Installing the Natural IMS Interface

This document describes how to install the Natural IMS Interface (NII)

The following topics are covered:

- Prerequisites
- Installation Tape for the Natural IMS Interface
- Installation Procedure for the Natural IMS Interface
- Customizing the IMS Environment
- Installing the Optional Multi-Session Feature
- Installation Verification

For information on the following topics, refer to Natural under IMS/TM in the Natural TP Monitor Interfaces documentation:

- Environments
- Components
- Special Functions
- User Exits
- Recovery Handling
- Natural IMS/TM Error Codes
  (a list of the error codes and messages that may be issued by the Natural IMS Interface)

Notation *vrs* or *vr*: If used in the following document, the notation *vrs* or *vr* stands for the relevant *version*, *release*, *system maintenance level* numbers.

Prerequisites

The following software must be installed and running before you install the Natural IMS Interface:

- Base Natural under OS/390 (Note that this Natural IMS Interface is applicable to both the Natural Versions 2.3 and 3.1).
- Natural global buffer pool if you are using the MPP environment (strongly recommended).
- Natural roll server if the Natural IMS parameter ROLLSRV is set to YES.
- Authorized Services Manager with the SIP Server function, if the Non-Conversational MPP Interface, Monitoring or Broadcasting is used.
- Authorized Services Manager, if Accounting to SMF is used.
- Adabas/IMS interface.

Installation Tape for the Natural IMS Interface

The installation tape contains the datasets listed in the table below. The sequence of the datasets is shown in the **Report of Tape Creation** which accompanies the installation tape.

Dataset Name	Contents
NII*nnn*.LOAD	Natural IMS-dependent load modules
NII*nnn*.SRCE	Natural IMS-dependent source programs and macros

The notation *nnn* in dataset names represents the version number of the product.

Copying the Tape Contents to Disk

If you do not use System Maintenance Aid, adapt and run job NIITAPE to copy the load and source libraries from tape to disk. NIITAPE is contained in job dataset NAT*nnn*.JOBS on the Natural installation tape. The sample jobs use the sequential datasets directly from tape.

The dataset type and disk space requirements are shown in the **Report of Tape Creation**.

Sample Jobs

The sample jobs are contained in the dataset NAT*nnn*.JOBS and are prefixed with "NII".

Installation Procedure for the Natural IMS Interface

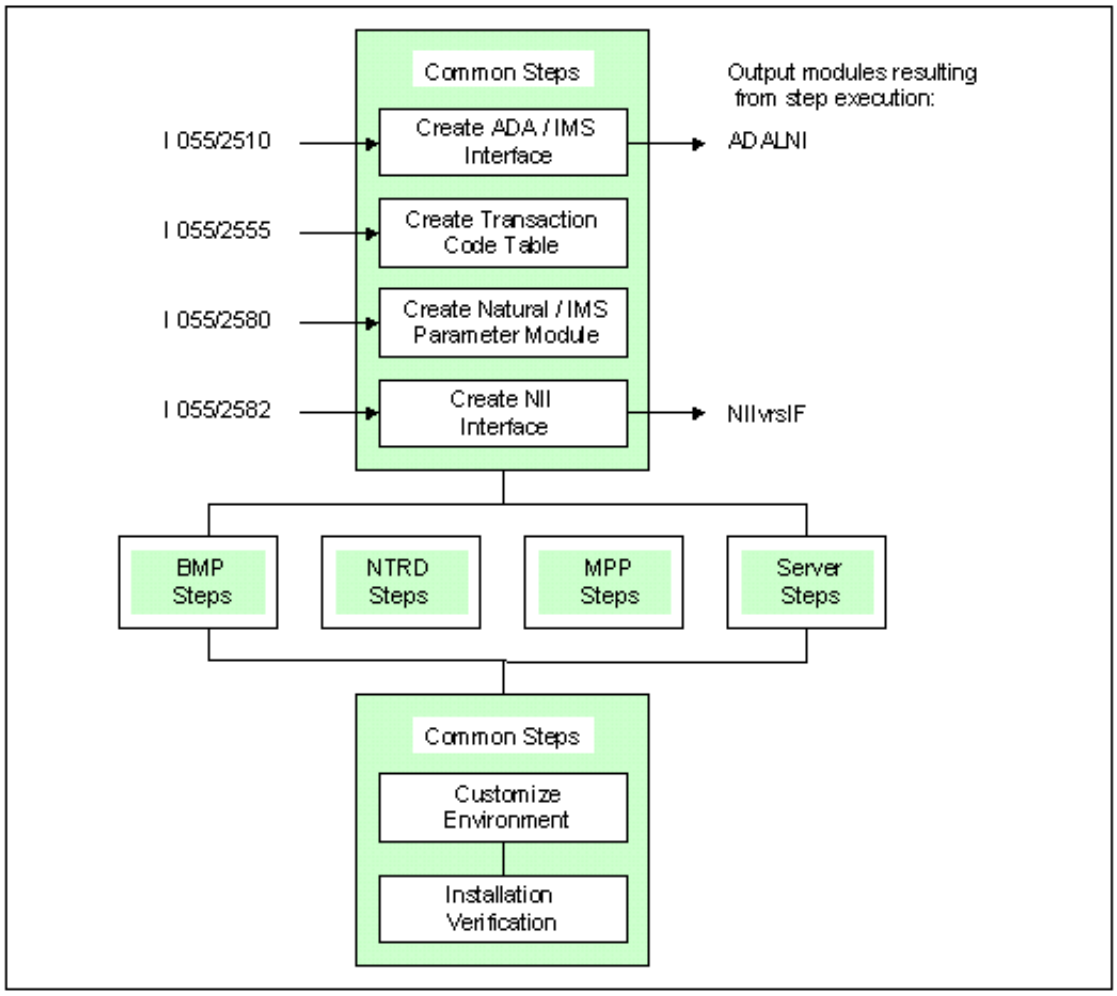
The installation procedure comprises the following:

1. Common Installation Steps
2. Installing the Batch Message Processing BMP Environment
3. Installing the Message-Oriented NTRD Environment
4. Installing the Dialog-Oriented MPP Environment
5. Installing the Natural IMS Server Environment
6. Customizing the IMS Environment

Perform the steps in the sequence indicated above.

Common Installation Steps

The following steps are required to install all environments:



Step 1: Assemble and Link the Adabas/IMS Interface

(Job I055, Step 2510)

1. Modify the member ADALNI from the Adabas/IMS source distribution library to meet your requirements. For further information, see the **Adabas Implementation and Maintenance documentation**.
2. Assemble and link the Adabas/IMS interface.

Step 2: Create and Assemble the Natural IMS Transaction Code Table

(Job I055, Steps 2555 and 2556)

1. Create the Natural IMS transaction code table by including a NIMTRNTG macro for each transaction code used for Natural transactions.

   For further information on the parameters in the NIMTRNTG macro, refer to NIMTRNTG Macro Parameters in the Natural TP Monitor Interfaces documentation.

   If you want to use Natural in non-message-driven BMP or a batch environment, add a NIMTRNTG macro for the PSB used with an arbitrary transaction code.

2. Assemble and link the transaction code table.

Step 3: Create and Assemble the Natural IMS Parameter Module

(Job I055, Steps 2580 and 2581)

1. Create the Natural IMS parameter module by including a NIMPARM macro for each environment needed.

   For information on the parameters for the NIMPARM macro, refer to NIMPARM Macro Parameters (in the Natural TP Monitor Interfaces documentation).

