

Maintenance activities for CAST Storage Service and PostgreSQL

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Summary: This section is designed to group together all miscellaneous backup, optimization and maintenance documentation related to the CAST Storage Service/PostgreSQL. All the tools listed in this page can be found in the **CSSAdmin** folder at the **root of your CAST AIP installation**.

Backing up a CAST AIP schema



- When using CSSBackup, you must only use CSSRestore to restore your schemas.
- Schema backups created with CSSBackup/CSSBackupAll included in 8.3.27 (and any higher 8.3 service pack) should only be restored with CSSRestore/CSSRestoreAll included in 8.3.27 (and any higher 8.3 service pack).

CAST provides a simple command line based method for backing up any CAST AIP schema in your CAST Storage Service/PostgreSQL instance to file. This backup file can then be used to restore the CAST AIP schema to the same CAST Storage Service/PostgreSQL instance or to another CAST Storage Service/PostgreSQL instance. As such it is a fully functioning backup, i.e. you do not need to create the target CAST AIP schema when subsequently running a restore process (see below).


To backup a CAST AIP schema, locate the file **CSSBackup.exe**. CAST recommends running the backup process from a batch file (make sure that all commands are placed on one single line and remember to surround any paths (i.e. to the .exe, dump file or log file) with quote marks if the path contains spaces). A typical command line to backup one CAST AIP schema would be as follows:

```
CSSBackup.exe
-schema <schema_name>
-password <Operator_password>
-file <path_and_name_of_backup_file.cssdmp>
-log <path_and_name_of_log_file.log>
```

Required parameters

- schema	Name of CAST schema to backup.
- password	CAST Storage Service/PostgreSQL instance "operator" password.
-file	Path and name of backup dump file, using the .cssdmp extension. Backup will fail if this file already exists.
-log	Path and name of output log file - does not need to exist already (logging functions in append mode). The resulting file is text based. Note that you can increase logging verbosity by using the parameter set CASTLOGMODE=DEBUG at the start of your command line, e.g.: <pre>set CASTLOGMODE=DEBUG CSSBackup.exe -schema <schema_name> -password <Operator_password> -file <path_and_name_of_backup_file.cssdmp> -log <path_and_name_of_log_file.log></pre>

Additional optional parameters

-host	Name/IP address of machine hosting the CAST Storage Service/PostgreSQL instance (default: localhost). Only required if the CAST Storage Service/PostgreSQL instance is on a remote machine.
-port	CAST Storage Service/PostgreSQL instance port (default: 2280 - CSS2): <ul style="list-style-type: none"> • For a CAST Storage Service 4, use -port 2284. • For a CAST Storage Service 3, use -port 2282.
- username	CAST Storage Service/PostgreSQL instance username (default: Operator).
- database	Not used (default: postgres).
-exedir	Used when you want to run CSSBackup.exe from outside the AIP Core installation folder: allows you to specify the path to the AIP Core installation folder
- compress	(boolean: Y or N) Determines whether the resulting backup dump file is compressed or not (default: Y). Setting -compress N is not recommended as the resulting file will be significantly bigger.
- psqlexedir	(Valid in CAST AIP 8.3.10): Allows the definition of an alternative location (for example, outside the AIP Core installation folder) for the PostgreSQL binaries used for this tool: <ul style="list-style-type: none"> • pg_dump.exe • psql.exe • pg_restore.exe For example - this path must not end with a back slash (\): <pre>-psqlexedir C:\some_folder\pg_binaries</pre> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;">  Note that this option should not be needed in the majority of situations. </div>
-h	Displays a list of available commands.

Result

The result of a successful backup process is the creation of the **.cssdmp** file specified in the parameter **-file**. This file can then be used in the restore process (see below).

