

BusinessNet Connect Integration Document UniCredit Bank Czech Republic and Slovakia, a.s.

BusinessNet Connect
November 2017

Life is full of ups and downs.
We're there for both.

Welcome to
 **UniCredit Bank**

Introduction

Dear client,

The integration of company's systems with the bank infrastructure is more frequent topic not only for biggest companies with thousands of payments per year but also for small companies which operate in online sales business.

We are delighted, that you have chosen BusinessNet Connect for your solution. This document will help you to properly set the interconnection of all systems.

In case you should need some clarifications, do not hesitate to call our technical support at +420 221 210 011.

Sincerely yours,

UniCredit Bank Czech Republic and Slovakia, a.s.

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BASIC TERMS

Technical user	<ul style="list-style-type: none"> • It is a special user, which is used to establish connection between the company's system and the bank infrastructure. This user is not intended to be used with BusinessNet Professional.
WebDAV	<ul style="list-style-type: none"> • Technology used for BusinessNet Connect. It is a standardized extension of HTTP protocol, which enables remote file management on a web server. <ul style="list-style-type: none"> ◦ The advantage of the protocol is that it is supported on all common operating systems so BusinessNet Connect works as a "web folder".
Public key	<ul style="list-style-type: none"> • Freely distributable key generated by the client. • The bank uses client's public key for file content encryption. The content is then unreadable. • Encrypted file could be decrypted only by the private key of the client.
Private key	<ul style="list-style-type: none"> • Private key cannot be under any circumstances shared with anybody else. • The key is used for content file decryption which was previously encrypted by the public key.

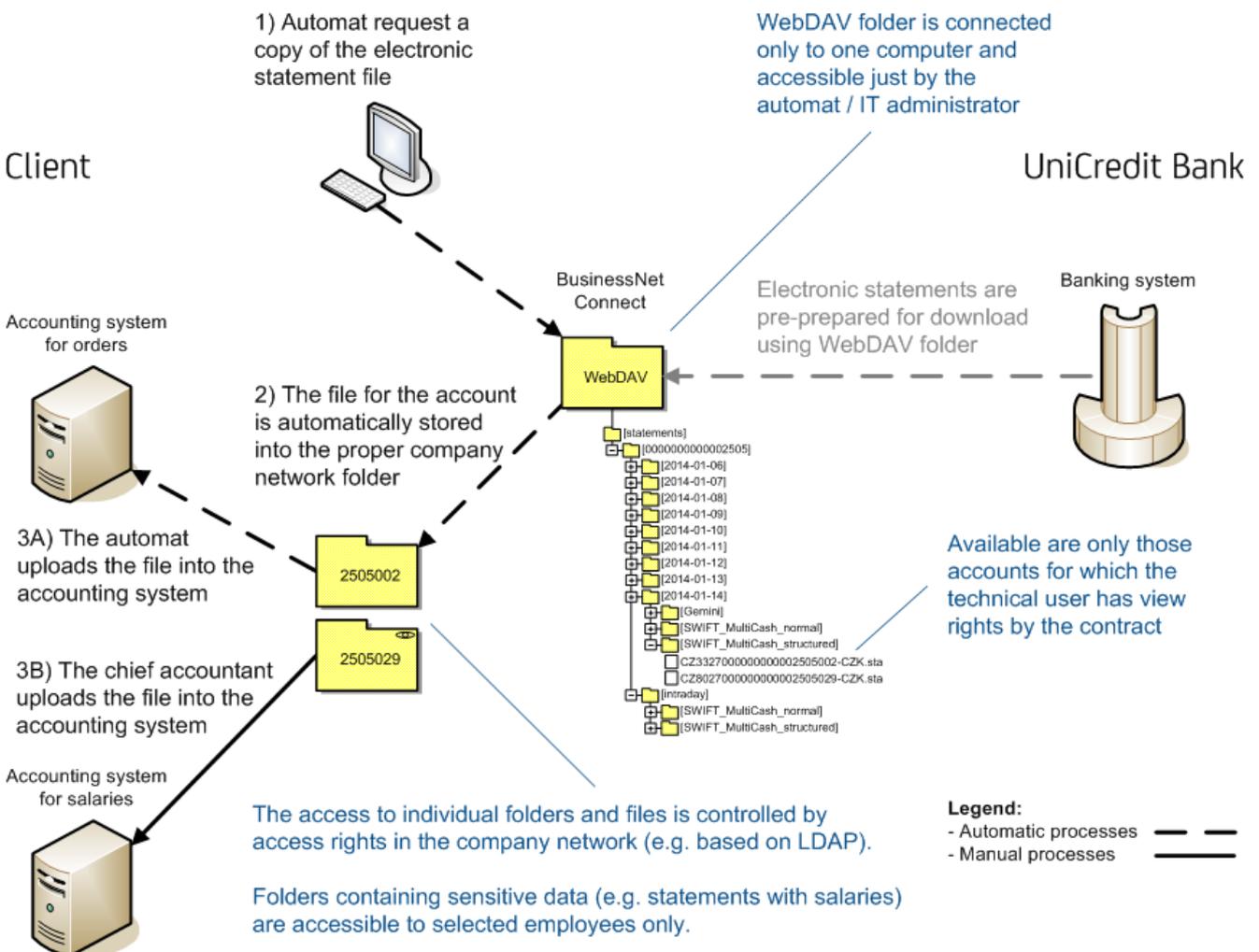
1. BEFORE YOU START

1.1 Access rights philosophy

As it is intended, the WebDAV folder should be accessible only to some automated process or a single person, which would copy files to/from the local disk. The access rights to the local files should be managed e.g. by Active Directory / LDAP policy and the access rights should be granted/changed only by the Company's admin. It is up to the Company's internal processes who should have access to these local files but once stored locally, the Bank cannot help anyhow with the access rights management. **Think it through twice, who should have access to these local files** (e.g. to statements with salaries or any other confidential data).

