Mainframe Installation Guide
Version 4.3
October 1999

CONSTRUCT SPECTRUM™ AND SDK

Manual Order Number: **SPE430-010IBM**

TABLE OF CONTENTS

PREFACE

1. INSTALLATION TAPE DESCRIPTION

Prerequisites 10
Construct Spectrum 10
Construct Spectrum SDK 10
Operating Environments 11
Operating Systems 11
Dataset-Naming Conventions 12
Description of the Construct Spectrum Administration Installation Tape 13
MVS Users 14
VSE Users 14
Description of the Construct Spectrum SDK Installation Tape 15
Installation Jobs 16
Using System Maintenance Aid (SMA) 16
Copying the Datasets on the Installation Tapes 18
Construct Spectrum Administration Subsystem 18
MVS Users 18
VSE Users 20
Construct Spectrum SDK 21
MVS Users 21
VSE Users 23

2. INSTALLING THE MAINFRAME COMPONENTS

Installing Construct Spectrum 26
Step 1 — Create Construct Spectrum Administration Subsystem Data Files 27
Secured Data 27
Loading Secured Data Ciphered 27
Loading Secured Data Unciphered 29
Unsecured Data 29

Step 2 — Load the Natural Construct System File (If It Does Not Currently Exist) 30
Step 3 — Lengthen AR Field in SPE411 System File (Upgrade Only) 30
Step 4 — Create Backup of SYSSPEC (Upgrade Only) 31
Step 5 — Modify ADALNK Source; Assemble and Link ADALNK (MVS) 32
Step 6 — Create and Link New Reentrant Natural Nucleus 32
Step 7 — Load Construct Spectrum Administration Subsystem Components 35
Step 8 — Load Construct Spectrum Administration Subsystem Error Messages . . 35
Step 9 — Load Dataset Containing Updates and Fixes 36
Step 10 — Create Natural Security Definitions 37
Defining Libraries to Natural Security 37
Step 11 — Run the CVSPEVR Setup Utility 37
Step 12 — Load Construct Spectrum Administration Subsystem Help Text 38
Step 13 — Register the Construct Spectrum Administration Subsystem 38
Product License System Window 39
PF5 (form) 41
Sale and Trial Installations 42
Step 14 — Create a New Natural Profile 43
Step 15 — Fulfill SAF Gateway Requirements (Optional) 44
SMA Tables 45
Activating the Construct Spectrum Administration Subsystem 46
Step 1 — Verify System File Assignments 46
Step 2 — Verify Natural Subtask Support 47
Using the Multi-Tasking Verification Utility 47
Step 3 — Add Default System File Data 49
Step 4 — Update Entire Broker Attribute File 50
Step 5 — Verify Entire Broker Attribute File 51
Step 6 — Verify Assembler Routines 51
Step 7 — Verify USR* Subprogram Installation 52
Step 8 — Verify SAG Editor Installation 52
Step 9 — Verify Message Queue API 52
Step 10 — Define Batch Transaction 53
Specifying a Job Name 53
Logon Parameters 53
Natural Input Parameters 54
Work File 7 54
Test Job Submission 54

Step 11 — Launch the Attach Service. 55
Step 12 — Launch Remaining Servers 56
Step 13 — Define JCL for Construct Windows Interface. 57
Installing Construct Spectrum SDK Over an Existing Version 59
Step 1 — Create Backup of Construct Spectrum SDK Modules in SYSCST 60
Step 2 — Load the Natural Components 61
Step 3 — Load Natural Construct Models and Code Frames 61
Step 4 — Load Code Frames for Natural Construct Models 62
Installing Construct Spectrum SDK for the First Time. 63
Step 1 — Load Natural Components. 63
Step 2 — Load Natural Construct Models and Code Frames 63
Step 3 — Load Code Frames for Natural Construct Models 64
Step 4 — Create Natural Security Definitions for Demo Application (Optional). . . 64
Step 5 — Confirm Natparm Assignments. 65
SMA Tables. 65

PREFACE

This manual describes the installation of the server components of Construct Spectrum and Construct Spectrum SDK. Natural Construct V4.3 must already be installed.

The information in this manual is intended for Natural administrators and others who are responsible for installing, maintaining, and monitoring the Natural application development and production environments. You will learn how to install and operate the Spectrum Administration subsystem on mainframe platforms.

For information about installing the client components of Construct Spectrum and Construct Spectrum SDK, refer to *Construct Spectrum Client and SDK Installation Guide*.

For information about the capabilities and use of the Spectrum Administration subsystem, refer to *Construct Spectrum Administrator's Guide*.

INSTALLATION TAPE DESCRIPTION

This chapter describes the installation tape for the Construct Spectrum Administration subsystem and the Construct Spectrum SDK. It includes an explanation of the dataset-naming conventions, a description of the installation tape, and sample JCL you can use to copy the datasets from tape to disk.

The following topics are covered:

- **Prerequisites**, page 10
  Describes the products that must be installed before you can install the Construct Spectrum Administration subsystem or the Construct Spectrum SDK.
- **Operating Environments**, page 11
  Lists the operating systems and teleprocessing monitors under which Construct Spectrum functions.
- **Dataset-Naming Conventions**, page 12
  Describes the naming conventions for the installation datasets.
- **Description of the Construct Spectrum Administration Installation Tape**, page 13
  Describes the installation tape containing the Construct Spectrum Administration subsystem.
- **Description of the Construct Spectrum SDK Installation Tape**, page 15
  Describes the installation tape containing the Construct Spectrum SDK.
- **Installation Jobs**, page 16
  Describes how to create the installation jobs to install the Construct Spectrum Administration subsystem or the Construct Spectrum SDK. This section includes information about using System Maintenance Aid (SMA).
- **Copying the Datasets on the Installation Tapes**, page 18
  Contains sample JCL to load the JOBS dataset, which contains JCL you can use to copy the other datasets on the installation tapes to disk.

