

# **i2S3**

## **Save/Restore for System i using Amazon S3 Service**

**Version 1.02**

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## Introduction

**i2S3** is a save restore utility for the IBM System i (Power System i/i5/iSeries/AS400) computer system that lets you store and retrieve objects using Amazon's Simple Storage Service (or, **S3**) storage service.

Amazon S3 is a low cost file storage service that can be used for any kind of file storage and is particularly well suited for backups and as an ancillary file storage facility for any website. For both of these purposes, the S3 service is very attractive and almost infinitely scalable for both bandwidth and storage capacity.

For the purposes of this documentation, your system will be referred to as an “**iSeries**” system. This term is used generically and applies to all systems in the System i family, including your **Power System i**, your **i5** system, your **AS/400** system or your **iSeries**.

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## Overview

To use **i2S3**, you will first have to create an active account with the Amazon S3 service. This can be done by using your web browser and going to the following web address:

<http://aws.amazon.com/s3>

You must first create an account at Amazon S3. In the process, Amazon will provide you with an “Access Key” and a “Secret Key”. The Access Key will be all caps while the Secret Key will be mixed case and may contain special characters. Note these down or print the page when they are provided to you.

Using this newly created account, you will then use an option in **i2S3** to create an account record. This will permanently store the account codes and let you create a short account Account Name that will be easier to use when doing save and restore operations with **i2S3**.

Once you have the account and have stored it using **i2S3**, you will then need to create what Amazon S3 calls “buckets”. Think of these as similar to “device names”. A bucket will set aside an area at your Amazon S3 for similarly grouped saved information. Within each bucket, you will store specific save sets from your iSeries. In order to start using **i2S3**, you will need to create and initialize at least one bucket, but you should give some consideration to how you want to use the software and create a bucket structure. There is an option in **i2S3** to create and initialize buckets as needed at Amazon S3.

Once you have at least one bucket defined, then you can start saving objects to Amazon S3 using your **i2S3** software. The product contains a new set of commands for creating saves and restoring from them that correspond to OS commands that you may already be familiar with. The following chart shows the OS commands and their corresponding **i2S3** commands as currently available in

the software:

Command Description	OS Command	i2S3 Command
Save Objects	SAVOBJ	S3SAVOBJ
Save Changed Objects	SAVCHGOBJ	S3SAVCHGOB
Save Library	SAVLIB	S3SAVLIB
Save SaveFile	SAVSAVFDTA	S3SAVSAVF
Save STMF from IFS	SAV	S3SAV
Restore Objects	RSTOBJ	S3RSTOBJ
Restore Library	RSTLIB	S3RSTLIB
Restore SaveFile	(none)	S3RSTSAVF
Restore STMF to IFS	RST	S3RST

These commands can be accessed from the menu system, sed directly from the command line or included in your CL programs. When a save operation is done, the details of what was saved are stored for you to review. Using the interactive feature from the menu system, you will be able to perform restores for an entire set or selectively from within the set that was saved.

### Encryption

Starting with release 1.02 of **i2S3**, all save commands include a parameter option to encrypt the backup set before sending it to Amazon S3 for storage. When you select this option for your backup, you must make sure that you have enough disc space on your system to hold two complete copies of the save set. i2S3 will first move all of the objects included in your save operation into a save file (this is true for all i2S3 saves) and then the set will be encrypted prior to being transferred to Amazon S3 for storage. **When using any encryption option, make sure that you have enough disk space on your system.**

Whenever an encrypted save is processed, i2S3 will automatically generate an encryption key and store it in the i2S3 backup set database. This key will be needed whenever you want to restore an encrypted set back onto your system. If you run the restore from menu option #2 on the MASTER menu, i2S3 will pick up and key for you automatically. If you are doing it from your own application, it is your responsibility to provide the correct key value. Whenever an encrypted save operation is done using i2S3, the key for the completed save is stored in a data area named LASTKEY in the QTEMP library for the session that runs the save. If you are running your own save process, you will need to save this key value.

The encryption process implemented in i2S3 is a variation on the ARC4 streaming encryption

method. The encryption method is proprietary to Kisco Information Systems. Save sets created by i2S3 must be decrypted using i2S3 software routines. You should plan accordingly when implementing data encryption.

## Installation and Security

Specific installation instructions are covered in the section of this manual titled "Installation". To install your product on trial, follow those instructions. i2S3 can be installed from distribution media supplied by Kisco Information Systems or from a download file from the Internet. The initial installation will allow i2S3 to run on your system for a period of at least thirty days. At the end of the trial period, the software will no longer function.

When you decide to keep i2S3, you must send your payment to Kisco Information Systems. At that time, Kisco must know the serial number for your system and the partition number where the software is installed. If you are not sure of this information, go to the INSTALL menu and run option #2. Send this screen information to Kisco Information Systems and they will be able to generate the correct install codes for you.

When Kisco receives your payment, serial number and partition information, they will issue a password to you. This password, when applied, will certify your copy of i2S3 and will permanently activate the software on your system. The password and certification instructions will be provided in writing by email.

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## Kisco Software Support

Kisco Information Systems software support is available from 7am to 6pm eastern time. You can reach software support with the following methods:

Phone: 518-897-5002  
Email: [support@kisco.com](mailto:support@kisco.com)  
Fax: 518-897-5003  
Mail: Kisco Information Systems  
89 Church Street  
Saranac Lake, NY 12983

Off-hours support can be provided for all registered customers with advance notification. Contact our support staff at least 24 hours in advance when you think you will need off-hours support and we will provide instructions for contacting us during that time. If you have unscheduled off-hours support needs, you should place a phone call and send an email request. Support is generally available during off-hours.

Kisco Information Systems provides unlimited software support during your first year of ownership. This includes the time during your free trial. Following the first year of ownership, there is a modest fee structure to maintain support for your software.

The Kisco support policy program works as follows:

1. First year support will continue to be FREE! This will include unlimited telephone

- support, unlimited E-mail support, free release updates and free license transfers.
2. After the first year, an annual charge will apply for support and software maintenance.
  3. The annual fee will be charged at the rate of 15% of the current selling price.
  4. Support covered by this annual fee includes:
    - a. Unlimited telephone support (518-897-5002)
    - b. Unlimited E-mail support (Support@kisco.com)
    - c. Defect analysis and correction
    - d. Free updates to correct known defects (Kisco PTFs)
    - e. Free license transfers (when you upgrade to a different system)
  5. Customers who are not on maintenance will be charged \$100 for each license transfer.

At the end of your first year of ownership, you will receive an invoice from us for your next year's maintenance charge. Non-payment of this invoice will be taken to mean that you decline maintenance.

---

### World Wide Web Support

You can also use the World Wide Web to reach us and to obtain software support information. Just set your web browser to our web address at:

<http://www.kisco.com>

Support information specifically for i2S3 can be found at this address:

<http://www.kisco.com/i2S3/support>

At our Website, you will find:

- Product information about all Kisco software products for the IBM Midrange market.
- Customer support information including:
  - ▶ Latest release level information for all products
  - ▶ Technical bulletins
  - ▶ Frequently asked questions and answers
  - ▶ Problem reports including i2S3 PTF availability
  - ▶ Descriptions for recent enhancements to products
  - ▶ E-mail contact information for getting in touch with us

- Information about consulting services available from Kisco Information Systems.
- Registration for automatic notification about i2S3 enhancements and changes.
- ..... and more

The first time you visit the Customer support section of our website for i2S3, be sure to register for automatic notification. Once you are registered, we will automatically send Email notices to you about upgrades, enhancements and fixes for i2S3 as soon as they become available.

We invite you to visit our Website, use the contact features to let us know what you think. We're always looking for ways to better serve you, our customer.

## Uses For i2S3

The Amazon Simple Storage Service (S3) has a size limitation on individual objects stored of 7GB. Due to this, i2S3 is not always a good candidate for doing full system backup operations.

It can, however, be used for strategic backup operations where you want to save information off-line from your IBM System i processor and you don't want to bother with the need for an operator or a tape drive.

Some strategic uses for i2S3 might include the following:

- Saving copies of source code at a given point in time. This is useful for developers and programmers alike when they are starting a new project, to save a frozen copy of their source code that they can easily go back to.
- Saving a snapshot of an application at a critical point in time to create a baseline that can easily be restored. A good example of this might be at the start of a complex nightly process, a complex month-end closing or at the start of a system conversion project.
- Storage of programs and source code for legal reasons. Some companies are required to keep certain off-site backups for legal reasons. Amazon S3 is well suited for this purpose.
- Storage of backups that might need to be restored to a different system. Amazon S3 can act as a storage intermediary.
- Critical offsite storage for key systems. With i2S3, this can be accomplished without the hassle of checking tapes in and out and making pickup and delivery arrangements. When offsite information is needed, it can be retrieved quickly.
- i2S3 save/restore processing does not require an operator to mount tapes, clear tapes or respond to tape related messages, so they can happen at any point during the day or night.
- For companies already storing web site components using Amazon S3, i2S3 can be used to automate maintenance of those web site files from your IBM System i.
- Distribution of IBM System i objects to multiple platforms in your network. You can upload once to Amazon S3 and then the individual platforms can download from there taking advantage of their high end bandwidth.

