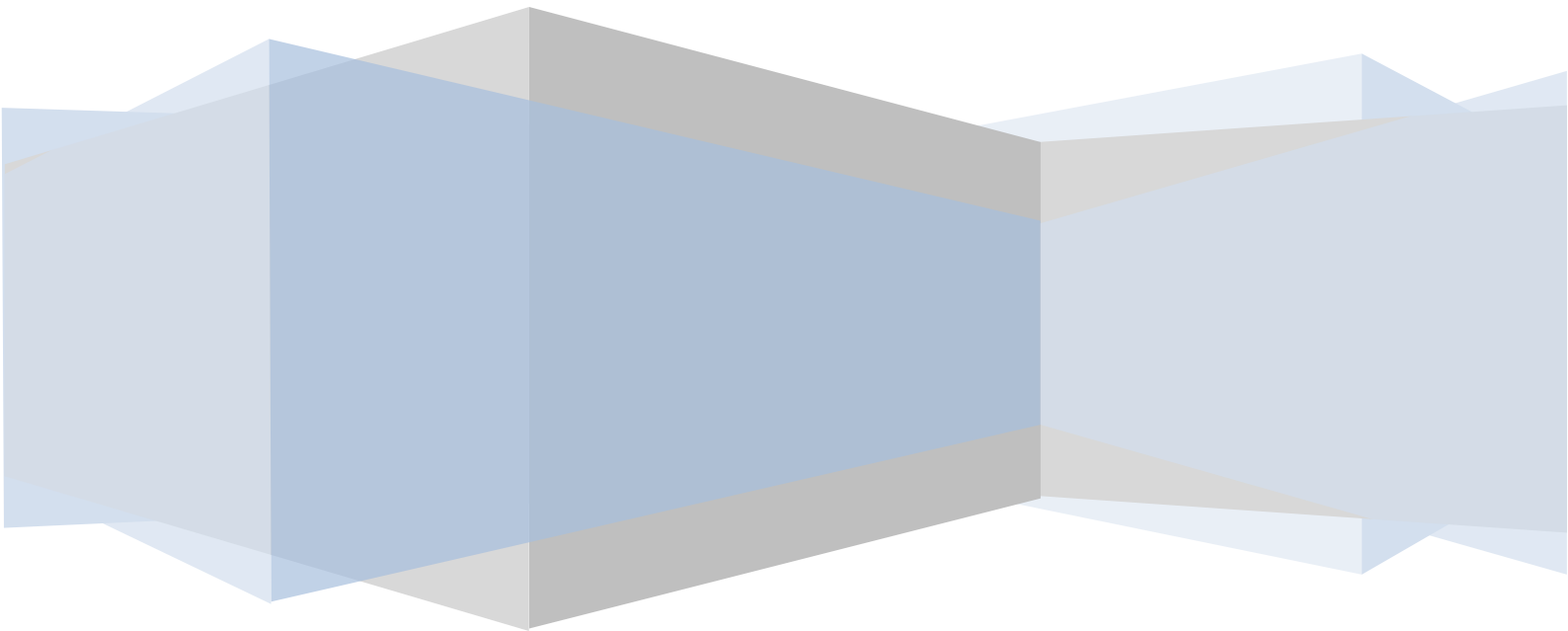


E-invoice

Technical service description

April 2020



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General description

This service description supplements the E-invoice service description, describing the technical details that companies need to take into consideration when adopting the service and answering questions concerning the use of the service.

Nordea's e-invoice service complies with the Finvoice technical descriptions, which can be found on the website of Finance Finland. Nordea recommends always using the latest Finvoice version.

Nordea delivers e-invoices to all the companies, entities and personal customers who receive e-invoices and have concluded an agreement on it with their service provider. A condition for this is that the customer's service provider has concluded an agreement with Nordea.

Nordea's e-invoice service can be used in two different ways:

1. as file transfer, in which case the channel is either Web Services or file transfer in Netbank

or

2. as a service in Netbank.

The 'e-invoice to file transfer' and 'e-invoice from file transfer' services require external software and a channel for sending and receiving invoices.

