Oracle® Hospitality Cruise Shipboard Property Management System
Norwegian Tax User Guide

Release 20.1

ORACLE®

Contents

Preface

This document describes the Norwegian Fiscal Enhancement introduced in Oracle Hospitality Cruise Shipboard Property Management System (SPMS). The product used in the Norwegian market must comply with the followings:

- Norwegian Tax Authority's Cash Register Systems Act (CSRA), and
- Norwegian Tax Authority's Cash Register Systems Regulation (CRSR).

The aim is to combat the illegitimate business and manipulation of the cash register system, and evading tax and duties, especially in sectors involving cash sales.

Audience

This document is intended for project managers, application specialists and users of Oracle Hospitality Cruise Shipboard Property Management System.

Customer Support

To contact Oracle Customer Support, access the Customer Support Portal at the following URL:

https://iccp.custhelp.com

When contacting Customer Support, please provide the following:

- Product version and program/module name
- Functional and technical description of the problem (include business impact)
- Detailed step-by-step instructions to re-create
- Exact error message received
- Screenshots of each step you take

Documentation

Oracle Hospitality product documentation is available on the Oracle Help Center at http://docs.oracle.com/en/industries/hospitality/cruise.html.

Revision History

Table 1   Revision History

Date	Description of Change
September 2020	Initial Publication
January 2024	Updated Customer Portal URL
	Updated document to new format

Prerequisites

Before you begin using the Norwegian Fiscal Enhancements, you must install the Digital Certificate. If the digital certificate is not present, the system will not allow you to perform any postings or payment. To apply a digital certificate, see section Key Pair Management for Digital Signature.

To comply with the Norwegian Tax Authority requirements, you are required to disable the financial functions of the SMART iCrew.

Table 1   List of User Security to Disable

Security Reference No.	Description
11106	Cabin change in iCrew
11641	Add payment in iCrew
11642	Add posting in iCrew
11643	Print invoice in iCrew
51011	Book shore excursion in iCrew

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System Parameters

The following general parameters serves as a switch to enable/disable the features introduced by Norwegian Fiscal Enhancements. It also ensures that the changes introduced does not affect existing SPMS operations that do not require the Norwegian Fiscal Enhancements.

The parameters mentioned in the below table are inserted by running the Database Installer for release 8.0.8 and above. To enable this feature, login to **Administration module, System Setup, Parameter, 'General'** group.

Table 1-1   Parameter Group General

PAR Name	PAR Value	Description
Use Norwegian Fiscal Requirements	1	1 – Turn ON the Norwegian Fiscal Requirements Changes. 0 – Turn OFF the Norwegian Fiscal Requirements Changes.
Norwegian Tax Audit Report Path	`C:\Users\Public\Docume nts\Oracle Hospitality Cruise\`	Default path to store report output file.

When enabling the Norwegian Fiscal Enhancements general parameters, the application will prompt the following.

By enabling the parameter "Use Norwegian Fiscal Requirements", you agree that the Financial functions (Postings, Payments and Printing of Invoices) in iCrew application will be disabled for ALL users permanently. Disabling this parameter is no longer permitted.

By clicking the **Agree** button, you consent to the agreement displayed, and is recorded in the SPMS database.

Once enable, the SPMS does not allow you to disable the Norwegian Fiscal Enhancements. If you attempt to disable the *"Use Norwegian Fiscal Requirements"* parameter from the Administration module, the application prompts **"You are not allowed to disable the General parameter "Use Norwegian Fiscal Requirements" after you have agreed to turn it ON!"**

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System Configurations

Below are the changes introduced for the Norwegian Fiscal Enhancements in order to meet the requirements specified by the Norwegian Tax Authority.

Company Details

You must set up the Company entities for the company information to be shown on the report.

Figure 2-1   Company Entities Setup

1. Login to the Administration module and select **Administration**, **System Setup**.

2. Select **Company Entities Setup** and enter the value for two new entities as follows:

   - **Organization number:** Organization number from Register Centre or other relevant government authority.

   - **VAT registration number:** The Company's VAT number. This is the unique number from Register Centre.

Printer Configuration

A printer set up in need in order to print the required receipts such as Sales Receipt, Delivery Receipt and Return Receipts.

1. From the **Management module**, **Options**, select the **Hardware** menu.

2. Select **Report Printers** as **Receipts** and choose the printer from the drop-down list.

3. Click **Apply** to save and exit the configuration screen.

Predefined Code Mapping

In Norwegian E-Journal Report, it is necessary to display standard predefined code instead of a system code. For example, standard predefined code for VAT rate and main department, therefore code mapping between standard predefined code and system code is required. The **Predefined Code Mapping** button is enabled when the PAR **Use Norwegian Fiscal Requirements** is enabled, and user has the authorization to access this function.

To map the standard predefined code with system code, login to Administration module and click the **Administration**, **System Codes** button, then the **Predefined Code Mapping** at the top menu.

Standard Predefined Code 04 — Article Group/Department Codes

Figure 2-2   Sample Predefined Article Group
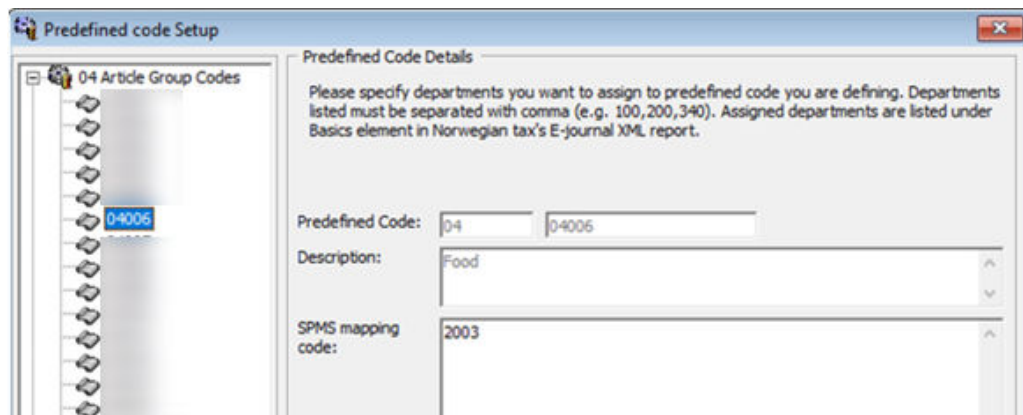
This code is used to configure the system debit department code. In below screen example, the system debit department code 2003 for food is mapped to standard predefined code 04 and predefined ID 04006.

On the report, this standard predefined code is displayed in `<basicType>` and `<predefinedBasicID>` under `<basics>` element.

Standard Predefined Code 11 – Transaction Codes

This code is used to configure the system transaction code. The payment transaction code **SALES** is mapped to standard predefined code 11 and predefined ID 11004 as shown in below figure.