## Using i2S3

### The MASTER Menu

When you finish installing the i2S3 product, the MASTER menu will be displayed. At any time, you can get to the menu by keying the following:

GO I2S3LIB/MASTER

The MASTER menu looks as follows:

```

MASTER
MASTER Menu

Select one of the following:

    1.  Work With S3 Buckets                WRKS3BCKS
    2.  Work With S3 Backup Sets           WRKS3SETS

    5.  Save Objects to S3                 S3SAVOBJ
    6.  Save Changed Objects to S3        S3SAVCHGOB
    7.  Save Save File to S3              S3SAVSAVF
    8.  Save Library to S3                 S3SAVLIB
    9.  Save IFS to S3                     S3SAV

   11.  Restore Objects from S3            S3RSTOBJ
   12.  Restore Save File from S3          S3RSTSAVF
   13.  Restore Library from S3            S3RSTLIB
   14.  Restore IFS from S3                S3RST

   20.  Maintain S3 Accounts
   30.  To INSTALL Menu

Selection or command
===>

```

At the bottom of the terminal window, the status bar shows: "I902 - Session successfully started" and "hp LaserJet 1320 PCL 6 on DOT4\_001". The date "22/007" is also visible in the bottom right corner.

The functions used to perform save and restore operations using i2S3 can all be accessed from this single menu. The options are as follows:

- |                             |  |
|-----------------------------|--|
| 1. Work With S3 Buckets     | Lets you create buckets at the Amazon S3 service   |
| 2. Work With S3 Backup Sets | Displays all current backup sets stored at Amazon S3 including details about the objects included with each set. |
| 5. Save Objects to S3       | Runs the S3SAVOBJ command to save objects in a library.  |

- |                               |   |
|-------------------------------|---|
| 6. Save Changed Objects to S3 | Runs the S3SAVCHGOB command to save changed objects in a library.                   |
| 7. Save Save File to S3       | Runs the S3SAVSAVF command to save an existing save file.                           |
| 8. Save Library to S3         | Runs the S3SAVLIB command to save the contents of an entire library.                |
| 9. Save IFS to S3             | Runs the S3SAV command to save objects from a path in the IFS.                      |
| 11. Restore Objects from S3   | Runs the S3RSTOBJ command to restore objects from a back set stored at Amazon S3.   |
| 12. Restore Save File from S3 | Runs the S3RSTSAVF command to restore an individual save file stored at Amazon S3.  |
| 13. Restore Library from S3   | Runs the S3RSTLIB command to restore the contents of a library stored at Amazon S3. |
| 14. Restore IFS from S3       | Runs the S3RST command to restore IFS files stored at Amazon S3.                    |
| 20. Maintain S3 Accounts      | Lets you maintain accounts open with Amazon S3.                                     |
| 30. To INSTALL Menu           | Displays the INSTALL menu.  |

To run any menu option, enter its menu option number and press ENTER.

Each of these menu options will be discussed in greater detail in the following sections of this user's guide.

## Work With S3 Buckets

Before you can create a backup at Amazon S3, you must first create a “bucket”. A bucket is an area at the Amazon S3 service, not unlike a folder on your disk or a library on your System i. In i2S3, you create your bucket and then assign a Bucket ID to it. To start working with this process, use menu option #1 or use the WRKS3BCKS command. The following will be displayed:

```

Session D - [24 x 80]
File Edit View Communication Actions Window Help
Maintain Buckets S3BLIS
Bucket ID . . . . .
Type options, press Enter.
  2=Change  3=Initialize  4=Delete  5=Display
Opt Bucket ID Account Bucket Name Created Date Created Time
_ FILDEV KISCO KISCO_FILDEV 2009-07-09 131323
_ QFUDEV KISCO KISCO-QFUDEV 2009-09-04 141035
_ S3DEV KISCO KISCO_S3DEV 2009-09-08 131851
_ WEBDEV KISCO KISCO_WEBDEV 2009-09-04 131736
F3=Exit F5=Refresh F6=Create Bottom
M d 03/040
I902 - Session successfully started hp LaserJet 1320 PCL 6 on DOT4_001

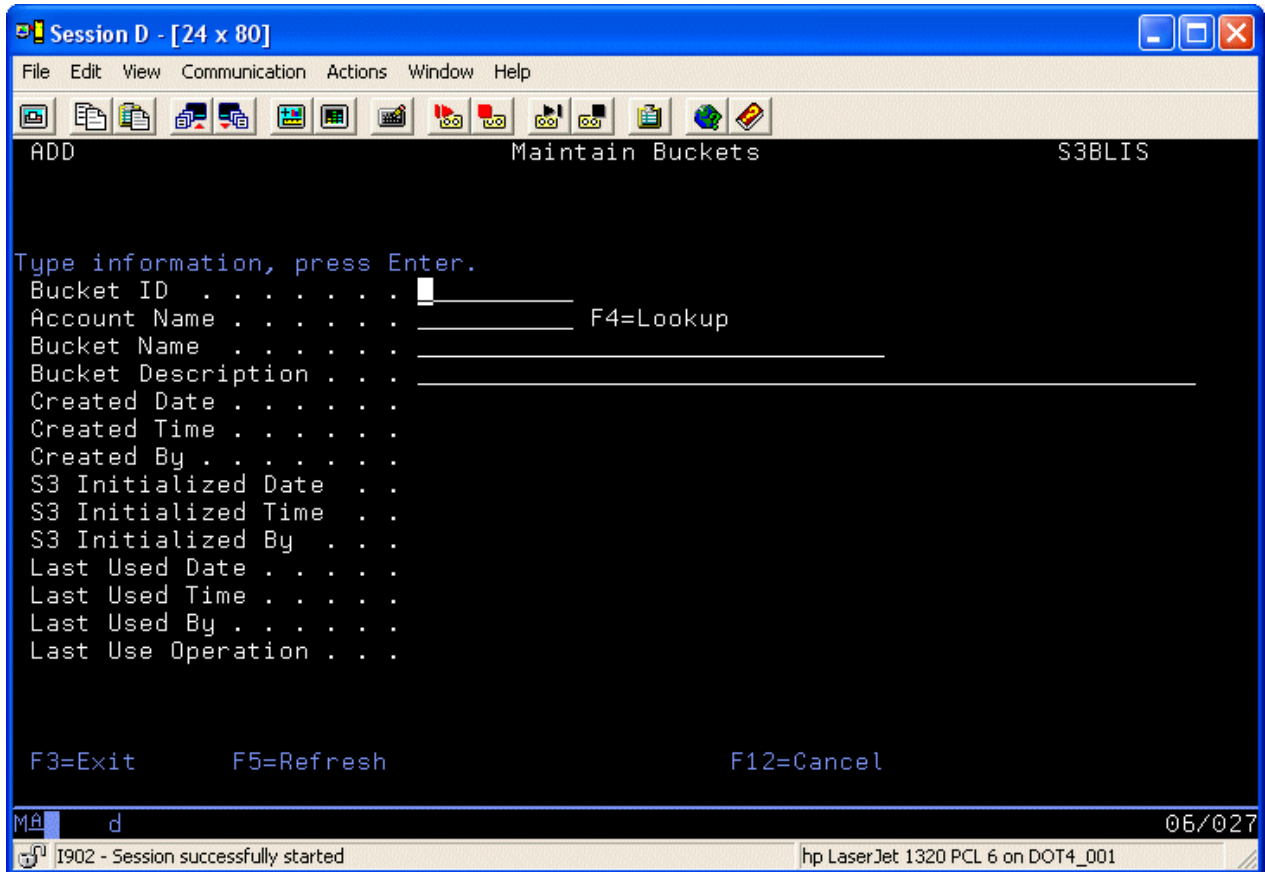
```

This display will show all of the buckets that you already have defined. The first time you use this option, the list will be empty.

Before you can create any buckets, you will need to create an account at Amazon S3 and record that account in the i2S3 product using menu option #20. Please see the section of this manual called “Maintain S3 Accounts” for information on how to set that up and record the account information in i2S3.

To create a new bucket, you must first describe it to i2S3 and then you must initialize it. Describing it to i2S3 will create the Bucket ID and enter the actual bucket information that will be used at Amazon S3.

To start creating a new bucket, press the F6 function key from the above display, when you do, the following will be displayed:



To create the bucket description, just fill in the first four fields on this display as follows:

- |              |  |
|--------------|--|
| Bucket ID    | Create your own unique 10 character bucket ID code. This code will be used for all save and restore functions for objects being stored at Amazon S3 for this bucket.   |
| Account Name | Enter an existing active Account Name that has already been created using menu option #20 in i2S3. You can use the F4 function key to prompt a list of current accounts that have been registered to i2S3.   |
| Bucket Name  | Create the bucket name to be used at Amazon S3 to describe this bucket. The assigned name must be unique and, in fact, must be unique to all buckets currently in use at Amazon S3. Because of this, you should include something that is unique to your company or organization. Kisco recommends that the Amazon S3 Bucket Name not contain any imbedded blank characters. |

Bucket Description    Enter a text description of the bucket you are creating. This is for documentation purposes only.

When you are done, press the ENTER key and the initial bucket description will be created. You will be returned to the previous list of buckets defined to i2S3 on your system.

**Before you can use this bucket**, you must then initialize it. The initialize process actually creates the bucket at Amazon S3. To initialize a bucket, find it in the list of bucket descriptions and place a '3' next to it. Press the ENTER key and the bucket will be set up at Amazon S3. If the bucket is already initialized, you will be advised as much and the process will be suspended. You can check to see if a bucket has been initialized by placing a '5' next to it and checking the S3 Initialized Date and Time fields.