Prerequisites

The following sections describe the prerequisites for installing Construct Spectrum and the Construct Spectrum SDK on the mainframe.

Construct Spectrum

Before installing Construct Spectrum, the following products must be installed on your server:

- Natural Construct 4.3.1 (or later)
- Natural 2.3.2 (or later)
- Optional - Natural Security 2.3.2 (or later)

In addition, the NATRJE utility must be functional under the TP monitor you are using. Some TP monitors, such as CICS and IMS/DC, require special entries to enable the use of the NATRJE utility. For details, refer to *Natural Installation and Operations Manual*.

The Construct Spectrum Administration subsystem installation tape includes sample JCL for the installation (see the SPE*nnn*.JOBS dataset).

Construct Spectrum SDK

Before installing the Construct Spectrum SDK, the following products must be installed on your server:

- Adabas 6.2 (or later)
- Natural 2.3.2 (or later)
- Construct Spectrum 4.3.1 (or later)
- Entire Broker 2.1 (VSE/ESA)
- Entire Net-Work 5.5.1 or EntireX configured to use TCP/IP as the network transport protocol
- EntireX Message Broker 4.2.1 (MVS/ESA)

Operating Environments

This section describes the operating environments for Construct Spectrum and includes a listing of the operating systems on which you can run Construct Spectrum.

Operating Systems

The Construct Spectrum Administration subsystem version 4.3 functions in any environment that supports Natural 2.3 or later, including the following operating systems:

- MVS/ESA
- VSE/ESA
- DOS/VSE
- BS/2000

Like Natural, the Construct Spectrum Administration subsystem runs under the following teleprocessing monitors:

- Com-plete
- IMS/DC
- CICS
- TSO

Dataset-Naming Conventions

The Construct Spectrum Administration subsystem and Construct Spectrum SDK installation tapes use a dataset-naming convention that identifies the product, version number, release number, system maintenance level, and dataset type. For example, the Construct Spectrum installation tape includes the following dataset:

`SPE`*`nnn`*`.INPL`

This dataset name consists of the following components:

Component	Description
SPE	Product code
n	Version number
n	Release number
n	System maintenance level
INPL	Dataset type

Description of the Construct Spectrum Administration Installation Tape

The Construct Spectrum Administration subsystem installation tape contains the datasets described in this section. The *Report of Tape Creation* lists the volume serial number, media type, dataset names, and dataset sequence numbers. It also indicates the record layouts and disk storage required for each dataset.

The installation tape contains the following common datasets (applicable to all environments), where *nnn* indicates the version number, release number, and system maintenance (SM) level of Construct Spectrum SDK:

Dataset Name	Description
SPE*nnn*.INPL	INPL dataset containing all the Construct Spectrum Administration subsystem modules.
SPE*nnn*.IUPD	INPL dataset containing updates and fixes to the main INPL dataset. Load this dataset after loading the SPE*nnn*.INPL dataset.
SPE*nnn*.SYSF	Dataset containing the Natural Construct file. This file contains a definition of the Natural Construct file required to load help text for the Construct Spectrum Administration subsystem. It also contains all help text for Natural Construct. Use this dataset as input to the Adabas ADALOD load utility.
SPE*nnn*.ERRN	SYSERR dataset containing messages used by the Construct Spectrum Administration subsystem.
SPE*nnn*.SYSH	Dataset containing help text used by the Construct Spectrum Administration subsystem.

Dataset Name	Description (continued)
SPE*nnn*.SYS1	Dataset containing the Construct Spectrum Administration subsystem file. This file contains secured data used as input to the Adabas ADALOD load utility.
SPE*nnn*.SYS2	Dataset containing the Construct Spectrum Administration subsystem data file. This file contains unsecured data used as input to the Adabas ADALOD load utility.

MVS Users

For MVS users, the installation tape contains the following additional datasets:

Dataset Name	Description
SPE*nnn*.JOBS	Dataset containing sample OS JCL for all functions required to install the Construct Spectrum Administration subsystem.
SPE*nnn*.LOAD	Partitioned dataset (PDS) containing members used for compression and encryption functions.
SPE*nnn*.SRCE	Dataset containing a sample Natural parameter module for use by Construct Spectrum.

VSE Users

For DOS/VSE users, the installation tape contains the following additional dataset:

Dataset Name	Description
SPE*nnn*.LIBR	Dataset containing three kinds of books: books containing all source members (Source books), books containing all sample JCL (JCL books), and books containing all object code (Object books).

Description of the Construct Spectrum SDK Installation Tape

The Construct Spectrum SDK installation tape contains the datasets described in this section. The *Report of Tape Creation* lists the volume serial number, media type, dataset names, and dataset sequence numbers. It also indicates the record layouts and disk storage required for each dataset.

The installation tape contains the following datasets, where *nnn* indicates the version number, release number, and system maintenance (SM) level of Construct Spectrum SDK:

Name	Description
SPV*nnn*.INPL	INPL dataset containing all Natural Construct 4.3 model subprograms and data areas required for the Subprogram-Proxy model, Visual Basic models, and the VB-Client-Server-Super-Model model. It also contains the Construct Spectrum demo application.
SPV*nnn*.SYSM	Dataset containing the Natural Construct 4.3 model definitions for the Subprogram-Proxy model, the Visual Basic models, and the VB-Client-Server-Super-Model model.
SPV*nnn*.SYSR	Dataset containing the Natural Construct 4.3 code frames for models included in the SPV*nnn*.SYSM dataset.
SPV*nnn*.JOBS	Dataset containing JCL samples for all functions required to install Construct Spectrum SDK.