The e-invoice service in Netbank is intended for companies that do not use external software for any other payments either. The service is suitable for sending and receiving individual e-invoices.

Message descriptions

The invoice messages are described in the Finvoice implementation guidelines, and notification service messages related to consumer invoicing (invoicer notifications, reception notifications and receiver proposals) are described in the Notification service implementation guidelines. Both sets of guidelines are available on Finance Finland's website. In regard to the European standard on e-invoicing (Finvoice version 3.0), the supplementary guidelines provided by the government are to be followed in addition to the Finvoice implementation guidelines. The supplementary guidelines can be found on the State Treasury's website.

The Finvoice implementation guidelines contain the following:

- Description of the structure and information content of a Finvoice invoice, covering all invoicing needs.
- XSL description that enables invoices to be displayed on a browser and printed on paper.
- XSD description (Schema) that is used when creating Finvoice messages. XSD determines the message format.
- Models of an extensive and a short e-invoice.

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- Description of the transmission frame (SOAP) that enables invoices to be forwarded directly from seller to buyer or through a third party.
- In addition, Finance Finland's website contains a free archiving program where an invoice's frame can be deconstructed and invoices can be processed in their separate directories.
- The Notification service implementation guidelines and the program for creating invoicer notifications and receiver proposals can also be found on the website of Finance Finland.

In addition, the terms and conditions of the Finvoice forwarding service are applied to the sender and the recipient.

Basic structure of the Finvoice invoice message

The file (material) sent to Nordea may contain several Finvoice messages. Every message must contain a transmission frame (SOAP) which indicates the sender's and the recipient's details and the service providers' details.

- Transmission frame (SOAP)
 - Sender's details
 - Recipient's details
- E-invoice
 - Seller's details
 - Buyer's details
 - Invoice details
 - Invoice row details
 - Information provided by the seller for the payment order (ePI)

The information content of the SOAP frame and the Finvoice invoice message, and the maximum lengths of the elements and whether they are compulsory have been defined in a separate information list on Finance Finland's website.

E-invoices sent to Nordea may or may not contain rows. Indentations may be used in material containing rows, but are not obligatory.

E-invoice to file transfer

The customer's sending address in the material is the same as the Service ID found on the agreement, and the operator detail is NDEAFIHH.

The material types associated with the E-invoice to file transfer service are:

- LAHLASKUT is the material to be sent when your company sends e-invoices.
- HYLLASKUT is the retrievable material when your company retrieves feedback on rejected e-invoices.
- FIB2CLASS is the material to be sent when your company sends invoicer notifications (SI messages).
- FIB2CVASL is the retrievable material when your company retrieves reception notifications related to consumer invoicing (RI messages).

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- FIB2CMAKS is the material to be sent when your company sends receiver proposals (RP messages).
- FIEINVATS is the material to be sent when your company sends e-invoice attachments.

When sending invoices through Web Services, the material type must be determined in the forwarding request. The material type is selected from the dropdown menu in file transfer in Netbank. The maximum file size that can be sent is 50 megabytes.

The e-invoice recipient's service provider forms the HYLLASKUT material for rejected e-invoices. The material can be retrieved from Nordea's file transfer, just like other feedback. Nordea forms the HYLLASKUT material for its own recipient customers on the same day. Other service providers form rejection messages according to their own timetable and send them to Nordea, after which they can be retrieved from file transfer.

It is recommended that the HYLLASKUT material be retrieved daily.

Printing service

The printing service allows for the automation of the entire sales invoicing process. If a recipient has not adopted the e-invoice yet, the e-invoices will be printed and sent to the recipient by post.

For an e-invoice to be forwarded to the printing service, the recipient in the e-invoice's SOAP frame (To PartyID) must be PRINT or PAPERI. If an e-invoice has an attachment, the attachment recipient (TolIdentifier) must be identical to that in the e-invoice.

Virtual barcodes can be utilised (element VirtualBankBarcode), in which case the barcode is printed on the credit transfer form. The printing models can be found at the end of this document.

Printing with a logo

To make an invoice uniquely identifiable, it is possible to add the company's logo to the invoice in the printing service. The logo will be visible in the envelope's window and the size of the printed logo depends on whether it includes the sender's address details or not. The maximum height for the logo is 3 cm and the maximum width 5,9 cm. If the logo does not include the sender's address details, the height of the printed logo will be 1.2 cm at maximum.