Figure 2-3   Sample Predefined Transaction Codes
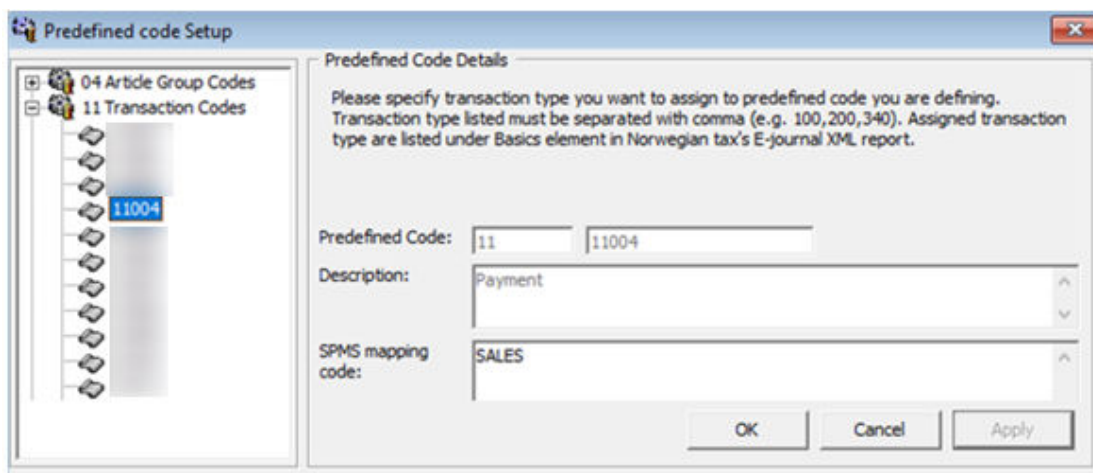
There are two categories of transaction code in the system:

Transaction code for Point-of-Sales (POS) record. This is displayed in `<lineType>` under `<ctLine>` element on report. There are five types of transaction code for POS record. You **must** follow the exact system transaction code per below and configure it into user interface to avoid unmapped data and incorrect information being displayed.

- POST (add posting)
- SALES (payment)
- REFUND (return payment)
- DIS (discount)
- VOID (void posting)

Transaction code for receipt type. This is displayed in `<transType>` under `<cashtransaction>` element on report. There are four types of transaction code for receipt type. You must follow the exact system transaction code below to configure into user interface.

- SALES (Sales Receipt)
- RETURN (Return Receipt)
- PROFORMA (Pro Forma Receipt)
- DELIVERY (Delivery Receipt)

Standard Predefined Code 12 — Payment Codes

Figure 2-4   Sample Predefined Payment Codes
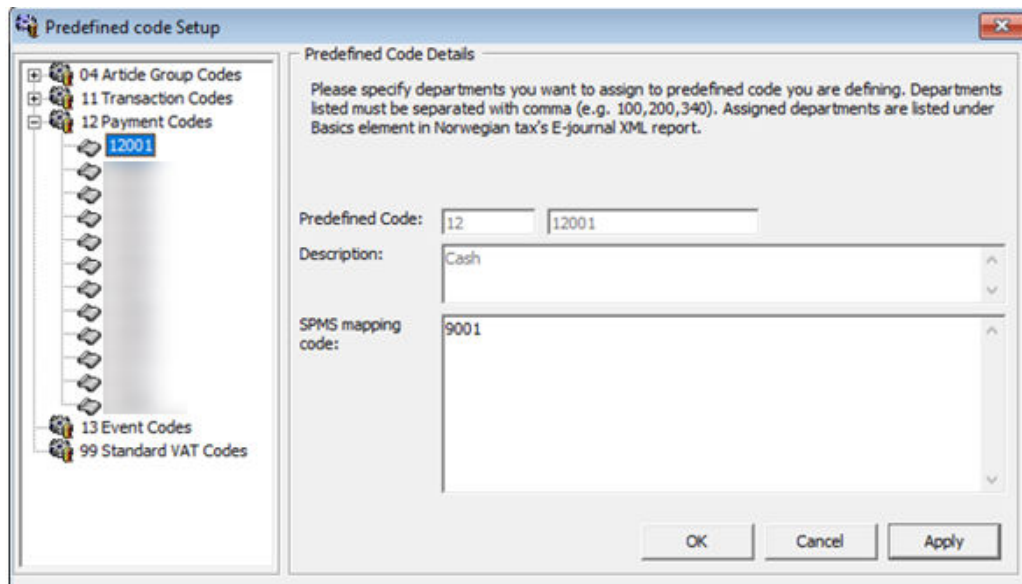
This code is used to configure system credit department code or payment code. In below example, the credit department code 9001 for cash is mapped to standard predefined code 12 and predefined ID 12001.

This is displayed in `<basicType>` and `<predefinedBasicID>` under `<basics>` element on report.

Standard Predefined Code 13 — Event Codes

Figure 2-5   Sample Predefined Event Codes
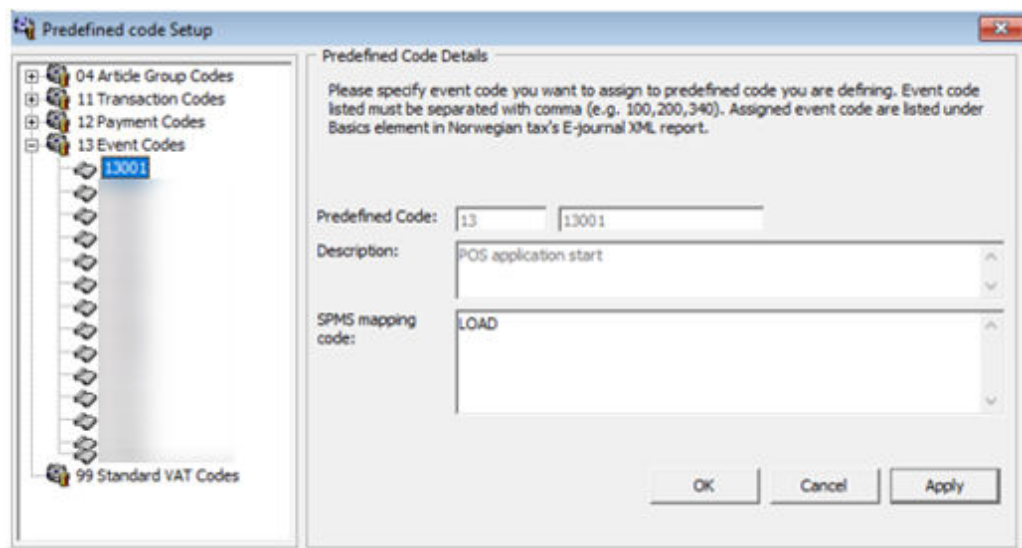
This code is used to configure system event code. In below example, the system event code **LOAD** for application starting is mapped to standard predefined code 13 and predefined ID 13001.

This is displayed in `<event>` under `<cashregister>` element on report.