Supported data types

Ordinarily, the CSSBackup tool will backup a standard CAST AIP schema and all its data. However, if you have customized the schema (by adding new tables or adding new columns to existing tables), you may find that the customizations are not included in the backup result. This can occur when your customizations use data types that are not supported by the CSSBackup process. CAST supports only the following datatypes:

- integer
- double precision
- numeric
- varchar
- char
- timestamp
- text
- bytea

If an unsupported data type is encountered during the backup process, the table containing the unsupported data type will be excluded from the backup. A list of excluded tables is displayed in the log file, which you should check on completion of the backup process.

Backing up all CAST AIP schemas in one go



- When using CSSBackupAll, you must only use CSSRestoreAll to restore your schemas.
- Schema backups created with CSSBackup/CSSBackupAll included in 8.3.27 (and any higher 8.3 service pack) should only be restored with CSSRestore/CSSRestoreAll included in 8.3.27 (and any higher 8.3 service pack).

In addition to the functions provided by the CSSBackup.exe tool, CAST provides a simple command line based method for backing up ALL CAST AIP schemas in your CAST Storage Service/PostgreSQL instance in one go. This backup can then be used to restore ALL the CAST AIP schemas to the same CAST Storage Service/PostgreSQL instance or to another CAST Storage Service/PostgreSQL instance. As such it is a fully functioning backup, i.e. you do not need to create the target CAST AIP schemas when subsequently running a restore process (see below).

To backup All CAST AIP schemas in one go, locate the file **CSSBackupAll.exe**. CAST recommends running the backup process from a batch file (make sure that all commands are placed on one single line and remember to surround any paths (i.e. to the .exe, dump file or log file) with quote marks if the path contains spaces). A typical command line to backup all CAST schemas would be as follows:

```
CSSBackupAll.exe
-password <Operator_password>
-dumpdir <path_to_the_dump_folder>
-log <path_and_name_of_log_file.log>
```

Required parameters

-password	CAST Storage Service/PostgreSQL instance "operator" password.
-dumpdir	Path to the folder that will store the result of the backup action. This folder must already exist.
-log	Path and name of output log file - does not need to exist already (logging functions in append mode). The resulting file is text based. Note that you can increase logging verbosity by using the parameter set CASTLOGMODE=DEBUG at the start of your command line, e.g.: <pre>set CASTLOGMODE=DEBUG CSSBackupAll.exe -password <Operator_password> -dumpdir <path_to_the_dump_folder> -log <path_and_name_of_log_file.log></pre>

Additional optional parameters


-host	Name/IP address of machine hosting the CAST Storage Service/PostgreSQL instance (default: localhost). Only required if the CAST Storage Service/PostgreSQL instance is on a remote machine.
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-port	CAST Storage Service/PostgreSQL instance port (default: 2280 - CSS2): <ul style="list-style-type: none"> For a CAST Storage Service 4, use -port 2284. For a CAST Storage Service 3, use -port 2282.
-username	CAST Storage Service/PostgreSQL instance username (default: Operator).
-database	Not used (default: postgres).
-exedir	Used when you want to run CSSBackupAll.exe from outside the AIP Core installation folder: allows you to specify the path to the AIP Core installation folder
-compress	(boolean: Y or N) Determines whether the resulting backup dump files are compressed or not (default: Y). Setting -compress N is not recommended as the resulting file will be significantly bigger.
-psqlxedir	(Valid in CAST AIP 8.3.10): Allows the definition of an alternative location (for example, outside the AIP Core installation folder) for the PostgreSQL binaries used for this tool: <ul style="list-style-type: none"> pg_dump.exe psql.exe pg_restore.exe For example - this path must not end with a back slash (\): <pre>-psqlxedir C:\some_folder\pg_binaries</pre> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;">  Note that this option should not be needed in the majority of situations. </div>
-h	Displays a list of available commands.

Result

The result of a successful backup process is the creation of the multiple .backup files in the folder specified in the -dumpdir parameter. The contents of this folder can then be used in the "restore all" process (see below).

Restoring a backed up CAST AIP schema

 The CSSRestore release number (i.e. the AIP Core release) must be the same or higher than the CSSBackup release (i.e. the AIP Core release) used to backup the schemas.