The recommended file formats for the logo are jpg, tiff or pdf. To obtain a high quality printing result, a resolution of 300 dpi and the use of the CMYK colour system are recommended.

E-invoice from file transfer

Your company's reception address is the same as the Service ID found on the agreement, and the operator detail is NDEAFIHH.

The material types associated with the E-invoice from file transfer service are:

- HAELASKUT is the material to be retrieved when your company receives e-invoices.
- FIEINVATL is the material to be retrieved when your company retrieves e-invoice attachments.

When retrieving e-invoices and their attachments through Web Services, the material type must be determined in the forwarding request.

Nordea restricts the size of retrievable attachment material (FIEINVATL) in Web Services to 50 Mb before it is possibly compressed. For this reason, attachment material must be retrieved until getDownloadFileList is empty.

The material type is selected from the dropdown menu in file transfer in Netbank.

Nordea does not alter invoices' information content; all complaints concerning an invoice's contents must be sent directly to the sender of the invoice.

Scanning service

The scanning service is used for the digitalisation of paper purchase invoices to e-invoices (Finvoice 2.0) after which they can be retrieved from the file transfer. The recipient of the invoice provides the invoicer with an invoicing address (email and postal address) and other details needed for the delivery of the invoice. The invoicer may deliver the invoice via email in the PDF, JPG or TIF format or as a paper invoice to the postal address the recipient has provided.

The basic details of a purchase invoice to be reviewed include:

- The address of the invoice recipient
- The name of the sender
- The sender's EDI code
- The supplier's IBAN
- The invoice number
- The invoice date
- The due date of the invoice
- The currency
- The total amount
- The amount of VAT
- The reference number

The files which have arrived to the scanning service on a workday before 9.00 will be delivered to the file transfer for retrieval by 12.00 on the next workday. A link will be delivered together with the e-invoice. By clicking the link, the recipient can view a picture of the invoice in a PDF format in the presentment archive service for six months.

If the details sent by the invoicer by post are incorrect and an e-invoice file cannot be formed, the invoice will be sent to the recipient on paper, if possible. If the invoicer has sent the invoice to the scanning service via email, the incorrect invoice will be returned to the sender in an email.

E-invoice attachment

Finvoice attachments provide further details to the information in Finvoice invoices, and the attachments are forwarded in a separate Finvoice attachment message. Attachments can be sent and received only through the e-invoice to file transfer and the e-invoice from file transfer services.

For every invoice message, a maximum of one attachment message can be sent, with each attachment message containing 1–10 attachments. The attachment message and the attachment(s) it contains can be attached to only one invoice. The maximum size of an individual attachment message is 1MB and the permitted file types are PDF/A, JPEG and PNG.

The structure of a Finvoice attachment message consists of the message's forwarding details and the attachment details. An attachment message does not have a message-specific SOAP frame like a Finvoice invoice.

Attachments consist of binary content sent separately from the e-invoice, but as a message related to it; the invoice and attachment message always form a message pair.

The processing of the invoice and attachment message is interlinked with the unique identifiers. An invoice message contains a reference to the attachment message and vice versa. The same attachment message can be used only once. An attachment message with the same content can be used repeatedly, provided that the material is recreated with new identifiers.

Your company must deliver attachments to Nordea within an attachment message. The invoice and attachment messages are sent consecutively as separate file types.

The order in which messages (invoice message or attachment message) are sent to Nordea does not matter, but they must be delivered to Nordea within 12 hours of each other.

The structure of an attachment message and other more detailed requirements for it can be found in the Finvoice implementation guidelines maintained by Finance Finland. In addition to validation, Nordea scans attachments for any malware. If malware is detected, both the e-invoice and its attachment will be rejected. The error feedback message will only indicate that malware has been detected. More detailed information on the malware can be obtained from E-Support for Corporate Customers.

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The attachments of invoices forwarded to the printing service will be printed in size A4 and in four colours. Individual attachments will be printed on separate sheets and included in the same envelope with the invoice. Margins of at least 3 mm must be left on the right, left and bottom of the page in attachments intended for printing. A margin of at least 10.6 mm must be left at the top.