Standard Predefined Code 99 – Standard VAT Codes

Figure 2-6   Sample Predefined VAT Codes
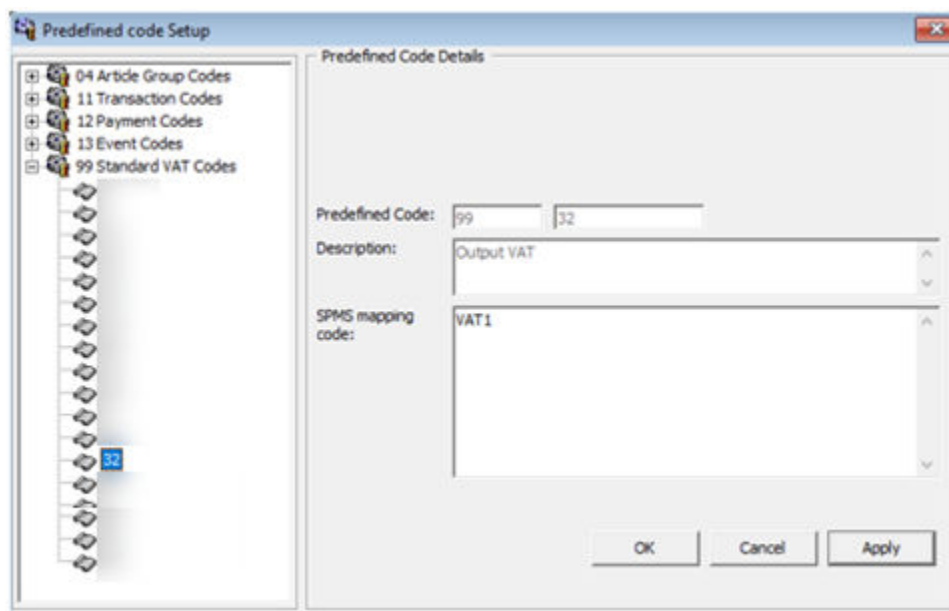
This code is used to configure system VAT code. In below example, the system VAT code **VAT1** is mapped to standard predefined code 99 and predefined ID 32.

This is displayed in `<standardVatCode>` under `<vatCodeDetails>` element on report.

Key Pair Management for Digital Signature

Norwegian Tax Authority mandates that sales transactions MUST be digitally signed. Norwegian Tax Authority has chosen the cryptographic function: RSA-SHA1-1024, based on the asymmetric encryption where a key pair of private key and public key is required.

To perform key management, the key pair can be self-generated and self-signed. This means the key pair can be generated from ANY machine and anywhere. The public key submitted to the Norwegian Tax Authority signifies the valid key pair recognized by the Norwegian Tax Authority. For each Cruise Operator, one key pair is sufficient regardless of the number of the Sales Registers used. Cruise Operator shall be FULLY responsible for the generation and management of the key pairs.

For Norwegian Tax Authority audit purpose, the Cruise Operator is responsible in submitting the key pair of the public key used in digital signing. When the key expires or breached, the Cruise Operator must re-generate a new key pair and updates the new key pair in SPMS. The new public key shall be resubmitted to the Norwegian Tax Authority.

See Digital Certificate Requirement.

Creating Self-signed Certificate

Listed below are the tools that you can use to generate a self-signed certificate.

1. Using the OpenSSL libraries.

2. Using the MakeCert.exe tool distributed in the Windows SDK.

3. Using the PowerShell pkiclient cmdlet.

Open SSL

This method is recommended if you work with multiple platforms (Linux, Mac, Windows, etc.). OpenSSL can be installed on most of the OS's.

Download and install the OpenSSL toolkit from: https://www.openssl.org/.

MakeCert

This method is recommended if the target machine is Windows 10 and Windows Server 2012. Download and install the Windows 10 SDK from: https://developer.microsoft.com/en-us/windows/downloads/sdk-archive.

Start the installation and choose the option as shown in below figure.

Figure 2-7   Windows Software Development Kit Options
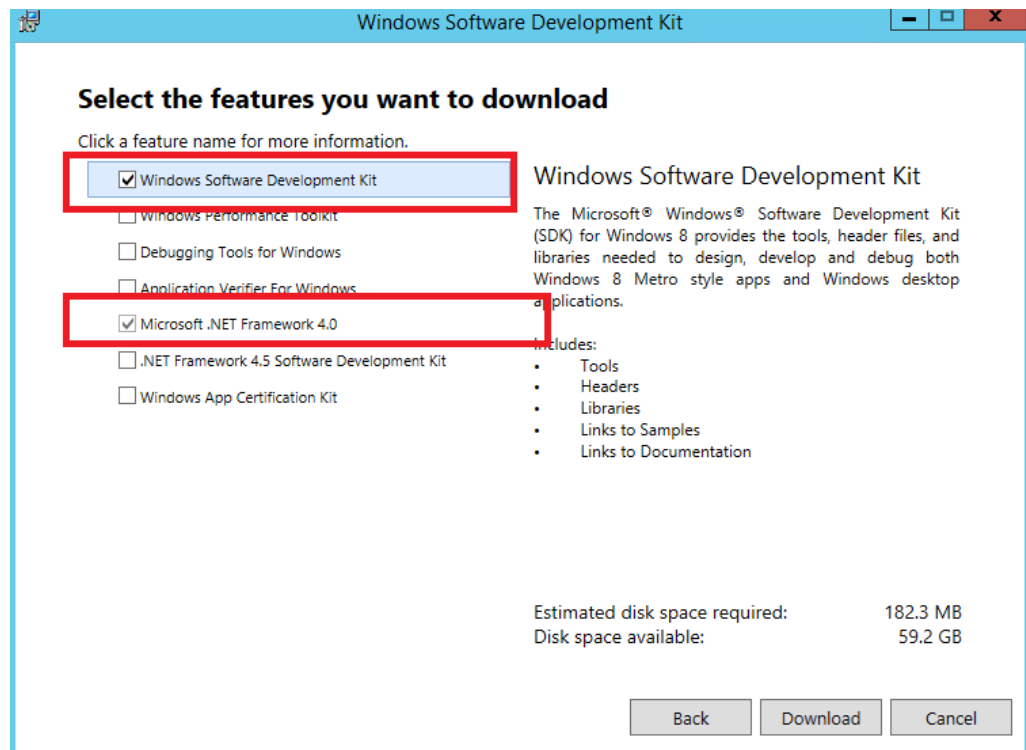
This example creates a self-signed certificate for the purpose of digital signing and that would be stored in the Windows Certificate Store "`cert: \LocalMachine\My`".

Right-click the **Command** prompt and select to run in **Administrator mode**, and run the command below.

```
cd "C:\Program Files (x86)\Windows Kits\8.0\bin\x86"
MakeCert -a <name> -len 1024 -n "CN=< CERTIFICATE NAME>" -pe -r -sky
Signature -sr LocalMachine -ss My
```

This generates a new key pair for RSA-SHA1-1024 cryptographic function with the certificate subject being set as the name defined in `<CERTIFICATE NAME>`.

- The "-pe" option allows the private key to be exportable. You need this as the key pair will be used by each Sales Register.

- The "-r" option creates a self-signed certificate.

- The "-sky Signature" option indicates that this key pair is meant for digital signing.

- The "-sr LocalMachine" option makes the Windows to store the key pair under the `HKEY_LOCAL_MACHINE` registry location certificate store.

- The "-ss My" option is the name of the certificate store that stores the generated certificate that contains the key pair.

