Tamino

Tamino Data Loader

Version 10.1

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WEBMETHODS

This document applies to Tamino Version 10.1 and all subsequent releases.

Specifications contained herein are subject to change and these changes will be reported in subsequent release notes or new editions.

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Table of Contents

Tamino Data Loader

Tamino provides tools for loading and unloading small or large amounts of XML data into or from a Tamino database. Depending on your data loading situation, you can use the Tamino Interactive Interface, the Tamino X-Plorer or the Tamino Data Loader.

The documentation for the Tamino Data Loader is organized under the following headings:

Loading Data into Tamino	Describes the various possibilities you have to load data into Tamino and lists the advantages and disadvantages of each.
The Tamino Data Loader	Gives information about how the Tamino Data Loader works, what the required input and output file formats are, and introduces the graphical user interface.

1 Loading Data into Tamino

Data loading is one of the most important features of Tamino. Tamino offers several possibilities to load data: the Tamino Data Loader, the Tamino X-Plorer, and the Tamino Interactive Interface. In the following, you will find a description of use cases for the different tools as well as the prerequisites and advantages, depending on your data loading situation. This section comprises the following topics:

Decision Criteria

Basically, the Tamino Interactive Interface and the Tamino X-Plorer are best suited for small amounts of data, whereas the Data Loader is used for loading larger amounts of data. Some other criteria for deciding which tool to use for the different data loading situations are listed in the following table:

	Tamino Interactive Interface	Tamino X-Plorer	Tamino Data Loader
Small amounts of data	+	+	
Large amounts of data			+
Graphical user interface	+	+	
Performance (for large data volumes)			+
Wildcard search			+
Handling of non-XML data	+	+	+

Use Cases

Use Case 1: Few documents with small amounts of data

Tamino Interactive Interface

The *Tamino Interactive Interface* offers the possibility to load *small* amounts of data quickly and easily. Use it if your Tamino database is already up and running and you quickly want to add a few small instances of data, or use it for testing or demo purposes. It is not suitable for mass loading data - if you want to load large amounts of data, use the ***Tamino Data Loader***. The reasons why the Interactive Interface is not suitable for mass loading are:

- Performance is not the focus of the Interactive Interface, but easy handling of small data sets.
- When loading large documents with the Interactive Interface, the timeout limits are quickly reached and the loading process stops.

For detailed information about how to use the Interactive Interface, see the respective documentation.

Tamino X-Plorer

Another possibility to load small amounts of data is the *Tamino X-Plorer*. The Tamino X-Plorer offers easy handling of data loading via a navigation tree. You can also load documents that do not have a doctype, as well as non-XML documents (see **Use Case 4**). For detailed information about how to use the Tamino X-Plorer, see the respective documentation.

Note: If you load data for demo or test purposes only, it is recommended not to use too many or too large documents.

Use Case 2: Many documents with small amounts of data

Tamino Data Loader

The Tamino Data Loader is used to load *many documents* into Tamino. It does not require a special input format and even offers the possibility of wildcard data selection. You can load several files at the same time, and do not need to convert them to a special format.

Use Case 3: Many documents with large amounts of data

Tamino Data Loader

The Tamino Data Loader is also used to load *large* amounts of data into Tamino. Use it if your data has more than just several megabytes. The Tamino Data Loader offers the quickest way to load these data. The Data Loader is started via the command line.

Starting with Tamino Version 4.2, it is possible to load several files without using the special input format, to use wildcards for input file selection, and to use the Data Loader for non-XML files.

Use Case 4: Non-XML data

If you want to load documents that do not have an XML format into a user collection, for example graphic or word processing files, you can use the Tamino Interactive Interface, the Tamino X-Plorer or the Tamino Data Loader. A special schema is needed in this case. Here is an example of a schema file for non-XML data:

```
<?xml version="1.0" encoding="UTF-8"?>

<xs:schema
   xmlns:xs  = "http://www.w3.org/2001/XMLSchema"
   xmlns:tsd = "http://namespaces.softwareag.com/tamino/TaminoSchemaDefinition">
   <xs:annotation>
      <xs:appinfo>
         <tsd:schemaInfo name = "abcNonXML">
            <tsd:collection name = "abcNonXML"/>
            <tsd:doctype name = "xyzNonXML">
                <tsd:nonXML/>
```

```
            </tsd:doctype>
         </tsd:schemaInfo>
      </xs:appinfo>
   </xs:annotation>
</xs:schema>
```

The decisive element in this schema is `tsd:nonXML`. It tells Tamino to load non-XML data into the collection abcNonXML.

To load the data into Tamino, first define the schema above to Tamino with the help of the Tamino Interactive Interface or the Tamino X-Plorer. The process is described in the respective documentation. The next step is to load the non-XML files into Tamino.

Tamino Interactive Interface

Use the Interactive Interface as follows:

To load non-XML data into Tamino with the Tamino Interactive Interface

1 Start the Tamino Interactive Interface, if you have not already done so.

2 Choose the **Load** tab.

3 Enter the database URL.

4 Enter the file to be loaded. Use the **Browse** button to locate the file, if necessary.

Note: The limitation for document names for non-XML documents is 1004 bytes. The number of possible characters varies, depending on UTF-8 encoding. If a document name exceeds the limitation, an error message will be displayed and the document will be rejected.