E-invoice in Netbank

The service allows your company to send and receive e-invoices easily and without a file transfer connection. This service does not allow for the sending and receiving of attachments.

A program and an invoice template for creating e-invoices can be found in Netbank. The user guidelines can be found in Netbank and more detailed information on the service is available in the document *E-invoice, Service Description*.

E-invoice for consumers

With Nordea's e-invoice to file transfer service, your company can also send e-invoices to consumer customers. The service includes the possibility of sending both e-invoices and direct payments, as well as notification service messages. The printing service allows you to also reach personal customers who do not use Netbank.

Notification service

The service allows banks to receive information on your company's capability to send e-invoices and direct payments to personal customers. The banks will enter the information on the capability to send e-invoices in their online banking platforms. Nordea does not show any information about the capability to send direct payments in its Netbank. Direct payments are intended for branch customers who do not use Netbank for paying their bills.

Nordea's notification service consists of invoicer notifications and reception notifications.

Invoicer notification

Your company can send invoicer notifications through Nordea to all the banks participating in the Finvoice forwarding service. Similarly, your company can also retrieve all reception notifications sent by other banks from Nordea's file transfer service. For instance, if you wish to offer an e-invoice to the customers of four (4) different banks, you must send four (4) different invoicer notifications through Nordea's file transfer, one to each bank.

It is your company's responsibility to attend to the archiving of invoicer notifications for potential updates or deletion in the future.

The material type of an invoicer notification is FIB2CLASS.

If the recipient bank of an invoicer notification is Nordea, the element *SellerInstructionFreeText* is obligatory at least in Finnish, in deviation from the FFI's guidelines.

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Reception notification

Consumers must order e-invoices and direct payments through their own bank. Orders are forwarded with reception notifications that include a reception address and the service type (e-invoice or direct payment) to be retrieved from file transfer. All the reception notifications delivered by the banks can be retrieved from Nordea's file transfer.

The material type for reception notifications is FIB2CVASL.

Receiver proposal

The receiver proposal (RP-message) can be used in two different cases:

1. To get the customer's e-invoice address already before the first invoice.
2. During changes to move customers from one invoicing subject to another.

In both cases the value of the element MessageActionCode is to be ADD.

In the first case the value of the element MessageActionCodeIdentifier is to be 00 and the customer's social security number is to be given in the element BuyerPartyIdentifier.

In the second case the value of the element MessageActionCodeIdentifier is to be 02 and the customer's e-address is to be given in the element InvoiceRecipientAddress.

The RP-message is shown in the customer's netbank for approval. If the customer doesn't react within 30 days the RP-message is removed automatically.

Rejection feedback messages are not formed in the case of customer rejection or automatic removal of the RP-message after 30 days.

It is not possible to use the RP-message for direct payment customers.

Structure of the messages

Nordea checks that invoicer notifications have the correct structure by validating them against the version 1.0 DTD and version 2.0 schema (xsd). Receiver proposals are validated against schema (xsd).

Every message must contain a transmission frame (SOAP) which indicates the sender's and the recipient's details and the service providers' details.

A more detailed description of the notification service messages' structures can be found in the Notification service implementation guidelines on Finance Finland's website.

E-invoice link, invoicer instructions

E-invoice link is an additional service offered to invoicers and used with consumer e-invoicing. Your company can present its consumer customers with an image of the invoice, an attachment to the invoice or other additional information related to the invoice through the link formed in Netbank. An agreement on the use of the service must be made with Nordea.

Nordea forms a link to an e-invoice's additional information based on the e-invoice delivered to Nordea's Netbank. If a Nordea Netbank user wishes to view the information linked to an e-invoice, he or she must click the "Invoicer's breakdown" link in order to be directed from Netbank to the invoicer's service.

Netbank is available 24/7, which means the e-invoice link document must also be viewable at all times. An invoice's additional information must be made viewable in the document presentment service as soon as the Finvoice message is sent to the bank. The document linked to must be found in the document presentment service using the unique archive identifier given in the Finvoice message. The additional content for an e-invoice must be viewable for at least 24 months from the delivery of the e-invoice.