Installation Jobs

To install SAGA SOFTWARE products, use installation jobs created:

- using System Maintenance Aid (SMA)
- manually using JCL

If you create the installation jobs manually, use the JCL sample described in **Copying the Datasets on the Installation Tapes**, page 18. Adapt the sample job to your requirements.

Using System Maintenance Aid (SMA)

You can install Construct Spectrum and the Construct Spectrum SDK using SAGA SOFTWARE's System Maintenance Aid (SMA); the Construct Spectrum SDK has no special parameter requirements.

Note: SMA is not available for the CMS operating system.

➢ To use SMA for the installation process, perform the following steps before generating the jobs:

1 Load the SMA table data as described in *System Maintenance Aid (SMA) manual*.

2 In the list of available products for your environment, set one of the following to TO BE INSTALLED:

- If installing Construct Spectrum, specify SPE43*n*, where *n* is the system maintenance level.
- If installing the Construct Spectrum SDK, specify SPV43*n*, where *n* is the system maintenance level.

Note: If you are installing the product for the first time, adapt the FSPE1 (or FSPE2) and FSPE-DBID parameters in the FILNUM parameter group to the required values.

For more information about using SMA, refer to **Using System Maintenance Aid**, page 17**,** *Natural Construct Installation and Operations Manual for Mainframes*.

To use SMA to install Construct Spectrum, set the following options in your SMA environment (on the Environment Values panel). Since options may be set from a previous installation, ensure that you check all options (including VOL-AUSBA, VOL-FEHL, UNIT-AUSBA and UNIT-FEHL in the Adabas group) before generating the jobs:

SMA Name	Description
SPE-SECDATA-CIPHERED	To cipher the Construct Spectrum secured data, specify "Y". If you do not want to cipher the secured data, specify "N".
Note:	*If SPE-SECDATA-CIPHERED=Y and SMS=N, you must set VOL-AUSBA and VOL-FEHL.*
SPE-FIRST-INSTALL	To install Construct Spectrum for the first time (never been installed before), specify "Y". To install Construct Spectrum to update a previous version, specify "N".
FSPE1	The file number for the Construct Spectrum secured data file.
FSPE2	The file number for the Construct Spectrum unsecured data file.
FSPE-DBID	The database number for the Construct Spectrum system files.

Copying the Datasets on the Installation Tapes

You may want to install the datasets on the installation tapes to disk. The disk storage required for each dataset is given in the *Report of Tape Creation*.

The following sections describe how to copy the datasets on the installation tapes.

Construct Spectrum Administration Subsystem

You may want to copy the datasets on the Construct Spectrum Administration subsystem installation tape to disk. Alternatively, you can install the datasets directly from the installation tape. Copy the SPE*nnn*.JOBS dataset to disk. This dataset contains JCL you can use to copy the installation tape contents to disk.

Note: If you are using Natural Security, you may have to supply a user ID in the JCL.

MVS Users

We recommend that you perform step 1 in the following procedure; step 2 is optional.

➢ To copy the tape contents to disk:

1 Use the following OS JCL sample to copy the SPE*nnn*.JOBS dataset from tape to disk:

```
//   JOB CARD
//V2COPY   EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=A
//IN1      DD DSN=SPEnnn.JOBS,DISP=OLD,UNIT=tttttt,
//            VOL=(,RETAIN,SER=SPEnnn),LABEL=(x,SL)
//OUT1     DD DSN=SPEnnn.JOBS,DISP=(NEW,CATLG,DELETE),
//            UNIT=dddddd,VOL=SER=vvvvvv,SPACE=(TRK,(1,1))
//SYSIN    DD *
 C I=IN1,O=OUT1
```

Modify the OS JCL as follows for your installation and provide an appropriate job card:

- Replace *nnn* (wherever it occurs) with the version number for Construct Spectrum
- Replace *tttttt* in the first UNIT parameter with your tape device type
- Replace the *x* in the LABEL parameter with the sequence number of the datasets specified in the *Report of Tape Creation*
- Replace *dddddd* in the second UNIT parameter with your disk device type
- Replace *vvvvvv* in the VOL=SER parameter with your disk VOL-SER
- Replace "(TRK,(1,1))" in the SPACE parameter with the value specified in the *Report of Tape Creation*

2 Use the SPETAPE member (included in the SPE*nnn*.JOBS dataset) to copy the remaining contents of the tape to disk.

3 Modify the SPETCPY JCL as follows for your installation and provide an appropriate job card:

- Replace *nnn* (wherever it occurs) with the version number for Construct Spectrum
- Replace *tttttt* in the first UNIT parameter with your tape device type
- Replace *dddddd* in the second UNIT parameter with your disk device type
- Replace *vvvvvv* in the VOL=SER parameter with your disk VOL-SER
- Replace the "(CYL,(cc,1))" in the SPACE parameter with the value specified in the *Report of Tape Creation*

VSE Users

If you are not using SMA, copy the library containing the sample installation jobs from tape using the following sample JCS:

```
* $$ JOB JNM=SPEJOBS,CLASS=0,DISP=D,LDEST=*,SYSID=1
* $$ LST CLASS=A,DISP=D
// JOB SPEJOBS
// ASSGN SYS005,IGN
// ASSGN SYS006,cuu,VOL=XXXXXX
// MTC REW,cuu
// MTC FSF,SYS006,xx
*  *** Now processing SPEnnn.LIBR
// EXEC LIBR,PARM='MSHP'
   RESTORE SUBLIB=SAGLIB.SPEnnn:SAGLIB.SPEnnn
           TAPE = SYS006           /* TAPEADDRESS
           LIST  = YES             /* LIST SPECIFICATION
           REPLACE = NO            /* REPLACE OPTION
/*
// MTC REW,SYS006
/*
/&
* $$ EOJ
```

where:

- *cuu* represents the physical unit address of the tape drive
- *XXXXXX* is the tape volume serial number specified in the *Report of Tape Creation*
- *xx* represents the file sequence number specified in the *Report of Tape Creation*
- *nnn* represents the version, release, and system maintenance level values

Note: If your library is the first dataset on the tape, omit the last portion of the sample beginning at // MTC.

