

# Norwegian SAF-T Cash Register data

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## Documentation

**SAF-T Working group**

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1.0	Initial version	06.07.2016
1.1	Enriched descriptions	24.07.2017

Important information and overview of resources available for system developers and vendors of cash register systems.

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## Introduction

### Purpose of the SAF-T Cash Register format

Norwegian SAF-T (Standard Audit File - Tax) Cash Register is standard file format for exporting of cash register journal data using an XML format.

The primary purpose of the SAF-T Cash Register data format is to:

- Serve as an export format for cash register journal data after request from the Norwegian Tax Administration, public accountants and other parties.
- Can be used as format of moving data to book keeping systems and other systems (transaction line or z-report)

This documentation is intended for software developers and vendors of cash register systems who are to incorporate export functionality of SAF-T Cash Register data in their system.

### Legal background of the SAF-T Cash Register format

In in the regulations no. 1616 of 18.12.2015 relating to requirements for cash register systems (the Cash Register Systems Regulations), Section 2-7 (1) Electronic journal, states that:

*“The system must be capable of producing a file directly from the electronic journal or other electronic medium in a standardized form determined by the Directorate of Taxes.”*

The Directorate of Taxes determined the standardized form on in July 2016. For more information see

<http://www.skatteetaten.no/no/Radgiver/Rettskilder/Kunngjoringer/standard-format-for-eksport-av-elektronisk-journal/>

### Background of the SAF-T Cash Register

The Norwegian Tax Administration set a working group with participants from system suppliers, who detailed the needs and possibilities in the standard based on best practice and the legal requirements.

The working group detailed the XML schema with the basis in the Auditfile Afrekensystemen (XAA) used in the Netherlands. Adjustments have been made to the point where the format is not fully compatible, but the same basic structure and principles are intact. As with the XAA there are no restrictions on use of this format. Details on the XAA format can be found at:

[http://www.softwarepakket.nl/swpakketten/auditfiles/auditfile\\_afrekensystemen.php](http://www.softwarepakket.nl/swpakketten/auditfiles/auditfile_afrekensystemen.php)

A consultant version of the format was out for the system developers to comment in May 2016, and the final version was published in July 2016.

## Changes and future versions of the SAF-T Cash Register

The format is part of the Norwegian SAF-T standard formats, which at this time also consists of the SAF-T Financial data format.

The constitutive meeting in the administrative body of the Norwegian SAF-T standards (Financial & Cash Register) were held on June 9<sup>th</sup> 2017. The objectives of the body are to manage the standards to suit the needs for both the private and public sector. The body consists of representatives from The Norwegian Tax Administration, Accounting Norway and The Norwegian Institute of Public Accountants.

Future changes will be done after recommendation by the administrative body and in partnership with the cash register systems suppliers. As per date, the principal consensus is to avoid changes to the formats until the first versions are well established and experiences have been gained.

## Documentation of SAF-T Cash Register

Documents are available on the following page:

<http://www.skatteetaten.no/no/Bedrift-og-organisasjon/frister-attester-og-regnskap/Bokforing-og-regnskap/standardformat-regnskap-saf-t/dokumentasjon/>

- Norwegian SAF-T Cash Register data - Documentation (this document)
- Norwegian SAF-T Cash Register data - Technical description (XML elements)
- Norwegian SAF-T Cash Register data - Code lists (description of list elements)
- Requirements and guidelines for implementing digital signatures in Cash Register Systems

Technical XML resources are available at: [www.github.com/skatteetaten/saf-t](http://www.github.com/skatteetaten/saf-t)

- XML Schema – Norwegian\_SAF-T\_Cash\_Register\_Schema\_v\_1.00.xsd
- Cash Register Code Lists – Code lists in csv format
- Standard Tax Codes (VAT) - Code lists in csv/xml format (identical to SAF-T Financial)
- Example XML file

For information on regulations, see [www.skatteetaten.no/kassasystem](http://www.skatteetaten.no/kassasystem)

## Contact info - questions and answers

Issues on the GitHub repository can be used for exchange of experiences regarding the format between developers. The Norwegian Tax Administration will not moderate or be able to answer all issues there.

For questions regarding the XML format or digital signature, please contact [saf-t@skatteetaten.no](mailto:saf-t@skatteetaten.no)

## Exchange of SAF-T Cash Register data files

### SAF-T data file to the Tax Authorities

It must be possible to make the export available at the business premises.

Further details on how to exchange data (physical/practical) with the Tax Authorities are dealt with in dialog between the Tax Auditor and the representative of the subject using the cash register system.

In some cases it will be adequate to export SAF-T data from various systems and/or different periods or locations. In such cases the receiver of the data will do the necessary assemblies of the data.

During 2018 a solution for sending SAF-T Cash Register using the Altinn portal, in the same principle way as the existing SAF-T Financial will be available.

### Naming of the SAF-T data file

It is strongly advised to use the following naming convention to ensure necessary information in the filename. The purpose is to identify what data are in the file, the owner of the data, and to create a unique filename for each export.