PowerShell New SelfSigned Certificate cmdlet

This method is recommended if the target machine is Windows 10 and Windows Server 2016. The function and storage of the certificate for this tool is similar to MakeCert. Right-click the **PowerShell** prompt and select **Run in Administrator** mode, and then run the command below.

```
New-SelfSignedCertificate -CertStoreLocation "cert:\LocalMachine\My" -
Subject <"Certifate Name"> -HashAlgorithm SHA1 -KeyAlgorithm RSA -KeyLength
1024 -KeyExportPolicy Exportable -KeySpec Signature -KeyUsage CertSign -Type
CodeSigningCert -NotAfter $([datetime]::now.AddYears(5))
```

Export Self-signed Certificate

After generating the digital signing certificate, you will need to distribute the certificate to whichever machine that performs digital signing task. As the certificate contains private key, you will need to provide a password to secure the file after the certificate is exported to the local file system. You are responsible in safeguarding the certificate along with the password used to lock it. The steps below will guide you on how to export the digital signing certificate to a password secured PFX file.

1. At the **Search Windows** prompt, type in **Manage computer certificates** to open the "certlm" console.

2. At the tree view on the left panel, expand the **Personal** folder under "**Certificates - Local Computer**, and then click the **Certificates** folder.

3. At the **Certificates** folder, look for the certificate issued to "Cruise Digital Signature" on the right panel.

Figure 2-8   Certificates Repository on Local Computer
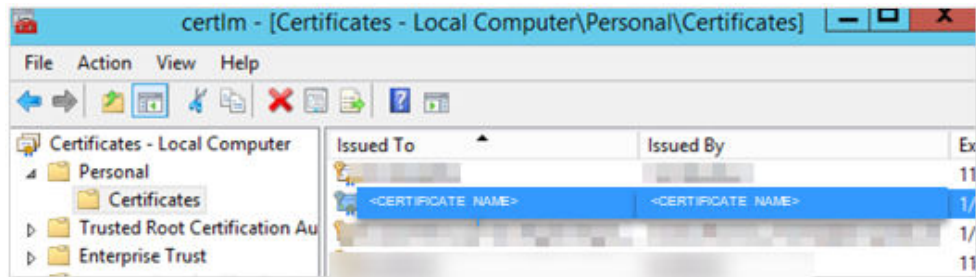
4. Double-click to open the certificate and ensure it contain the private key. You should see the golden key icon with message "You have a private key that corresponds to this certificate" under **General** tab.

5. Right-click the certificate on the right panel. You shall see a prompt.

6. Choose **All Tasks**, then click **Export** to launch the Certificate Export Wizard.

7. Click the **Next** button to continue.

8. At the Export Private Key screen, select the **Yes, export the private key** radio button option, and click the **Next** button.

9. Key in a password to secure and prevent users from opening the PFX certificate.

> **⊘ Important:**
>
> The Cruise Operator is responsible in remembering the password used.

10. Choose the location of the file to export and the click the **Next** button again.

11. Click the **Finish** button and now, you should have the PFX certificate located in the export location selected.

Import Key Pair

Before you import the key pair, ensure that you have a PFX certificate available on the machine and the certificate password. To import, follow the steps below.

1. Repeat steps 1 to 2 of Export Self-signed Certificate.

2. Right-click on the Certificate folder and select **All Tasks,** then **Import** to start the Certificate Import Wizard.

3. Click the **Next** button to continue.

4. At the **File to Import** screen, browse the location of the PFX file to import and the click the **Next** button again.

5. Key in the password to unlock the PFX certificate. *Do not* select the **"Mark this key as exportable."** option. This is to ensure maximum confidentiality.

6. Click the **Next** button and then click the **Finish** button. Now, you should have the key pair saved in the Windows certificate store.

Managing the Key Version in SPMS

Although the key pair is stored in the Windows certificate store, SPMS will need to manage the key version. Every new key pair used in SPMS will be recorded in KEY table of SPMS schema.

1. Login to **OHC Tools** module.

2. At the ribbon bar, click the **Update Cert ThumbPrint**.

3. At the Digital Signing Certificate window, click **Detect** for program to look up the certificate name < CERTIFICATE NAME>" and obtain the ThumbPrint of the public key.

Figure 2-9   Digital Signing Cert Thumbprint Updater
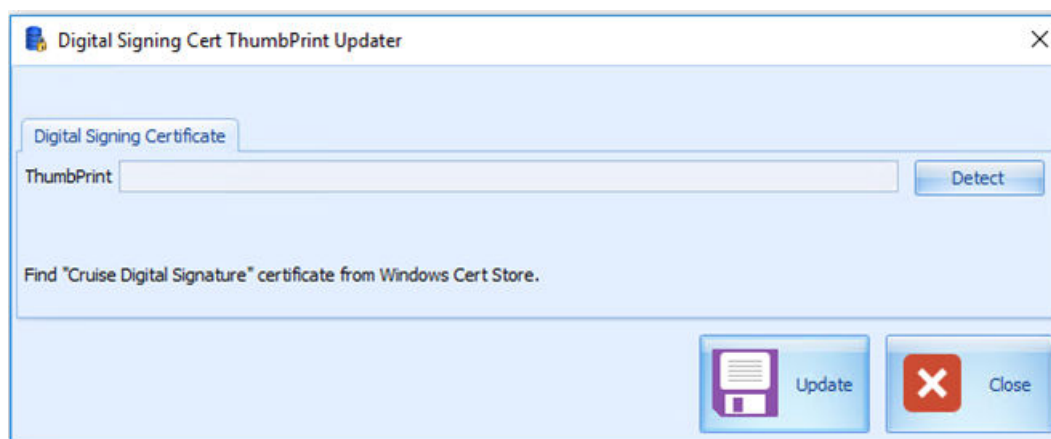
4. Click **Update** to store the key into the KEY table.

Export Public Key

Norwegian Tax Authority requires the public key in order to audit the digitally signed sales transactions. As a requirement, Cruise Operator MUST be able to provide the public key in the form of base64 encoded X.509 certificate.

1. Repeat steps 1 to 7 of Export Self-signed Certificate.

2. Select the **"No, do not export the private key"** radio button and then, click the **Next** button.

3. Select the **"Base-64 encoded X.509 (.CER)"** radio button and then, click the **Next** button.

4. Choose the location of the file to export and the click **Next** button again.

5. Click the **Finish** button and now, you should have the CER certificate located in the export location selected.

With the base64 encoded CER certificate, you can now submit the public key to the Norwegian Tax Authority.

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IIS Configuration

Configure Web Service Run Privilege

The SPMS Web Services (OHC WebServices or OHC TransactionsService) by default are configured to run with ApplicationPoolIdentity. The default run privilege is restricted and will not be able to retrieve the Digital Signing certificate stored in the Windows Certificate Store when digital signing is required. Therefore, it is important to note that when Norwegian Fiscal Enhancements feature is enabled, the Cruise IT personnel is required to change the web service run privilege, using the steps below.

1. Open the **IIS Manager**.

2. Select the web services (OHC WebServices or OHC TransactionsService) from the application pool. Right-click and select **Advanced Settings…** option.