Construct Spectrum SDK

You may want to copy the datasets on the Construct Spectrum SDK installation tape to disk. Alternatively, you can install the datasets directly from the installation tape. Copy the SPV*nnn*.JOBS dataset to disk. This dataset contains JCL you can use to copy the installation tape contents to disk.

Note: If you are using Natural Security, you may have to supply a user ID in the JCL.

MVS Users

We recommend that you perform step 1 in the following procedure; step 2 is optional.

➢ To copy the tape contents to disk:

1 Use the following OS JCL sample to copy the SPV*nnn*.JOBS dataset from tape to disk:

```
//   JOB CARD
//V2COPY   EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=A
//IN1      DD DSN=SPVnnn.JOBS,DISP=OLD,UNIT=tttttt,
//            VOL=(,RETAIN,SER=SPEnnn),LABEL=(x,SL)
//OUT1     DD DSN=SPVnnn.JOBS,DISP=(NEW,CATLG,DELETE),
//            UNIT=dddddd,VOL=SER=vvvvvv,SPACE=(TRK,(1,1))
//SYSIN    DD *
 C I=IN1,O=OUT1
```

Modify the JCL as follows for your installation and provide an appropriate job card:

- Replace *nnn* (wherever it occurs) with the version number for the Construct Spectrum SDK
- Replace *tttttt* in the first UNIT parameter with your tape device type
- Replace the *x* in the LABEL parameter with the sequence number of the datasets specified in the *Report of Tape Creation*
- Replace *dddddd* in the second UNIT parameter with your disk device type
- Replace *vvvvvv* in the VOL=SER parameter with your disk VOL-SER
- Replace "(CYL,(6,1)" in the SPACE parameter with the value specified in the *Report of Tape Creation*
- Rename the disk datasets to names appropriate for your installation

2 Use the SPVTAPE member (included in the SPV*nnn*.JOBS dataset) to copy the remaining contents of the tape to disk.

3 Modify the SPVTCPY JCL as follows for your installation and provide an appropriate job card:

- Replace *nnn* (wherever it occurs) with the version number for Construct Spectrum
- Replace *tttttt* in the first UNIT parameter with your tape device type
- Replace *dddddd* in the second UNIT parameter with your disk device type
- Replace *vvvvvv* in the VOL=SER parameter with your disk VOL-SER
- Replace the "(CYL,(cc,1))" in the SPACE parameter with the value specified in the *Report of Tape Creation*

VSE Users

If you are not using SMA, copy the library containing the sample installation jobs from tape using the following sample JCS:

```
* $$ JOB JNM=SPVJOBS,CLASS=0,DISP=D,LDEST=*,SYSID=1
* $$ LST CLASS=A,DISP=D
// JOB SPVJOBS
// ASSGN SYS005,IGN
// ASSGN SYS006,cuu,VOL=XXXXXX
// MTC REW,cuu
// MTC FSF,SYS006,xx
*  *** Now processing SPVnnn.LIBR
// EXEC LIBR,PARM='MSHP'
   RESTORE SUBLIB=SAGLIB.SPEnnn:SAGLIB.SPEnnn
           TAPE = SYS006           /* TAPEADDRESS
           LIST  = YES             /* LIST SPECIFICATION
           REPLACE = NO            /* REPLACE OPTION
/*
// MTC REW,SYS006
/*
/&
* $$ EOJ
```

where:

- *cuu* represents the physical unit address of the tape drive
- *XXXXXX* is the tape volume serial number specified in the *Report of Tape Creation*
- *xx* represents the file sequence number specified in the *Report of Tape Creation*
- *nnn* represents the version, release, and system maintenance level values

Note: If your library is the first dataset on the tape, omit the last portion of the sample beginning at // MTC.

INSTALLING THE MAINFRAME COMPONENTS

This chapter describes how to install the mainframe components of the Construct Spectrum Administration subsystem and the Construct Spectrum SDK.

The following topics are covered:

- **Installing Construct Spectrum**, page 26
  Contains step-by-step instructions on the procedure to install the Construct Construct Spectrum Administration subsystem over an existing version or for the first time.
- **Activating the Construct Spectrum Administration Subsystem**, page 45
  Contains step-by-step instructions on how to activate the Construct Spectrum Administration subsystem; includes information on how to set up Entire Broker data and Natural profiles.
- **Installing Construct Spectrum SDK Over an Existing Version**, page 58
  Contains step-by-step instructions on how to install Construct Spectrum SDK over an existing version of the product.
- **Installing Construct Spectrum SDK for the First Time**, page 62
  Contains step-by-step instructions on how to install Construct Spectrum SDK for the first time.

Installing Construct Spectrum

This section describes how to install Construct Spectrum for the first time (product has never been installed before) or over an earlier version of the product (upgrading). If you are upgrading, you must perform two additional steps:

- Step 2: Lengthen a field in the SPE411 system file (if upgrading from version 4.1.2, this step is not necessary)
- Step 3: Create a back up copy of SYSSPEC

Note: Steps for upgrading Construct Spectrum have "Upgrade Only" in their headings.

➢ To install the Construct Spectrum Administration subsystem:

1 Create the Construct Spectrum Administration subsystem data files
2 Load the Natural Construct System File (if it does not currently exist)
3 Lengthen the AR field in the SPE411 system file (upgrade only)
4 Create a backup copy of the SYSSPEC library (upgrade only)
5 Modify the ADALNK source and then assemble and link ADALNK (MVS)
6 Create and link new Re-entrant Natural nucleus
7 Load the Construct Spectrum Administration subsystem components
8 Load the Construct Spectrum Administration subsystem error messages
9 Load dataset containing updates and fixes
10 Create Natural Security definitions
11 Run the CVSPEVR setup utility
12 Load the Construct Spectrum Administration subsystem help text
13 Register the Construct Spectrum Administration subsystem
14 Create a new Natural profile

Each step is described in detail in the following sections.