5 The entry in the field **Into collection** is special for non-XML data. Enter the following:

```
(collection name)/(doctype name)/(document name)
```

If, for example, you want to load a file named *patient.doc* with the example schema file above, enter:

```
abcNonXML/xyzNonXML/patient.doc
```

The document with ino:docname *patient.doc* is loaded into Tamino, and you can query for it.

Specifying the document name is optional, but recommended, since it provides the possibility to query the document via the ino:docname attribute. Use the function `tf:getDocname` to get the document name for the non-XML document element.

Tamino X-Plorer

The Tamino X-Plorer offers a special dialog box for loading non-XML data. See the X-Plorer documentation, section *Working with Instances* > *Inserting new Instances* > *From non-XML Files* for a detailed description.

Before You Start Mass Loading Data

If you only have small amounts of data to be loaded and are using the Tamino Interactive Interface or the Tamino X-Plorer, you can ignore this section. If, however, you will be loading large amounts of data into Tamino, some preparations are recommended if you want to further increase data loading performance:

- Increasing the Buffer Pool Size
- Removing the Text Index
- Removing the Structure Index

Increasing the Buffer Pool Size

In order to improve the performance for loading large amounts of data into Tamino, you first should check the buffer pool size of your database. If it is lower than 100 MB, increase it to 100 MB.

Note: The value of 100 MB is only a recommendation, gained from experience. It depends on the data loading situation and is a good starting point to find the value that best suits your needs.

Removing the Text Index

If you are looking for a quick way to load data, take a look at the corresponding schema and nodes with index properties (`tsd:index`). Removing text indexes from the schema reduces data loading time considerably. If the schema contains several text indexes, delete most of them and only keep the most important ones:

```
...
<tsd:index>
...
    <tsd:text>          -> delete!
    </tsd:text>         -> delete!
...
</tsd:index>
...
```

To do so, you can use the Tamino Schema Editor as follows.

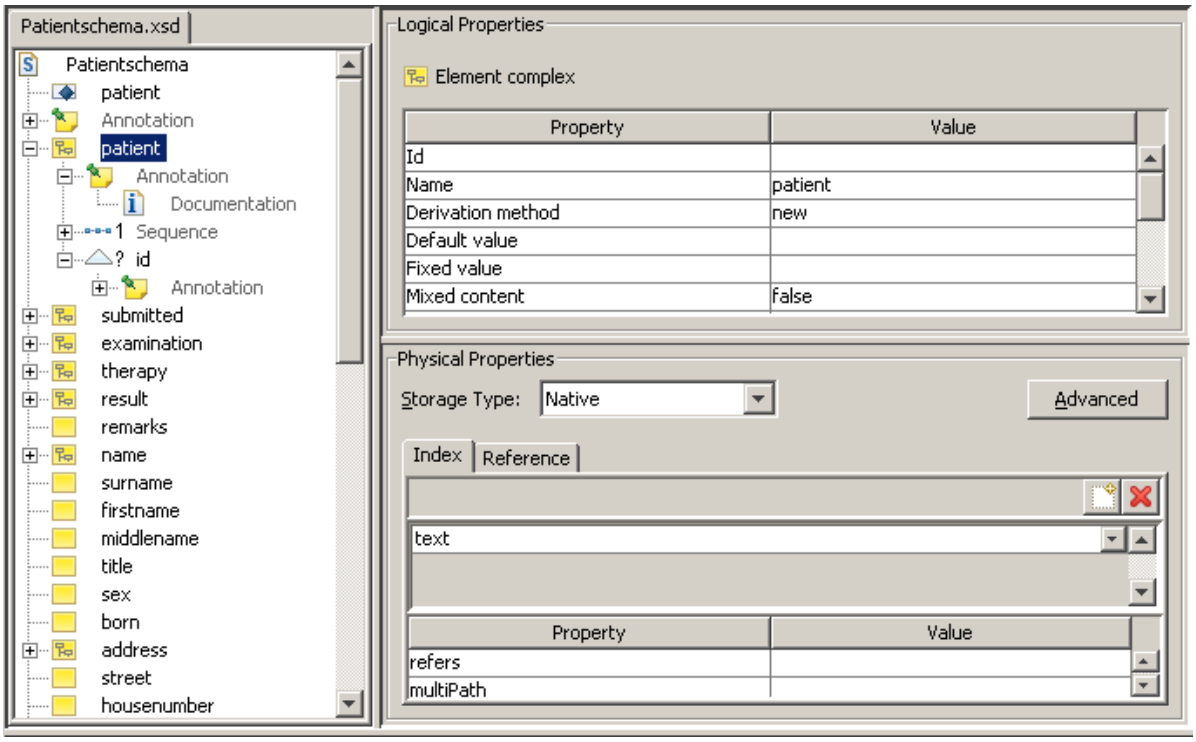
To remove text indexes from the schema with the Tamino Schema Editor

1 Open the Tamino Schema Editor.

2 Open the schema for your data to be loaded.

3 Select a node for which a text index has been defined.

This example shows an element `patient`, for which an existing text index shall be removed:



4 Remove the text index by choosing the **Delete Index** icon.

5 Repeat these steps for every node that has a text index.

Note that after having deleted text indexes, you should query only those nodes that still have a text index to reduce query time. Alternatively, you can also reactivate the text indexes after the load process by putting them back into your schema. To do so, follow the steps described above, but reverse the process.

ino:loadlist

If for any reason you do not want to or cannot remove any text indexes, use the *ino:loadlist* instead to speed up the data loading process. Words that are very likely to be used as indexes should be defined in load lists. This can be done by adding a load list document to your database into the collection `ino:vocabulary`. Here is an example:

```
<?xml version='1.0' encoding='UTF-8'?>

<ino:loadlist ino:loadlistname="myloadlist"
  xmlns:ino="http://namespaces.softwareag.com/tamino/response2">
  <ino:word>jazz</ino:word>
  <ino:word>blues</ino:word>
  <ino:word>swing</ino:word>
  <ino:word>ragtime</ino:word>
</ino:loadlist>
```

The required schema is already defined in Tamino. It is possible to define several load lists (with different names). When a database is started, Tamino will concatenate all load lists stored in the database and pre-load the words contained in them for the indexing to speed up the loading of documents.

Removing the Structure Index

Another possibility to accelerate data loading performance is to prevent the structure index from being built. To do so, enter the following information into your schema:

```
...
<tsd:structureIndex>none
</tsd:structureIndex>
...
```

Again, you can use the Tamino Schema Editor as follows.

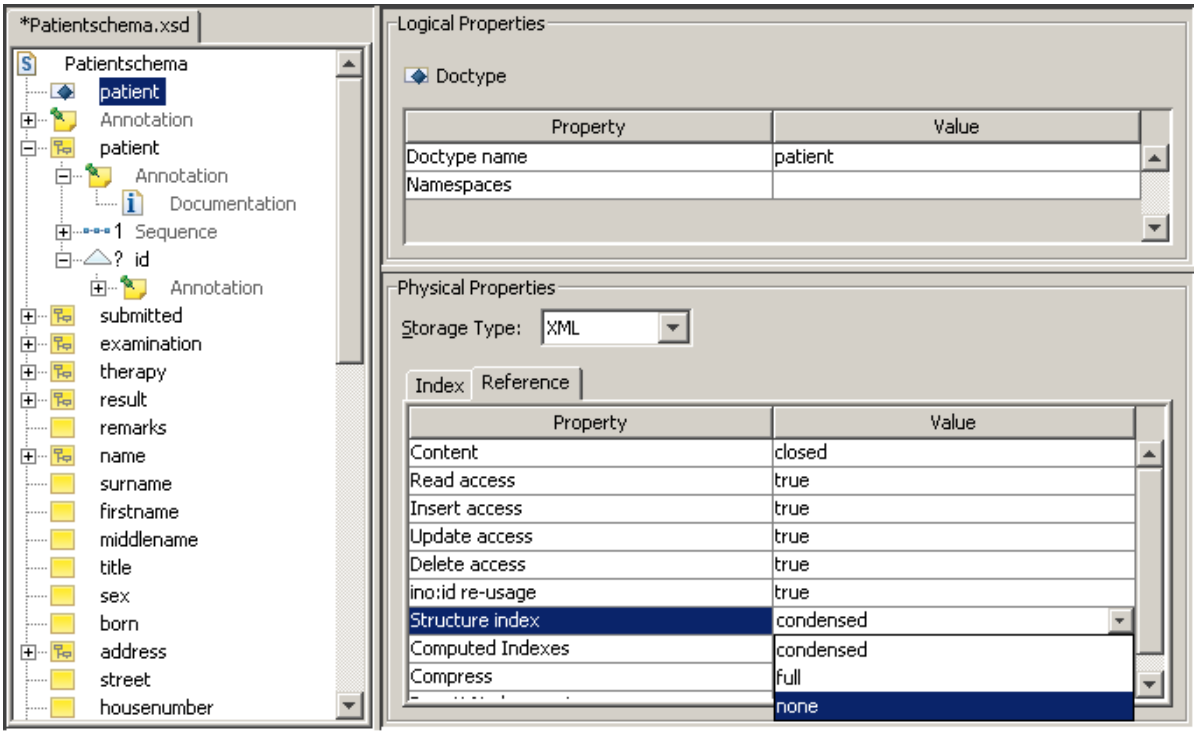
To remove the structure index from the schema with the Tamino Schema Editor

1 Open the Tamino Schema Editor.

2 Open the schema for your data to be loaded.

3 Select the doctype node in the tree view.

This example shows a doctype `patient`, for which an existing structure index shall be removed:



4 Change the **Structure index** value under **Physical Properties** to **none**.

In this case, the same applies as for the text index: Use queries only for nodes that are part of the schema. Alternatively, you can also reactivate the structure index after the load process by putting it back into your schema. To do so, follow the steps described above, but reverse the process.

Tips and Hints

Initial Loading of Data

When you use the Tamino Data Loader for initial loading, make sure that you use it *without* the `concurrentwrite` option (which is the default behavior). This will improve performance considerably.

For subsequent data loading, you may consider switching the `concurrentwrite` parameter on, which means that the users of the database have read and write access while data is being loaded. This may, however, decrease data loading performance.

