

**kConnect**

**for**

**IBM i**

**Kisco Connect**

**Version 1.0**



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## Chapter 1 - Kisco Connect Overview

### ***kConnect SMS Messaging using Twilio®***

**With kConnect messaging** you can send SMS messages to cell phone numbers directly from IBM i without using SMTP commands or servers. There is no need to do e-mail-to-SMS conversions that do not work reliably.

Using kConnect, you can also imbed the kSNDSMS command into your existing applications to provide timely alert messages or notifications to your system users or administrators.

kConnect kSNDSMS uses the popular SMS service known as Twilio® to provide the system-to-SMS interface.

## Chapter 2 - Setup Kisco Connect...It's this Easy!

1. Install the kConnect product following the instructions on the Kisco Systems website at [www.Kisco.com](http://www.Kisco.com)

Guidance on the use of the options on the Kisco Connect Installation Menu will be provided by Kisco support staff as needed.

```
INSTALL                                Kisco Connect                                12/06/22
MPADEV                                Installation Menu                               15:02:54

Select one of the following:
  1. Run initial install procedure
  2. Display installation status
  3. Change installation status
  4. Print documentation
  5. Check Version Information

  6. Process Kisco PTF Package
  7. Prepare Service File for Kisco
  8. Prepare Configuration File for Kisco

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===> _____

F3=Exit   F4=Prompt   F9=Retrieve   F12=Cancel
F13=Information Assistant   F16=System main menu
```

2. Go to [www.twilio.com](http://www.twilio.com) and create a new user account.

Follow the instructions at the link below on how to create your first Twilio® account. You can start with a free TEST account and upgrade the account to a full account later.

You will need to obtain a Twilio® Account SID and the Authorization Key. You will probably want to get a phone number to use from them as well.

<https://www.twilio.com/docs/usage/tutorials/how-to-use-your-free-trial-account>

3. Configure kConnect

After you have your new Twilio® Account SID, Authorization Key and phone number, you are ready to configure kConnect.

- On a 5250 command line, enter the following command:

### GO KCONNECT/KC1

```

KC1                               Kisco Connect   v1.0                12/05/22
MPA1                               Main Menu      13:37:23

Select one of the following:
1. Send SMS Message
2. Display SMS Log File
3. Purge SMS Log File
4.
5. Change kConnect Environment Settings
6. Work with SMS Service Providers
7.
8.

Fast Path
kSndSMS
DspkConLog
PrgkConLog

ChgkConEnv
WrkkConSrv

80. Install Menu
90. Signoff

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```

- Select **Option 6 - Work with SMS Service Providers**

If this is a new installation, you will be prompted to *Add a New Account*.

```

KCSMS02                           Kisco Connect   _____          12/07/22
MPADEV                             Maintain SMS Service Accounts 11:04:46

Provider: TWILIO

Options:
2=Change 3=Copy 4=Delete

Opt Account ID
_ *DEFAULT Notes: Production Twilio Account
.....Add New SMS Account.....
Account ID: _____
SID: _____
AuthKey: _____
Phone#: _____

F12=Return

```

- Enter the SID, AuthKey and phone number you have chosen.

We recommend that you create an account ID of *\*DEFAULT* at this time since that is the default value in the KSNDSMS command.

- Exit the program. You have now configured kConnect

## Chapter 3 - Sending an SMS Message

There are two ways to send an SMS Message using kConnect:

- From the Kisco Connect Main Menu, select **Option 1 – Send SMS Message**
- Use the command **kSndSMS** in library KCONNECT

Both options will show you the following command prompt:

```
kConnect Send SMS Message (KSNDSMS)
Type choices, press Enter.
Send to Phone#(s) . . . . . _____
+ for more values
Message to Send . . . . . _____
_____
_____
Account ID . . . . . *DEFAULT *DEFAULT
Account Name . . . . . TWILIO TWILIO
```

Enter a target phone number and your message text.

If you used the *\*DEFAULT* account ID, just press **ENTER**.

If you used a different Account ID you will need to enter that ID instead of *\*DEFAULT*.

There may be a delay the first time you use the command. When the process completes, you should receive the following:

**SMS Message Sent**

## Chapter 4 - Configuring the kConnect Environment

kConnect can log details about every message sent.

To manage logging, on the Kisco Connect Main Menu (KC1) select **Option 5 – Change kConnect Environment Settings** or use the **CHGKCONENV** command.

By default kConnect logging is active; you can turn logging off or on as needed by changing the *Log SMS Messages?* parameter.

**Note:** If you choose to turn normal logging off, any FAILED messages will still be logged.