Figure 3-1   Application Pool Settings
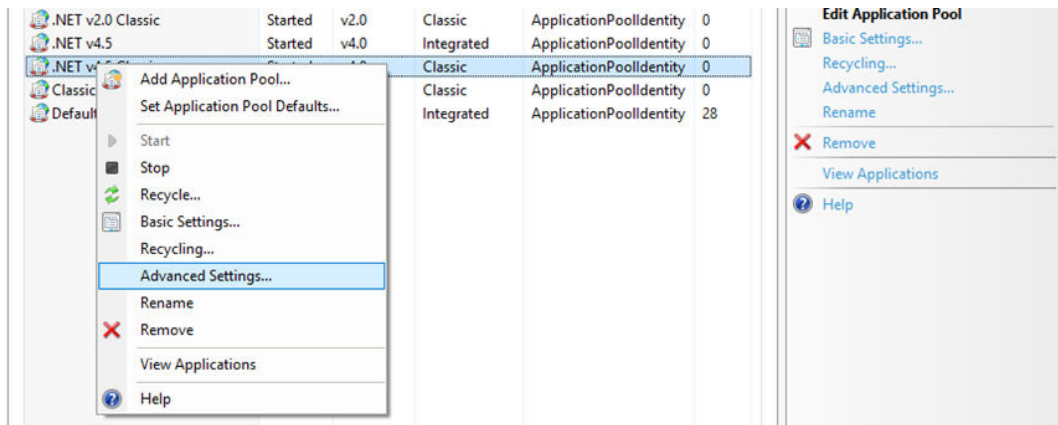
3. Under **Process Model** group, select **Identity** option.

Figure 3-2   Application Pool Advanced Settings
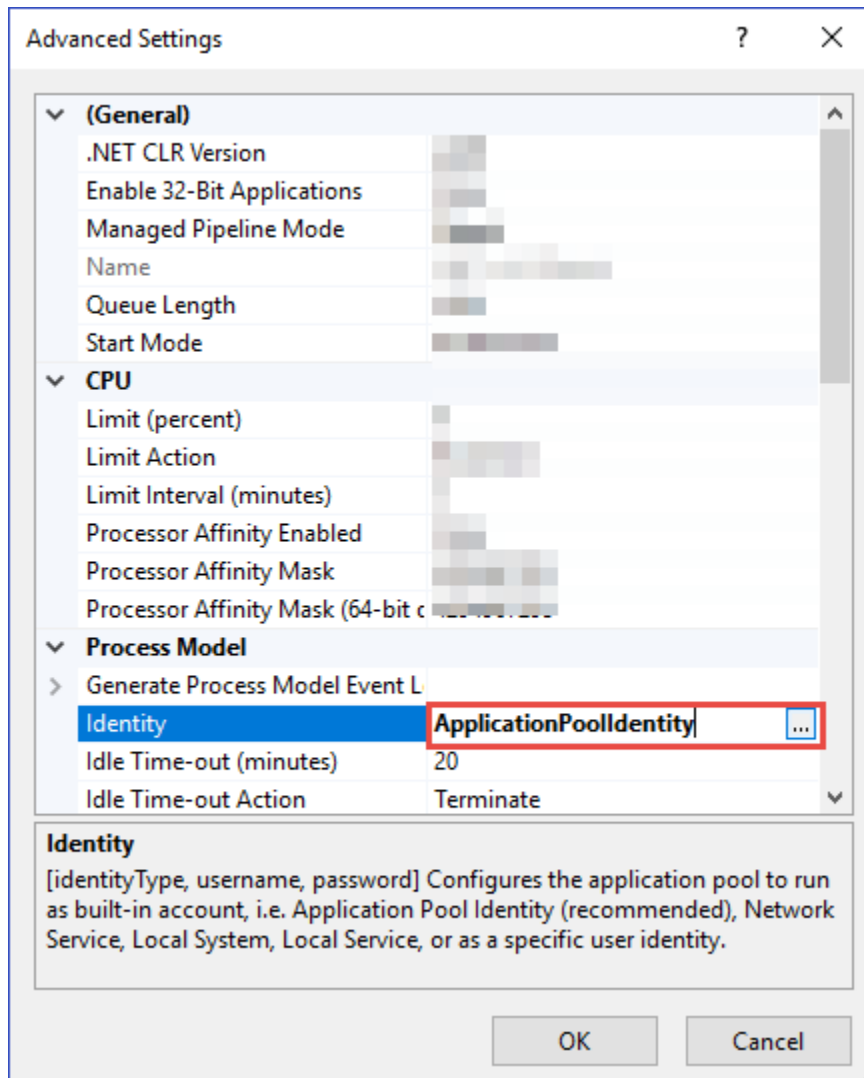
4. At the Application Pool Identify form, change the Windows user access by selecting **Custom Account** and click **Set**.

5. At the Set Credentials form, enter the **User Name, Password** and **Confirm Password** when prompt.

6. Click **OK** to save and exit.

4

Receipt Printing

Norwegian Tax handling enforces all the receipts (Delivery Receipt, Sales Receipt, and Return Receipt) except Pro Forma Receipt to be printed and electronically signed. The receipt layout uses a standard SPMS Invoice Report with additional requirements for each receipt type.

See section Receipt Layout Modification for lists of mandatory elements that needs to be presented on all the 4 types of receipt.

Delivery Receipt

Delivery Receipt in terms of this regulation is a print-out from the cash register system for transactions which are not yet closed but charged to the on-board account. In other words when a Guest acquires a credit or charge a posting to the cabin.

The business logic behind the POST functionality forces a Delivery receipt to be printed on each cabin charge posting. When performing a cabin charge posting, only the **POST & PRINT** button is available.

The following table lists the areas applicable to perform posting and print Delivery receipt.

Table 4-1   List of Area to Perform Posting and Print Delivery Receipt

Module	Function
Management, Crew	Guest/ System Account/ Group/ Gift Card handling,
	Add Posting Crew handling Add Posting Quick Posting
Business Center	Internet Posting
Advanced Quick Check In	Ferry operation: Package posting when create new reservation
	Change Schedule Change Cabin
Casino	Post
Currency Exchange	Post to Account
Kiosk	Book an Excursion, Book an Event and Internet Posting
Medical	Add Posting
Shore Excursion	Booking, Move Booking, Post Unposted Booking, Package Postings
Universal Interface	Booking Msg, Posting Msg, BookExcPack
Web Service	FCUI Posting
Ticket	Event Booking, Move Booking
SPA	Post

Sales Receipt

The Sales Receipt in this regulation is a print-out from the cash register system for completed transactions, in other words when a Guest perform payment by cash, credit or other payment methods.

All business logic behind the PAY functionality forces a Sales receipt to be printed when invoice payment is made. Only the **PAY & PRINT** button is available when performing payment / invoice balance.

The following table lists the areas applicable to perform invoice payment and print Sales receipt.

Table 4-2   List of Function to Perform Invoice Payment and Print Sales Receipt

Module	Function
Management, Crew	Guest/ System Account/ Group/ Gift Card handling, Pay InvoiceCrew handling, Pay InvoiceGuest/ System Account/ Group/ Resident Quick Billing Pay by Credit Card / Pay Direct Sales
Advanced Quick Check In	Ferry operation – create new reservation: Pay by Credit Card Change Schedule - Pay by Credit Card Change Cabin - Pay by Credit Card
Universal Interface	PaymentMsg
Web Service	FCUI Payment
Shore Excursion	Booking - Pay by Credit Card Quick Booking - Pay by Credit Card

Return Receipts

Return receipt is a print-out from the cash register system that states the a previously printed Sales receipt contains incorrect information or information about repayment for repriced or returned goods or services. In other word, it is void payment.