## Work With S3 Backup Sets

To review the current backup sets that you have stored at Amazon S3, use option #2 of the MASTER menu or run the WRKS3SETS command. The following display will be shown:

```

Session D - [24 x 80]
File Edit View Communication Actions Window Help
Work With Backups S3OLIS

Bucket ID  S3 Object Name
_____

Type options, press Enter.
  4=Delete  5=Display  6=Show Object List  8=Restore SAVF  9=Restore Set

Opt Bucket ID  S3 Object Name  Save Description
-  FILDEV      FILDEV-2009.09.04  FILDEV Backup for *ALL Objs
-  OLDCODE     OLDCODE_SAVED_2009.10.09  OLDCODE Backup 2009-10-09
-  QFUDEV     QFUDEV-SOURCE_FILES-2009-09-04  All Q* Source Files - QFUDEV
-  S3DEV      I2S3TEST-S3SAVLIB-2009-11-27  I2S3TESST, S3SAVLIB Encrypted
-  S3DEV      KISCO_htdocs-2009.09.28  Kiscoifa Htdocs Testing
-  S3DEV      KISCO_S3TEST_2009-09-23  S3SAVOBJ *ALL objs in S3TEST
-  WEBDEV     WEBDEV.2009-09-04  SAVE OF ALL WEBDEV OBJECTS

F3=Exit  F5=Refresh

Bottom

M d 04/002
I902 - Session successfully started hp LaserJet 1320 PCL 6 on DOT4_001

```

Whenever a save operation is done within the i2S3 software, a record of the operation is posted to this list. If a save set has been encrypted, it will be displayed in yellow. From this list, you can use the following options on the line item for the saved set:

### Opt Description

- 4 Will delete the backup set at Amazon S3 and also delete all record of the set from this display, including the backup details.
- 5 Will display information about the backup set including the save description used at Amazon S3 along with the date, time and user who created the backup. You will also be able to see information about whether this save set has been retrieved for any restore processing. From the detail display screen, there is an F10 key option that will allow you to display the encryption key used if the save set has been processed with the encryption option.

- 6 Will display a list of the contents of the saved set.
- 8 Will start a process to restore the save file from Amazon S3 to your system. See the description of the S3RSTSAVF command for more details on how this works.
- 9 Will start a process to restore the entire save set from Amazon S3 to your system. Depending on the type of backup created, a different restore command will be prompted. See the description for the various restore commands in i2S3 for more information on how these work.

## Save Commands

Menu options 5 through 9 on the MASTER menu perform the different save functions in i2S3. This section of the documentation will address each function.

### Save Objects to S3

The Save Objects command (S3SAVOBJ) corresponds to the SAVOBJ command in the IBM System i operating system. When you select menu option 5 from the MASTER menu, the following command prompt will be displayed:

```

i2S3 Save Object (S3SAVOBJ)

Type choices, press Enter.

Objects . . . . . _____ Object name, generic*, *ALL
      + for more values
Library . . . . . _____ Library name
S3 Bucket . . . . . _____ F4=List
Object type . . . . . *ALL _____ Object type, *ALL
      + for more values
Destination object name . . . . . _____
Backup Description . . . . . _____

Additional Parameters

Encrypt? . . . . . *NO _____ *NO, *YES
Target release . . . . . *CURRENT _____ *CURRENT, *PRV or VnRnMn

Bottom
F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F13=How to use this display
F24=More keys

Mâ d 05/037
I902 - Session successfully started hp LaserJet 1320 PCL 6 on DOT4_001

```

Fill in the command parameters as follows:

- |           |   |
|-----------|---|
| Objects   | Enter up to 50 object names that you want to include in the backup set. You can use full object names or generic names. |
| Library   | Enter the library name that contains the objects to be saved.   |
| S3 Bucket | Enter the Bucket ID that you want to use. If you are not sure of  |

which Bucket Ids are available, use the F4 key and a list will be displayed for you to choose from.

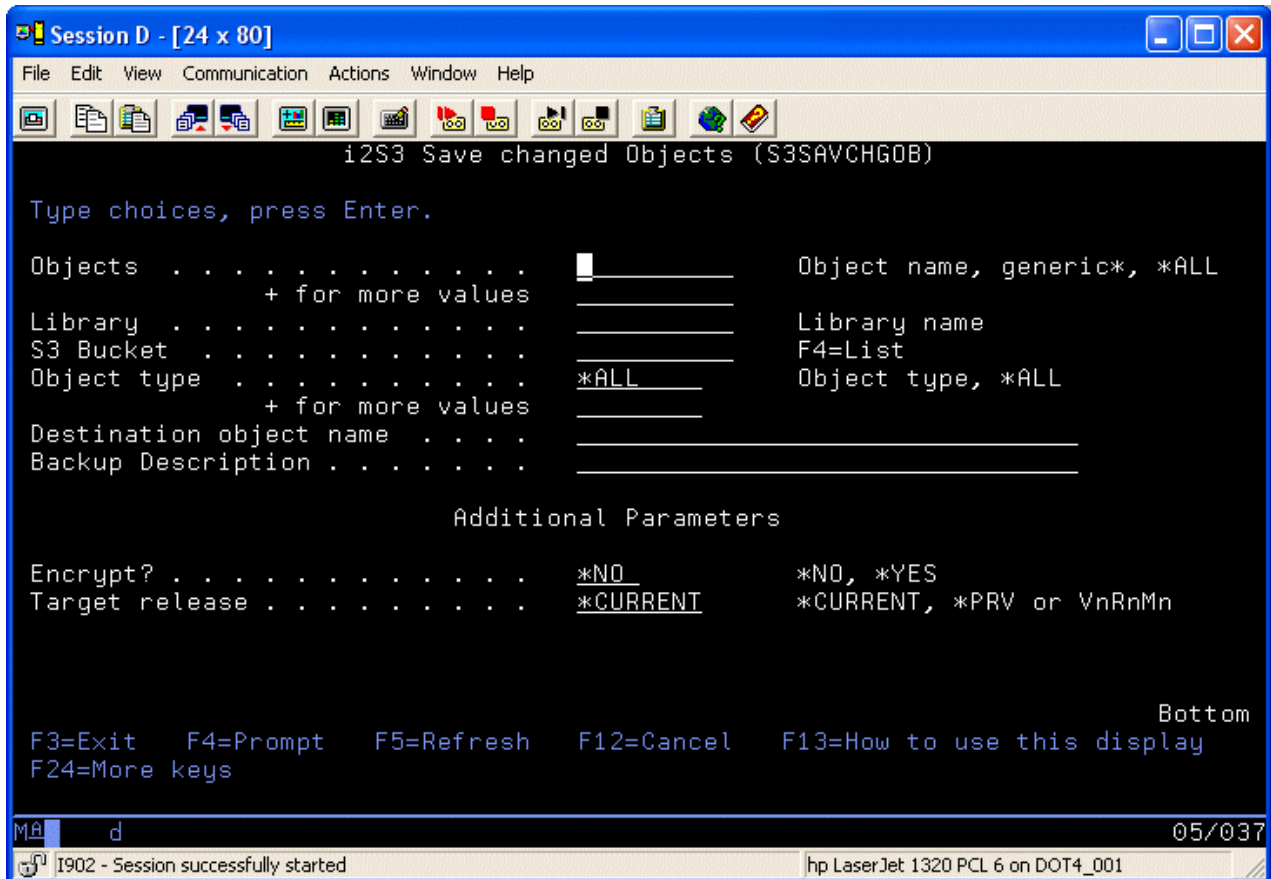
- Object type** Enter up to 50 object type values. If you want to save all object types, just use the special value of \*ALL.
- Destination object name** Enter a name that will be used to identify the save set at Amazon S3. This name must be unique within your bucket. The name should be entered without any imbedded blank characters.
- Backup Description** Enter a text description of the backup set.
- Additional parameters (shown when the F10 key is selected):**
- Encrypt?** If you leave the default value of \*NO, the save set at Amazon S3 will not be encrypted. Changing this value to \*YES will cause i2S3 to encrypt the save set before sending it to S3. An encryption key will be automatically created and stored with the backup set information in i2S3.
- Target release** Choose one of the following values:
- \*CURRENT - the backup set will be created for the current OS release level.
  - \*PRV - the backup set will be created to the immediately previous OS release level.
  - VnRnMn - the backup set will be created for the selected OS release level. This can only be the current OS level, the immediately prior OS level or two levels back on most systems.

**Note:** the size of an individual save set stored at Amazon S3 cannot exceed 7GB. When selecting objects to be saved for a single operation, make sure that this limit is not exceeded.

When these values have been entered, press the ENTER key. i2S3 will package the objects to be saved into a save file, then transmit the save file to Amazon S3. You will see a display of the progress of the transmission at the bottom of the display while it is being sent. When the backup has been stored at Amazon S3, details of what has been saved will be posted to i2S3.

### Save Changed Objects to S3

The Save Changed Objects command (S3SAVCHGOB) corresponds to the SAVCHGOBJ command in the System i OS. When you select option 6 from the MASTER menu or prompt the S3SAVCHGOB command, the following is displayed:



Fill in the command parameters as follows:

- Objects                      Enter up to 50 object names that you want to include in the backup set. You can use full object names or generic names. To save all objects in the library, use the special value of \*ALL.
  
- Library                      Enter the library name that contains the objects to be saved.
  
- S3 Bucket                    Enter the Bucket ID that you want to use. If you are not sure of which Bucket Ids are available, use the F4 key and a list will be displayed for you to choose from.
  
- Object type                  Enter up to 50 object type values. If you want to save all object types, just use the special value of \*ALL.

Destination object name      Enter a name that will be used to identify the save set at Amazon S3. This name must be unique within your bucket. The name should be entered without any imbedded blank characters.