```
kConnect Environment Settings (CHGKCONENV)

Type choices, press Enter.

Log SMS Messages? . . . . . *YES          *YES, *NO
Job CCSID Override . . . . . *NONE        *NONE or a valid CCSID
Type of DUO invite to send . . . *SMS         *SMS, *EMAIL
Use SYSIBM HTTP SQL? . . . . . *NO          *YES, *NO
Path to KeyStore . . . . . '/home/kconnect/kconnect.kdb'
```

The *Use SYSIBM HTTP SQL?* parameter (USESYSIBM) is set to \*NO by default, indicating the newer IBM QSYS2 HTTP functions will be used for SMS messages.

For details and considerations on how to set this parameter when sending SMS messages, see Chapter 6 in this guide.

### **Working with the SMS Service Providers**

You eventually will change from a test account to a valid Twilio® production account.

If your TEST account SID is currently assigned to the kConnect \*DEFAULT Account ID, you can re-assign that test SID to a different Account ID.

You may want to assign your new valid Twilio® account to Account ID \*DEFAULT and use that Account ID for PRODUCTION.

To view the list of SMS accounts select **Option 6 – Work with SMS Service Providers** from the Kisco Connect Main Menu (KC1)



```

KCSMS02          Kisco Connect          12/07/22
MPADEV           Maintain SMS Service Accounts 11:17:55

                Provider: TWILIO

Options:
2=Change 3=Copy 4=Delete

Opt Account ID
= *DEFAULT      Notes: TEST Twilio Account
  SID:          ACXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
  AUTHKEY:      36XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
  PHONE#:      15555555555

```

Use **Option 3** on this screen to copy the existing *\*DEFAULT* account to a new named account. This example copies *\*DEFAULT* to a new TEST account.

```

-----Copy Account ID-----
Copy FROM Account ID: *DEFAULT
Copy TO Account ID: TEST
New Note: Test SMS Account.
                                     F12=Return

```

After the account is copied to a new TEST account, use **Option 2** on the original *\*DEFAULT* and change the SID, AuthKey and Phone# to your new PRODUCTION SID account.

```

KCSMS02                               Kisco Connect                               12/07/22
MPADDEV                               Maintain SMS Service Accounts                 11:27:11

                                           Provider: TWILIO

Options:
2=Change 3=Copy 4=Delete

Opt Account ID
 2 *DEFAULT Notes: TEST Twilio Account
   SID:     ACxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
   AUTHKEY: 36xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
   PHONE#:  1555555555
  _ MPATEST Notes: Test

..... Change Account.....

Account ID:  *DEFAULT  PRODUCTION Twilio Account
SID:        ACxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
AuthKey:    36xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Phone#:     1555555555

                                           F12=Return

```

You can now use your new PRODUCTION SID account ID as the *\*DEFAULT* account in kConnect.

You can still use your test account by entering the account name of TEST in the kSndSMS command AccountID field.

```

kConnect Send SMS Message (KSNDSMS)

Type choices, press Enter.

Send to Phone#(s) . . . . . 5551212
+ for more values
Message to Send . . . . . test

Account ID . . . . . TEST *DEFAULT
Account Name . . . . . TWILIO TWILIO

```

## Chapter 5 - SMS Log File

### Viewing the SMS Log file

To view the log entries, from the Kisco Connect Main Menu select **Option 2 – Display SMS Log File (DSPKCONLOG)**

```
KCSMS03          Kisco Connect          11/21/22  16:54:31
MPADEV          kConnect SMS Transmission Log  Selection Filters:
Options:        Date: 2022/11/22
1=SMS Info     5=SMS Message  Time:
Phone:
Sequence: D Ascend/Desc

Displaying the Last Logged Messages.
Opt  Status          Date/Time          To Phone          Message
-  queued          outbound 2022/11/22  16:48:31  6462093303  Test Message
-  Failed          outbound 2022/11/22  11:54:03  6462093303  test bad
-  queued          outbound 2022/11/22  11:52:57  6462093303  Sent from your Twilio
```

Use **Options 1 and 5** to view specific details about the SMS message or any error messages.