Step 1 — Create Construct Spectrum Administration Subsystem Data Files

- Job I050, Step 1370

  To create the Construct Spectrum Administration subsystem data files, load two files from the installation tape: one contains data that is Security related (secured data) and the other contains all other data (unsecured data).

  Because the data is contained in two files, you can cipher secured data without ciphering all Construct Spectrum Administration subsystem data. When loaded, the files are empty. After the physical files are created, a Natural program populates the files.

  To dynamically access these files, use the following LFILE values:

- LFILE 135 to access the secured data
- LFILE 136 to access the unsecured data

  The following sections describe how to load secured and unsecured data.

Secured Data

Loading this data differs, depending on whether you cipher the secured data. The following sections describe how to load secured data both ciphered and unciphered.

Note: Minimum recommended size requirements are DSSIZE=50B, NISIZE=50B, and UISIZE=20B.

Loading Secured Data Ciphered

- Job I050, Step 1370 and 1371

  To cipher secured data, see the ADACMP sample compress job and ADALODC load job in the SPE*nnn*.JOBS dataset. Use the FILE135 member in the SPE*nnn*.SRCE partitioned dataset as input to an ADACMP job. You may have to modify the contents of FILE135 to reflect your environment. You can then use the results of this process as input to an ADALOD job. To load this file, use the same file number and DBID values as you use for NTFILE 135 (see step 7).

To load the ciphered secured data file, see the ADALOD1 sample file load job in:

- SPE*nnn*.JOBS dataset (MVS)
- SPE*nnn*.LIBR dataset (VSE)

Loading Secured Data Unciphered

- Job I050, Step 1372; SPE*nnn*.SYS1 dataset

  The Adabas ADALOD utility loads the Construct Spectrum Administration subsystem data file. The SPE*nnn*.SYS1 dataset is an unloaded Adabas 6 file; use this file as input to the ADALOD utility. To load this file, use the same file number and DBID values you use to define NTFILE 135 (see step 7).

  Set the following minimum sizes for the ADALOD utility:

- MAXISN=20000
- DSSIZE=5
- NISIZE=300B
- UISIZE=50B

  To load the secured data, see the ADALOD1 sample file load job in:

- SPE*nnn*.JOBS dataset (MVS)
- JCL books in the SPE*nnn*.LIBR dataset (VSE)

Unsecured Data

- Job I050, Step 1373; SPE*nnn*.SYS2 dataset

  The Adabas ADALOD utility loads the Construct Spectrum Administration subsystem data file. The SPE*nnn*.SYS2 dataset is an unloaded Adabas 6 file; use this file as input to the ADALOD utility. To load this file, use the same file number and DBID values as you use to define NTFILE 136 (see step 7).

Note: Minimum recommended size requirements are DSSIZE=200B, NISIZE=100B, UISIZE=40B.

➢ To load the unsecured data, see the ADALOD2 sample file load job in:

- SPE*nnn*.JOBS dataset (MVS)
- JCL books in the SPE*nnn*.LIBR dataset (VSE)

Step 2 — Load the Natural Construct System File (If It Does Not Currently Exist)

- Job I050, Step 1375; SPE*nnn*.SYSF dataset

  If Natural Construct is currently installed, omit this step and proceed to Step 3.

  If Natural Construct is not currently installed, you must load one new Adabas file from the installation tape. Use this file to store the online help text for the Construct Construct Spectrum Administration subsystem. We recommend that you set the following minimum sizes for the Adalod utility:

  – MAXISN=20000
  – DSSIZE=5
  – NISIZE=300B
  – UISIZE=50B

➢ To load the Natural Construct system file:

1 MVS users, see the ADALODH sample file load job in the SPE*nnn*.JOBS dataset.

2 VSE users, see the ADALODH sample file load job in JCL books in the SPE*nnn*.LIBR dataset.

Step 3 — Lengthen AR Field in SPE411 System File (Upgrade Only)

- Job I051, Step 1373

  If you are upgrading from Construct Spectrum 4.1.1, change the length of the AR field in the SPE411 secured file (LFILE=135) from 112 to 144.

  Use the following utility in batch to lengthen the field:

```
ADABAS CHANGE FILE=XXX
ADABAS CHANGE FIELD=AR
ADABAS CHANGE LENGTH=144
```

Step 4 — Create Backup of SYSSPEC (Upgrade Only)

- Job I051, Step 1374

  Before upgrading, use the SYSMAIN utility to move all existing modules in the SYSSPEC library to a temporary library (SPETEMP) and define this library to Natural Security. Moving these modules ensures that no obsolete modules remain in your SYSSPEC library. Modules you created or modified using earlier versions of Construct Spectrum are not overwritten. Use the backup copy to restore your custom modules.

  Because the SYSSPEC library contains a large number of modules, we recommend that you move these modules in batch mode. Use the following batch input:

```
LOGON SYSTEM
SYSMAIN
MENU M,ALL,*,FM,SYSSPEC,DBID,xxx,FNR,yyy,TO,SPETEMP,DBID,aaa,%
FNR,bbb,REP
FIN
```

  where:

- *xxx* indicates the database ID (DBID) for your FNAT system file
- *yyy* indicates the file number (FNR) for your FNAT system file
- *aaa* indicates the DBID for your FUSER system file
- *bbb* indicates the FNR for your FUSER system file

Step 5 — Modify ADALNK Source; Assemble and Link ADALNK (MVS)

- Job I055, Step 1370

  Your batch nucleus must be linked with ADALNK, not ADAUSER.