Backup Description              Enter a text description of the backup set.

Additional parameters (shown when the F10 key is selected):

Encrypt?                          If you leave the default value of \*NO, the save set at Amazon S3 will not be encrypted. Changing this value to \*YES will cause i2S3 to encrypt the save set before sending it to S3. An encryption key will be automatically created and stored with the backup set information in i2S3.

Target release                  Choose one of the following values:

\*CURRENT - the backup set will be created for the current OS release level.

\*PRV - the backup set will be created to the immediately previous OS release level.

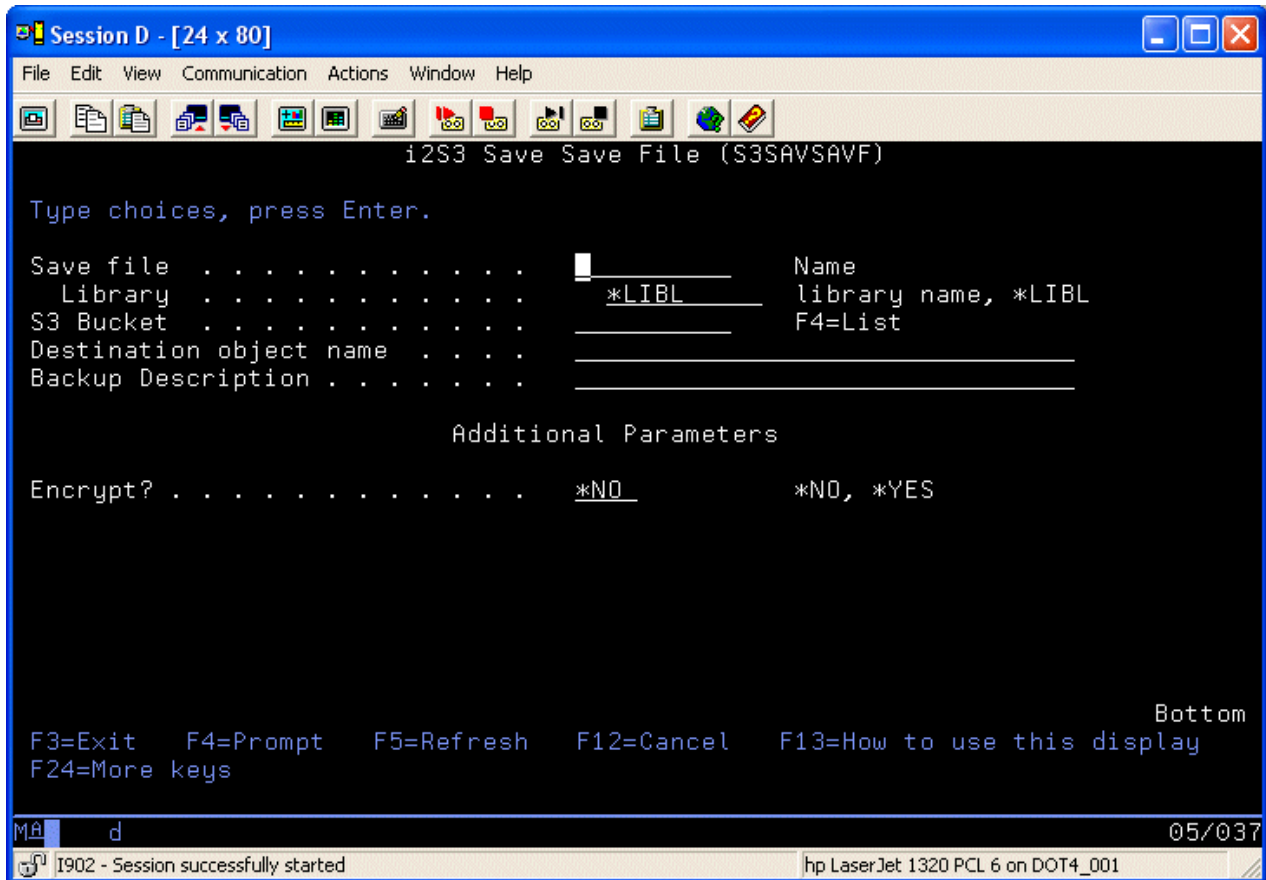
VnRnMn - the backup set will be created for the selected OS release level. This can only be the current OS level, the immediately prior OS level or two levels back on most systems.

**Note:** the size of an individual save set stored at Amazon S3 cannot exceed 7GB. When selecting objects to be saved for a single operation, make sure that this limit is not exceeded.

When these values have been entered, press the ENTER key. i2S3 will package the objects to be saved into a save file, then transmit the save file to Amazon S3. You will see a display of the progress of the transmission at the bottom of the display while it is being sent. When the backup has been stored at Amazon S3, details of what has been saved will be posted to i2S3.

## Save Save File to S3

The Save Save File command (S3SAVSAVF) corresponds to the SAVSAVFDTA command in the IBM System i OS. It allows you to transfer an existing save file to Amazon S3. When you select menu option #7 from the MASTER menu or when you prompt this command, the following will be displayed:



Fill in the command parameters as follows:

- |                         |  |
|-------------------------|--|
| Save file               | Enter the name of the save file and its library to be transferred to Amazon S3. If you leave the library set to *LIBL, then the save file must reside in a library in the current library list for your job. |
| S3 Bucket               | Enter the Bucket ID that you want to use. If you are not sure of which Bucket Ids are available, use the F4 key and a list will be displayed for you to choose from.   |
| Destination object name | Enter a name that will be used to identify the save set at Amazon S3. This name must be unique within your bucket. The name should be entered without any imbedded blank characters.                         |

Backup Description            Enter a text description of the backup set.

Additional parameters (shown when the F10 key is selected):

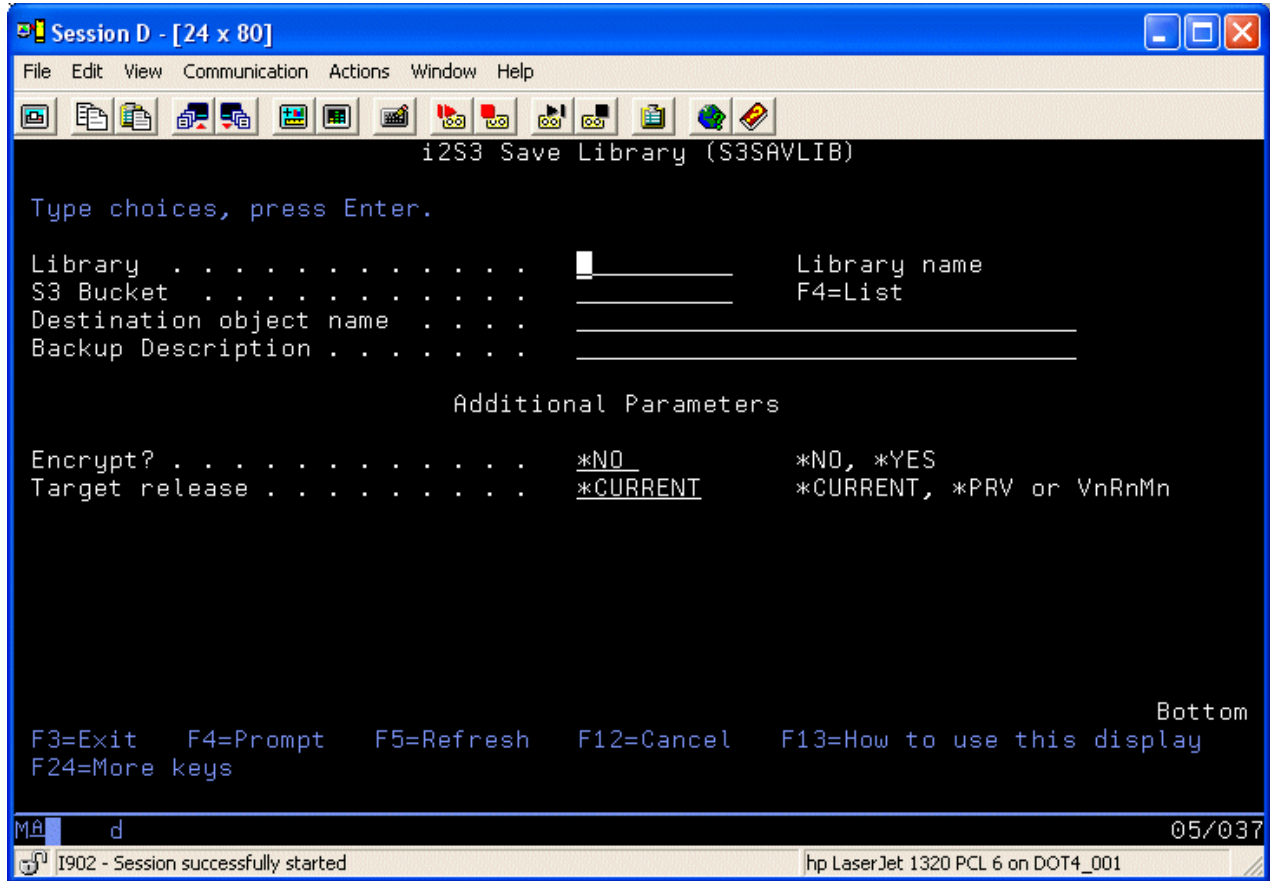
Encrypt?                        If you leave the default value of \*NO, the save set at Amazon S3 will not be encrypted. Changing this value to \*YES will cause i2S3 to encrypt the save set before sending it to S3. An encryption key will be automatically created and stored with the backup set information in i2S3.