```
KCSMS03          Kisco Connect          11/21/22  16:55:31
MPADEV          kConnect SMS Transmission Log
SMS Details          Sent by User: SAFENET
Status: queued          outbound-api
Date: 2022/11/22  16:48:31  From Job: 366567/SAFENET/QPADEV0006
To Phone: 6462093303
From Phone: +12029345172
Msg: Test Message
From Acct ID: ACf6ee8305de937eb5a1e9e1531d31335
#Segs: 1          #Media: 0          Version: 2010-04-01
URI: /2010-04-01/Accounts/ACf6ee8305de937eb5a1e9e1531d31335/Messages/SM920087d
9a5eea33d56b5a37bd093ee40.json

TransID: SM920087d9a5eea9dd58b5a6fbd096ee40
Err Codes:
```

## **Purging the SMS Log file**

If you leave logging active, you may want to purge the log file as it may grow quite large over time.

From the Kisco Connect Main Menu select **Option 3 – Purge SMS Log File (PRGKCONLOG)**.

You can enter a purge thru date or the number of days to retain.

```
kConnect Purge SMS Log File (PRGKCONLOG)
Type choices, press Enter.
Number of Days to Retain . . . . . 030          Number
or a Purge Thru Date . . . . . _____      Date
```

## Chapter 6 - Improving SMS Performance

There are two ways to connect to SMS service providers.

**ORIGINAL METHOD** uses legacy SYSIBM SQL functions and a local Java Virtual Machine (JVM). This method, although very reliable, can be a bit slow to start since it has to start a local JVM.

**NEWER METHODS** for connections are available only on IBM i V7R3 and later with the latest Technology Refresh PTFs. They are much faster and utilize QSYS2 SQL functions that don't rely on a local job JVM to start.

By default kConnect is set to use the original SYSIBM SQL functions. To use the newer functions you must review these steps:

- Populate your DCM Certificate Authorities as described on the following pages in this chapter
- Make sure you are on V7R3 or above with the latest Technology Refresh PTFs installed
- Activate the newer QSYS2 SQL functions.

From the kConnect Main Menu, use **Option 5 – Change kConnect Environment Settings** or the following command to change the kConnect Environment:

**CHGKCONENV USESYSIBM(\*NO)**

```
kConnect Environment Settings (CHGKCONENV)

Type choices, press Enter.