The direct access to the WebDAV folder **shall not be shared!**

IT infrastructure setup for the download of statements using BusinessNet Connect



1.2 Level of automation

The level of automation is often determined by company's internal process. BusinessNet Connect provides an option how to fully automate these processes. In that case, the command line interface could be used for files upload/download, files encryption/decryption/signature and together with automatically scheduled jobs. Before starting the integration, **think about which processes should be automated**.

E.g. BusinessNet Connect would be used for downloading MT942 statements (with intraday movements) which are then imported into the accounting system but once-a-month invoices would be uploaded classically using the BusinessNet Professional (manual import by a user in an internet browser).

Consider these aspects:

- Is the action needed frequently (e.g. statement needs to be downloaded every 5 minutes)? Use BusinessNet Connect...
- Is the action time sensitive (e.g. payments need to be sent within 5 minutes after the invoice is generated in the accounting system)? Use BusinessNet Connect...
- Does the internal process forbid the file to be touched by a human operator (e.g. it needs to be delivered directly from the accounting system to the Bank)? Use BusinessNet Connect...

But:

- Do you need to authorize payments by multiple persons in the Company and it is not supported by your accounting system? Use BusinessNet Professional...

1.3 Handling non-standard situations

During the integration, we **strongly recommend** to setup internal company processes for cases, when the WebDAV folder is not available (e.g. due to scheduled internet banking maintenance).

As part of these measures, we recommend to:

- Setup service availability monitoring.
- Setup automatic notification about service unavailability – e.g. by email to the IT administrator.
- Setup process for manual or automated reconnection to the WebDAV folder.

2. CONNECTION SETUP TO UNICREDIT BANK

2.1 Technical user password setup

The technical user ID and one-time security code are delivered to the person responsible for the technical email by an email. One-time security code is valid for 2 days and it needs to be changed. To do so, please:

- Open the address <https://cz.unicreditbanking.net> in your internet browser application
- On the login screen, enter the technical user ID into the field "User ID"
- Enter the one-time security code (it has 6 digits) delivered by email into the field "Security Code"
- Click on "Login" button
- In the next step, you will be asked to enter the old security code and to choose a new one
- Once the new security code is set, log out from the internet banking

2.2 WebDAV setup

There are several ways, how to work with the WebDAV folder. You can either access it as:

- a network disk
 - copying a file is then a simple drag&drop of the file
 - or a command line could be used (this mode of work enable the full automation)
- using a file manager – e.g Total Commander

Below you can find several options, how to connect to the WebDAV. We do not describe all possible options – e.g. for Linux, davfs and Cadaver client were successfully tested with BusinessNet Connect.

Windows – Native WebDAV client setup

To setup the WebDAV :

- In the command line, enter (X: corresponds to the disk drive letter, you wish to map the WebDAV folder):
net use X: <https://cz.unicreditbanking.net/webdav/>
- Enter the user ID of the technical user
- Enter the security code (password) for the technical user

Total Commander – File manger for Windows

In order to use Total Commander with WebDAV, you will need to install a plugin::

- Install Total Commander – you can download it here:
<http://www.ghisler.com>
- Install WebDAV plugin– you can download it here:
<http://www.ghisler.com/dplugins.htm>

To setup the connection:

- In the comobox with drives, select "Network Neighborhood" and select "WebDAV" folder. Then pres F7 to create new folder (connection)
- Enter the name of the folder
- Into the field "Connect to", enter:
<https://cz.unicreditbanking.net/webdav/>
- Into the field "User name" enter the user id of the technical user
- Into the field "Password" enter the secure code (password) for the technical user
- Check option "Secure server (via SSL)"
- Uncheck option "Use multi-step upload method"
- Leave all other options unchecked

Linux – Native WebDAV client setup

E.g. in Ubuntu, it could be setup as follows:

- In menu, select the item “File”, then “Connect to a Server” and then “Secure WebDAV (HTTPS)”
- Into the field “Server” enter the value:
<https://cz.unicreditbanking.net/>
- Into the field “Folder” enter the value “/webdav/”
- Into the field “Username” enter the user id of the technical user
- Into the field “Password” enter the secure code (password) for the technical user

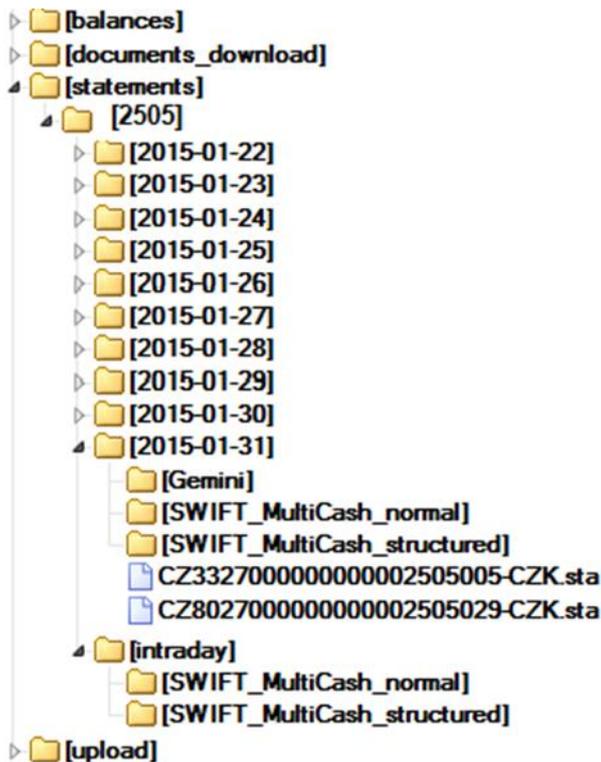
3. FILES DOWNLOAD – ELECTRONIC STATEMENTS

BusinessNet Connect supports following formats for electronic statements:

- Daily statements / MT940 – MultiCash Structured, MultiCash unstructured, Gemini
- Intraday movements / MT942 – MultiCash structured, MultiCash unstructured

Daily statements are available next day at around 7:00.