2. Assemble and link the Natural IMS parameter module.

Step 4: Link the Natural IMS Interface Module

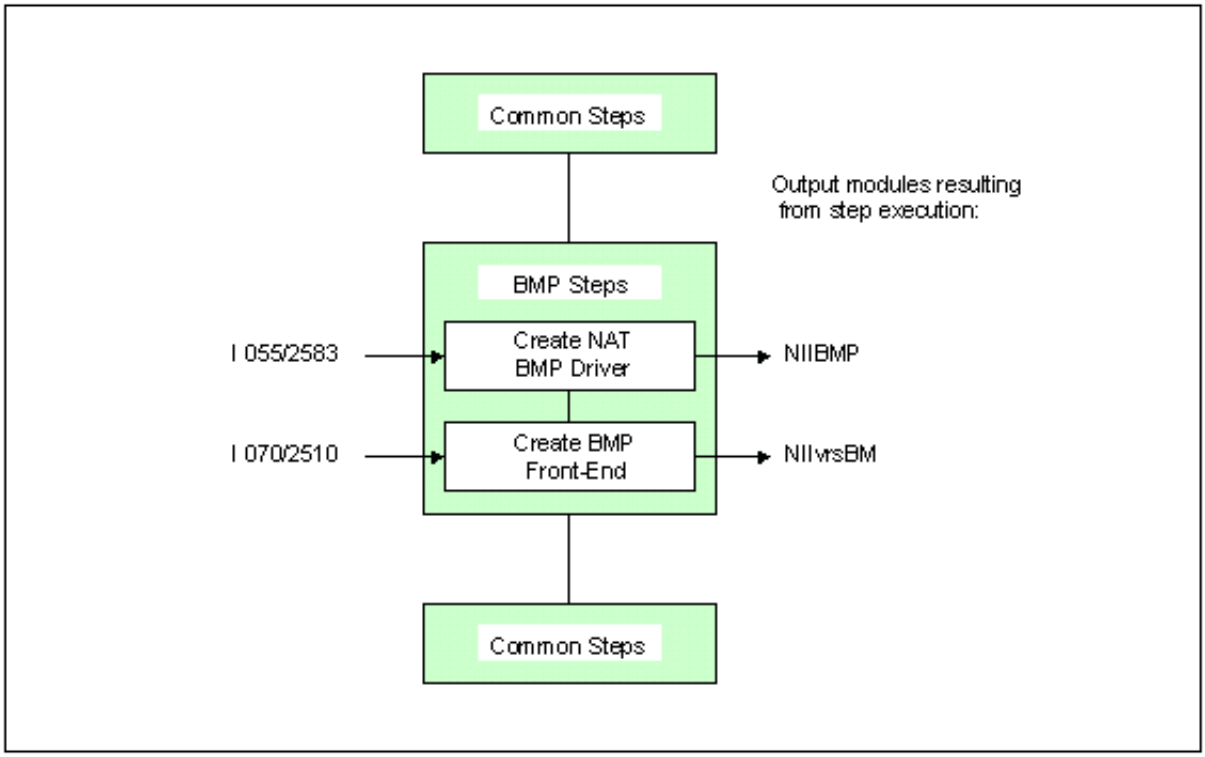
(Job I055, Step 2582)

Link the Natural IMS Interface module.

This module is applicable to all environments.

Installing the Batch Message Processing BMP Environment

The following steps are required to install the Natural IMS BMP environment:



Step 1: Create the Natural IMS BMP Interface

(Job I055, Steps 2583 and 2584)

1. Create the source NIIBMP which contains a call to macro NIMDRIV with the parameter TYPE set to "BMP".

   For further information on the macro NIMDRIV, refer to the NIMDRIV Macro Parameters (in the Natural TP Monitor Interfaces documentation).

2. Assemble and link the Natural IMS BMP interface.
   For CMPRMTB you receive the warning IEW0461. You can ignore this.
   If LE370 is set to YES, you receive the warning IEW0461 for modules starting with CEE. You can ignore this.

Step 2: Link the Natural IMS BMP Front-End

(Job I070, Step 2510)

The front-end consists of the BMP interface created in the previous step and your batch Natural parameter module NATPARM.

1. Specify the name of the Natural batch parameter module with the INCLUDE instruction in the parameter module (Job I060, Steps 0610, 0015).
2. Specify the name of the front-end module used for this link.