For further information about the `concurrentwrite` option, see section ***Prerequisites*** in the Tamino Data Loader documentation.

Working in a Multiprocessor Environment

Another way to improve performance is to separate Tamino server and massload client physically by running them on different machines. If, however, a multiprocessor machine is used, this is not necessary. If you want to have several massload clients work in parallel, you must set the parameter `concurrentwrite` (see section ***With concurrent read/write access***).

Schema definition

In many cases, you need to define a schema before loading your data. To do so, use the Schema Editor as described in the Tamino documentation.

2 The Tamino Data Loader

The Tamino Data Loader is used to load and unload large amounts of data in an efficient manner. This document covers the following topics:

What Is the Tamino Data Loader?

The Tamino Data Loader ensures the efficient loading and unloading of large amounts of data into and from Tamino. Particularly the initial load of mass data during the migration phase from other data management systems that are to be replaced by Tamino (the so called *legacy data*) is a special challenge, which can be solved quickly and safely by the Tamino Data Loader.

Also, the Tamino Data Loader guarantees the permanent topicality of data when large amounts of data, which are for example provided regularly by external applications, are added to the database. Normal operations of the Tamino Server are not affected by this, and hence the error-free use of Tamino is ensured 24 hours a day.

The Tamino Data Loader can load not only XML data but also non-XML data, such as text, audio or video documents. These documents can of course also be subsequently unloaded.

The selection of documents to be loaded is very easily done by specifying a combination of file lists, wildcards and regular expressions. Thus, a variety of documents and files can be loaded in one single run.

Also the selection of documents to be unloaded from Tamino can be done by using search expressions, thus manipulating and reducing the data to be unloaded in a very flexible manner. It is thus possible to efficiently hand over unloaded data to follow-up applications. The Tamino Data Loader can take the role of a filter in this process and pass the unloaded data directly to an application without intermediate storage of documents.

Before You Start

The Tamino Data Loader is provided as a command line interface. On a Windows platform, the command line interface is available in the **Tools** submenu of Tamino. On UNIX platforms, a script is available. See the startup procedures for your platform as described in the section *Starting Tamino* > Starting Tamino on UNIX Systems for details.

This section gives you general information that you need before you start working with the Tamino Data Loader:

- Prerequisites

Prerequisites

The Tamino Data Loader needs an active Tamino Server with the appropriate collection and doctype defined into which the documents are to be loaded, or from which they will be unloaded. For information about collections and doctypes, see the *Getting Started* document. The collection and doctype need to be defined *before* the data loading can start. This can be done using the Schema Editor or the Tamino Data Loader's `-define` function.

By default, the Tamino Data Loader exclusively locks the complete doctype when loading data. This means that queries and all other Tamino operations on this doctype will be refused. However, the Tamino Data Loader provides a parameter called `concurrentwrite` that allows concurrent read and write access to the doctype while data is loaded. In the graphical interface, you can switch the parameter on or off by simply activating or deactivating a button. In the command line interface, you can explicitly specify the parameter `concurrentwrite`.

The Tamino Data Loader may utilize the communication methods "XTS" or "TCP/IP". Thus it can not work if neither of the two is available, i.e. the communication method is "HTML" for example. The default communication method, "XTS and TCP/IP" will do, as will "HTTP and XTS", "HTTPS and TCP/IP", etc.

Cancel an Inactive Session

It is possible to cancel an inactive data loading operation with the function `ino:CancelMassLoad` of the X-Machine `-admin` command. For further information, see the documentation about the X-Machine `_admin` command.

Using the Data Loader from the Command Line Interface

To use the Tamino Data Loader from the command line, open the command line interface as described in the startup procedures for your platform as described in the section *Starting Tamino*. Use the command `inoload` with the appropriate parameters (consisting of a keyword and an option) to start data loading. To list the online help texts for the parameters, enter `inoload -help` at the prompt.

The command line syntax is:

```
inoload [-keyword [option]]...
```

Note that there is a minus sign *before* the keyword, and a space *between* keyword and option. Keywords and options are not case sensitive.

Here is an example for starting the Tamino Data Loader from the command line interface:

To start the Data Loader from the command line

- At the prompt, enter for example the following command:

```
inoload -database my-database -user [Johnid]
-collection Hospital/patient -input abc.xml -norejects -log xyz.xml
```

Note: Generally, it is possible to use wildcards in filenames. Wildcard expansion depends on the operating system or shell. However, do not use blanks in pathnames when using wildcards. Combining blanks and wildcards in pathnames leads to errors.

In the following, you will find a detailed description of the parameters that are available:

- General Parameters
- Load Parameters
- Unload Parameters
- Delete Parameters
- Define Parameters
- Undefine Parameters
- Unloadschema Parameters

General Parameters

Parameter Name and Syntax	Default Value
-function [load|unload|delete|define|undefine|unloadschema]	load
-database *database name*	none
-server *machine name*:*XML port*	none
-user *uid*	if not provided, anonymous
-password *password*	none
-log *log filename*	STDERR (standard error)
-version	none
-verbose	none
-quiet	none
-help or -h	none

General Parameters Overview

-function [load | unload | delete | define | undefine | unloadschema]

This parameter specifies which function you want to use (load or unload data, delete data, define, undefine or unload a schema or doctype). The default value is `load` (which can be omitted for load operations).