In the link information, Nordea transmits a control number calculated from the Netbank user's personal identity number to the document presentment service. The document presentment service can use this control number to check the identity of the person viewing the invoice provided that the service has a register of its customers' personal identity numbers. This will help ensure that the material stored in the document presentment service is only shown to the persons authorised by your company.

Nordea will deliver invoice messages to other banks when it acts as the distributor bank of the invoicer's material. In such cases, the supplier of the document presentment service must have valid agreements with the other banks, too. The control numbers of links formed by other banks are calculated using the MAC key provided by each bank. The algorithm used by Nordea is MD5. Other banks may use other algorithms.

Security

E-invoice links are formed in Netbank, where Nordea's customers are reliably identified. In Netbank, data communications between the customer and the bank are encrypted, so any third parties cannot see or change the data.

The information contained by the e-invoice links is protected with an identifier, so it is also impossible for a Netbank user to change the information without it being detected by the document presentment service.

The document presentment service must be SSL encrypted. The invoicer is liable for the confidentiality, encryption and security of the service it uses as well as for the validity of the information.

The link's control number and the personal identity number control number are calculated using the MAC key created when the document presentment agreement was signed and delivered to the supplier of the document presentment service. If the key must be changed,

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the document presentment service must make sure the new key is introduced in the service and agree on this separately with Nordea.

The service may only be used for displaying additional information relating to e-invoices. Information on the customer received through the service may not be used for any other purposes than operations in compliance with the agreement.

Invoice message structure

One thing invoicers must consider in the structure of invoice messages is that any information that is displayed via a link should not be contained in or attached to the actual Finvoice message sent to the bank. Such information must be stored in the invoicer's document presentment service, and displaying it requires that the link's USERMAC parameter be converted and checked by the document presentment service.

A Finvoice message delivered to Nordea must contain the necessary information for forming the link. The invoice's first InvoiceUrlText element must contain the business identity code of the document presentment service used by the invoicer (8 digits, including a possible zero at the beginning, without the dash), a separating character (+) and the invoice's archiving ID (max. 60 characters) which is used to find the additional information attached to the invoice from the document presentment service.

Example: <InvoiceUrlText>12345678+12345678901234567890</InvoiceUrlText> .

Read more about the technical requirements in the section *E-invoice link, document presentment service guidelines* and Finance Finland's descriptions of links in online banking platforms.

Direct payment

Offering direct payments requires the e-invoice notification service to be activated and e-invoices under Finvoice version 2.0 or newer. A direct payment differs technically from the e-invoice only with respect to the *InvoiceTypeCode* and *InvoiceTypeText* elements. In a direct payment, these are 'INV09' and 'Suoramaksu', respectively.

Personal customers can activate direct payments and change the details of their direct payment orders at Nordea branches or in the personal customers' Customer Service. Nordea will forward direct payment orders with a reception notification.

In accordance with the Finvoice service descriptions, direct payments must consist of an invoice sent to the payer (paper invoice or other notification) and an electronic invoice copy (e-invoice) sent to the bank. Please note that, in Nordea's e-invoice to file transfer service, your company can process both components by utilising the printing service. In this case, two files must be sent: an electronic invoice copy and a direct payment invoice addressed to the payer through the printing service.

Your company can cancel an unpaid direct payment sent to Nordea by sending a cancellation invoice concerning it.

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Cancellation invoice

If your company has sent an e-invoice or a direct payment using incorrect details, they can be cancelled with a cancellation invoice. The cancellation invoice must be at the recipient's bank no later than three (3) days before the invoice's due date. If the recipient is in a different bank group than the sender, the cancellation invoice must be sent no later than four (4) banking days before the due date.

When there is a due invoice in the bank's database matching a cancellation invoice, the due invoice is deleted and the amount is not debited to the payer's account. If necessary, your company can create a new invoice and send it normally to Nordea as an e-invoice or to the payer's address as a direct payment.

If the cancellation invoice does not match a due payment in the bank's database, your company will receive a message informing it that the cancellation failed. In that case, your company must agree with the payer on correcting the invoice or on reimbursing the customer.