3.1 Address book structure



In the “statements” folder, in the folder with the identification number of the client (2505 in our example), there are:

- 30 folders containing daily statements MT940 (named by date)
- One folder “intraday” containing statements MT942 with intraday movements

Each folder is divided into subfolders according to the statement format type in which you would find statements as files. Statements are available in all supported formats, so if you for example need daily statement in Gemini format for one accounting system and MT940 MultiCash structured format for another accounting system, you just need to copy a file from the proper folder.

The set of accounts accessible to BusinessNet Connect is based on accounts assigned to the technical user by the contract.

The technical user has read-only rights to these folders.

Remark: Daily statements (MT940) older than 30 calendar days are still available for manual download (export) in BusinessNet Professional – menu Finances > Accounts > Statements

3.2 Naming convention for electronic statement files

The file name always contains IBAN of the account, followed by hyphen and account currency code. In case of the daily statement MT940 in both structured and unstructured MultiCash format, the file extension is “sta”. In case of Gemini format, the file extension is “ace”. For statements with intraday movements MT942, for both structured and unstructured formats the file extension is “vml”.

Example: The file with MT942 statement for the account 2505002 in CZK currency maintained in UniCredit Bank will have the following name: CZ3327000000000002505002-CZK.vml

In case that BusinessNet Connect is configured to encrypt all downloaded statements (see below), then for all formats there is another extension “esc” added.

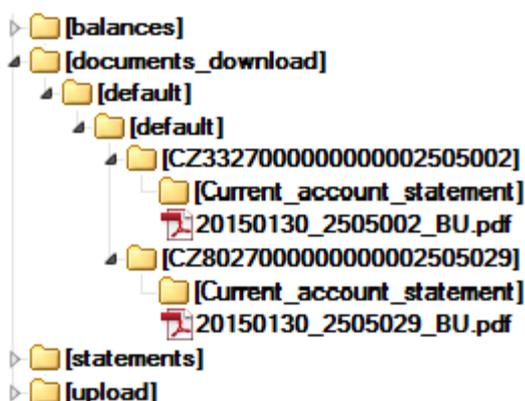
4. FILES DOWNLOAD – ELECTRONIC STATEMENTS

BusinessNet Connect could be used for downloading documents, which are available in BusinessNet Professional in the pdf archive (menu Finances > Documents (PDF)).

In this folder, there are official documents stored and you could find here e.g. current account statements or documents about unexecuted payments.

The work with WebDAV folder is the same as with any other network folder. To make the automated files download possible, there is a hierarchy of folders and files naming convention defined.

3.1 Folders hierarchy



The folder “documents_download” contains on the third level folders corresponding to individual connected accounts. As the folder name, the IBAN form of the account number is used. Every folder contains subfolders for document types (e.g “Current_account_statement” for the current account statement document type) and in those individual documents could be found.

The technical user has read-only rights to these folders.

4.2 Naming convention for document files

The file name convention is different for each document type. In most cases, it contains the document generation date, the account number and the document type abbreviation.

Example: The document with the statement for the current account 2505002 from 30th January 2015 will have name 20150130_2505002_BU.pdf.

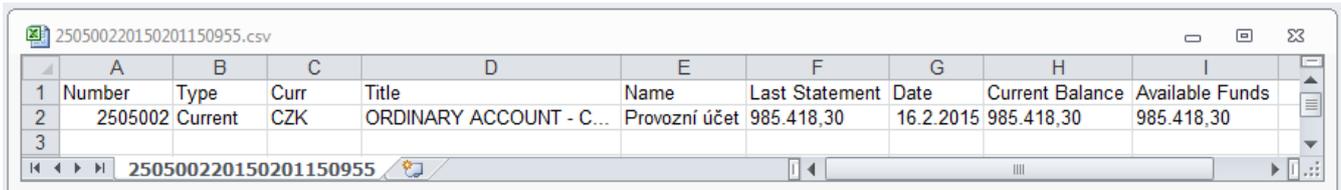
In case that BusinessNet Connect is configured to encrypt all downloaded documents (see below), then for all documents there is another extension “esc” added.

5. FILES DOWNLOAD – BALANCES

BusinessNet Connect could be used for downloading special CSV file which contains information about balances on accounts. It is the same sort of information as in BusinessNet Professional on the screen “Financial Overview” (menu Finances > Accounts).

It contains information about the last statement balance, the current and accounting balance. Actual balances are refreshed based on the time of the technical user login to BusinessNet Connect.

Example of CSV file:

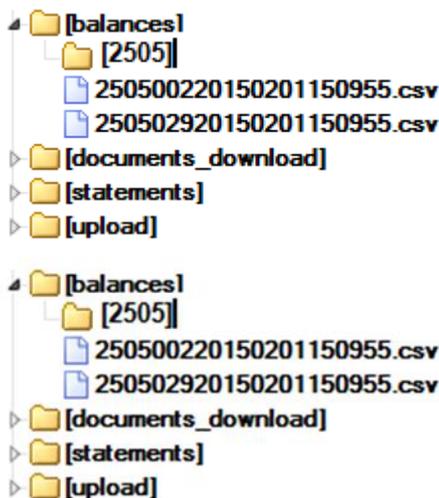


	A	B	C	D	E	F	G	H	I
1	Number	Type	Curr	Title	Name	Last Statement	Date	Current Balance	Available Funds
2	2505002	Current	CZK	ORDINARY ACCOUNT - C...	Provozni účet	985.418,30	16.2.2015	985.418,30	985.418,30
3									

The meaning of columns in the CSV file is following:

- Number – the account number
- Type – the account type
- Curr – the account currency
- Title – more detailed account description, shortened to 20 characters
- Name – own name for the account
- Last Statement – the accounting balance from the last statement
- Date – the date of the last statement
- Current Balance – the actual accounting balance
- Available Funds – the actual available balance

Remark: The folder does not contain any historical files with balances, only the actual file for each of accounts. If you need historical files with balances, you need to download them regularly.