CAST provides a simple command line based method for restoring any CAST AIP schema to your CAST Storage Service that has been backed up using the CSSBackup.exe tool documented above.

To restore a CAST schema, locate the file **CSSRestore.exe**. CAST recommends running the restore process from a batch file (make sure that all commands are placed on one single line and remember to surround any paths (i.e. to the .exe, dump file or log file) with quote marks if the path contains spaces). A typical command line to restore one CAST AIP schema would be as follows:


```
CSSRestore.exe
-schema <schema_name>
-password <Operator_password>
-file <path_and_name_of_backup_file.cssdmp>
-log <path_and_name_of_log_file.log>
```

Required parameters

-schema	Name of CAST AIP schema to restore. The schema is created if it does not already exist. If the schema exists already, the restore will fail.
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- password	CAST Storage Service/PostgreSQL instance "operator" password.
-file	Path and name of backup dump file, using the .cssdmp extension.
-log	Path and name of output log file - does not need to exist already (logging functions in append mode). The resulting file is text based. Note that you can increase logging verbosity by using the parameter set CASTLOGMODE=DEBUG at the start of your command line, e.g.: <pre>set CASTLOGMODE=DEBUG CSSRestore.exe -schema <schema_name> -password <Operator_password> -file <path_and_name_of_backup_file.cssdmp> -log <path_and_name_of_log_file.log></pre>

Additional optional parameters

-host	Name/IP address of machine hosting the CAST Storage Service/PostgreSQL instance (default: localhost). Only required if the CAST Storage Service/PostgreSQL instance is on a remote machine.
-port	CAST Storage Service/PostgreSQL instance port (default: 2280 - CSS2): <ul style="list-style-type: none"> • For a CAST Storage Service 4, use -port 2284. • For a CAST Storage Service 3, use -port 2282.
- username	CAST Storage Service/PostgreSQL instance username (default: Operator).
- database	Not used (default: postgres).
-exedir	Used when you want to run CSSRestore.exe from outside the AIP Core installation folder: allows you to specify the path to the AIP Core installation folder
- psqlexedir	(Valid in CAST AIP 8.3.10): Allows the definition of an alternative location (for example, outside the AIP Core installation folder) for the PostgreSQL binaries used for this tool: <ul style="list-style-type: none"> • pg_dump.exe • psql.exe • pg_restore.exe <p>For example - this path must not end with a back slash (\):</p> <pre>-psqlexedir C:\some_folder\pg_binaries</pre> <div style="border: 1px solid #ccc; border-radius: 10px; padding: 10px; margin-top: 10px;">  Note that this option should not be needed in the majority of situations. </div>
-h	Displays a list of available commands.

Result

The result of a successful restore process is a fully functioning CAST AIP schema that can be used immediately.



It is often useful to optimize the CAST AIP schema you've just restored. See [Optimizing CAST schemas](#).

Restoring all backed up CAST AIP schemas in one go



The CSSRestoreAll release (i.e. the AIP Core release) must be the same or higher than the CSSBackupAll release (i.e. the AIP Core release) used to backup the schemas.

In addition to the functions provided by the CSSRestore.exe tool, CAST provides a simple command line based method for restoring ALL CAST AIP schemas to your CAST Storage Service/PostgreSQL instance that have been backed up using the **CSSBackupAll.exe** tool documented above.