Cancellation invoices must be sent using the same details as the original e-invoice or direct payment now being cancelled.

The information in the electronic invoice copy of the direct payment and on the cancellation invoice must be the same so that the recipient bank can cancel the payment proposal based on the direct payment order. The following details on the cancellation invoice are used for finding the payment proposal:

- Due date (EpiDateOptionDate)
- Invoicer's crediting account (EpiAccountID)
- Reference (EpiRemittanceInfoIdentifier)
- Amount (EpiInstructedAmount) NB. The amount must be negative on the cancellation invoice.
- Subject of invoicing (EpiPaymentInstructionId)
- E-invoice recipient's address and intermediary code

The cancellation invoice cancels the entire original invoice (full amount).

The invoice sender must send the cancellation invoice by using the same sender's e-invoicing address and intermediary code as the ones used when sending the original e-invoice or direct payment.

If a cancellation request cannot be matched with the payment order, Nordea will send an ACK message with the code "6" and with the definition "Cancellation not matched".

Active approval

Consumer customers' adoption of e-invoices can be facilitated by introducing the active approval feature. The consumer only needs to accept the e-invoice order when paying the paper invoice in Netbank. You can activate this feature by updating the invoicer notification so that it fulfils the criteria below.

Requirements for the invoicer notification

- The customer is only asked for a single ID, which is either a national or an international reference.
 - The element *SellerInvoiceIdentifierText* asks for only a national or international reference (RF).
 - The attribute *SellerInvoiceIdentifierType* has the value 01 or 02.
- The crediting accounts shown in the element *SellerAccountID* must not be included in other invoicer notifications.

The feature has been in production since 5 February 2015, so if an invoicer notification has been sent to Nordea before this date, it must be updated even if all the above criteria are fulfilled.

Information in the reception notification

Nordea will return the reference entered by the customer for the invoice in the element *SellerInvoiceIdentifier* of the reception notification.

Testing

Nordea offers its customers a validation tool with which they can test the structural integrity of material. The tool validates B2C e-invoices, B2B e-invoice and Finvoice attachments by comparing them to a schema file. In addition, the tool accounts for the additional checks Nordea performs on e-invoices.

Nordea uses XSD (schema) for validating Finvoice versions 1.3, 2.0, 2.01 and 3.0. In addition, Nordea follows the Finvoice implementation guidelines maintained by Finance Finland, and the supplementary guidelines provided by the government in regard to European standard on e-invoicing.

In addition to the schema check and the implementation guidelines, Nordea has the following processing rules in place:

B2C e-invoicing

- In the invoicer notification, the element *SellerInstructionFreeText* is obligatory at least in Finnish (*LanguageCode*: FI).
- An e-invoice intended for printing must contain the recipient's address information.
- The e-invoice's due date must be 2–365 days in the future.
- The *EpiNameAddressDetails* element is obligatory.
- The reference number is obligatory in the element *EpiRemittanceInfoIdentifier*.

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B2B e-invoicing

- E-invoice attachments cannot be sent to Netbank recipients.
- An e-invoice intended for printing must contain the recipient's address information.
- The e-invoice's due date must be 3–365 days in the future.
- The reference number is obligatory in the element *EpiRemittanceInfoIdentifier* if the recipient is a Netbank customer.
- The *EpiNameAddressDetails* element is obligatory if the recipient is a Netbank customer.
- The following invoice types may be received in Corporate Netbank:
 - INV01 (OriginCode: Original)
 - INV03 (OriginCode: Original)
 - INV04 (OriginCode: Original)
 - INV05 (OriginCode: Original)

All other invoice types will be printed and delivered to the recipient by post.

E-invoice file processing timetables at Nordea

If the recipient of an e-invoice is a Nordea customer, Nordea will make an invoice available for retrieval through file transfer or show it in Netbank within 2 days of it being sent. Nordea will forward invoices sent to other service providers within two banking days.

Files sent from other service providers will be made available for retrieval within one banking day of their arrival at Nordea.

Sent material will be processed on the same day if it has been received by Nordea in its entirety before 22.00, including any e-invoice attachments.