As with any other network folder. To make the automated files download files naming convention defined.

In the folder “balances”, there is a folder with (technical) client number in which there is a separate file with balances for each account.

The technical user has read-only rights to these folders.

5.2 Naming convention for balances files

The file name always contains the account number, the date and time of the file generation.

Example: The file with balances information for the account 2505002 generated on 1st February 2015 at 15:09:55 will have name 250500220150201150955.csv.

In case that BusinessNet Connect is configured to encrypt all downloaded files with balances(see below), then for all files there is another extension “esc” added.

6. ENCRYPTION SETUP AND USAGE FOR DOWNLOAD

There is an **optional choice** for the BusinessNet Connect, that all downloaded files will be encrypted by the Company's public key. This setup needs to be agreed in the contract.

6.1 Technical user's key distribution process

The key is set for the technical user and the person responsible for the technical user needs to send the public key to the bank by email at the address elbn@unicredit.eu. As the subject of the message, the text "Public key to be set for the technical user " followed by the technical user id. The email body should also contain the name of the company. This email could be accepted only if it is send from an **email address**, which was **stated for the user in the key holders section** in BusinessNet Connect contract.

After setting up the key for the technical user, the bank will confirm by an email, that setup was done.

6.2 Key generation for the technical user

BusinessNet Connect supports only Open PGP type of keys. The validity of the key needs to be set to less than 1 year and the key needs to be of RSA type.

For the key generation and maintenance, we recommend using the application **Kleopatra**, which you can download at www.gpg4win.org. Its advantage is that it contains also program with command line interface.

To generate the public/private key pair:

- **Caution:** During the key generation, the following **(non-default options)** need to be chosen, otherwise the key would not work:
 - Kind of key: **RSA (sign only)**
 - Key is valid for: **1y** = 1 year
- Enter in the command line:


```
gpg2 --gen-key
```
- Or use Kleopatra application: Select menu File > New Certificate

To save the public key as a file:

- Enter in the command line:


```
gpg2 --export --armor "key_holder_email_address" > public_key_file_name
```
- Or use Kleopatra application: Select the public key to be exported and click on menu File > Export Certification

To display the list of all public keys:

- Enter in the command line:


```
gpg2 --list-keys
```
- Or use Kleopatra application: Overview screen My Certificates

To display the list of all private keys:

- Enter in the command line:


```
gpg2 --list-secret-keys
```

6.3 Downloaded files decryption

Once you download the file, it needs to be decrypted otherwise it is not readable. The file could be decrypted only on the computer, where the private key for the technical user is stored:

- By entering command in the command line:
gpg --output *output_file_name* --decrypt *encrypted_input_file_name*
- Or use Kleopatra application: Select menu File > Decrypt/Verify files, select the file and choose the operation Decrypt.

7. FORMATS FOR MT940 AND MT942 STATEMENTS

The actual format description for daily statements formats (MT940) and intraday movements formats (MT942) is available at: https://www.unicreditbank.cz/content/dam/cee2020-pws-cz/en-documents/cash-management/BusinessNet_format_description_valid_from_9.10.2017.zip

7.1 MT942 format – How the information is repeated

The MT942 statement downloaded using BusinessNet Connect contains **all MT942 messages**, which were generated on that date. MT942 is thus **not incremental**.

The newest message is added at the end of the statement. When processing the statement, you need to distinguish which transaction were already contained in previous messages and were thus processed.

Individual messages could be distinguished by the field 28C (the statement number and page number) and by the field 13D (time of the message generation) – see the example below.

7.2 MultiCash format MT940/MT942 – How to use paging

When using statement in **MultiCash format**, it needs to be considered that the **paging** is used (similarly as in the case of paper statements). Depending on the volume of information in transactions, the statement is paged by 6-7 transactions. The paging is used for both MT940 and MT942.

Pages could be distinguished by the field 28C – see the example below.