<SAF-T export type>\_<organization number of the vendor who the data represents>\_<date and time(yyyymmddhh24hmm)>\_<file number of total files>.xml

For example: SAF-T Cash Register\_999999999\_20160401235911\_1\_12.xml

Where:

- "SAF-T Cash Register" states the SAF-T type of file
- "999999999" represents the organization number belonging to the owner of the data.
- "20160401235911" represents the date and time when the file was created using a 24-hour clock.
- "1\_12" represents file 1 of 12 total files in the export (same selection period)

### Exporting of large SAF-T data files

It is strongly advised to ZIP the files during transport, as this compresses the xml data file.

Altinn will be the future portal for submitting SAF-T Cash Register files. Current limitations in the Altinn portal are 200 MB per file, and a maximum of 10 files per transmission. Each zip can contain single XML files of up to 2 GB.

Preparing and sending of multiple files, or splitting of the ZIP archive in several files is considered as an adequate solution. For data files that exceed the limitations, dividing of the export into different periods, locations, cash registers (point of sale) can be a solution. Minimum selection should be the same as the period as covered by a Z-report, normally one day.

From The Netherlands and usage of the XAA format, the following estimates were published:

Type of business	No. of cash registers	No. of slips per cash register	No of lines on slip	Size of the XML file
Hairdresser	1	10,000	2	0.022 GB
Perfume shop	2	20,000	3	0.170 GB
Garden centre	9	100,000	10	10 GB
Supermarket	8	100,000	20	16 GB

All fields are fully filled out according to the field length in the specifications in the example above.

### **Validation of the SAF-T data file**

It is recommended to do an XSD schema validation of SAF-T test data files. There are different solutions available for this purpose. Further information on validation support from the Tax Authorities will be given.

## Data model and other documentation

### Basic structure

The structure of the format is hierarchically, with these main groups:

- **Header** – header information per xml file
- **Company** – one file per company
  - **Location** – multiple locations per company is possible
    - **Cash Register** – multiple cash registers/point of sale per location is possible
      - **Event** – stores details on all “non sale” activities
        - Issuing of reports, cash box openings, price inquiry etc
      - **Cash Transaction** – details transactions on cash/goods
        - Amounts in total per transaction etc.
        - **Ct Line** – details on transaction line level
          - Amounts per article etc.

Note that some elements and structures are both at Cash Transaction and Ct Line. Please adjust to what will be the adequate and most complete representation of the available dataset.

Data not described in Cash Transaction are described in Ct Line.

### Difference between Mandatory and Optional data elements

The variety of data stored in the database/journal varies between the cash register systems. For this reason several data elements are stated as optional.

It is important to emphasize that as long as the optional data elements are available in the database/journal, they must be exported to the XML file. The SAF-T Cash Register data format will not extend the documentation requirements past the requirements in the Cash Register System Act and Regulation. Further, some of the regulations are dependent on whether the system has the functionality or not. One example is the ability to register transactions/events on each user/employee or not. If the functionality exists then the journal (and XML) must contain information about the user.

Mandatory data elements must not be empty, and in some cases must contain enumerated values. This is necessary for the XML data file to validate with the schema.

The mandatory elements mainly represent the data necessary to produce the minimum of data and to comply with the regulations. Also other essential data in the XML file must by nature be mandatory, such as the header data elements.

## Master data selections

This is used for the following structures per company:

- customersSuppliers
- generalLedger
- vatCodeDetails
- periods
- employees
- articles
- basics

The purpose is to avoid repetition of data on Cash Transaction level. This is the same principle as with first normal form (1NF) in database design. It is therefore only necessary to include details on the master data selections with transactions in the selection period.

## Standard VAT Tax codes <standardVatCode>

In Norway it is common that codes are used for classification and calculation of value added tax (VAT), and is typically referred to as VAT codes. The standard VAT codes are based on VAT academic logic.

The standard codes are only applicable to the SAF-T Cash Register format. Software vendors can use whatever VAT tax codes they prefer internally in their own systems, and export them to the XML document on transaction or transaction line level.

However, the internal VAT tax codes have to be mapped to the corresponding Norwegian SAF-T Standard VAT codes <StandardVatCode> in schema location Company, vatCodeDetails.

See further information in the document <Norwegian SAF-T Standard VAT codes> and the codelist at Github (folder Standard Tax Codes).

The codes representing sales of goods and services will be of primary interest for cash register systems. The codelist is the same as being used by Norwegian SAF-T Financial data.

## Use of BasicType and PredefinedBasicID

The basics element is used to define various master data such as transaction codes, payment codes and event codes. Different systems use different codes in the transactions and events. Basics is used to explain supplier specific codes and translate these into predefined standard codes.

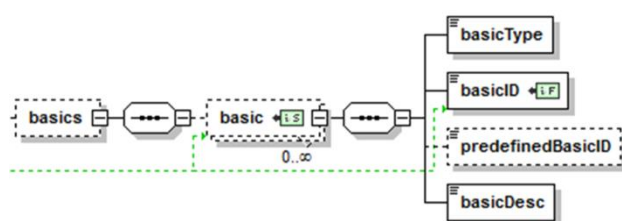
Hence, there must be a corresponding basics element listed for each supplier specific code used in transactions and events.