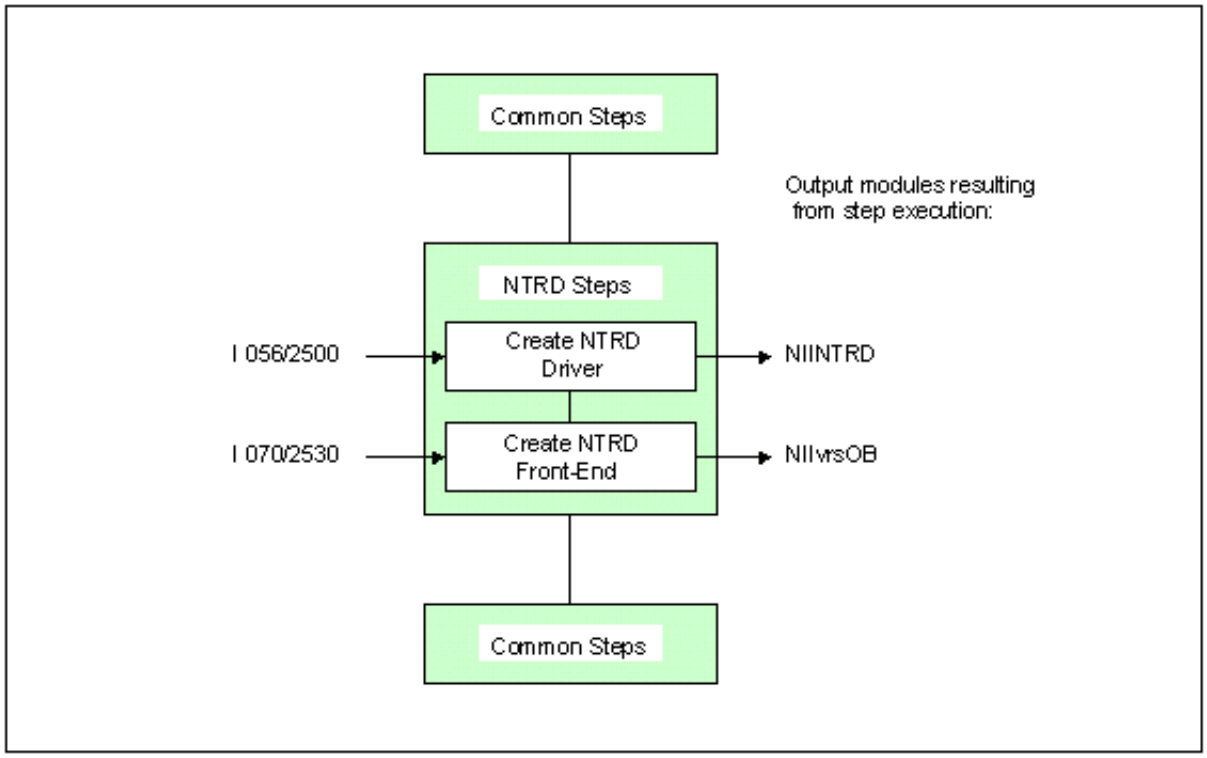
   

   This name must also be specified in your BMP region job as application program name (parameter MBR).

3. Link the front-end for the Natural IMS BMP environment.

Installing the Message-Oriented NTRD Environment

The following steps are required to install the Natural IMS NTRD environment:



Step 1: Create the Natural IMS NTRD Interface

(Job I056, Steps 2500, 2501)

1. Create the source NIINTRD which contains a call to macro NIMDRIV with the parameter TYPE set to "NTRD".
   For further information on the macro NIMDRIV, refer to the NIMDRIV Macro Parameters (in the Natural TP Monitor Interfaces documentation).
2. Assemble and link the Natural IMS NTRD interface.
   For CMPRMTB you receive the warning IEW0461. You can ignore this.
   If LE370 is set to YES, you receive the warning IEW0461 for modules starting with CEE. You can ignore this.

Step 2: Link the Natural IMS NTRD Front-End

(Job I070, Step 2530)

The front-end consists of the NTRD interface created in the previous step and of your batch Natural parameter module NATPARM.

1. Specify the name of the Natural batch parameter module with the INCLUDE instruction in the parameter module (Job I060, Steps 0610, 0015).
2. Specify the name of the front-end module used for this link.