-database *database name*

This parameter specifies the name of the Tamino database. It is a mandatory parameter without a default value. For example: `-database my-database`

-server *machine name*:*XML port*

This parameter specifies the name of the machine where the Tamino Server is running. The port is the XML port of the database and can be found in the Tamino Manager under **Databases > (name of database) > Properties > Ports > XML Port**. It is a mandatory parameter without a default value. The parameter `server` has the same meaning as (and is mutually exclusive to) the parameter `database`. It is provided for platforms where only TCP/IP communication is available.

-user *uid*

This parameter specifies the Tamino user identification. If it is not provided, the user remains anonymous. If *Tamino Security* is used, it is a mandatory parameter.

-password *password*

This parameter specifies the password for the Tamino user identification, if a user identification is specified.

-log *log filename*

This parameter specifies whether to write a file with processing information (log messages). It also specifies the filename of the log file. The log file is in Tamino response format.

-version

This parameter shows the current version of the Tamino Data Loader.

-verbose

This parameter specifies that all messages are written to the log file.

-quiet

With this parameter, only important error messages are written to the log file. If you specify this parameter, only important error messages are written.

-help

With this parameter, online help is displayed.

Load Parameters

Parameter Name and Syntax	Default Value
-collection *collection/doctype*	none
-input *input filespec*	STDIN (standard input)
-norejects	tolerate having rejected documents
-mediatype *media type*	none
-docname [none|full|filename|autoext]	autoext
-concurrentwrite	no concurrent read/write

Load Parameters Overview

-collection *collection/doctype*

This parameter specifies the collection name and doctype to load data into. It is a mandatory parameter.

-input *input filespec*

This parameter specifies the input for the load operation. As input, it is possible to enter a filename or a list of filenames, separated by a space. Note that it is possible to use wildcards in filenames. However, do not use blanks in pathnames when using wildcards. Combining blanks and wildcards in pathnames leads to errors. If no input parameter is provided, then the input is assumed to come from standard input.

-norejects

Files that cannot be loaded by the Tamino Data Loader are called rejected files. When the Data Loader finds a file to be rejected during the load process, the file is renamed and a copy of it placed in the same directory as the input file (unless it is a read-only device, such as a CD-ROM). The new file name consists of the original file name plus the string *-mlderr*, followed by the process id, using the following format: *input filename-mlderrpid.input filename ext*. Files that contain only one document do not produce rejected files.

This parameter specifies that rejected documents are not tolerated while loading. If it is used and an error occurs, the mass loading is stopped with no documents being loaded, and the collection is left in the same state as before the load operation started. Rejected documents are written to the directory where also the files to be loaded reside.

-mediatype *media type*

This parameter specifies a text string for a valid media type. Information about valid media types can be found in the section ***Known Media Types***.

-docname [none | full | filename | autoext]

This parameter specifies how to generate the ino:docname on the basis of the corresponding filename for load operations. The ino.docname is the identifier of a loaded document. When storing documents and other data in Tamino, Tamino allows assigning a document name to such an object. This name is stored in the internal attribute `ino:docname`. The following values are available:

Value of parameter for docname	Description (for load operations)
none	No ino:docname is created for the documents in Tamino. The media type is set if the file extension is known to Tamino. If no file extension is found, the media type is not set. If a media type is explicitly specified as parameter, that media type is set for the document.
full	The ino:docname is set to the filename including its path. The media type is set if the file extension is known to Tamino. If no file extension is found, the media type is not set. If a media type is explicitly specified as parameter, that media type is set for the document.
filename	The ino:docname is set to the filename without the path but including the file extension, if one exists. The media type is set if the file extension is known to Tamino. If no file extension is found, the media type is not set. If a media type is explicitly specified as parameter, that media type is set for the document.
autoext	The ino:docname is set to the filename without the path and without the file extension. If an extension exists and the extension is known to Tamino, the corresponding media type is set. If the extension is not known to Tamino, the extension is used as media type, where the character sequences %2E and %2F are replaced by . (dot) and / (slash) respectively in the media type name. If the extension #nomimetype is found, no media type will be set

-concurrentwrite

This parameter specifies that the Data Loader allows other clients to have concurrent read and write access to the doctype while data is being loaded.

Unload Parameters

Parameter Name and Syntax	Default Value
-collection *collection/doctypename*	none
-docname [none | full | filename | autoext]	autoext
-output *output filespec*	STDOUT (standard output)
-outputformat [singlefile | multifiles]	singlefile
-filter	no filter (unload all)

Parameter Name and Syntax	Default Value
-concurrentwrite	no concurrent read/write

Unload Parameters Overview

-collection *collection/doctype*

This parameter specifies the collection and doctype to unload data from. It is mandatory.