Return receipts have to be separately marked. They are not required to be printed but still can be.

The following table lists the areas applicable to perform void payment and print Return receipt.

Table 4-3   List of Function to Perform Void Payment and Print Return Receipt

Module	Function
Management, Crew	Guest/ System Account/ Group/ Gift Card handling, 'VOID' button Crew Handling, 'Void' button
Currency Exchange	Exchange Overview, 'Void' button
Casino	Cashier, 'Void Posting' button
Medical	Search Posting, 'Void Transaction' button

Table 4-3   (Cont.) List of Function to Perform Void Payment and Print Return Receipt

Module	Function
Excursion	Handling Lists, 'Void Tour Booking' button
Tickets	Account Handling, 'Void Booking' button
SPA	'Void Posting' button

Proforma Receipts

A Pro forma in this regulation is a print-out from the cash register system which shows provisionally registered sales. In other words, it is an Information Invoice.

From SPMS modules perspective, all information invoice is generated using following menu options are:

Table 4-4   Invoices Menu Option

Module	Function
Management, Crew	Guest/ System Account/ Group/ Gift Card handling,
	'PRINT INVOICE' button Crew Handling,
	'PRINT INVOICE' button Guest/ System Account/ Group/ Resident Quick Billing,
	'PRINT' button Crew Quick Billing, 'PRINT' button

5
Norwegian E-Journal Report

The Norwegian Electronic Journal report is the electronic documentation of the continuous use of the cash register system. The continuous used here refers to all use of the cash register system including registration of sales, printing of receipts like Sales, Return, Pro-forma and Delivery Receipts, change of prices, printing of reports X & Z.

The Electronic Journal is protected against alteration and deletion, and are transferable to another electronic medium using a file format that cannot be edited.

1. Login to **Management module**.

2. Select **Cashier** from the menu and then **Norwegian Tax E-Journal Report**. This menu is enabled only when the parameter **'Use Norwegian Fiscal Requirement'** is enabled, and you are authorized to generate the report.

3. At the **Norwegian Tax E-Journal Report** window, select the date range from the date editor.

4. Click **Generate** to create the export into XML file, based on the path configured in the parameter.

> **✎ Note:**
>
> You can only export the receipts once. Previously exported records will no longer exist the report.

Below is the output filename and format:

```
<SAF-T export type>_<organization number of the vendor who the data
represents>_<date and time (yyyymmddhh24hmise>_<file number/follow period
number in report>.xml
```

For example: `SAF-T Cash Register_A1234567_20180901150823_3.xml`

See Appendix section E-Journal Report Structure on required fields.

6
Fiscal Report

The cash register system must be able to generate an *X* and *Z* reports per Point of Sale.

By definition, the *Z* report is a daily summary of the registrations in the cash register and *X* report is a summary of registrations in the cash register since the last *Z* report.

It is a requirement to produce the Z report but not necessary to have it printed for each Cash Register, and must described how to get it printed on demand. Producing *Z* report may therefore be connected to change of business (system) date in general and both of these report is required to print on demand.

The *X* and *Z* reports should be printed/displayed on any Cash Register. One should be able to run/print *Z* report on scheduled task and/or manually.

It is important that running/printing of both the *X* and *Z* reports is written into the Electronic Journal.

The X and Z report are generated from **Administration, Reports, Reports** module.

For X and Z Report Structure, see X and Z Report Structure in Appendix section.

Figure 6-1   Report Printing Function
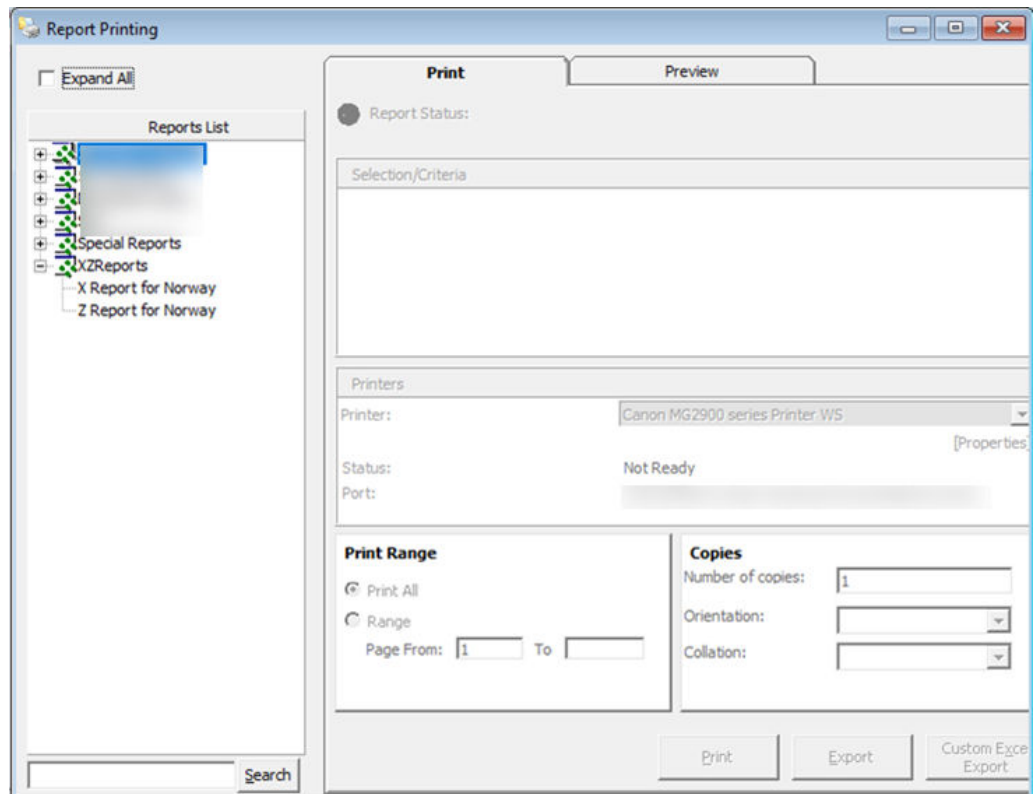
Appendix

The following section list the information required to generate a receipt, digital certificate, E-Journal and X and Y Report for submission to Norwegian Tax Authority.

Receipt Layout Modification

Norwegian Tax Authority requires that the receipts contains the following information.

Sales Receipt Requirements

The table below describes the requirement for the Sales Receipts.