➢ To make ADALNK reentrant, update the ADALNK source as follows:

1 Adjust the default SVCNR value to reflect the Adabas SVC used in your environment.
In the multi-tasking batch nucleus, you cannot change any ADARUN parameters dynamically because the DDCARD input parameters are no longer available.

2 Set the &RENT macro value to 1.
For example, comment out the default setting for &RENT and remove the comment marker from the reentrant setting:

```
*&RENT     SETB  0          Non-reentrant ADALNK                .sg62.
 &RENT     SETB  1          Reentrant ADALNK                    .sg62.
```

3 Assemble and link ADALNK.
Ensure that the ADALNK link specifies the RENT parameter.

Step 6 — Create and Link New Reentrant Natural Nucleus

- (Job I060, Step 10, 15, and 20 - batch, Job I080 - online)

  The content of the Natparm module differs slightly, depending on your operating system. Ensure that you use the correct CSTATIC list for your operating system.

  The Construct Spectrum Administration subsystem uses special files that must be identified to the Natural transaction used for the subsystem. You can either use the LFILE parameter to dynamically identify the files or you can code the NTFILE macro in the Natural parameter module to make the files part of the Natural nucleus.

  If you identify the Construct Spectrum Administration subsystem file using the LFILE method, use LFILE=(135,DBID,FNR) for the secured and LFILE=(136,DBID,FNR) for the unsecured data file to invoke Natural. The DBID and FNR values identify the database and file number for the Construct Spectrum Administration subsystem file.

  To define a reentrant batch nucleus, set ADAPRM=ON in your Natparm.

Note: Construct Spectrum uses the SAG editor internally. To access the SAG editor, you must have an editor work file and buffer pool or you must specify an EDPSIZE.

The following example shows the recommended settings for the Construct Spectrum Administration subsystem. Specify the Natural parameters for your batch and online nuclei where indicated in bold:

```
ACMPARM  TITLE 'NATURAL 2.3 PARM-MODUL, EXAMPLE'
NTPRM FNR=XX,                  NATURAL SYSTEM FILE NUMBER     -
      DBID=XXX,                NATURAL SYSTEM FILE DB         -
      FUSER=(XXX,X),           NATURAL USER SYSTEM FILE DB    -
      FDIC=(XXX,XXX),          PREDICT SYSTEM FILE            -
      FNAT=(XX,XX),            FNAT FILE                      -
      FSEC=(XXX,XXX),          FSEC FILE                      -
      BPID=XXX,                GLOBAL BUFFER POOL ID          -
      ADASVC=XXX,              GBP AND DB SVC                 -
      MENU=OFF,                MENU MODE OFF                  -
      IM=D,                                                   -
      INTENS=1,                                               -
      MT=0,                                                   -
      PD=50,                   SIZE OF COMPLETE PAGE DATA SET -
      ML=B,                    MESSAGE LINE ON BOTTOM         -
      FS=OFF,                                                 -
      LS=132,                  LINE SIZE (0 WOULD TAKE DEVICE)-
      PS=60,                   PAGE SIZE (0 WOULD TAKE DEVICE)-
      PC=OFF,                                                 -
      WH=OFF,                  WAIT IF RECORDS HELD           -
      USIZE=32,                SIZE OF USER AREA              -
      DATSIZE=180,             SIZE OF USER AREA              -
      ESIZE=120,               SIZE OF EXTENDED USER AREA
      ADAPRM=ON                PASS SESSION DATA IN 7TH PARM  -
      FSIZE=40,                                               -
      SYNERR=ON,                                              -
      MAXCL=0,                                                -
      MADIO=0,                                                -
      DU=OFF,                   DUMP WILL BE PRODUCED         -
     OPRB=NOOPEN,              NO OPEN WILL BE DONE          -
      AUTO=ON,                                                -
     CSTATIC=              * Valid values listed below
    NTBP EDIT,247,225
    NTFILE ID=227,DBID=XXX,FNR=XXX  CONSTRUCT DATA
    NTFILE ID=135,DBID=XXX,FNR=XXX  SPECTRUM SECURED DATA
    NTFILE ID=136,DBID=XXX,FNR=XXX  SPECTRUM UNSECURED DATA
    NTSYS PC,'PRINTER=(PC,PC,,,PC),WORK=(PC,PC,,,PC)'
    END
```

- For MVS, `CSTATIC=CMPRS,EXPND,CSTCSN,CSTCSD,CSGLK`
- For VSE, `CSTATIC=CMPRS,EXPND,CSTCSN,CSTCSD,CSGLK,CSMUTDAT,CSMUTKYS`

Note: We recommend that you use a global buffer pool. If you use a local buffer pool, changes to code are not automatically detected; new or updated modules are not updated. If you are using a local buffer pool, stop and then restart all running services to update modules.

➢ To create a new Natural batch nucleus:

1 See the NATPRMBT sample Natural batch parameters in:

- SPE*nnn*.JOBS dataset (MVS)
- Source books in the SPE*nnn*.LIBR dataset (VSE)

2 Assemble the new batch Natparm.
After creating the Natural parameter module, you must assemble the Natparm before linking it to the new Natural batch nucleus.

3 Link the new Natural batch nucleus as follows:

- MVS users
Link a new batch nucleus using the Natparm you created and assembled. Ensure that the CMPRS, EXPND, CSTCSN, CSTCSD, and CSGLK modules in the SPE*nnn*.LOAD dataset are included (INCLUDE) in the link job.
You can include all of these modules with a single INCLUDE statement like this:

```
INCLUDE SPELIB(SPECTRUM) SPECTRUM MODULE
```

Note: The INCLUDE statement must be in the same module, shared or TP dependent, in which the Natparm containing the CSTATIC entries are located.