**Note:** the size of an individual save set stored at Amazon S3 cannot exceed 7GB. When selecting the save file to be saved, make sure that this limit is not exceeded.

When these values have been entered, press the ENTER key. i2S3 will transmit the save file to Amazon S3. You will see a display of the progress of the transmission at the bottom of the display while it is being sent. When the backup has been stored at Amazon S3, details of what has been saved will be posted to i2S3. The detailed contents of the save file will not be logged, just the save file itself.

Save Library to S3

The Save Library command (S3SAVLIB) corresponds to the SAVLIB command in the IBM System i OS. The contents of an entire library will be transferred to Amazon S3. When you select menu option #8 on the MASTER menu or prompt the command, the following will be displayed:



Fill in the command parameters as follows:

- Library                                      Enter the library name to be saved.
  
- S3 Bucket                                    Enter the Bucket ID that you want to use. If you are not sure of which Bucket Ids are available, use the F4 key and a list will be displayed for you to choose from.
  
- Destination object name                  Enter a name that will be used to identify the save set at Amazon S3. This name must be unique within your bucket. The name should be entered without any imbedded blank characters.
  
- Backup Description                         Enter a text description of the backup set.

Additional parameters (shown when the F10 key is selected):

**Encrypt?** If you leave the default value of \*NO, the save set at Amazon S3 will not be encrypted. Changing this value to \*YES will cause i2S3 to encrypt the save set before sending it to S3. An encryption key will be automatically created and stored with the backup set information in i2S3.

**Target release** Choose one of the following values:

\*CURRENT - the backup set will be created for the current OS release level.

\*PRV - the backup set will be created to the immediately previous OS release level.

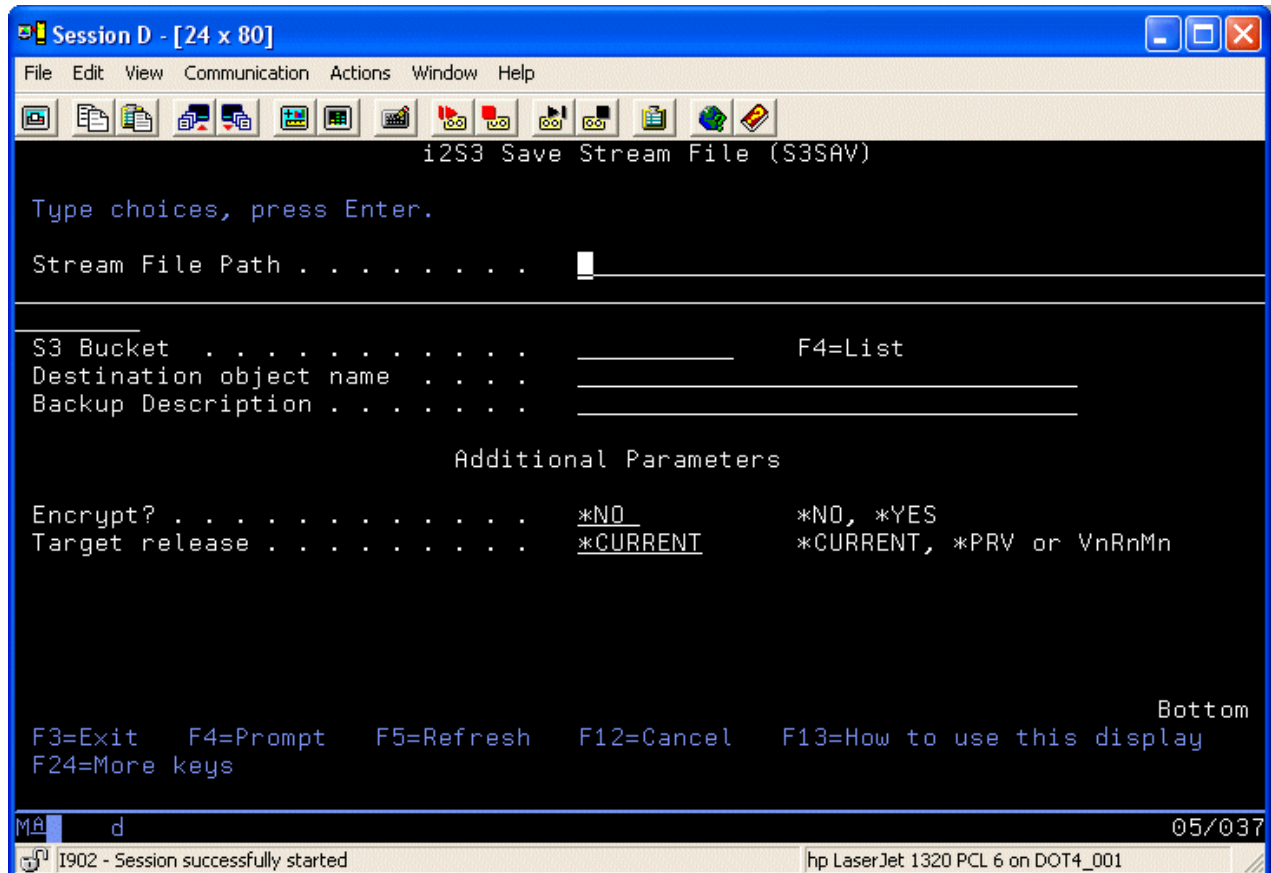
VnRnMn - the backup set will be created for the selected OS release level. This can only be the current OS level, the immediately prior OS level or two levels back on most systems.

**Note:** the size of an individual save set stored at Amazon S3 cannot exceed 7GB. When selecting the library to be saved, make sure that this limit is not exceeded.

When these values have been entered, press the ENTER key. i2S3 will package all objects in the library to be saved into a save file, then transmit the save file to Amazon S3. You will see a display of the progress of the transmission at the bottom of the display while it is being sent. When the backup has been stored at Amazon S3, details of what has been saved will be posted to i2S3.

## Save IFS to S3

The Save IFS command (S3SAV) corresponds to the SAV command in the IBM System i OS. You can use this command to save specific objects from the Integrated File System (IFS) and transfer them to Amazon S3. You can process a single object or a group of objects. When you select menu option #9 or prompt the command, the following will be displayed:



Fill in the command parameters as follows:

**Stream File Path** Enter the path of the IFS file or files that you want transferred to Amazon S3. If you just want to transfer a single file, enter the file name and path in full. If you want to transfer all files in a folder, specify the path to the folder followed by a “/\*”. This will save all files in that folder for transmission.

**S3 Bucket** Enter the Bucket ID that you want to use. If you are not sure of which Bucket Ids are available, use the F4 key and a list will be displayed for you to choose from.

**Destination object name** Enter a name that will be used to identify the save set at Amazon S3. This name must be unique within your bucket. The name should be

entered without any imbedded blank characters.

**Backup Description** Enter a text description of the backup set.

Additional parameters (shown when the F10 key is selected):

**Encrypt?** If you leave the default value of \*NO, the save set at Amazon S3 will not be encrypted. Changing this value to \*YES will cause i2S3 to encrypt the save set before sending it to S3. An encryption key will be automatically created and stored with the backup set information in i2S3.

**Target release** Choose one of the following values:

\*CURRENT - the backup set will be created for the current OS release level.

\*PRV - the backup set will be created to the immediately previous OS release level.

VnRnMn - the backup set will be created for the selected OS release level. This can only be the current OS level, the immediately prior OS level or two levels back on most systems.

**Note:** the size of an individual save set stored at Amazon S3 cannot exceed 7GB. When selecting the files to be saved, make sure that this limit is not exceeded.

When these values have been entered, press the ENTER key. i2S3 will package the file or files to be saved into a save file, then transmit the save file to Amazon S3. You will see a display of the progress of the transmission at the bottom of the display while it is being sent. When the backup has been stored at Amazon S3, details of what has been saved will be posted to i2S3.

## Restore Commands

Menu options 11 through 14 on the MASTER menu perform the different restore functions in i2S3. This section of the documentation will address each function.

### Restore Objects from S3

The Restore Objects from S3 command (S3RSTOBJ) corresponds to the RSTOBJ command from the IBM System i OS. Using this command, you can restore an entire backup set that was created with the S3SAVOBJ command or individual objects within the save set. When you select menu option #11 from the MASTER menu or prompt the command, the following will be displayed:

```

Session D - [24 x 80]
File Edit View Communication Actions Window Help
i2S3 Restore Object(s) (S3RSTOBJ)
Type choices, press Enter.
Objects . . . . . _____ Object name, generic*, *ALL
      + for more values
Library . . . . . _____ Library name
S3 Bucket . . . . . _____ F4=List
Object type . . . . . *ALL _____ Object type, *ALL
      + for more values
S3 object name . . . . . _____
Restore to library . . . . . *SAVLIB _____ Name, *SAVLIB

Additional Parameters
Decryption key . . . . . _____ Key value

Bottom
F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F13=How to use this display
F24=More keys

MA d 05/037
I902 - Session successfully started hp LaserJet 1320 PCL 6 on DOT4_001

```

Fill in the command parameters as follows:

**Objects** Enter up to 50 object names that you want restored from the backup set. You can use full object names or generic names. To restore all objects, use the special value of \*ALL.

**Library** Enter the library name that contained the objects when they were saved.

S3 Bucket	Enter the Bucket ID where the objects were saved. If you are not sure of which Bucket Ids are available, use the F4 key and a list will be displayed for you to choose from.
Object type	Enter up to 50 object type values. If you want to restore all object types, just use the special value of *ALL.
S3 object name	Enter the name that was used to identify the save set at Amazon S3.
Restore to library	If you want to restore the objects to the same library that they were originally saved from, leave this parameter set to the special value of *RSTLIB. To restore the objects to a different library, enter that library name here.