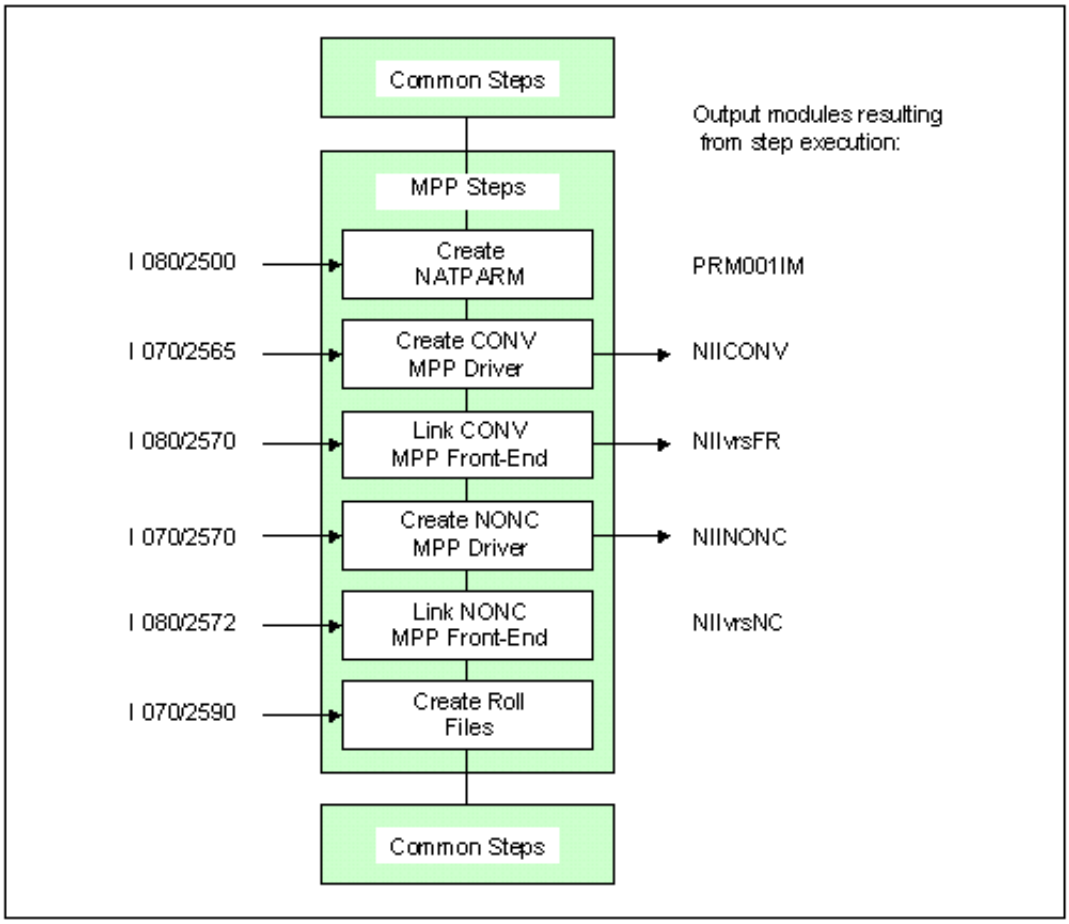
   

   This name must also be specified in the APPLCNT macro as application program name (parameter PSB), if the NTRD front end is invoked direct by transaction code and not by bootstrap module.

3. Link the front-end for the Natural IMS NTRD environment.

Installing the Dialog-Oriented MPP Environment

The following steps are required to install the Natural IMS MPP environment:



Step 1: Create the Online Natural Parameter Module

(Job I080, Steps 2500, 2510)

1. Set the values of the following parameters in the parameter module:

   ```
   FNAT=(dbid,fnat)
     FUSER=(dbid,fuser)
   ```

   where *dbid*, *fnat*, and *fuser* are the values you specified when loading the system files in your base Natural installation.
   For further information, see Installing Natural Under OS/390.

2. To use a global buffer pool, specify the macro NTBPI in the parameter module and set the parameter SUBSID in the profile parameter module.

   It is strongly recommended that you use a global buffer pool.

3. Modify any other parameters in the parameter module whose default values do not meet your requirements. For further information on the parameters contained in the parameter module, refer to Parameter Modules (in the Natural Reference documentation).
4. Assemble and link the Natural parameter module for the dialog-oriented environments.

Step 2: Create the Natural IMS Conversational MPP Interface

(Job I070, Steps 2565,2566)

1. Create the source NIICONV which contains a call to macro NIMDRIV with the parameter TYPE set to "CONV".

   For further information on the macro NIMDRIV, refer to the NIMDRIV Macro Parameters (in the Natural TP Monitor Interfaces documentation).

2. Assemble and link the Natural IMS Conversational MPP interface.

Step 3: Link the Natural IMS Conversational MPP Front-End

(Job I080, Step 2570)

The front-end consists of the Natural IMS Conversational MPP interface created in Step 2 and the online Natural parameter module NATPARM created in Step 1.