If your company sends e-invoices using several sending addresses, we recommend that e-invoices from the same sending address are placed consecutively in the material. Nordea will group the sent material by sending address before processing it. This speeds up data transfer for customers using the Web Services protocol and Corporate Netbank's file transfer. In addition, this procedure clarifies the confirmation process for e-invoices in Corporate Netbank's file transfer service.

The maximum size of material sent through the Web Services channel is 50 MB. It is recommended that large files are compressed before sending, and they can also be retrieved as compressed files. The more detailed instructions are available in the Web Services service description on Nordea's website.

The invoicer's account numbers must be in the IBAN format and the bank's BIC must be stated.

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E-invoice link, document presentment service instructions

Nordea will deliver the ID and MAC key used in the document presentment service to your company once the agreement between the document presentment service provider and Nordea is signed.

No specific WWW server software is required of the document presentment service, but it must support SSL encryption.

The document linked to must be found in the document presentment service using the unique archive identifier given in the Finvoice message.

The document presentment service provider must check whether a document may be shown to the Netbank user directed to it. If the document may not be shown, the document presentment service must be able to indicate the reason for this to the Netbank user.

Link parameters

The parameters must comply with the online banking platform link description jointly agreed upon by the participating banks. The banks' joint description contains bank-specific alternatives and specifies that the link may be connected to various payment transactions or documents. The descriptions are available on Finance Finland's website. Below is a description of how a link is formed in the Netbank of a Nordea consumer customer to an e-invoice sent as a Finvoice message.

Example link and instructions on calculating the link's MAC:

The character string used for calculating the MAC consists of the parameter fields' contents and ampersands (&). The MAC key and an ampersand (&) are added to the end of the string. The character strings do not contain any spaces. The result is as follows:

```
VERSION&PMTREFNB&TIMESTMP&KEYVERS&ALG&LANGCODE&SESSIONID&STATUS&SENDID&PMTORIG&USERMAC&MAC AVAIN&
```

Example in the case of a link:

```
0001&12345678901234567890&2008-03-16-102030+02&0001&0001&1&12345&Prod&NDEAFIHH&1&1234567890123456789012&[MAC key]&
```

NB. The field's TIMESTMP encoding in the calculation has been converted back to a plus (+) sign:

2008-03-16-102030%2B02 is presented as 2008-03-16-102030+02 in the calculation.

An MD5 control number is calculated for this character string and displayed visibly (as ASCII characters) as the value of the parameter field's MAC. NB. Any lower-case letters in the MAC value are converted to upper-case in the link.

An example of a full link:

https://www.company.fi/aaaa/bbbbbb/ccccccc?VERSION=0001&PMTREFNB=12345678901234567890&TIMESTAMP=2008-03-16-102030%2B02&KEYVERS=0001&ALG=0001&LANGCODE=1&SESSIONID=12345&STATUS=Prod&SENDID=NDEAFIHH&PMTORIG=1&USERMAC=12345678901234567890123456789012&MAC=12345678901234567890123456789012

Checking that a link can be used only once

The document presentment service must check that a link can be used only once. The check is made by comparing the values of the TIMESTAMP and PMTREFNB parameters. If the link is used again, the user must be notified that the link has expired.

Additional clarification of the check performed on the USERMAC parameter

If the personal identity numbers of the persons who are permitted to view certain information are registered in the document presentment service, the viewer's rights can be checked by forming a corresponding character string of the invoicer's information, calculating an MD5 control number from it and comparing the resulting control number to the USERMAC parameter field. The check requires that the personal identity numbers are registered in the document presentment service, as the personal identity number is not transmitted in any form.

The USERMAC is formed in the same way as the control number for the entire link:

The system creates a character string from the time stamp, personal identity number and the key, separating them with ampersands (&). `TIMESTAMP&HENKILÖTUNNUS&AVAIN&`

The personal identity number in the character string contains a dash and any letters in it are capitalised.

An MD5 control number is calculated for the character string and displayed as the value of the USERMAC in ASCII format.

The personal identity number cannot be calculated on the basis of the USERMAC even if a secret key is used for forming the control number.