Table 1   Sales Receipt Requirements

Mandatory Element on Sales Receipt	Comments
Document Number and Date	Consecutive number of document (Sales Receipt) and date of the document.
Parties involved	Information about document (Sales Receipt) Issuer and Receiver.
	Issuer data must contain: the name, address, and organization number (from The Brønnøysund Register Centre (Brønnøysundregistrene) of the enterprise.
	If the issuer is registered with the VAT Register, organization name shall follow the following convention: the letters "MVA" +registration number.
	Receiver data must contain identification data.
Date and place of delivery	When and where services were delivered
Sale nature and scope	Services which have been delivered
Specification of taxable and tax-free sales	Taxable and tax-free sales and the sales exempted from VAT shall be listed and added separately. The same applies if taxable turnover tax is calculated at different rates.
Identification of Cash Register	The ID number of the Cash Register System (UWID). It must be a unique identifier that represents the PC Workstation that prints the receipt, it must not be changeable and preferable a combination of letters and numbers. It must be unique to each business location (ship) and within the company's organization (fleet). It must also be unique in the case of Workstation replacement.
	(suggestion UWID -> XCET_FC_ID + WORKSTATION ID)

Table 1   (Cont.) Sales Receipt Requirements

Mandatory Element on Sales Receipt	Comments
Indication that document is a Sales receipt (Salskvittering)	Word 'Salskvittering' must appear at the top of the receipt and are twice as big as "change due" entry on the receipt.
	It is not permitted to replace the upper case letters with a lower case.
	The font of the text must be at least 50% larger than the text that of the amount shown.
Indication that Sales receipt is in electronic form (Elektronisk Salskvittering)	If the sales receipt is produced in electronic form, the words "Elektronisk salskvittering" (Electronic sales receipt) must be displayed.
Digital Signature	Each receipt must be electronically signed. The signature shall sign specific data from each receipt and recorded in the Electronic Journal upon finalization of each transaction. Electronic signature of the Sales Receipt must not be printed but it must be stored in Electronic Journal.

Return Receipt Requirements

The layout of Return Receipt is similar to Sales Receipt except the following:

Table 2   Return Receipts Requirement

Mandatory Element on Return Receipt	Comments
Indication that document is a Return Sales receipt (Returkvittering)	Word 'Returkvittering' must appear at the top of the receipt and are twice as big as "change due" entry on the receipt.
	It is not permitted to replace the upper case letters with a lower case.
	The font of the text must be at least 50% larger than the text that of the amounts shown.

Proforma Receipt Requirements

The layout of the Pro-Forma Receipt is similar to Sales Receipt except the following:

Table 3   Proforma Receipt Requirement

Mandatory Element on Proforma Receipts	Comments
Indication that document is a Pro forma receipt (Foreløpig kvittering)	Phrase 'Foreløpig kvittering – IKKE KVITTERING FOR KJØP' must appear at the top of the receipt and are twice as big as "change due" entry on the receipt.
	It is not permitted to replace the upper case letters with a lower case.
	The font of the text must be at least 50% larger than the text of the amount shown.

Delivery Receipt Requirements

The layout of the Delivery Receipts is similar to Sales Receipt, except the following

Table 4   Delivery Receipt Requirement

Mandatory Element on Delivery Receipts	Comments
Indication that document is a Delivery receipt (Utleveringskvittering)	Phrase 'Utleveringskvittering – IKKJE KVITTERING FOR KJØP' must appear at the top of the receipt and are twice as big as "change due" entry on the receipt.
	It is not permitted to replace the upper case letters with a lower case.
	The font of the text must be at least 50% larger than the text that shows the amounts.

Digital Certificate Requirement

To implement digital signature cryptographic functions, a key pair of private key and public key is required. The key pair is stored in a digital certificate form. Norwegian Tax Authority requires that the digital certificate format to be as shown below.

- **Format:** x.509
- **Charset:** UTF-8
- **Encoding:** Base-64
- **Endianness:** Little Endian
- **OAEP Padding:** PKCS1 v1.5 padding
- **Private key size:** 1024 bits
- **Hash Message Format:** SHA-1

Digital Signature

Digital signature in our context here is the asymmetrically encrypted hash of the Transaction Data. Briefly, the digital signature is defined as:

```
<Transactiondatahash> = Sha-1(<Transactiondata>)
<Digitalsignature> = Rsa-1024(<Transactiondatahash >) Using The Private Key
```

Signing and Verification Process

Figure 2   Signing and Verification Process
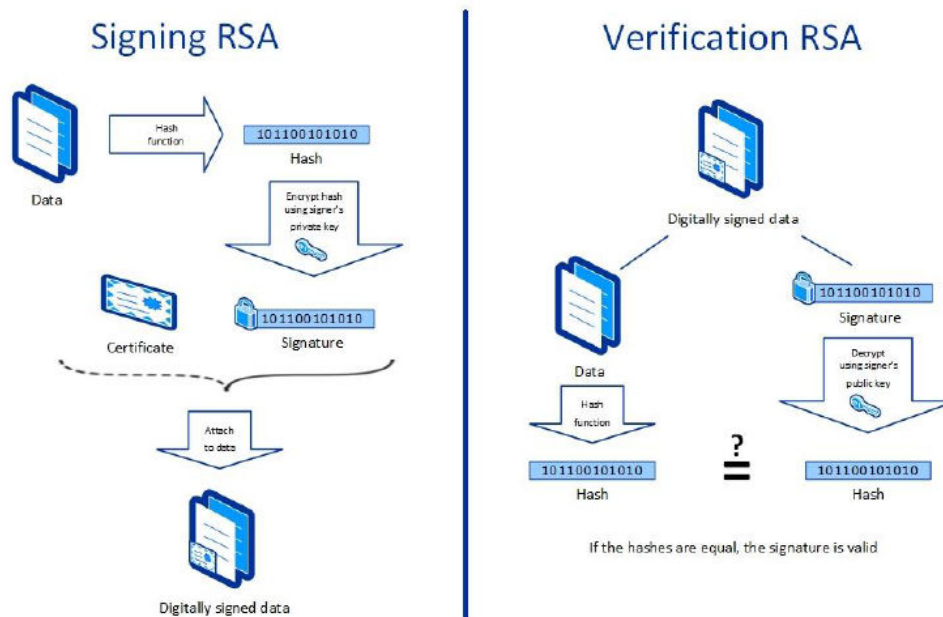
**Figure 3   Sample Signed and Verified Certificate**

Data to be signed:

signature_from_previous_receipt;

Hash data with   :

Encrypt the hash value with private key and generate signature:

signature_for_this_receipt

Verification of signature:

Generate hash with   with same data as signed above:

Use public key on signature to get hash:

The hash values are the same and the data integrity is confirmed.

Digital Signature Trail

To preserve the integrity of the transactions, Norwegian Tax Authority mandates that the digital signing process should be chained, as shown below where the signature trail that SPMS would apply for its digital signing function.

- Cruise Line Company A
  - Ship AA
    - TransactionAA1
      - SignatureAA1
    - TransactionAA2
      - SignatureAA2 (from SignatureAA1)
    - TransactionAA3
      - SignatureAA3 (from SignatureAA2)
  - Ship AB
    - TransactionAB1
      - SignatureAB1
    - TransactionAB2
      - SignatureAB2 (from SignatureAB1)
    - TransactionAB3
      - SignatureAB3 (from SignatureAB2)
- Cruise Line Company B
  - Ship BA
    - TransactionBA1
      - SignatureBA1
    - TransactionBA2
      - SignatureBA2 (from SignatureBA1)
    - TransactionBA3
      - SignatureBA3 (from SignatureBA2)
  - Ship BB
    - TransactionBB1
      - SignatureBB1
    - TransactionBB2
      - SignatureBB2 (from SignatureBB1)
    - TransactionBB3
      - SignatureBB3 (from SignatureBB2)

Verifying Digital Signature

Table 5   Digital Certificate Elements and Descriptions

Element in SAF-T Cash Register	Description	Format and requirements	Examples
signature (previous)	Signature from previous receipt	Base-64 If no previous receipt the signature value must be set to "0" – number zero	signature_from_previous_receipt
transDate	Date at which the transaction was performed.	YYYY-MM-DD Do NOT use time zone or combined date and time format.	2014-01-24 2015-10-29
transTime	Time at which the transaction was performed.	hh:mm:ss Use ss=00 as default value if no information of seconds are available. Same as within the SAF-T export. Do NOT use time zone or combined date and time format.	23:59:59
nr	Transaction number. This must be a unique, sequential number within a journal. This will be the same as the number stated on the issued receipt	No leading or ending spaces.	123456789
transAmntIn	The amount involved in the transaction, including VAT.	Decimal Data Type: Numerical field with two decimals. Decimal separator "." (dot). No thousand separators. No leading or ending spaces.	1250.00 -1250.00 0.00
transAmntEx	The amount involved in the transaction, excluding VAT.	Decimal Data Type:	1000.00 -1000.00
signature (current)	Signature of current receipt	Base-64 If no previous receipt the signature value must be set to "0" – number zero	

Below are the steps to verify the digital signature.