1. Specify the name of the online Natural parameter module in the INCLUDE instruction for the parameter module.
2. Specify the name of the front-end module used for this link.

   This name must also be specified in the APPLCNT macro as application program name (parameter PSB).

3. Link the front-end for the Natural IMS Conversational MPP environment.

Step 4: Create the Natural IMS Non-Conversational MPP Interface

(Job I070, Steps 2570, 2571)

1. Create the source NIINONC which contains a call to macro NIMDRIV with the parameter TYPE set to "NONC".
   For further information on the macro NIMDRIV, refer to the NIMDRIV Macro Parameters (in the Natural TP Monitor Interfaces documentation).
2. Assemble and link the Natural IMS Non-Conversational MPP interface.

Step 5: Link the Natural IMS Non-Conversational MPP Front-End

(Job I080, Step 2572)

The front-end consists of the Natural IMS Non-Conversational MPP interface created in the previous step and the online Natural parameter module NATPARM created in Step 1.

1. Specify the name of the online Natural parameter module in the INCLUDE instruction for the parameter module.
2. Specify the name of the front-end module used for this link.

   This name must also be specified in the APPLCNT macro as application program name (parameter PSB).

3. Link the front-end for the Natural IMS Non-Conversational MPP environment.

Step 6: Allocate and Format the Natural IMS Roll Files

(Job I070, Step 2590)

This step is only required if you do not use the roll server.

If you do not want to use the Natural roll file server, you have to allocate and format the roll files to be used by Natural under IMS.

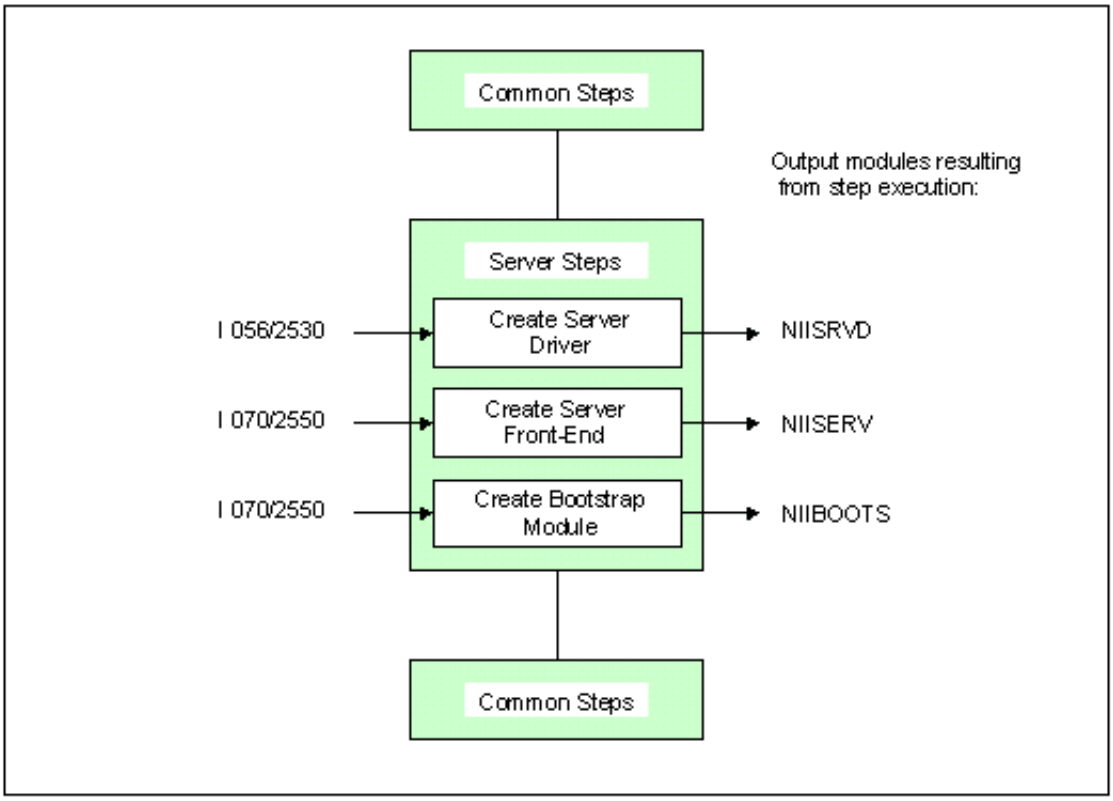
You can allocate up to 5 sequential datasets with a fixed-record format for use as roll files.