-docname [none | full | filename | autoext]

This parameter specifies how to generate the filename on the basis of the ino:docname for unload operations. Existing files are overwritten. The following values are available:

Value of parameter for docname	Description (for unload operations)
none	The filename of the stored document is created from the ino:id as "#doc" + ino:id. The filename is followed by an extension if a media type is set for that document and if Tamino knows an extension for that media type. If the document is stored in an XML doctype, then .xml is always used as the extension.
full	The filename of the stored document is created from ino:docname, where that may also include creation of subdirectories, if paths are part of the filename. If the parameter `output` is set, only the filename without the path is used for storing the documents. If the document being unloaded does not have an ino:docname, the filename of the stored document is created from the ino:id as "#doc" + ino:id. The filename is followed by an extension if a media type is set for that document and if Tamino knows an extension for that media type. If the document is stored in an XML doctype, then .xml is always used as the extension.
filename	The filename of the stored document is created from ino:docname, where any paths are stripped if they exist. If the document being unloaded does not have an ino:docname, the filename of the stored document is created from the ino:id as "#doc" + ino:id. The filename is followed by an extension if a media type is set for that document and if Tamino knows an extension for that media type. If the document is stored in an XML doctype, then .xml is always used as the extension.
autoext	The filename of the stored document is created from ino:docname, where any paths are stripped if they exist. If the ino:docname does not include a file extension, an extension is automatically added to the filename if an extension is known for that media type. If the document being unloaded does not have an ino:docname, the filename of the stored document is created from the ino:id as "#doc" + ino:id. The filename is followed by an extension if a media type is set for that document. If Tamino knows an extension for that media type, that extension is used, otherwise the full media type name is used as the extension, where the special characters . (dot) and / (slash) are replaced by %2E and %2F respectively. If the ino:docname contains an extension, but there is no media type set for the document, the extension #nomimetype is appended, which will result in no media type being set when that file is loaded into Tamino again with the autoext option.

Note: The ino:docname is not necessarily a valid filename (depending on the platform you are using). Unloading documents with the ino:docname can thus fail. If the ino:docname has a slash or backslash (/ or \), it is substituted by a hash (#).

-output *output filespec*

This parameter specifies the file or directory name, to which the unloaded documents are to be written.

-outputformat [singlefile|multifiles]

This parameter specifies whether to write the unloaded documents into one single file, or each document to a separate file. The value `multifile` is only available in connection with an output file specification of a directory. The documents are written into several files, one for each document.

-filter

This parameter specifies a filter to select the documents to be unloaded. Use a query string if you want to assemble the data to be unloaded. The filter expression has to start and end with square brackets [], for example: `-filter [filterexpression]`. Use X-Query syntax for the filter expression.

-concurrentwrite

This parameter specifies that the Data Loader allows other clients to have concurrent read and write access to the doctype while data is being unloaded.

Delete Parameters

Parameter Name and Syntax	Default Value
-collection *collection/doctypename*	none
-filter	no filter (delete all)
-concurrentwrite	no concurrent read/write

Delete Parameters Overview

If no filter is specified, the delete function deletes all documents. Depending on the amount of data to be deleted, the process can take some time. So if you want to delete all files, you can use the undefine function with a collection name or doctype name specified (all documents belonging to the doctype or collections are also deleted) and then redefine the collection/doctype (see ***Undefine Parameters***.

-collection *collection name/doctype name*

This parameter specifies the name of the collection and/or doctype, from which data is to be deleted.

-filter

This parameter specifies a filter to select the documents to be deleted. Use a query string if you want to select the data to be deleted. The filter expression has to start and end with square brackets [], for example: `-filter [filterexpression]`. Use X-Query syntax for the filter expression.

-concurrentwrite

This parameter specifies that the Data Loader allows other clients to have concurrent read and write access to the doctype while data is being deleted.

Define Parameters

-input *input filespec*

This parameter specifies the file or directory containing schemas to be defined. The default value is *STDIN*.

If you define a list of schemas (e.g. with wildcards), the definition document has to be defined first, then the other schemas.

Undefine Parameters

The undefine function undefines a collection, schema and/or doctype and deletes all documents that belong to the collection/doctype (see also ***Delete Parameters***. The collection name is mandatory; schema and doctype names are optional. If you want to delete all files, you can use the undefine function with a collection name or doctype name specified (all documents belonging to the doctype or collections are also deleted) and then redefine the collection/doctype.

-collection *collection*[/*schema*][/*doctype*]

This parameter specifies the name of the collection, schema and/or doctype to be undefined.

Unloadschema Parameters

The option `unloadSchema` unloads the specified schema into a single file. The name of the file into which the schema is unloaded is *collectionname#schemaname.tsd*. If all doctypes are unloaded, an additional schema - the so-called *definition document* - is unloaded into a file, containing attributes of the collection. The filename is *collectionname.tsd*. In combination with `unloadSchema`, the doctype does not need to be specified; all schemas in the specified collection will be unloaded.

It is not possible to unload single doctypes that belong to one schema.

The following parameters are available:

-collection *collection*[**/***schema*]

This parameter specifies the collection and schema to be unloaded. It is a mandatory parameter.

-output *output filespec*

This parameter specifies where to write the unloaded schema file to. The default value is *STDOUT*.

Restrictions and Error Situations

Errors

When an error occurs in the processing of a document, the line and column numbers given in the error report will be relative to the load document that was in error (line and column computation start at the tag `ino:object`). Processing messages are written to the log file. The log file is a well-formed XML document.

Restrictions

X-Node and Triggers

If you want to *load* data and are using the Tamino X-Node feature, insert or update operations are only possible with the concurrent read/write option being switched on. This means that it is not possible to insert data into external databases or to update them if you are using the Tamino Data Loader in default mode, which is without concurrent read/write. You need to explicitly switch the parameter on. The same applies for triggers.