To restore All CAST AIP schemas, locate the file **CSSRestoreAll.exe**. CAST recommends running the restore process from a batch file (make sure that all commands are placed on one single line and remember to surround any paths (i.e. to the .exe, dump file or log file) with quote marks if the path contains spaces). A typical command line to restore all CAST AIP schemas would be as follows:


```
CSSRestoreAll.exe
-password <Operator_password>
-dumpdir <path_to_the_dump_folder>
-log <path_and_name_of_log_file.log>
```

Required parameters

-password	CAST Storage Service/PostgreSQL instance "operator" password.
-dumpdir	Path to the folder containing the result of the "backup all" action.
-log	Path and name of output log file - does not need to exist already (logging functions in append mode). The resulting file is text based. Note that you can increase logging verbosity by using the parameter set CASTLOGMODE=DEBUG at the start of your command line, e.g.: <pre>set CASTLOGMODE=DEBUG CSSRestoreAll.exe -password <Operator_password> -dumpdir <path_to_the_dump_folder> -log <path_and_name_of_log_file.log></pre>

Additional optional parameters

-host	Name/IP address of machine hosting the CAST Storage Service/PostgreSQL instance (default: localhost). Only required if the CAST Storage Service/PostgreSQL instance is on a remote machine.
-port	CAST Storage Service/PostgreSQL instance port (default: 2280 - CSS2): <ul style="list-style-type: none"> For a CAST Storage Service 4, use -port 2284. For a CAST Storage Service 3, use -port 2282.
-username	CAST Storage Service/PostgreSQL instance username (default: Operator).
-database	Not used (default: postgres).
-exedir	Used when you want to run CSSRestoreAll.exe from outside the AIP Core installation folder: allows you to specify the path to the AIP Core installation folder

<p>-psqlxedir</p>	<p>(Valid in CAST AIP 8.3.10): Allows the definition of an alternative location (for example, outside the AIP Core installation folder) for the PostgreSQL binaries used for this tool:</p> <ul style="list-style-type: none"> • pg_dump.exe • psql.exe • pg_restore.exe <p>For example - this path must not end with a back slash (\):</p> <pre>-psqlxedir C:\some_folder\pg_binaries</pre> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p> Note that this option should not be needed in the majority of situations.</p> </div>
<p>-h</p>	<p>Displays a list of available commands.</p>

Result

The result of a successful "restore all" process is fully functioning CAST AIP schemas that can be used immediately.



- It is often useful to optimize the CAST schema you've just restored. See [Optimizing CAST schemas](#).
- CSSRestoreAll will fail if the target server contains schemas with the same names as those you are trying to restore.

Resetting Operator and Guest passwords



Note that this section of documentation is only applicable to CAST AIP 8.3.11. In CAST AIP 8.3.12, resetting passwords for CAST Storage Service/PostgreSQL instance users is no longer possible.

Although it is possible to change the **Operator** and **Guest** user passwords for the CAST Storage Service/PostgreSQL instance using the **CAST Management Studio** (see the on-line Help for CAST Management Studio), inevitably these passwords may get forgotten, thus they cannot then be changed because the old password is always required to make the change.

If this is the case, the Operator and Guest passwords must be **reset to their defaults** (CastAIP and WelcomeToAIP respectively) using a specific tool (**CS SPASSWORDReset.exe**). To prevent unauthorised password resetting, CAST has implemented a system whereby a special "unlock code" will be provided by CAST Support BEFORE the passwords can be reset - this unlock code is generated using the two pieces of information returned by **CS SPASSWORDReset.exe** (namely the CAST license key and a random "Personal Unblocking Key" (PUK)). Once the unlock code is provided by CAST Support, the CAST tool (**CS SPASSWORDReset.exe**) can be run again to reset the passwords.

Step 1: retrieve license key and PUK

To retrieve the license key and PUK from your CAST Storage Service/PostgreSQL instance, locate the file **CSSResetPassword.exe**. CAST recommends running the process from a batch file (make sure that all commands are placed on one single line and remember to surround any paths (i.e. to the .exe) with quote marks if the path contains spaces). A typical command line to retrieve the license key and PUK would be as follows:

```
CSSResetPassword.exe
-host <CAST_Storage_Service/PostgreSQL instance_host_machine>
```

Result

When the CSSResetPassword.exe tool is run successfully, it will return the current CAST AIP licence key and the PUK. You should then transfer these two pieces of information to CAST Support, who will then generate an unlock code that you can use in Step 2 below.

