn3 libsoup-2_4-1 libsqlite3-0 libstdc++6 libsystemd0 libtasn1 libtasn1-6 libthai-data libthai0 libtiff5 libudev1 libustr-1_0-1 libutempter0 libuuid1 libverto1 libwayland-client0 libwayland-server0 libxcb-dri2-0 libxcb-dri3-0 libxcb-glx0 libxcb-present0 libxcb-render0 libxcb-shm0 libxcb-sync1 libxcb-xfixes0 libxcb1 libxml2-2 libxshmfence1 libz1 libzio1 lsb-release mozilla-nsp mozilla-nss mozilla-nss-certs ncurses-utils openSUSE-release openSUSE-release-ftp openssl p11-kit p11-kit-tools pam perl perl-Net-DBus perl-X11-Protocol perl-XML-Parser perl-XML-Twig perl-base permissions pkg-config sed shadow shared-mime-info terminfo-base update-alternatives util-linux wget which xdg-utils
```

Copy the packages to the computer isolated with Air Gap:

```
sudo cp -r /var/cache/zypp/packages /path/to/medium
```

Install the packages on the computer isolated with Air Gap:

```
cd /path/to/medium  
sudo rpm -ivF packages/*/*/* --nodeps --replacepkgs
```

CentOS

Install Yumdownloader

```
sudo yum install yum-utils
```

Download the packages

```
sudo yumdownloader --destdir=/path/to/medium device-mapper libXext bc libunistring
mesa-libEGL liberation-narrow-fonts nss-pem initscripts shadow-utils python
libpwquality rpm gsettings-desktop-schemas freetype file-libs libwayland-server
libXtst rpm-libs wget openssl-libs iptables procmail binutils libselinux dejavu-
fonts-common pango libXrandr ca-certificates at sendmail libepoxy rest libssh2
fribidi libwayland-client libcroco libdrm krb5-libs adwaita-cursor-theme libpwquality
hardlink shared-mime-info mesa-libGL cracklib xz cyrus-sasl dbus libblkid gmp
elfutils-libs time libgcc libXcomposite groff-base device-mapper-libs libthai
libXfixes gettext popt elfutils-libelf libxshmfence kmod liberation-sans-fonts
libmodman bzip2-libs libsoup redhat-lsb-core crontabs pcre diffutils ncurses
libdbusmenu-gtk3 libacl libnfslink acl systemd-libs openldap p11-kit-trust
elfutils-default-yama-scope tzdata libffi findutils libcap-ng glib-networking
pkgconfig libsmartcols basesystem libxml2 libgomp cracklib glibc xz-libs systemd-libs
nss-softokn libgcc libverto nss-util libstdc++ alsa-lib nspr json-c libsmartcols
liberation-serif-fonts jasper-libs psmisc mesa-libgbm fontconfig libgcrypt harfbuzz
libmount trousers p11-kit keyutils-libs libgusb qrencode-libs libusbx gettext-libs
nss keyutils-libs libwayland-cursor python-libs at-spi2-atk libpciaccess setup
mariadb-libs fontconfig cronie mailx cyrus-sasl gtk3 libdb file libcom_err which
krb5-libs gmp libtasn1 diffutils libtasn1 passwd nss nss-tools lua graphite2
libpipeline libproxy make libXrender cups-libs dconf avahi-libs pcre bash util-linux
audit-libs iutils postfix glib2 fontpackages-filesystem hesiod mesa-libglapi
libXScrnSaver libuuid libglvnd p11-kit-trust gdk-pixbuf2 expat colord-libs gtk-
update-icon-cache ed procps-ng libjpeg-turbo bzip2-libs nspr libxkbcommon util-linux
libdb patch openssl-libs systemd ncurses-libs libX11 jbigkit-libs libcap libsemanage
libuuid openldap elfutils-libs cronie-anacron emacs-filesystem pixman info libXxf86vm
chkconfig procps-ng libuser libnetfilter_conntrack ustr pkgconfig iproute freetype
liberation-fonts-common libmount libgpg-error sqlite ncurses-libs libpng at-spi2-core
redhat-lsb-submod-security mesa-libglapi libacl cairo lz4 gdbm curl libdb-utils
libXinerama lcms2 lz4 libcap-ng m4 cyrus-sasl-lib dejavu-sans-fonts xdg-utils
xkeyboard-config gawk libindicator-gtk3 centos-release cyrus-sasl-lib libibusmenu
json-glib libgcrypt audit-libs libuser libblkid atk libselinux libsepol sysvinit-
tools libidn pam zlib gsettings-desktop-schemas gzip libX11 dbus-libs pam grep kpartx
file-libs libXi cpio glib2 tcp_wrappers-libs hwdata readline libcom_err ncurses-base
less nss-util libXcursor libwayland-egl libappindicator-gtk3 cups-client expat cairo-
gobject libmnl desktop-file-utils filesystem zlib mesa-libgbm libglvnd-glx libXft
spax libXau libgpg-error man-db redhat-lsb-core libcurl liberation-mono-fonts p11-kit
trousers nss-sysinit libglvnd-egl xz-libs hostname gnutls popt hicolor-icon-theme
cracklib-dicts libsepol kmod-libs adwaita-icon-theme glibc-common nettle nss-softokn-
freebl dracut cronie-noanacron libXdamage elfutils-libelf liberation-fonts libtiff
tar coreutils libX11-common cryptsetup-libs libdrm mesa-libwayland-egl libutempter
systemd-sysv glibc libcap libxcb sed libattr
```

Install the packages on the computer isolated with Air Gap:

```
cd /path/to/medium  
sudo rpm -ivF *.rpm --nodeps --replacepkgs
```