Additional parameters (shown when the F10 key is selected):

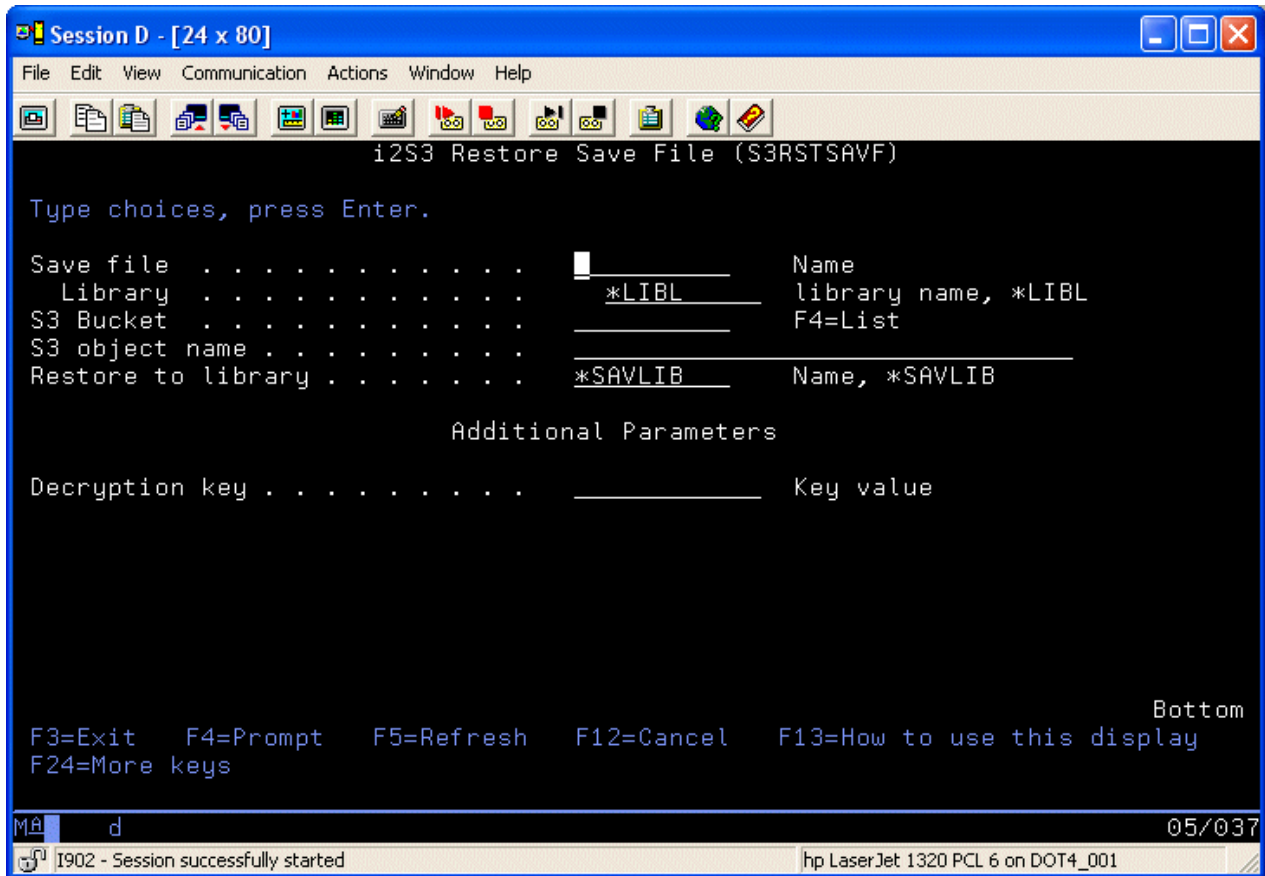
Decryption key	If the save set being restored is not encrypted, leave this field blank. If the set being restored is encrypted, enter the 12 digit encryption key that was created when the save set was first placed at Amazon S3.
----------------	--

When these values have been entered, press the ENTER key. i2S3 will retrieve the original save file from Amazon S3 and store it on your system. During the retrieve process, you will see a display of the progress of the transmission at the bottom of the display. When the backup has been retrieved, then the object restore(s) that you have requested will be processed.

If you have several specific objects that you want to restore from a saved set, you can repeat the restore process for additional objects and the retrieve process will be bypassed since the save file is retained temporarily on your system.

## Restore Save File from S3

The Restore Save File command (S3RSTSAVF) does not have a corresponding equivalent command in the IBM System i OS. This command can be used on any save set stored at Amazon S3 by i2S3. Since all save operations are done using save files, this command can be used to retrieve any save file and place it back on your system. When you select menu option #12 from the MASTER menu or prompt this command, the following will be displayed:



Fill in the command parameters as follows:

- |                |   |
|----------------|---|
| Save File      | Enter the name of the save file. This is the name of the file as you want it when it has been retrieved from Amazon S3. If the specified save file already exists on your system, it will be replaced by the retrieved copy now at Amazon S3. |
| S3 Bucket      | Enter the Bucket ID where the objects were saved. If you are not sure of which Bucket Ids are available, use the F4 key and a list will be displayed for you to choose from.  |
| S3 object name | Enter the name that was used to identify the save set at Amazon S3.   |

Restore to library                      This parameter supports restoring to an alternate library. You can either specify the alternate library in the Save File parameter or here. To simply restore to the library specified in the Save File, leave this parameter set to the special value \*RSTLIB.

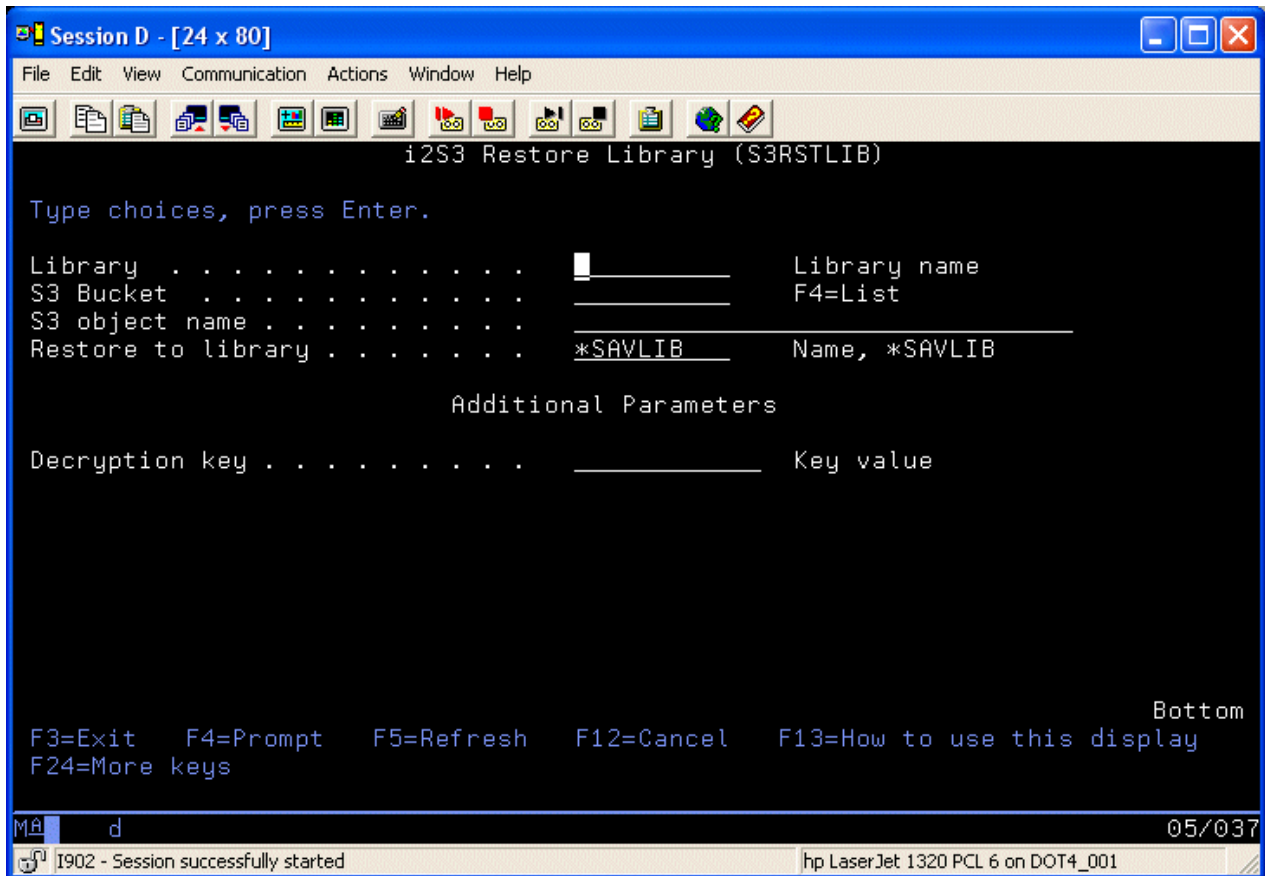
Additional parameters (shown when the F10 key is selected):

Decryption key                          If the save set being restored is not encrypted, leave this field blank. If the set being restored is encrypted, enter the 12 digit encryption key that was created when the save set was first placed at Amazon S3.