1. Allocate the roll files.
2. Format the roll files using the module NATRSRFI.
   Note:
   If you want to share roll files between Natural Version 2.3 and Natural Version 3.1 environments, you have to format the roll files using the Natural Version 2.3 module NATRSFI. Apart from the different version of module NATRSFI, the procedure is identical for Natural Version 2.3 and Natural Version 3.1 roll files.

The roll file initialization program produces a WTO message indicating the number of concurrent users which can be serviced by the roll file.
For information on the roll file facility, refer to Roll Server (in the Natural Operations for Mainframes documentation).

Installing the Natural IMS Server Environment

The following steps are required to install the Natural IMS server environment:



Step 1: Create the Natural IMS Server Interface

(Job I056, Steps 2530, 2531)

1. Create the source NIISRVD which contains a call to macro NIMDRIV with the parameter TYPE set to "SRVD".
   For further information on the macro NIMDRIV, refer to the NIMDRIV Macro Parameters (in the Natural TP Monitor Interfaces documentation).
2. Assemble and link the Natural IMS server interface.
   For CMPRMTB you receive the warning IEW0461. You can ignore this.
   If the Natural installation option LE370 is set to YES, you receive the warning IEW0461 for modules starting with CEE. You can ignore this.

Step 2: Link the Natural IMS Server Front-End

(Job I070, Step 2550)

The front-end consists of the server interface created in the previous step and of your batch Natural parameter module NATPARM.

1. Specify the name of the Natural batch parameter module with the INCLUDE instruction in the parameter module (Job I060, Steps 0610, 0015).
2. Specify the name of the front-end module used for this link.

   This name must also be specified in the NIMBOOT macro as diver name (parameter DRIVERN).

3. Link the front-end for the Natural IMS server environment.

Step 3: Create the Bootstrap Module NIIBOOTS

(Job I056, Steps 2540, 2541)

1. Create the source NIIBOOTS which contains a call to macro NIMBOOT with the parameter SERVER set to "YES". For the DRIVERN parameter, specify the name of the SRV front-end module created in step 2.
2. Assemble and link the Natural IMS bootstrap module.

Customizing the IMS Environment

The following steps require system modifications to your IMS environment.

Step 1: Create the APPLCTN Table Definitions for MPP, BMP and NTRD

MPP Define Sample:

```
APPLCTN PSB=NIIvrsFR,PGMTYPE=TP
      TRANSACT  CODE=NATvrs,MODE=SNGL,SPA=512,
          MSGTYPE=(SNLGSEG,RESPONSE,9)
```

The size of the SPA must be set to at least 157 bytes plus the NRASTART value.

BMP Define Sample (Message-Driven or NAF-specific BMP):

```
APPLCTN PSB=NIIvrsBM,PGMTYPE=BATCH
      TRANSACT  CODE=NATBMP,MODE=SNGL,
          MSGTYPE=(SNLGSEG,RESPONSE,9)
```

This APPLCTN definition is required if you use the CMGETMSG feature.

BMP Define Sample (without Message Queue Processing):

```
APPLCTN PSB=NIIvrsBM,PGMTYPE=BATCH
```

NTRD Define Sample:

```
APPLCTN PSP=NIIvrsOB,PGMTYPE=TP
      TRANSACT  CODE=NATOBMP,MODE=SNGL,
          MSGTYPE=(MULTSEG,NONRESPONSE,10)
```

Step 2: Create the PSB/ACB for both the MPP and BMP

Example for MPP:

PSB for conversational Natural:

```
  PCB TYPE=TP,MODIFY=YES
  PCB TYPE=TP,MODIFY=YES
  PCB TYPE=TP,MODIFY=YES
  PCB TYPE=DB,DBNAME=dliddm,PROCOPT=A,KEYLEN=16 sample for NDL
  SENSEG NAME=EMPLOY,PROCOPT=A sample for NDL
  SENSEG NAME=VEHICL,PROCOPT=A,PARENT=EMPLOY sample for NDL

  PSBGEN PSBNAME=NIIvrsFR,LANG=ASSEM,MAXQ=3,IOASIZE=132
```

At least one modifiable TP-PCB must be defined for default use of hardcopy, sending messages and transaction switching. To avoid a Natural initialization error, the value of the WRKPCBS parameter in the current environment table must be less than or equal to the number of PCBs minus 1.