Unloading data, however, is always possible, with or without concurrent read/write.

Generally, however, it is only possible to unload X-Node documents that have been saved via Tamino and thus have an ino:id. X-Node documents that have not been saved via Tamino and have no ino:id cannot be unloaded with the Data Loader.

Using the Data Loader with One Single Input File

Tamino also supports another method of loading data, which is to use one single input file which consists of all the files you want to load. In this case, the input file must have the following format (the output file format is the same):

```
<?xml version="1.0" encoding="UTF-8"?>
  <ino:request xmlns:ino="http://namespaces.softwareag.com/tamino/response2">
    <ino:object [ino:docname="docname"]  [ino:id="id"] >
      <!-- document contents for first XML document including PI's and Comments -->
    </ino:object >
   <ino:object [ino:docname="docname"] [ino:id="id"] >
      <!-- document contents for second XML document including PI's and Comments -->
   </ino:object >
        .....
  </ino:request>
```

The square brackets ("[", "]") around the `ino:docname` and `ino:id` attribute indicate that the attributes are optional.

The XML prolog may be specified only once at the start of the input file. The prolog and entities will be used by the Data Loader, but are not stored by Tamino. If there is no XML prolog, then the file must have a character encoding of UTF-8, UTF-16, or UTF-32. Make sure that all occurrences of ino:docname attributes are unique. Delivering duplicate `ino:docname` attributes leads to an error message, stating that an internal error has occurred, followed by a rollback of the whole loading process.

If you want to keep the doctype declaration of your documents to be loaded, it must be wrapped in the following way:

```
<ino:object>
 <ino:documentprolog>
  <![CDATA[
  <!-- here comes the doctype declaration -->
 ...]]>
 </ino:documentprolog>
 <rootelement>
  ...
 </rootelement>
</ino:object>
```

This format guarantees that the input file is still well-formed.

Known Media Types

The following lists are used by the Tamino Data Loader to determine the file extension for loading and unloading files:

- Input files: Using the file extension to determine the media type
- Output files: Using the media type to determine the file extension

Input files: Using the file extension to determine the media type

The following list is used to determine the media type, using the file extension, for loading data:

File Extension	*Media Type*
ai	application/postscript
aif	audio/x-aiff
aifc	audio/x-aiff
aiff	audio/x-aiff
asc	text/plain
au	audio/basic
avi	video/x-msvideo
avx	video/x-msvideo
bcpio	application/x-bcpio
bin	application/octet-stream
bmp	image/x-bmp
cdf	application/x-netcdf
class	application/octet-stream
cpio	application/x-cpio
cpt	application/mac-compactpro
csh	application/x-csh
css	text/css
dcr	application/x-director
dir	application/x-director
dl	video/x-dl
dll	application/octet-stream
dms	application/octet-stream
doc	application/msword
dvi	application/x-dvi
dxr	application/x-director

eps	application/postscript
etx	text/x-setext
exe	application/octet-stream
ez	application/andrew-inset
flc	video/x-fli
fli	video/x-fli
gif	image/gif
gtar	application/x-gtar
gz	application/x-gzip
hdf	application/x-hdf
hqx	application/mac-binhex40
htm	text/html
html	text/html
ice	x-conference/x-cooltalk
ico	image/x-ico
ief	image/ief
iges	model/iges
igs	model/iges
jpe	image/jpeg
jpeg	image/jpeg
jpg	image/jpeg
js	application/x-javascript
latex	application/x-latex
lha	application/octet-stream
lzh	application/octet-stream
m3u	audio/x-mpegurl
man	application/x-troff-man
me	application/x-troff-me
mesh	model/mesh
mid	audio/midi
midi	audio/midi
mov	video/quicktime
movie	video/x-sgi-movie
mp2	audio/mpeg
mp3	audio/mpeg
mpe	video/mpeg
mpeg	video/mpeg

mpg	video/mpeg
mpga	audio/mpeg
ms	application/x-troff-ms
msh	model/mesh
mv	video/x-sgi-movie
mxu	video/vnd.mpegurl
nc	application/x-netcdf
oda	application/oda
pbm	image/x-portable-bitmap
pdb	chemical/x-pdb
pdf	application/pdf
pgm	image/x-portable-graymap
pgn	application/x-chess-pgn
png	image/png
pnm	image/x-portable-anymap
ppm	image/x-portable-pixmap
ppt	application/vnd.ms-powerpoint
ps	application/postscript
qt	video/quicktime
ra	audio/x-realaudio
ram	audio/x-pn-realaudio
ras	image/x-cmu-raster
rgb	image/x-rgb
rm	audio/x-pn-realaudio
roff	application/x-troff
rpm	audio/x-pn-realaudio-plugin
rtf	text/rtf
rtx	text/richtext
sgm	text/sgml
sgml	text/sgml
sh	application/x-sh
shar	application/x-shar
silo	model/mesh
sit	application/x-stuffit
skd	application/x-koan
skm	application/x-koan
skp	application/x-koan