7.3 Example – Structured MultiCash MT942 statement

The following example illustrates information repetition in MT942 statement and the paging as well. First two messages contain one page, the third message contains two pages.

```
{1:F01BACXCZPPAXX0000000000}{2:I942BACXCZPPAXXN}{4:
:20:ACCOUNT OWNER
:25:BACXCZPP/181740736
:28C:650/1
:34F:CZK0,00
:13D:1308290024+0100
:61:1308280828D55099,34FMSC0000000000000000//9202900320000004
:86:999Založení Neměnný termínovaný vklad 060100758839 Počáteční částka: 55.099,34 CZK Od Do Sazba
28.08.2013 11.09.2013 0,11 p.a.
:90D:001CZK55099,34
-}
{1:F01BACXCZPPAXX0000000000}{2:I942BACXCZPPAXXN}{4:
:20:ACCOUNT OWNER
:25:BACXCZPP/181740736
:28C:651/1
:34F:CZK0,00
:13D:1308290702+0100
```

```

:61:1308280828D2,36FCMI000000011111555//9291993980000001
:86:833?00CASH MANAGEMENT?20SWEPT TO L2 1111555
:90D:001CZK2,36
-}
{1:F01BACXCZPPAXX000000000}{2:I942BACXCZPPAXXN}{4:
:20:ACCOUNT OWNER
:25:BACXCZPP/181740736
:28C:652/1
:34F:CZK0,00
:13D:1308291310+0100
:61:1308290829C1,00FTRFPA00024006641706//9231991690000009
:86:051?00S-TUZ-DOSLA/DOM-STNDTRNSF-I?20000000-0002505002/2700?21KS 000000000?22VS 000000019?23SS
000000000?302700?31000000-0801328006?32SENDER
:61:1308290829C2,00FTRFPA00025006687809//9231991700000004
:86:051?00S-TUZ-DOSLA/DOM-STNDTRNSF-I?20000000-0002505002/2700?21KS 000000000?22VS 000000019?23SS
000000000?302700?31000000-0801328006?32SENDER
:61:1308290829C3,00FTRFPA00026006640905//9231991610000004
:86:051?00S-TUZ-DOSLA/DOM-STNDTRNSF-I?20000000-0002505002/2700?21KS 000000000?22VS 000000019?23SS
000000000?302700?31000000-0801328006?32SENDER
:61:1308290829C4,00FTRFPA00027006687904//9231991620000004
:86:051?00S-TUZ-DOSLA/DOM-STNDTRNSF-I?20000000-0002505002/2700?21KS 000000000?22VS 000000019?23SS
000000000?302700?31000000-0801328006?32SENDER
:61:1308290829C5,00FTRFPA00028006642212//9231991630000004
:86:051?00S-TUZ-DOSLA/DOM-STNDTRNSF-I?20000000-0002505002/2700?21KS 000000000?22VS 000000019?23SS
000000000?302700?31000000-0801328006?32SENDER
:61:1308290829C6,00FTRFPA00029006688504//9231991640000004
:86:051?00S-TUZ-DOSLA/DOM-STNDTRNSF-I?20000000-0002505002/2700?21KS 000000000?22VS 000000019?23SS
000000000?302700?31000000-0801328006?32SENDER
:61:1308290829C7,00FTRFPA00020006640910//9231991600000004
:86:051?00S-TUZ-DOSLA/DOM-STNDTRNSF-I?20000000-0002505002/2700?21KS 000000000?22VS 000000019?23SS
000000000?302700?31000000-0801328006?32SENDER
:90C:007CZK28,00
-}
{1:F01BACXCZPPAXX000000000}{2:I942BACXCZPPAXXN}{4:
:20:ACCOUNT OWNER
:25:BACXCZPP/181740736
:28C:652/2
:34F:CZK0,00
:13D:1308291310+0100
:61:1308290829C8,00FTRFPA00021006687808//9231991660000004
:86:051?00S-TUZ-DOSLA/DOM-STNDTRNSF-I?20000000-0002505002/2700?21KS 000000000?22VS 000000019?23SS
000000000?302700?31000000-0801328006?32SENDER
:61:1308290829C9,00FTRFPA00022006641005//9231991670000004
:86:051?00S-TUZ-DOSLA/DOM-STNDTRNSF-I?20000000-0002505002/2700?21KS 000000000?22VS 000000019?23SS
000000000?302700?31000000-0801328006?32SENDER
:61:1308290829C10,00FTRFPA00023006687411//9231991680000004
:86:051?00S-TUZ-DOSLA/DOM-STNDTRNSF-I?20000000-0002505002/2700?21KS 000000000?22VS 000000019?23SS
000000000?302700?31000000-0801328006?32SENDER
:90C:003CZK27,00
-}

```

8. FILES UPLOAD

BusinessNet Connect supports following payments file formats:

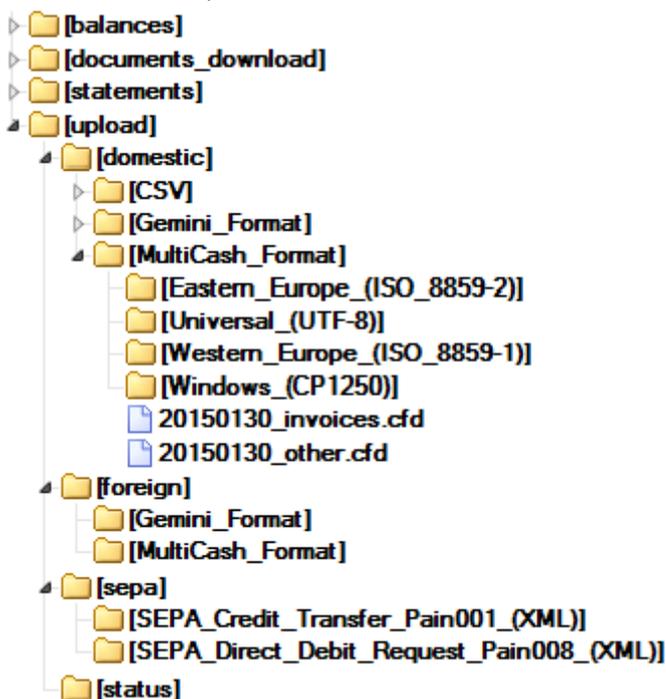
- Domestic payments – CSV, Gemini, MultiCash
- Foreign payments – Gemini, MultiCash
- SEPA payments – pain.001, pain.008

The actual format description for payments files is available at:

http://www.unicreditbank.cz/files/download/electronic_banking/BusinessNet_format_description.zip

The work with WebDAV folder is the same as with any other network folder. To make the automated files upload possible, there is a hierarchy of folders and files naming convention defined.