As stated in the document [Norwegian SAF-T Cash Register – Code lists](#) only 5 categories have predefinedBasicIDs. These are the following:



BasicType	English name	PredefinedBasicID	Norwegian description	Examples of XML element
01	Cost codes		Kostnadssted	costID / costObjID
02	Product codes		Produkt koder (PLU)	artID
03	Project codes		Prosjekt koder	projID
04	Article Group codes	X	Varegruppekoder	artGroupID
05	Ticketline codes		Varelinjekoder	lineType
06	Logging codes		Logging i systemet, backup etc. (ikke bruker/hendelses-basert)	eventType
07	Savings codes		Rabatter per enhet (3 for 2 etc)	savingsType
08	Discount codes		Rabatt i pris (prosent avslag etc)	dscTp
09	Quantity codes / Quantity ID		Definisjon av antall	qnt
10	Raise codes	X	Tips beløp, eller påslag i pris for definerte kundegrupper	raiseType
11	Transaction codes	X	Transaksjonstyper	transType
12	Payment codes	X	Betalingsmåter	paymentType
13	Event codes	X	Hendelser som ikke er salg	eventType
14	Service code		Systemleverandør service hendelser	eventType
15	User codes / User ID		Brukeridenten på systemet (kan også tilsvare empID)	userID
16	Other		Øvrige	

### Explanation of the basics elements:



- **basicType:** Two digits code indication the type of master data. See codelist BasicType.
- **basicID:** Unique individual code, typical system specific.
- **predefinedBasicID:** Predefined 5 digit code.
- **basicDesc:** Unique description of the code, typical system specific.

Data should be translated when ever possible to one of the predefined. If no predefined is suitable, please use the “other” types and state a clear description for these in basicDesc.

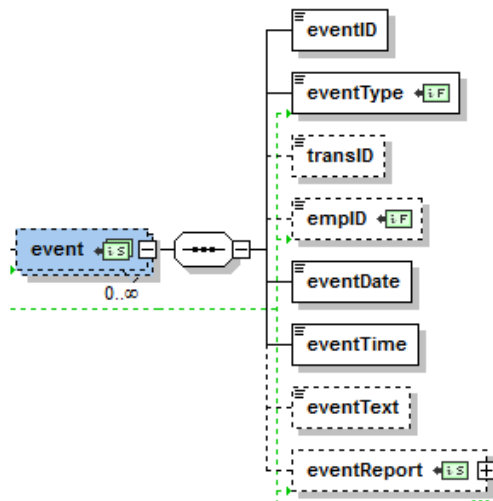
**Example:** Cash sales – system specific code are VER – predefined code exists

basicType	basicID	predefinedBasicID	basicDesc
11	VER	11001	Cash sale

**Example:** Employee discount – system specific code are ANS –predefined code does not exists

basicType	basicID	predefinedBasicID	basicDesc
ANS	08		Discount employees – 40% off

### Use of event and relation to basics:



**eventID:** Unique ID given by system.

**eventType:** Supplier specific code used for this event. This code must be listed in basics with BasicType and when possible translated to the corresponding PredefinedBasicID.

**transID:** Refers to an identification of the event. Could be the cash drawer opened during a sales transaction (see also transaction types predefined).

**empID:** Refers to the employee/clerk who executed the event.

**Example with basics and event:** Opening of cash drawer – system specific code are OpCaDr

Event:

eventID: 123456789  
 eventType: OpCaDr  
 transID: 1234  
 empID: A10

In basics listed for this type of event:

basicType: 13  
 basicID: OpCaDr  
 predefinedBasicID: 13005  
 desc: Open Cash Drawer

**The cash register system already uses the predefined codes**

Even if the cash register system uses system specific codes identical to the PredefinedBasicID codes, this still has to be shown in the basics table. For example:

basicType	basicID	predefinedBasicID	basicDesc
05	ABC		Description of code ABC
05	CDE		Description of code CDE
11	11001	11001	Cash sale
11	11002	11002	Credit sale
12	12001	12001	Cash

## Implementation of digital signature

In order to achieve compliance with the Norwegian Cash Register Systems Act and Regulations pursuant to the Act, all\* Cash Register Systems are required to implement a digital signature. The signature shall sign specific data from each receipt and be recorded in the electronic journal upon finalization of each transaction. It is also mandatory to export the signature to the SAF-T Cash Register XML.

When creating the signature, the system vendors need to choose one of the following methods:

- A digital signature using an RSA 1024 bit key with a SHA-1 hash function (RSA-SHA1-1024)
- A keyed-hash message authentication code using a 128 bit key with a SHA-1 hash function (HMAC-SHA1-128)

Please see the document [Requirements and guidelines for implementing digital signatures in Cash Register Systems](#) for details on how to implement a digital signature.

\* In certain cases it is not required to implement a digital signature. See the following [statement](#) for more information.