Log SMS Messages? . . . . . *YES          *YES, *NO
Job CCSID Override . . . . . *NONE       *NONE or a valid CCSID
Type of DUO invite to send . . . *EMAIL     *SMS, *EMAIL
Use SYSIBM HTTP SQL? . . . . . *NO        *YES, *NO
Path to KeyStore . . . . . '/home/kconnect/kconnect.kdb'
```

- Test a SMS push to a user. If this doesn't work, review the above steps and the JOBLOG for further information.
- You can revert back to the original method with this command:

**CHGKCONENV USESYSIBM(\*YES)**

## **Changes required to use new QSYS2 SQL functions with SMS messaging**

IBM gives you two choices to connect to the remote servers needed for SMS messaging and authentication.

The newer and better performing method requires some additional setup and configuration.

**Note:** If you choose to NOT make the changes listed below you can use the legacy method by making sure kConnect is set properly. Use **CHGKCONENV USESYSIBM(\*YES)**

If you DO choose to use the new QSYS2 SQL functions with SMS you need to do the following:

1. Make sure you have the new certificate store and the required Certificates are added to the keystore. (see below)
2. Give \*Public authority to lookup the CAs in the keystore for SSL processes by issuing the proper commands listed below.
3. Issue this command to set kConnect's SMS support to use the new SQL functions:

**CHGKCONENV USESYSIBM(\*NO)**

If you receive SQL **38501** errors when attempting to use kSndSMS you need to check the following:

1. Are the two required Certificates populated in your keystore?
2. Does \*Public have \*RX rights to the above directory and the default.kdb file in the directory?

If you continue to have the problem, try changing kConnect back to using the legacy SYSIBM SQL functions by issuing the following command:

**CHGKCONENV USESYSIBM(\*YES)**

Contact Kisco Systems for additional support.

## ***Using an Alternate Digital Certificate store for kConnect***

If you want to use a separate keystore for kConnect, you can either use one provided by Kisco or create your own.

### **Use the keystore provided by Kisco**

Check to see if there is a directory and files in the IFS using

**WRKLNK '/home/kconnect'**

Inside the directory you should find two files - **kconnect.kdb** and **kconnect.RDB**

If the directory or files **ARE NOT** present, you can contact Kisco for instructions on how to restore them OR follow the directions below to create them.

If the directory and files **ARE** present, you will need to re-sync the DCM passwords to the new certificate store using the following steps:

1. Open your DCM web app and open an “other” keystore
2. The “other” keystore path is **/home/kconnect/kconnect.kdb**

The password is **kconnect**

3. Choose the option to change the keystore password and set it to **kconnect2**
4. You will now have to log back into the “other” keystore and then select to change the password again. Change it back to **kconnect**.
5. Change the authority for the certificate store:

**CHGAUT OBJ('/home/kconnect') USER(\*PUBLIC) DTAAUT(\*RX)  
SUBTREE(\*ALL)**

Passwords are now re-synced and security updated. You can continue.

## Creating your own certificate store for kConnect

Make a new directory to store the new keystore by issuing this command:

**MKDIR '/home/kconnect'**

1. Open the System DCM at <http://hostname:2006/dcm>
2. Click on *Create Certificate Store*
  - Select a store type of *Other*
  - For PATH enter **/home/kconnect/kconnect.kdb**
  - For password enter “**kconnect**” or something of your choice.
3. Click on *Create*

You should receive a message that the keystore was created and the new keystore name will be displayed on the top of the screen.

If the new keystore name is **NOT** shown, please back up until you can select *Open Certificate Store* and then open the new store at path

**/home/kconnect/kconnect.kdb**

1. Click on *Populate With CAs* > *Select All* > *Populate*
2. Exit the DCM
3. On a command line enter

**CHGAUT OBJ('/home/kconnect') USER(\*PUBLIC) DTAAUT(\*RX)  
SUBTREE(\*ALL)**

Your new kConnect keystore is ready for use.



## **Certificates needed for SMS**

You may have to add Certificate Authorities to the keystore if they are not already populated.

### **To View or Add the CA's to your keystore**

Open the keystore you are using with kConnect in DCM.

You can get to your Digital Certificate Manager normally thru Navigator for i under the **Bookmarks** navigation link or directly via: <http://yourhost:2006/dcm/login>



1. Sign in and select **Open Certificate Store**
2. Click **\*SYSTEM store** or **Other** if you are not using the default keystore.
3. Click **Server/Client Certificate > Populate with CAs > Select All**

Note: you can select only specific CAs but only you can decide which are required thru trial and error.

4. Click on **Populate**

## Chapter 7 - Program examples using kSndSMS in IBM i applications

### *In a CL program:*

```
/*=====*/
/* Example of CL program that executes the KSNDSMS command */
/*=====*/
Pgm
  Dcl Var(&ToPhone#) Type(*Char) Len(16)
  Dcl Var(&ToMsg) Type(*Char) Len(1600)

  /* enter a valid &ToPhone# below */
  ChgVar &ToPhone# Value('9991112222')
  ChgVar &ToMsg Value('Test use example in CL program ')

  /* Send the message */
  KConnect/KSndSms ToPhone(&ToPhone#) ToMsg(&ToMsg)

EndPgm
```

### *In an RPG program using QCMDEXC:*

```
// this is a code subset that shows example of using RPG to send an SMS message
// define QCMDEXC procedure
dcl-pr RunCmd extpgm('QCMDEXC') ;
  @CmdStrng Char(200) ;
  @Cmdlen Packed(15:5);
end-pr;

// pgm Variables
dcl-s @Cmd Char(200) inz;
dcl-s @Len Packed(15:5) inz;

// these variables below are hardcoded only for example.
// You would normally not hard code either of these two variables.
dcl-s @ToPhone# Char(16) Inz('9995551111'); // <-- enter a valid #
dcl-s @ToMsg Char(1600) Inz('Test Example Message');

// Build Command string to execute
@Cmd = 'KCONNECT/kSndSMS ToPhone(' + %Trim(@ToPhone#) + ')' +
      ' ToMsg(' + @Len + %Trim(@ToMsg) + ')';
@Len = %len(%Trim(@Cmd));

// send the SMS Message
RunCmd(@Cmd :@Len);
```