When these values have been entered, press the ENTER key. i2S3 will retrieve the original save file from Amazon S3 and store it on your system. During the retrieve process, you will see a display of the progress of the transmission at the bottom of the display. When the backup has been retrieved, the save file will be available for additional processing.

## Restore Library from S3

The Restore Library from S3 command (S3RSTLIB) corresponds to the RSTLIB command in the IBM System i OS. You can use this to restore the entire contents of a library that was saved and stored at Amazon S3 using the S3SAVLIB command. When you choose option #13 from the MASTER menu or prompt for this command, the following will be displayed:



Fill in the command parameters as follows:

- |                    |   |
|--------------------|---|
| Library            | Enter the name of the library as it was originally saved at Amazon S3.  |
| S3 Bucket          | Enter the Bucket ID where the library was saved. If you are not sure of which Bucket Ids are available, use the F4 key and a list will be displayed for you to choose from. |
| S3 object name     | Enter the name that was used to identify the save set at Amazon S3.   |
| Restore to library | If you want to restore the library to the same library that was originally saved from, leave this parameter set to the special value of                                     |

\*RSTLIB. To restore the library as a different library, enter that library name here.

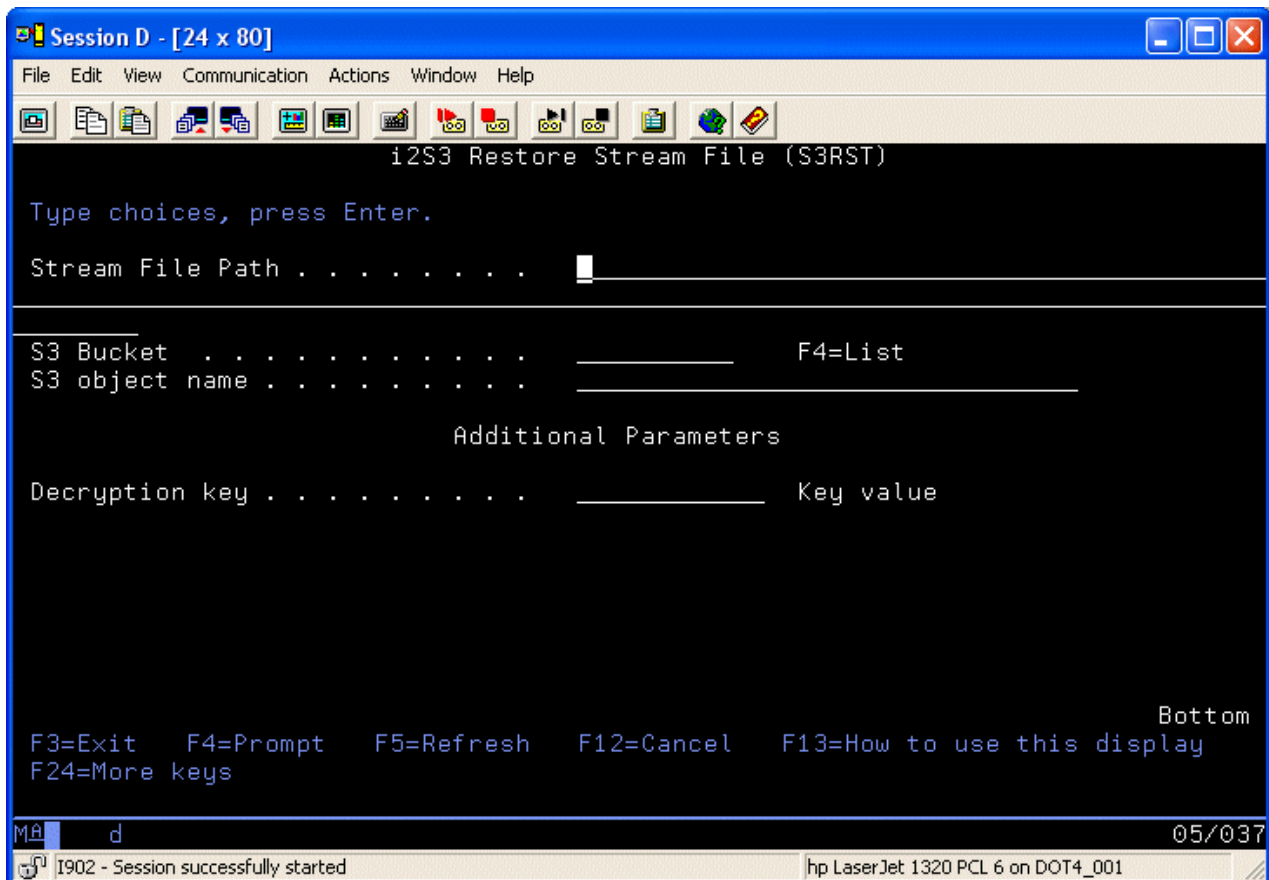
Additional parameters (shown when the F10 key is selected):

Decryption key                      If the save set being restored is not encrypted, leave this field blank.  
If the set being restored is encrypted, enter the 12 digit encryption  
key that was created when the save set was first placed at Amazon  
S3.

When these values have been entered, press the ENTER key. i2S3 will retrieve the original save file from Amazon S3 and store it on your system. During the retrieve process, you will see a display of the progress of the transmission at the bottom of the display. When the backup has been retrieved, then the library restore that you have requested will be processed.

## Restore IFS from S3

The Restore IFS from S3 command (S3RST) corresponds to the RST command in the IBM System i OS. It can be used to restore files to the IFS that were previously saved to Amazon S3 using the S3SAV command. When you select option #14 from the MASTER menu or prompt for this command, the following will be displayed:



Fill in the command parameters as follows:

**Stream File Path**                      Enter the IFS path where you want the files in the save set restored.

**S3 Bucket**                              Enter the Bucket ID where the files were saved. If you are not sure of which Bucket Ids are available, use the F4 key and a list will be displayed for you to choose from.

**S3 object name**                      Enter the name that was used to identify the save set at Amazon S3.

**Additional parameters (shown when the F10 key is selected):**

**Decryption key**                      If the save set being restored is not encrypted, leave this field blank.

If the set being restored is encrypted, enter the 12 digit encryption key that was created when the save set was first placed at Amazon S3.

When these values have been entered, press the ENTER key. i2S3 will retrieve the original save file from Amazon S3 and store it on your system. During the retrieve process, you will see a display of the progress of the transmission at the bottom of the display. When the backup has been retrieved, then the IfS files will be restored to the requested path.

## Installation and Configuration

Before any i2S3 functions will work, the initial install procedure must be run. i2S3 can be installed from media received with a shipment from Kisco Information Systems or from a download file obtained from the Internet. If you received a direct shipment from Kisco, use the *Installation from Media* instructions. If you downloaded a file from the Internet, use the *Installation from Internet* instructions.

---

### Installation from Media

You can install i2S3 by following these easy instructions:

1. Sign on using the QSECOFR user profile.
2. Check the following system values. They should be set as indicated here. If they are not, note the current settings then change them to these settings:

QALWOBJRST - \*ALL  
 QVFYOBJRST - value 3 or lower  
 QFRCCVNRST - value 0

3. Place the installation CD in your system's CD reader and key the following command:

**LODRUN DEV(xxxx)**

where xxxx is the name of your CD drive (normally "OPT01").

4. During installation, i2S3 does the following:
  - Checks to see if this is a new install or an update install.
  - For update installs, the old i2S3 program library is saved in library I2S3OLD and history information is transferred to the newly installed library.
  - For new installs, the software is initialized for the free 30 days trial period.
  - Additional documentation is printed which covers topics that have been added or changed since this user documentation manual was last printed.
5. When the command finishes, your session will return to the command line and a message will be displayed indicating that installation has been completed.
6. If you changed any system values at step #2, reset them back to their original values now.

When the procedure finishes, your copy of i2S3 will be successfully installed for your thirty day trial period. At the end of the trial period, i2S3 will cease functioning until either an extension password or a permanent password is entered. The additional documentation printed during the

installation covers features and functions that have been added or changed since your copy of the manual was updated. Before using i2S3, please review this manual and the additional documentation in detail.

If you upgraded from an earlier release of i2S3, you may delete the library named I2S3OLD created during the installation after you are certain that the new release is working to your satisfaction. Kisco recommends keeping the I2S3OLD library on your system for a period of at least two weeks.

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### Release Upgrade Installation

When Kisco Information Systems completes work on a new Release of i2S3, you will be notified of the availability for the new release. New releases are available as downloads from our website or from a CD shipped to you.

To install an upgrade from media received from Kisco Information Systems, follow the instructions provided along with the upgrade install media.