8.1 Folders hierarchy



In the “upload” folder there are 4 folders:

- domestic
- foreign
- sepa
- status

“Domestic” and “foreign” folder is further divided into subfolders according to the payment file format type and then by the file encoding. The payment file is then simply copied to the appropriate folder – which is equivalent to the upload functionality in BusinessNet Professional. The result of the upload could be checked in the “status” folder (see below).

The set accounts, which could be used in the payment file, is based on accounts assigned to the technical user with the upload rights by the contract.

Each uploaded file needs to have a unique name. We also strongly recommend using date/time as the part of the naming convention. Maximum length of the file name including the file extension is 64 characters.

The technical user has write-only rights for these folders. Because of security reasons, the content of files cannot be read from the WebDAV folder.

8.2 Error handling using the status file

For each uploaded file there is a status file created in the “status” folder. This file contains the result of the upload and summary data about the payment package (similar to the summary data from package details in BusinessNet Professional).

The file name always starts with date and time of the upload followed by the uploaded file name. The file extension is txt.

Example: Payments file named “20130725_invoices.cfd” which was uploaded on 24.10.2013 11:09:31:729 will have a status file the following name: 2013-10-24_11-09-31_729.20130725_invoices.cfd.txt.

The following field **needs to be checked** in the status file after the upload:

- Status – is the status of the uploaded package:
 - If the upload ends up in the “306 (Error)” status, such a package cannot be uploaded and it will not be even listed on the Package overview in the BusinessNet Professional. Correction of the file and re-uploading is needed. See below for error codes.
 - Successfully uploaded file, which is ready for signature, will have status “302 (To sign)”.
 - Partially signed package (special automatic processing setup is needed) will have status “303 (P. signed)”. The signature of such a package needs to be finished in BusinessNet Professional.
 - If the package is finally signed (special automatic processing setup is needed), then the status will be empty.
 - In case of the automatic order processing, the signature process could take up to 5 minutes. The status file is updated afterwards. The result of the signature might need to be rechecked.

We also recommend checking these fields:

- # Orders – is the number of orders in the payment file.
- Checksum – is the sum of all payments amounts (we do not distinguish currency and direction of the payment – it is simply the sum of absolute values).
- # To sign – is equal to zero only if all order were automatically signed (special automatic processing setup). Non-zero value means that the package with orders needs to be signed in BusinessNet Professional.

The attached table should help you to pinpoint the root cause of unsuccessful upload:

Field Status	Root cause
Problems with the technical user account rights	
Status : 306 (Error) IBX00016 (USER HAS NOT IMPORT/UPLOAD RIGHTS FOR THE ACCOUNT Code[IBX00016])	The technical user does not have upload rights for at least one account used in the payment file.
Status : 306 (Error) IBX00188 (Current account not existing Code[IBX00188])	At least one of the accounts used in the file is not assigned to the technical user.
Problems with the file structure	
Status : 306 (Error) IKC00022 (Parsing Impossible Code[IKC00022])	The content of the file could not be parsed. This error could occur for example in these situations: <ul style="list-style-type: none"> • A properly structured file was uploaded into

	<p>a wrong subfolder (e.g. MultiCash domestic payment file into the foreign Gemini subfolder).</p> <ul style="list-style-type: none"> The uploaded file has a wrong structure (e.g. part of the file is corrupted).
Problems with the encryption and signature	
<p>Status : 306 (Error) JWB0524 (Uploaded file was not plain but the chosen transport profile accepts only plain files. (JWB0524))</p>	<p>Problem with file decryption at Bank's side.</p> <p>This error could occur in these situations:</p> <ul style="list-style-type: none"> The uploaded file was encrypted or signed, but BusinessNet Connect is set to accept only plain text files. The uploaded file was uploaded as plain text file (unencrypted), but BusinessNet Connect is set to accept only encrypted files. The uploaded file was not signed, but BusinessNet Connect is set to accept only signed files. The uploaded file was not encrypted and signed, but BusinessNet Connect is set to accept only encrypted and signed files.
<p>Status : 306 (Error) SG74107 (General public key error. (SG74107))</p>	<p>Problem with the type of the user signature key which was user for the file signature.</p> <p>The public key assigned to the user needs to be replaced by the proper type (new key needs to be generated and registered for the user within the Bank).</p>
<p>Status : 306 (Error) SG74106 (General private key error. (SG74106))</p>	<p>Problem with the public Bank's key used for encryption of the uploaded file.</p> <p>The new Bank's public key needs to be downloaded for Bank's website and set in the gpg program.</p>

8.3 Example – Status file of a successful upload

The status file of a successful upload using BusinessNet Connect (the package contains 2 orders and it will be prepared for a signature in BusinessNet Professional):

```
Status : 302 (To sign)
Pay.Type : 1 (Domestic Payment)
Changed : false
Filename : 20130725_invoices.cfd
Type : 1 (Upload)
Structure : 1 (MultiCash format)
Timestamp : 24.10.2013 11:09:25
Checksum : 250.00
Digest : 3183e2d93e6273fc0fa4be8e00cedf20
Errors : 0
# To sign : 2
# Orders : 2
```

```
11111111|CA Europa Test|Reservation|24/10/2013 11:09:25|
11111111||File imported|24/10/2013 11:09:31|
```

8.4 Example – Status file of a failed upload

The status file of a failed upload using BusinessNet Connect (there was an account used in the payment file for which the technical user did not have upload rights):

```
Status : 306 (Error)
      IBX00016 (USER HAS NOT IMPORT/UPLOAD RIGHTS FOR THE ACCOUNT Code[IBX00016])
Pay.Type : 1 (Domestic Payment)
Changed : false
Filename : 20130725_invoices_II.cfd
Type : 1 (Upload)
Structure : 1 (MultiCash format)
Timestamp : 22.11.13 10:01:24
Checksum : 0.00
Digest : 2d8837df68f388a8e24065ed90d62552
Errors : 0
# To sign : 0
# Orders : 0
```

```
25029752| CA Europa Test|Reservation|22/11/2013 10:01:24|
25029752||File imported|22/11/2013 10:02:12|
```