- VSE users
Link a new batch nucleus using the Natparm you created and assembled. Ensure that the CMPRS, EXPND, CSTCSN, CSTCSD, CSGLK, CSMUTDAT, and CSMUTKYS modules in Object books in the SPE*nnn*.LIBR dataset are included in the link job.

4 Ensure that the Construct Spectrum modules in the SPE*nnn*.LOAD dataset are INCLUDED in the link job. When linking your batch nucleus, include the ADALNK module you modified. Also, remove the INCLUDE statement for the ADAUSER module that normally links with your Natural nucleus. When linking the batch nucleus, ensure that the RENT parameter is specified.

Ensure that the updates described in Step 4 are applied to the Natparm for your online nucleus.

Step 7 — Load Construct Spectrum Administration Subsystem Components

- Job I061, Step 1370; SPE*nnn*.INPL dataset

  This dataset contains the modules for the Construct Spectrum Administration subsystem. The modules are stored in the SYSSPEC, SYSLIBS, and SYSTEM libraries in the FNAT system file. Ensure that the FNAT parameter value correctly identifies the desired system file. Use the following input to the INPL utility:

```
INPL
B
FIN
```

*Note: Assign SPE*nnn*.INPL to CMWKF01.*

Step 8 — Load Construct Spectrum Administration Subsystem Error Messages

- Job I061, Step 1371; SPE*nnn*.ERRN dataset

  This dataset contains error messages used by Construct Spectrum. The dataset was created using the ERRULDUS SYSERR utility. All messages are loaded into SYSERR. Messages 0001 to 9999 are loaded into the SYSSPEC library; messages 8000 to 8999 are loaded into the CSTAPPL library.

  To load these messages into your system files, invoke Natural in batch with work file 2 assigned to SPE*nnn*.ERRN. Ensure that your FUSER and FNAT system files are specified correctly. Use the following statements:

```
LOGON SYSERR
ERRLODUS
FIN
```

  For more information, see **Natural SYSERR Utility** in the *Natural 2 Administrator's Manual*.

Step 9 — Load Dataset Containing Updates and Fixes

- Job I061, Step 1372; SPE*nnn*.IUPD dataset

  This INPL dataset contains updates and fixes to Construct Spectrum. Load this dataset after loading the SPE*nnn*.INPL dataset.

Step 10 — Create Natural Security Definitions

If you are using Natural Security, add the Natural Security definitions for the SYSSPEC library, as well as the Construct Spectrum Administration subsystem files. The SYSSPEC library stores the executable code for the Construct Spectrum Administration subsystem. You can restrict access to this library to only those users who maintain definitions that control the generation process. Users who generate modules using the Construct Spectrum SDK do not require access to this library. Ensure that you have defined SYSLIBS to Natural Security.

Defining Libraries to Natural Security

If you are installing Construct Spectrum for the first time (not upgrading to a new version) and you are using Natural Security, you must add definitions for the following Construct Spectrum Administration subsystem library to Natural Security:

Library	Description
SPECDEMO	The Construct Spectrum demo library.
SYSSPEC	The Construct Spectrum Administration subsystem library.

Step 11 — Run the CVSPEVR Setup Utility

- Job I200, Step 1371

  Invoke the CVSPEVR setup utility in batch mode. It does not require parameters to run. This conversion utility makes different changes, depending on whether you are upgrading from an earlier version of Construct Spectrum or installing the product for the first time. The CVSPEVR utility does the following:

1. When upgrading, converts the data in your SPE41 data files to SPE43 format. This is necessary because the data fields used to hold DBID and FNR values increased from three to five digits.
2. Sets the system file version to SPE43.
3. When upgrading, deletes redundant SPE411 and SPE412 modules from the SYSCST and SYSSPEC libraries.

4 Invokes the CVUSRCOP utility to copy the USR modules used by Construct Spectrum from the SYSEXT library to the SYSSPEC library.

Note: If this utility returns NAT4890 or NAT4891 errors, modify the Natural Security definitions for the affected libraries and set the Utilities flag to "N". To complete the copy procedure, rerun the CVUSRCOP utility.

Note: If you used the Natural Security Administration option to define all the Natural system libraries, ensure that the SYSLIB library is defined.

Step 12 — Load Construct Spectrum Administration Subsystem Help Text

- Job I500, Step 1370; SPE*nnn*.SYSH dataset

  This dataset contains help text for the Construct Spectrum Administration subsystem. Using a Natural job, load the Natural Construct help text to an existing Natural Construct system file (version 3.4 or higher).

  To load help text to your Natural Construct file, invoke Natural in batch with work file 1 assigned to SPE*nnn*.SYSH. Use the following statements:

```
LOGON SYSCST
CSHLOAD
*,*,*,*,Y
.
FIN
```

Note: Ensure LFILE 227 points to the Natural Construct system file.

Step 13 — Register the Construct Spectrum Administration Subsystem

After installing the Construct Spectrum Administration subsystem, you require a license key to activate the system. The license key should be included in your installation package. If not, either call your local SAGA SOFTWARE affiliate or print a license key request form from the Product License System window, fill it in, and send it to your local affiliate.