skt	application/x-koan
snd	audio/basic
so	application/octet-stream
spl	application/x-futuresplash
src	application/x-wais-source
stc	application/vnd.sun.xml.calc.template
std	application/vnd.sun.xml.draw.template
sti	application/vnd.sun.xml.impress.template
stw	application/vnd.sun.xml.writer.template
sv4cpio	application/x-sv4cpio
sv4crc	application/x-sv4crc
swf	application/x-shockwave-flash
sxc	application/vnd.sun.xml.calc
sxd	application/vnd.sun.xml.draw
sxg	application/vnd.sun.xml.writer.global
sxi	application/vnd.sun.xml.impress
sxm	application/vnd.sun.xml.math
sxw	application/vnd.sun.xml.writer
t	application/x-troff
tar	application/x-tar
tcl	application/x-tcl
tex	application/x-tex
texi	application/x-texinfo
texinfo	application/x-texinfo
tgz	application/x-gzip
tif	image/tiff
tiff	image/tiff
tr	application/x-troff
tsv	text/tab-separated-values
txt	text/plain
ustar	application/x-ustar
vcd	application/x-cdlink
vfw	video/x-msvideo
vrml	model/vrml
wav	audio/x-wav
wbmp	image/vnd.wap.wbmp
wbxml	application/vnd.wap.wbxml

wml	text/vnd.wap.wml
wmlc	application/vnd.wap.wmlc
wmls	text/vnd.wap.wmlscript
wmlsc	application/vnd.wap.wmlscriptc
wp	application/wordperfect5.1
wrl	model/vrml
xbm	image/x-xbitmap
xls	application/vnd.ms-excel
xml	text/xml
xpm	image/x-xpixmap
xsl	text/xml
xwd	image/x-xwindowdump
xyz	chemical/x-xyz
zip	application/zip

Output files: Using the media type to determine the file extension

The following list is used to determine the file extension, using the media type, for unloading data:

Media Type	*File Extension*
application/andrew-inset	ez
application/mac-binhex40	hqx
application/mac-compactpro	cpt
application/msword	doc
application/octet-stream	bin
application/oda	oda
application/pdf	pdf
application/postscript	ps
application/vnd.ms-excel	xls
application/vnd.ms-powerpoint	ppt
application/vnd.sun.xml.calc	sxc
application/vnd.sun.xml.calc.template	stc
application/vnd.sun.xml.draw	sxd
application/vnd.sun.xml.draw.template	std
application/vnd.sun.xml.impress	sxi
application/vnd.sun.xml.impress.template	sti
application/vnd.sun.xml.math	sxm
application/vnd.sun.xml.writer	sxw

application/vnd.sun.xml.writer.global	sxg
application/vnd.sun.xml.writer.template	stw
application/vnd.wap.wbxml	wbxml
application/vnd.wap.wmlc	wmlc
application/vnd.wap.wmlscriptc	wmlsc
application/wordperfect5.1	wp
application/x-bcpio	bcpio
application/x-cdlink	vcd
application/x-chess-pgn	pgn
application/x-cpio	cpio
application/x-csh	csh
application/x-director	dir
application/x-dvi	dvi
application/x-futuresplash	spl
application/x-gtar	gtar
application/x-gzip	gz
application/x-javascript	js
application/x-koan	skd
application/x-latex	latex
application/x-netcdf	cdf
application/x-sh	sh
application/x-shar	shar
application/x-shockwave-flash	swf
application/x-stuffit	sit
application/x-sv4cpio	sv4cpio
application/x-sv4crc	sv4crc
application/x-tar	tar
application/x-tcl	tcl
application/x-tex	tex
application/x-texinfo	texinfo
application/x-troff	roff
application/x-troff-man	man
application/x-troff-me	me
application/x-troff-ms	ms
application/x-ustar	ustar
application/x-wais-source	src
application/zip	zip

audio/basic	au
audio/midi	midi
audio/mpeg	mp3
audio/x-aiff	aiff
audio/x-mpegurl	m3u
audio/x-pn-realaudio	ram
audio/x-pn-realaudio-plugin	rpm
audio/x-realaudio	ra
audio/x-wav	wav
chemical/x-pdb	pdb
chemical/x-xyz	xyz
image/gif	gif
image/ief	ief
image/jpeg	jpg
image/png	png
image/tiff	tif
image/vnd.wap.wbmp	wbmp
image/x-bmp	bmp
image/x-cmu-raster	ras
image/x-ico	ico
image/x-portable-anymap	pnm
image/x-portable-bitmap	pbm
image/x-portable-graymap	pgm
image/x-portable-pixmap	ppm
image/x-rgb	rgb
image/x-xbitmap	xbm
image/x-xwindowdump	xwd
model/iges	iges
model/mesh	mesh
model/vrml	vrml
text/css	css
text/html	html
text/plain	txt
text/richtext	rtx
text/rtf	rtf
text/sgml	sgml
text/tab-separated-values	tsv

text/vnd.wap.wml	wml
text/vnd.wap.wmlscript	wmls
text/xml	xml
text/x-setext	etx
video/mpeg	mpeg
video/quicktime	mov
video/vnd.mpegurl	mxu
video/x-dl	dl
video/x-fli	flc
video/x-fli	fli
video/x-msvideo	avi
video/x-sgi-movie	movie
x-conference/x-cooltalk	ice

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