9. ENCRYPTION / SIGNATURE SETUP AND USAGE FOR UPLOAD

There are 3 **optional choices** for the BusinessNet Connect upload setup:

- **Encryption of uploaded files** – files are encrypted by the Bank’s public key before they are uploaded using BusinessNet Connect. The encryption could be set to values No / Mandatory / Optional (the Bank would accept both encrypted and unencrypted files).
- **Electronic signature of uploaded files** – files need to be signed by a digital signature by one of users before they are uploaded using BusinessNet Connect. The digital signature must be assigned a “human” user, it cannot be used for this purpose by the technical user. The encryption could be set to values No / Mandatory / Optional (the Bank would accept both signed and unsigned files).
- **Automatic processing** – if set to Yes, then all digital signature of individual users are legally binding and all orders in the package are considered as if authorized in BusinessNet Professional. The uploaded package is automatically sent to the signature process and in case that orders are finally signed, they are directly processed by the backend. If set to No, the uploaded package is never automatically sent to the signature process (it remains in status “To sign”) and it needs to be signed manually in BusinessNet Professional.

All these settings need to be agreed in the BusinessNet Connect contract.

9.1 User’s public key distribution process

The public signature key is set for the individual user based on a request sent by email at the address elbn@unicredit.eu. As the subject of the message, the text “Public key to be set for the user ” followed by the user id. The email body should also contain the name and surname of the user, followed by the company’s name for which the user should have signature role. This email could be accepted only if it is send from an **email address**, which was **stated in the key holders section** in BusinessNet Connect contract. Only one digital key could be set to one user. This key will be used for all clients the user is assigned to.

After setting up the key for the technical user, the bank will confirm by an email, that setup was done.

9.2 Bank’s public key

The Bank’s public key could be downloaded from the address:

<https://cz.unicreditbanking.net/cmsdocument/unicreditbank.cz.public.asc?itid=2146240913&lq=en>

9.3 Key generation for the user

Key generation is the very same as the one for the technical user - described in the chapter 4.1.

9.4 Encryption of uploaded files

When set as mandatory for the BusinessNet Connect, the uploaded file needs to be encrypted by the Bank’s public key.. To encrypt the file:

- Enter in the command line:
`gpg2 --recipient "bank_public_key_name" --armor --encrypt to_be_uploaded_file_name`
- Or use Kleopatra application: File > Sign/Encrypt Files...

There will be a new file created with the file extension “gpg”. This file could be uploaded.

9.5 Signature of uploaded files

When set as mandatory for the BusinessNet Connect, the uploaded file needs to be signed by one of the users, which is designated as the key holder for the Company. The user's public key needs to be registered/set within the Bank. To sign the file by the user:

- Enter in the command line:
`gpg2 --local-user "user_private_key_name" --armor --sign to_be_uploaded_file_name`
- Or use Kleopatra application: menu File > Sign/Encrypt Files...

There will be a new file created with the file extension "asc". This file could be uploaded.

Caution: If there is an automatic processing set for the BusinessNet Connect, the orders contained in the file are **directly sent to the signature process** upon uploading and if all necessary signatures are met for order, they are **immediately sent for processing**.

9.6 Encryption and signature of uploaded files

When set as mandatory for the BusinessNet Connect, the uploaded file needs to be encrypted by the Bank's public key and signed by one of the users, which is designated as the key holder for the Company. To encrypt and sign the file:

- Enter in the command line:
`gpg2 --local-user "user_private_key_name" --recipient "bank_public_key_name" --armor --sign --encrypt to_be_uploaded_file_name`
- Or use Kleopatra application: menu File > Sign/Encrypt Files...

There will be a new file created with the file extension "asc". This file could be uploaded.

Caution: If there is an automatic processing set for the BusinessNet Connect, the orders contained in the file are **directly sent to the signature process** upon uploading and if all necessary signatures are met for order, they are **immediately sent for processing**.

10. FULL AUTOMATION SCRIPT EXAMPLES

10.1 Files download for daily electronic statements – MS Windows

This example demonstrates how a script for an automated files download could be done using the command line – concretely, it copies in bulk all files with daily statements in the MultiCash structured format which were generated in last 10 days to a local disk into a single folder. Statements for respective days are distinguished by the file name – it contains date in form YYYY-MM-DD.

This example is just a **proof-of-the-concept** and it needs to be further extended (e.g. how to handle erroneous situation such as when the connection to BusinessNet Connect failed) . It was tested on MS Windows 7 32 bit.

Assumptions:

- BusinessNet Connect WebDAV folder is mapped as a w: disk drive.
- Because of the date computation, the Czech localization needs to be set on the computer.
- In order to get the date offset by X days, the datemath script is used - <http://ss64.com/nt/syntax-datemath.html>. Store this script as a file with cmd extension into the same directory from which our copy script is run.