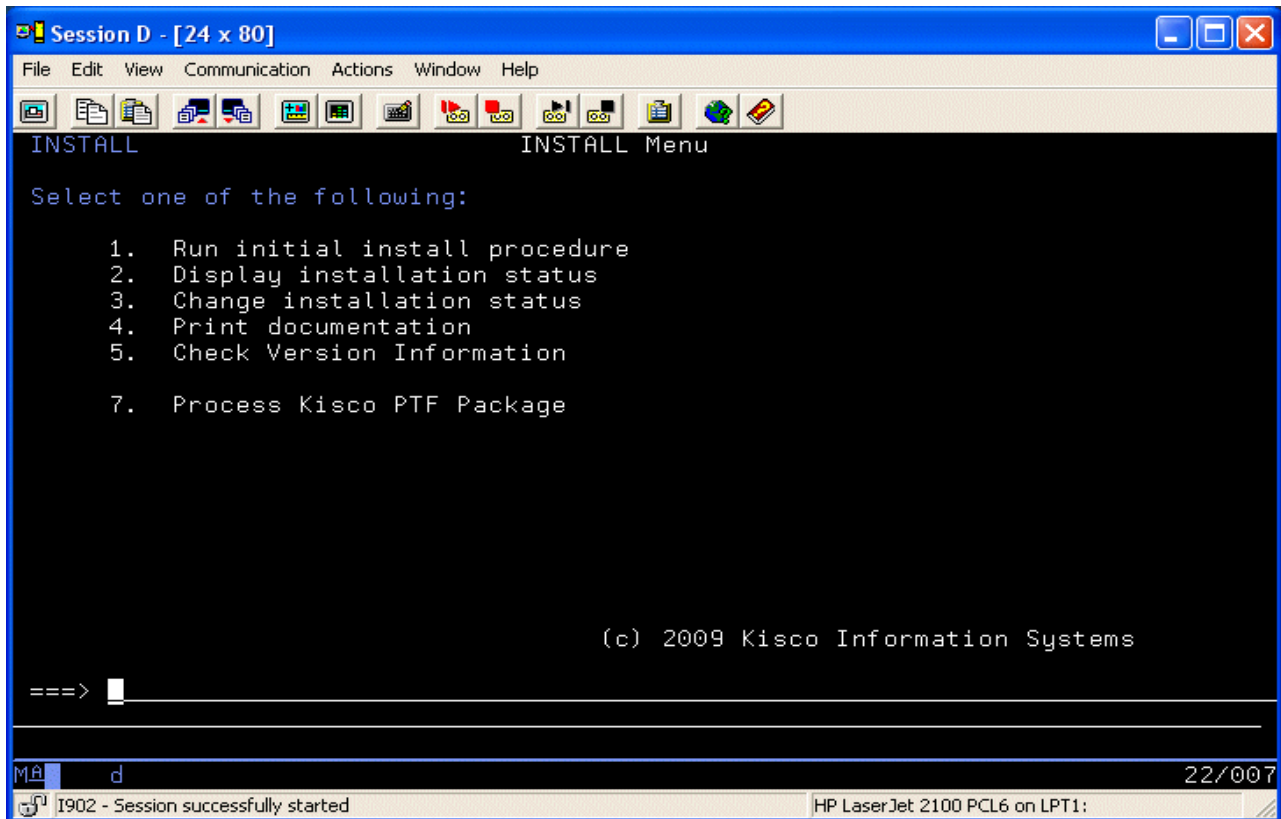
### Installation from Internet

We recommend that you use the install instructions from the i2S3 Download web page. After you download the install file from the website, please print the Download page and use it for reference while completing the installation.

## The Install Menu

You can access the i2S3 INSTALL menu by entering the following command:

GO I2S3LIB/INSTALL



Menu items perform the following functions. Each function is discussed in greater detail later in this document:

- |                                    |  |
|------------------------------------|--|
| 1. Run initial install procedure - | Do not use this option unless directed to do so by Kisco Support staff. This option is automatically run during normal install processing. |
| 2. Display installation status -   | Displays a screen showing the current installation status for the software.  |
| 3. Change installation status -    | Displays the current software installation status and allows for changes to be made.   |
| 4. Print documentation -           | Prints this documentation manual to the default print device.  |

- 5. Check Version Information - Displays information about the specific version of i2S3 that is installed on your system.
- 7. Install Kisco PTF package - Allows you to process a corrective PTF package received from Kisco for program fixes.

## Display installation status

At any time, you can check the current installation status of your copy of i2S3 by selecting this menu option. You must be signed on with security authority of QSECOFR or equivalent. The following screen will be displayed:

```

Session D - [24 x 80]
File Edit View Communication Actions Window Help
Free Trial -- Dynamic Software Security -- INSTALLATION Procedure

Installation for      I2S3LIB      Developer ID code  KISCO
Machine serial number 104A60F      Current Library    I2S3LIB
                        Sec.serial number 104A60F
Machine run date....  090930      Sec.install date.. 090925
                        Sec.expire date..  091115
                        Sec.partition...  001

Security Status INSTALLED ON TRIAL.....Z-004

Please enter:
Type of install ..... █      T for trial, or P for permanent
Install password ....         Blank for trial, or permanent password
New expire date.....         Blank for trial, or 999999 for permanent

Cm3,7-Return to menu      HELP      ENTER-process installation

Free Trial (c)1990, 1992 Monahan
MA d 17/031
I902 - Session successfully started      hp LaserJet 1320 PCL 6 on DOT4_001

```

The message at the center of the screen indicates your current installation status. You should also check the Sec. expire date for an expired trial period. i2S3 may still show as installed on a trial basis but, if the trial is expired, it will no longer function.

The following are the possible status messages that can appear on this display:

<u>Message</u>	<u>Explanation</u>
Z-001 NOT INSTALLED	Trial installation not started
Z-002 TRIAL EXPIRED	Trial period has ended
Z-003 PERMANENTLY INSTALLED	Software is permanently installed
Z-004 INSTALLED ON TRIAL	Software is installed on trial
Z-005 PASSWORD NOT ACCEPTED	Password keyed is not valid
Z-006 WRONG LIBRARY	Programs must run from our library
Z-007 PLEASE RUN TRIAL INSTALL	Must have trial install before perm.
Z-008 INVALID INSTALL REQUEST	Must be P or T
Z-009 INVALID SECURITY (REC#6)	Call Kisco
Z-010 INVALID SECURITY (NO ZZ)	Call Kisco

Z-011 INVALID SECURITY (HASH.)      Call Kisco

### Change installation status

To make changes to your installation status, use this menu option. The changes processed can include both a trial period extension and permanent installation. You must be signed on with QSECOFR security authority or equivalent. When you select this option, the following screen is displayed:

```

Session D - [24 x 80]
File Edit View Communication Actions Window Help
Free Trial -- Dynamic Software Security -- INSTALLATION Procedure

Installation for      I2S3LIB      Developer ID code  KISCO
Machine serial number 104A60F      Current Library    I2S3LIB
Sec.serial number     104A60F      Sec.install date.  090925
Machine run date....  090930      Sec.expire date..  091115
Sec.partition....    001

Security Status INSTALLED ON TRIAL.....Z-004

Please enter:
Type of install ..... █      T for trial, or P for permanent
Install password .... :..... Blank for trial, or permanent password
New expire date..... :..... Blank for trial, or 999999 for permanent

Cm3,7-Return to menu      HELP      ENTER-process installation

Free Trial (c)1990, 1992 Monahon
M# d 17/031
I902 - Session successfully started hp LaserJet 1320 PCL 6 on DOT4_001

```

### Trial extension

To extend a trial period, contact Kisco Information Systems and request an extension. We will provide you with an extension password and new expiration date. On the above screen, enter the following:

Type of install	Enter 'T' for trial
Install password	Enter all six digits of the extension password provided, including any leading zeros
New expire date	Enter the new expiration date in the format YYMMDD (ie: Jan 12, 2006 would be 060112)

When the parameter fields have been completed, press enter to reactivate your software.

### Permanent installation

To permanently install your software package, use the permanent password provided by Kisco Information Systems following receipt of payment. On the above screen, enter the following:

Type of install	Enter 'P' for permanent
Install password	Enter all six digits of the extension password provided, including any leading zeros
New expire date	Enter all 9's (ie: 999999)

When the parameter fields have been completed, press enter. Your software is now permanently installed.

### Print additional documentation

At any time, you can reproduce the additional documentation by using this menu option. A full copy of the additional documentation topics will be printed.

### Display Software Version Information

This menu option will display the current release level and PTF information for your version of i2S3. The developer may need to verify this when working with you on a support issue.

## Install Kisco PTF Package

i2S3 supports distribution of program updates remotely via the Internet. When programs in i2S3 are updated or program fixes are required, Kisco Information Systems can send the updates directly to you via the Internet. If needed, we will send E-mail to you with an attached PC file. This file, when loaded into a folder on your system, can be used to post program updates and changes to your copy of i2S3.

When you receive a PTF update package from Kisco, you will be given an eight character PTF Package Name. There may also be special instructions that come in the email text with the PTF that you will have to take into account. Please read the email message carefully before you start the PTF update process to make sure that any special situations are covered.

To load and apply the PTF to your system, follow these steps:

### Step# Instructions

1. Create a folder on your system named KISCO. You can do this with the following command:

```
CRTFLR FLR(KISCO)
```

Note: This folder only has to be created the first time you install a PTF.

2. From a PC that is attached to your system, move the PTF Package file that you received from Kisco into this folder. If you are not familiar with this process, please check the following URL at the Kisco website for specific instructions:

```
http://www.kisco.com/pctoflr.htm
```

3. Sign on to any terminal or terminal session as QSECOFR.
4. Make sure that no i2S3 functions are in use.
5. Choose option #7 from the INSTALL menu.
6. The command will prompt for two values. The first is the name of the i2S3 application library and should not be changed. The second command must contain the eight character name of the PTF Package File. When both parameters are set, press ENTER and the PTFs will be loaded and applied to your copy of i2S3.
7. All Kisco PTFs are loaded so that the prior version of any program objects is saved. This will allow for the effects of a PTF to be reversed at a later time should a defect be identified in the PTF. This can only be done via direct instruction from a Kisco support representative.

During the PTF installation process, one or two printouts can be created. The first of these will be the PTF Cover Letter Documentation. The second is optional and, if printed, will be a fresh update of the Additional Documentation Topics for all i2S3 changes. Kisco recommends that you read both documents before starting to use i2S3 again.