Step 2: use the unlock code generated by CAST Support

To use the unlock code generated by CAST Support, locate the file **CSSResetPassword.exe**. CAST recommends running the process from a batch file (make sure that all commands are placed on one single line and remember to surround any paths (i.e. to the .exe) with quote marks if the path contains spaces). A typical command line to use the unlock code would be as follows:

```
CSSResetPassword.exe
-host <CAST_Storage_Service/PostgreSQL instance_host_machine>
-unlockcode <Unlock_code>
```

Result

When the CSSResetPassword.exe tool is run successfully with the unlock code, the Operator and Guest passwords will be reset to their defaults (CastAIP and WelcomeAIP respectively).

Parameters

To use the CSSResetPassword.exe tool, use the following parameters:

Required parameters

-host	Name/IP address of machine hosting the CAST Storage Service/PostgreSQL instance.
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Optional parameters

-port	CAST Storage Service/PostgreSQL instance port. Only required if you have modified the port number during the installation process.
-unlockcode	CAST Unlock Code generated by CAST Support.
-h	Displays a list of available commands.

Managing user-defined parameters in the CAST Storage Service



Note that this section of documentation is only applicable to **CAST Storage Service 2**.

When installing the CAST Storage Service, it is possible to choose various user-defined parameters, for example the **port number** or the **data path** (i.e. where the CAST schema data is stored). If these user-defined parameters require modification during the lifetime of the CAST Storage Service, or if the CAST Storage Service needs to be re-installed (thus resetting any user-defined parameters to their defaults), then it is possible to use a specific CAST tool that can:

- inject the modified parameters into the existing CAST Storage Service
- inject modified parameters from an old CAST Storage Service into a newly installed CAST Storage Service

Storage of user-defined parameters and update tool

CSS.config

Any user-defined parameters for the CAST Storage Service are stored in an XML file called **CSS.config**. This file is stored at the **root of your CAST Storage Service installation location**. Typically its format is as follows:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<CastStorageSettings>
  <WindowsService name="CastStorageService3" />
  <DbData path="C:\Program Files\CAST\CASTStorageService3\db_data" />
  <Parameters>
    <Parameter name="TcpPort" value="2282" />
  </Parameters>
</CastStorageSettings>
```

CSSConfig.exe

The CAST Storage Service update tool is called **CSSConfig.exe** and is located in the **<CAST_storage_service_install_location>\bin** folder.

Modifying user-defined parameters

If you need to modify any of the user-defined parameters during the lifetime of the CAST Storage Service:

- Modify the **CSS.config** file located at the **root of your CAST Storage Service installation location** using a simple text editor
- Stop the **CAST Storage Service** using the Windows Services snap-in:

? Unknown Attachment

- Execute the update tool (**CSSConfig.exe**) from the command line. To do so, CAST recommends the use of a batch file containing the following command (adapt to your own environment) - remember to surround the path to the CSS.config file with quote marks if the path contains spaces:

```
C:\Program Files\CAST\CASTStorageService<version>\bin\CSSConfig.exe "C:\Program Files\CAST\CASTStorageService<version>\CSS.config"
```

- Start the **CAST Storage Service** using the Windows Services snap-in.
- The modifications you made to the CSS.config file will now be taken into account

i Remember that if you changed the port number, you may need to update your connection profiles in the CAST applications.

Retaining user-defined parameters

If you have already made some modifications to the user-defined parameters but now need to re-install the CAST Storage Service, you can retain your user-defined parameters as follows:

- Make sure you backup your existing CAST schemas - see above.
- Make a backup of the CSS.config file and move the copy to a different location on disk
- Uninstall the existing CAST Storage Service using the built-in Windows uninstaller
- Re-install the CAST Storage Service using the CAST setup
- Follow the above instructions (from point 2 onwards) to inject your existing user-defined parameters into the new CAST Storage Service

Optimizing CAST AIP schemas - CSSOptimize

Over time and through continued use, the efficiency of your Application's CAST AIP schemas may well start to degrade ("gaps" in table data, inefficient indexes etc.) - this degradation can significantly impact the performance of CAST AIP, with the most visible impact seen in the performance of the CAST Dashboards. To counter this, CAST provides a tool (known as Csoptimize) that can be run to optimize the schemas stored in your CAST Storage Service /PostgreSQL instance - i.e. to clean up defects that have appeared over time.

This tool is run automatically with the default **analyze** action in the following situations:

- immediately on completion of a **snapshot** (for the **Dashboard schema**)
- immediately on completion of a **data upload to the Measure schema**

i When using **AIP Console**, it is possible to change/disable the behavior of the automated use of the tool - see:

- see [Administration Center - Settings - CSS Optimization](#)

The optimize actions can also be run **manually** via the AIP Console GUI:

- [Administration Center - Settings - Measurement](#) (for the Measurement schema)
- [Administration Center - Applications](#) (for the Application schemas)



To **manually** optimize a CAST AIP schema, locate the file **CSSOptimize.exe** in the **CSSAdmin folder** at the root of your AIP Core installation. CAST recommends running the optimize process from a batch file (make sure that all commands are placed on one single line). A typical command line to optimize one CAST schema would be as follows:

```
CSSOptimize.exe
-schema <schema_to_optimize>
-password <Operator_password>
-log <path_to_log_file>
```

Required parameters

-schema	Name of CAST AIP schema to optimize (not case sensitive).
-password	CAST Storage Service/PostgreSQL instance username password.
-log	Path and name of output log file - does not need to exist already (logging functions in append mode). The resulting file is text based.

Additional optional parameters

-host	Name/IP address of machine hosting the CAST Storage Service/PostgreSQL instance. (default: localhost).
-port	CAST Storage Service/PostgreSQL instance port (default: 2280 - CSS2): <ul style="list-style-type: none">• For a CAST Storage Service 4, use -port 2284.• For a CAST Storage Service 3, use -port 2282.
-database	Not used (default: postgres).
-username	Name of the CAST Storage Service/PostgreSQL instance user - for example, operator , or a custom user . (default: operator). <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;"> Available in CAST AIP 8.3.13.</div>
-user	CAST Storage Service/PostgreSQL instance username (default: Operator). <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;"> This option is deprecated in CAST AIP 8.3.13 and should not be used. Use -username instead.</div>
-operation	Choose the PostgreSQL operation to perform: <ul style="list-style-type: none">• analyze (default - see http://www.postgresql.org/docs/9.6/static/sql-analyze.html for more information on the actions performed)• vacuum (see https://www.postgresql.org/docs/9.6/static/sql-vacuum.html for more information on the actions performed)• vacuum_analyze (see https://www.postgresql.org/docs/9.6/static/sql-vacuum.html for more information on the actions performed)• vacuum_full (available in CAST AIP 8.3.7 - see https://www.postgresql.org/docs/9.6/static/sql-vacuum.html for more information on the actions performed)
-h	Displays a list of available commands.

Examples

Minimum required parameters using default Operator user and default port to perform **-operation analyze** on CSS2:

```
CSSOptimize.exe -schema LOCAL -password CastAIP -log log.txt
```

Minimum required parameters using default Operator user to perform **-operation analyze** on CSS3:

```
CSSOptimize.exe -schema LOCAL -port 2282 -password CastAIP -log log.txt
```

Minimum required parameters using default Operator user to perform **-operation vacuum_analyze** on CSS3:

```
CSSOptimize.exe -schema LOCAL -port 2282 -password CastAIP -operation vacuum_analyze -log log.txt
```

Minimum required parameters using custom user to perform **-operation vacuum_analyze** on CSS3:

```
CSSOptimize.exe -schema LOCAL -port 2282 -username my_custom_user -password my_custom_password -operation vacuum_analyze -log log.txt
```

Move CAST AIP schemas from one instance to another

See [Moving existing schemas to a new CAST Storage Service or PostgreSQL instance](#).