In the script, the following needs to be modified :

- Enter the client name (see the folder hierarchy in chapter 3.1) – variable client.
- Choose the desired statement format type – variable statement_type.
- Choose the destination folder to which statements will be downloaded – variable destination_folder.

```
@ECHO off

SET client="000000000002505"
SET statement_type="SWIFT_MultiCash_structured"
SET destination_folder="your_destination_folder "

ECHO.
ECHO --- BusinessNet Connect Downloader ---
ECHO.

SET i=1

:loop
CALL datemath %date:~9,4% %date:~6,2% %date:~3,2% - %i
SET date_path=%_yy_int%-_%mm_str%-_%dd_str%

ECHO Downloading statements for the date %date_path%...
ECHO.
COPY w:\statements\%client%\%date_path%\%statement_type%\*.* %destination_folder%\*.*%date_path%.sta
ECHO.

SET /a i=%i% + 1
IF %i% LSS 11 goto loop
```

In case, that there is an English localization set on your computer, replace the row for date computation by:

```
CALL datemath %date:~10,4% %date:~4,2% %date:~7,2% - %i
```

10.2 Files download for daily electronic statements - Linux

This example demonstrates how a script for an automated files download could be done using the command line – concretely, it copies in bulk all files with daily statements in the MultiCash structured format which were generated in last 10 days to a local disk into a single folder. Statements for respective days are distinguished by the file name – it contains date in form YYYY-MM-DD in the prefix.

This example is just a **proof-of-the-concept** and it needs to be further extended (e.g. how to handle erroneous situation such as when the connection to BusinessNet Connect failed) . It was tested on Ubuntu 14.04 LTS.

Version with kioclient command

Advantages:

- Downloading files using the command curl or wget **does not require root rights**.

Disadvantages:

- The script contains the user name and the password of the technical user in the text form. **Due to security reasons, the file with the script needs to be protected from other users using file access rights!**

In the script, the following changes are needed:

- Enter the client name (see the folder hierarchy in chapter 3.1) – variable CLIENT.
- Choose the desired statement format type – variable STATEMENT_TYPE.
- Choose the destination folder to which statements will be downloaded – variable DESTINATION_FOLDER.
- Enter the user name and password for the technical user – replace values *user* and *password*.

```
#!/bin/sh
CLIENT="000000000002505"
STATEMENT_TYPE="SWIFT_MultiCash_structured"
DESTINATION_FOLDER="/your_destination_folder"

echo ""
echo "--- BusinessNet Connect downloader ---"
echo ""

for I in 1 2 3 4 5 6 7 8 9 10
do
    DATE=$(date --date='- '$I' day' +"%Y-%m-%d")
    echo ""
    echo "Downloading statements for the date $DATE..."
    echo ""

    STATEMENTS_LIST=$(kioclient ls
webdavs://user:password@cz.unicreditbanking.net:443/webdav/statements/$CLIENT/$DATE/$STATEMENT_TYPE)

    for STATEMENT_NAME in $STATEMENTS_LIST
    do
        if [ $STATEMENT_NAME != '.' ]
        then
            echo "Downloading the file $STATEMENT_NAME..."
        fi
    done
done
```

```

kioclient --noninteractive cp
webdavs://user:password@cz.unicreditbanking.net:443/webdav/statements/$CLIENT/$DATE/$STATEMENT_TYPE/$STATEMENT_NAME $DESTINATION_FOLDER/$DATE'_'$STATEMENT_NAME

fi
done

echo ""
done

```

The command `curl` or `wget` could be used instead of the command `kioclient`. For these two commands, the “download all files” option is not available so downloaded files must be identified by a full name. The variable `STATEMENTS_LIST` needs to list file name separated by a space. From this two disadvantages follow. Whenever there is a new account assigned to the technical user, **the script needs to be updated**. Furthermore, the script cannot be used for downloading files for which **the exact name is not known** – e.g. the status file name contains also the time of the payments time upload including miliseconds. In the script you would need to change the variable `STATEMENTS_LIST` and replace the second occurrence of `kioclient` command:

- `STATEMENTS_LIST="CZ332700000000002505002-CZK.sta CZ802700000000002505029-CZK.sta"`
- `curl -f --user user:password https://cz.unicreditbanking.net/webdav/statements/$CLIENT/$DATE/$STATEMENT_TYPE/$STATEMENT_NAME --output $DESTINATION_FOLDER/$DATE'_'$STATEMENT_NAME`
- `wget -nv --no-check-certificate --auth-no-challenge --output-document $DESTINATION_FOLDER/$DATE'_'$STATEMENT_NAME https://user:password@cz.unicreditbanking.net/webdav/statements/$CLIENT/$DATE/$STATEMENT_TYPE/$STATEMENT_NAME`

Version with davfs file system

Advantages:

- Single command could be used to **download all files in the folder** – it is not necessary do define a list of statement file names and keep it updated.
- The user name and password of the technical user could be **stored in a configuration file**.

Disadvantages:

- For the WebDAV folder mapping, **you will need root rights**. The guide how to map the folder could be found e.g. here: <http://sysblogd.wordpress.com/2007/09/09/ubuntu-mounting-remote-filesystem-using-davfs2-fuse/>.

In the script, the following changes are needed:

- Enter the client name (see the folder hierarchy in chapter 3.1) – variable `CLIENT`.
- Choose the desired statement format type – variable `STATEMENT_TYPE`.
- Enter the source folder into which the WebDAV folder is mapped – variable `SOURCE_FOLDER`.
- Choose the destination folder to which statements will be downloaded – variable `DESTINATION_FOLDER`.

```

#!/bin/sh
CLIENT="0000000000002505"
STATEMENT_TYPE="SWIFT_MultiCash_structured"
SOURCE_FOLDER="/zdrojova_WebDAV_sLozka"
DESTINATION_FOLDER="/cilova_sLozka"

echo ""

```

```
echo "--- BusinessNet Connect downloader ---"
echo ""

for I in 1 2 3 4 5 6 7 8 9 10
do
  DATE=$(date --date='- '$I' day' +"%Y-%m-%d")
  echo ""
  echo "Downloading statements for $DATE..."
  echo ""
  cp -v -f $SOURCE_FOLDER/statements/$CLIENT/$DATE/$STATEMENT_TYPE/*.* $DESTINATION_FOLDER
  echo ""
done
```

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