Adoption and management of changes

The invoicer or a representative of the document presentment service provider must contact Nordea at the time of adoption or when changes occur to make sure that a detailed plan can be agreed on the implementation and timetable of any changes. Whether new testing, for example, will be needed depends on the nature of the changes, and therefore sufficient time for changes must be reserved.

If changes to the service are implemented by the invoicer or Nordea, such changes must be agreed between the invoicer and Nordea in order to secure the service offered to consumers. Invoicers should prepare to manage any service breaks resulting from changes to the document presentment service they are using, and to inform consumers of such breaks.

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If the MAC key must be changed by the document presentment service provider, the provider must contact Nordea and agree on the timetable of the change.

Changing the MAC key

The MAC key used for calculating the control numbers can be changed at the request of Nordea, the invoicer or the document presentment service provider. The control number key is delivered to the contact person specified in the agreement between the document presentment service and Nordea. The contact person will also be informed of the new key's version number and the date it becomes valid. All control numbers will be calculated using the new key beginning from the announced date.

In order to ensure a seamless switch of MAC keys, the document presentment service must enable the entering of a new key in advance, in other words, the use of two MAC keys simultaneously. When the switch takes place, some of the links may be calculated with the old key and some with the new key for about 15 minutes from the time of the switch. After this, once the new MAC key has been used successfully, the old key can be removed or its use in the document presentment service can be blocked.

URL information

https Protocol, SSL encryption
 www.yritys.fi E-invoice server name in the document presentment service
 aaaa/bbbbbb/cccccccc E-invoice service name on the above server

Tunnus (Identifier)	Content	Check performed by the document presentment service
VERSION	Link version number, 4 characters 0001=production version 1	If the version is anything other than 0001, the link must be rejected.
PMTREFNB	Archiving ID identifying the document in the document presentment service, received from the Finvoice message, max. 60 characters	If the document to be displayed cannot be found, the user must be notified.
TIMESTMP	Link creation time VVVV-KK-PPHHMMSS%2BHH%2B02 = normal time in Finland %2B03 = summer time in Finland	The link creation time may not diverge more than 15 minutes from the time of the check. If the time of creation diverges by more than 15 minutes or the link has been used earlier (see section 4.1.4), the user must be notified that the link has expired.
KEYVERS	MAC key version, 4 characters	The key version must correspond to the registered key version in the document

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		presentment service, and the corresponding key is used in the MAC calculation. Additional information on what to do when changing keys is available in section 5.1.
ALG	MAC key calculation algorithm, 2 characters 0001= MD5 algorithm	Check the content. Links formed by Nordea use MD5.
LANGCODE	Netbank user's language code, 1 character, 1 = Finnish, 2 = Swedish, 3 = English.	Checked and service provided in the language selected by the Netbank user.
SESSIONID	Log data, max. 20 characters	Log data
STATUS	Link status, 4 characters Prod = production link, Test = test link	Content checked and link directed to the production service or the test service.
SENDID	Link creator ID, max. 20 characters, NDEAFIHH = Nordea	BIC code of the bank that forms the link. If the code is not NDEAFIHH, the link must be rejected.
PMTORIG	Payment input method, 1 character, 1 = e-invoice.	Content must be 1.
USERMAC	Control number formed from the payer's personal identity number, 32 characters.	The check procedure is described in section 4.2.
MAC	Link's MAC control number, 32 characters.	Nordea's server uses the parameter data listed above to calculate the field's MAC. It is used by the document presentment service for checking that the link has been formed by Nordea and has not been modified.

Rejection feedback (ACK)

Nordea performs checks on sent files (incl. virus scan on attachments) before approving them. If an error is detected in the contents of an invoice or attachment message, Nordea will create a feedback message for the sender (FinvoiceAck, version 2.0). If an attachment message contains even one attachment with an error, the entire message will be rejected, including the invoice message linked to it. Similarly, if an invoice message contains an error that causes it to be rejected, the attachment message linked to it will also be rejected.

The rejection feedback's file type is HYLLASKUT. It is recommended that feedback be retrieved regularly – at least over a few days after sending files. For instance, the rejection feedback for invoices forwarded to other banks are retrievable after 2 days of them being sent at the earliest.

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