Example for BMP:

```
  PCB TYPE=TP,MODIFY=YES
  PCB TYPE=TP,MODIFY=YES
  PCB TYPE=DB,DBNAME=dliddm,PROCOPT=A,KEYLEN=16 sample for NDL
  SENSEG NAME=EMPLOY,PROCOPT=A sample for NDL
  SENSEG NAME=VEHICL,PROCOPT=A,PARENT=EMPLOY sample for NDL
    PSBGEN PSBNAME=NIIvrsBM,LANG=ASSEM,MAXQ=3,IOASIZE=132
```

At least one modifiable TP-PCB must be defined for default use of hardcopy and sending messages. To avoid a Natural initialization error, the value of the WRKPCBS parameter in the current environment table must be less than or equal to the number of PCBs minus 1.

After creating the required APPLCTNs for the BMP and MPP environments, you must generate the PSB, DBD and ACB.

After the ACB generation, the following commands activate the new definitions:

```
MODIFY PREP ACBLIB
  MODIFY COMMIT
```

Step 3: Create the BMP and MPP Regions

Use the sample members as guidelines when creating the specific regions for your installation.

```
BMPJOB
  MPPJOB
```

Step 4: Create the PRELOAD List

Update the PRELOAD list using a PRELOAD member DFSMPL*xx* with the following module names:

- the Natural nucleus name,
- the name of the NII interface,
- the front-end name,
- the Adabas link module name

Example for MPP:

```
NATURvr,NIIvrsIF,NIIvrsFR,ADALNI
```

Example for BMP:

```
NATURvr,NIIvrsIF,NIIvrsBM,ADALNK
```

If ALIAS names are used for any members in the PRELOAD list, these names should be added to the PRELOAD list as well. Failure to do so leads to performance degradation.

Special Considerations

- Set the REGION parameter to at least 2 MB.
- Include LOAD libraries used to create the Natural IMS environment.
- Include the DD statement for the roll file created in job I070M, step 2590:

  ```
  //ROLLFn   DD  DSN=....DISP=SHR
  ```

  where *n* is a value from 1 - 5.

- Include the DD statement for NATRJE:

  ```
  //NIIRJEDD   DD  SYSOUT=(X,INTRDR)
  ```


Installing the Optional Multi-Session Feature

The Multi-Session Feature is an optional feature. For further information, see Multi-Session Feature (in the Natural TP Monitor Interfaces documentation).

Step 1: Create the Multi-Session Database

The following steps have no corresponding example jobs in NAT*nnn*.JOBS.

1. Create the DBD using the member NIIMSDBD in NII*vrs*.SRCE.
2. Create the PSB for the initial load.
3. Add the DBD to all PSBs intended for use with the multi-session feature.
4. Define and load the database using the JCL INITDM in NAT*vrs*.JOBS.

Step 2: Adapt the NII Parameter Module - Environment Table

Parameter	Description
MSACTV=YES	Activates the session manager
MSDBD=*dbdname*	Where *dbdname* is the name used in MSDBD
MSCRKEY	The key to create a new session
MSRSKEY	The key to switch to a resumed session
MSMAX=*nn*	Where *nn* is the number of active sessions (max. 8)

For further information, see the sections Installing the Batch Message Processing (BMP) Environment and Installing the Dialog-Oriented (MPP) Environment.

Step 3: Adapt the Transaction Code Table

Set the following parameter:

Parameter	Description
MSPCB	Number of the multi-session PCB

Installation Verification

1. From an IMS session, start the BMP with the following command:

   ```
   /STA REG BMPJOB
   ```

2. Check output.
   The output results from the Natural system command TECH. Verify the output with your environment.
3. Issue the following IMS commands from the IMS session:

   ```
   /STA REG MPPJOB
     /STA TRAN NATvrs
     /STA PROG NIIvrsFR
   ```

4. Type in transaction name NAT*vrs*.
5. Proceed with the steps described in the section Installation Verification for TP Monitor Interface.