1. Get Transaction Data from e-journal xml file.

2. Ensure that you have the public key in PEM format. You will need this to verify the signature.

3. Save the transaction data in **message.txt** file.

4. Save the signature in **signature.txt** file.

5. Go to Windows search and type **"git bash"** to start the command line tool.

6. Extract the public key from the certificate.

```
$ openssl x509 -pubkey -noout -in <certificate_name> > pubkey.pem
```

7. Now, decode the base64 encoded signature and store it in "<signature_name>.txt" file.

```
$ cat signature.txt| base64 -d > <signature_name>.txt
```

8. Finally, verify the signature.

```
$ openssl dgst -<name> -verify pubkey.pem -signature <signature_name>.txt
message.txt
```

E-Journal Report Structure

This following tables list the report header for standard report, company report and company by location and cashier register.

Report <header> Structure

Table 6   Report Header Structure

Element	Descriptions
<fiscalYear>	Current year of From Date.
<startDate>	First day in current year of From Date.
<endDate>	Last day in current year of To Date.
<curCode>	Current currency code setup in SPMS.
<dateCreated>	Current database date.
<timeCreated>	Current database time.
<softwareDesc>	Current software to generate E-Journal report.
<softwareVersion>	Current software version.
<softwareCompanyName>	Current company setup in SPMS
<auditfileVersion>	The XML version number to be displayed in E-Journal Report.
<userID>	Login user who generates E-Journal Report.

Report<company>Structure

Table 7   Company Report Header Structure

Element	Descriptions
<companyName>	Get from Name under Company Entities Setup in OHC Administration.
<taxRegIdent>	Get from VAT registration number under Company Entities Setup in OHC Administration.
<customersSuppliers>	Customer details. Only customer who exists in the receipt period being selected from user interface.
<vatCodeDetails> <standardVatCode>	All VAT configuration details are using in SPMS. Standard VAT Code stated in norwegian-saf-t-standard-vat-codes.pdf. More details in section Standard Predefined Code 99 – Standard VAT Codes.
<periods> <periodNumber>	Period number of the defined period. Period number is generated by sequence CNT_EJOURNAL_RUNNO from database.
<employees>	Employee who generate the receipt and trigger the event (refer to <event> node). Only employee who exists in the receipts period is selectable from user interface.
<articles>	Department and main department details. Only department and main department that exist in the receipts period is selectable from user interface.
<basics>	Main department ID for credit and debit department, and transaction code. With the mapping standard predefined code. See section Standard Predefined Code 04 — Article Group/Department Codesfor more information.

Report <company><location><cashregister> Structure

<registerID>

Company ID in Company Entities Setup in OHC Administration, combine with my computer name.

<regDesc>

Name in Company Entities Setup in OHC Administration.

<event>

Log record from LOG table. Only records that exist in the date period being selected from user interface.

One <cashtransaction> per one receipt. Only receipts that exist in the receipts period being selected from user interface.

<nr>

Receipt number.

<transID>

Receipt number.

<transType>

Receipt type:

- SALES
- RETURN
- PROFORMA
- DELIVERY

Refers to section Standard Predefined Code 11 – Transaction Codes

<transAmntIn>

Total receipt amount including VAT tax.

<TransAmntEx>

Total receipt amount excluding VAT tax.

<amntTp>

An increase in revenue (such as sales) is to be marked as C.

While a decrease in revenue (such as returns) is to be marked as D.

<empID>

User who generates receipt.

<custSupID>

Customer account number.

<periodNumber>

Refer to <periods> in above table.

<transDate>

Receipt creation date.

<transTime>

Receipt creation time.

<invoiceID>

Delivery receipt number.

<rounding>

Rounding to 2 decimal places.

Digital signature of receipt.

<keyVersion>

The version of the private/secret key.

<voidTransaction>

True = Void transaction

False = No

<vat>

VAT details of all transactions within each receipt.

<payment>

Payment details of receipt.

<ctLine>

All transactions of the receipt. Record is retrieved from POS table.

<nr>

Receipt number. Link to root <nr>.

<lineID>

POS_ID of the POS record.

<lineType>

Transaction type of the POS record.

- POST
- SALES
- REFUND
- DIS
- VOID

Refers to section 2.4 Standard Predefined Code 11 – Transaction Codes.

<artGroupID>

Main department ID of the POS record.

<artID>

Department ID of the POS record.

<qnt>

Quantity of the POS record.

<lineAmntIn>

Amount of the POS record including VAT tax.

<lineAmntEx>

Amount of the POS record excluding VAT tax.

<amntTp>

An increase in revenue (such as sales) is to be marked as C.

While a decrease in revenue (such as returns) is to be marked as D.

<empID>

User who process this record.

<lineDate>

POS record creation date.

<lineTime>

POS record creation time.

<vat>

VAT details of the POS record.

<discount>

Discount details of the POS record

X and Z Report Structure

X Report

An X Report must contain the following information at the very least:

- An inscription that the report is an X report.
- The name and organization number of the enterprise.
- The date and time.
- The ID number of the Cash Register System (UWID). It must be a unique identifier that represents the PC Workstation that prints the report, it must not be changeable and preferable a combination of letters and numbers. It must be unique on each business location (ship) and within the company's organization (fleet). It must also be unique in case of Workstation replacement.
- Total cash sales
- The number of cash sales and amounts broken down by different means of payment
- The number of cash sales and amounts broken down by different means of payment for each individual operator (user)
- The number of tips and amount
- Sales subject to value added tax and sales free from value added tax, as well as value added tax subdivided into different value added tax rates
- Opening change float
- The number of Sales receipts
- The number of Copy receipts and amount (currently not applicable for OHC SPMS)
- The number of Pro forma receipts and amount

- The number of returns and amount

- The number of discounts and amount

- Number of Delivery receipts and amount

- Grand total sales

- Grand total returns (voids)

- Grand total net

Z Report

A Z Report must contain at least the same amount of information as X Report except of the following:

- An inscription that the report is a Z report.

- A Z Report number that represents a unique counter which is increased every time it is run. This means that a Z Report must not have the same number as an earlier Z Report.

- A Z Report must not contain transactions that have been included in an earlier Z Report.