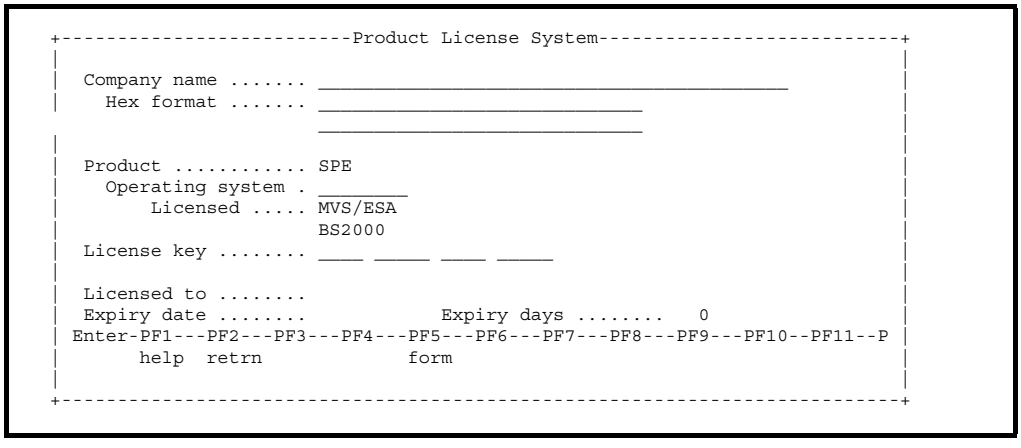
The Construct Spectrum Administration subsystem has two types of licenses: sale and trial. A sale license is a permanent license granted with the purchase of the Construct Spectrum Administration subsystem. A trial license is a temporary license granted for a specific period of time; after the time has elapsed, the system is no longer operable.

This section describes the Product License System window, the Product License Form window, and the differences between a sale and trial installation.

Product License System Window

➢ To invoke the Construct Spectrum Administration subsystem:

1 Enter “MENU” at the NEXT prompt in the SYSSPEC library.
The first time you logon, the following window is displayed:



Product License System Window

2 Fill in the appropriate information in the following fields:

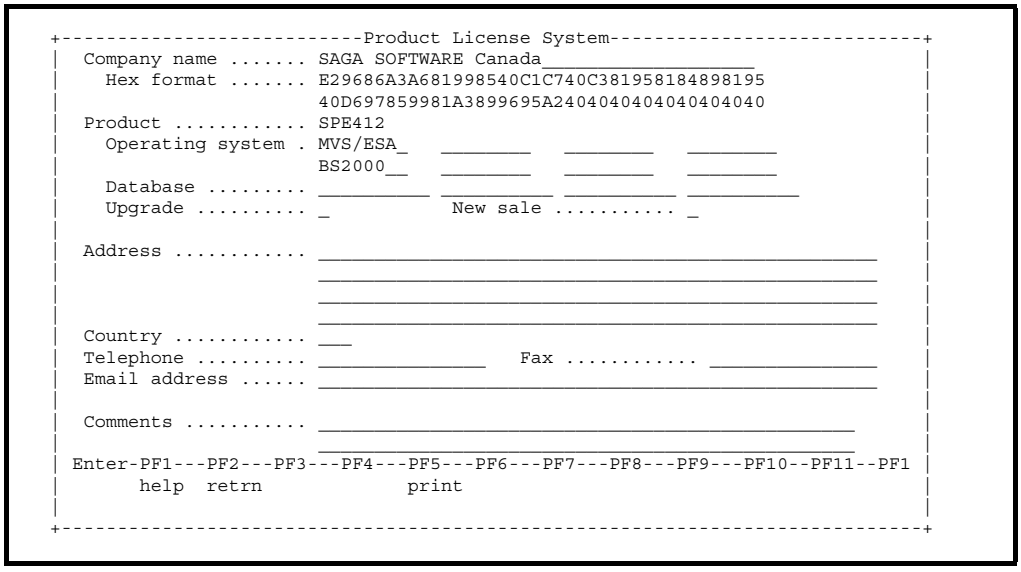
Field	Description
Company name	Type the name of your company. (Users with double byte character sets must use the Hex format field.) This field is case-sensitive; therefore, ensure that upper case translation is not performed by your TP monitor. The company name must match the name specified on the registration form exactly.
Hex format	For users with double byte character sets, type the name of your company in Hex format.
Product	Type the code for the product you are installing.
Operating system	Type the name of the operating system for which you are licensing the product.
Licensed	Type the operation systems for which the product is already licensed.
License key	Type the license key for the Construct Spectrum Administration subsystem. To obtain the license key for your installation, either call your SAGA SOFTWARE affiliate or press PF5 (form) to display a form you can fill out, print, and send to your local affiliate. For an example of this window, see the following page. (To print the form, you must have access to a printer.)

3 Press Enter to activate the Construct Spectrum Administration subsystem.

PF5 (form)

➢ To display the registration form for printing:

1 Press PF5 (form) in the Product License System window.
The Product License Form window is displayed:



Product License Form Window

2 Type the required information in the appropriate fields in this window.

3 Press PF5 (print) to print a copy of the registration form.

4 Send the form to your local SAGA SOFTWARE affiliate to obtain your license key.

Sale and Trial Installations

After entering your license key and the operating system in the appropriate field, one of the following is displayed:

- If this is a product purchase installation, the installation is complete and the main menu is displayed.
- If this is a trial installation, a message similar to the following is displayed:

```
SPE5114> Licensed to SAGA SOFTWARE Current License key expires on 99-12-06
```

Trial License Window

This window displays the expiry date for the trial installation. The Construct Spectrum Administration subsystem is no longer operable after the date displayed (Dec 6, 1999 in this example).

Note: Several days prior to the expiration of a license key, the above window is displayed each time you invoke the Construct Spectrum Administration subsystem. If you have a new license key, logon to the SYSSPEC library and invoke the BSSI_GAS program. The Product License System window is displayed for you to enter the new license key.

Step 14 — Create a New Natural Profile

To simplify and automate the launching of the Construct Spectrum environment, use the Natural SYSPARM utility to create a new profile.

➢ To create a new Natural profile:

1 Log onto the SYSPARM library.

2 Issue the MENU command.

3 Type "A" in conjunction with the SYSSPEC profile name.

4 Add the Natural parameters to start Natural with the required sizes and system files.

Note: If suitable values are already linked into your Natural nucleus, some of these parameters may not be necessary.

If they are not defaulted within the Natural transaction, the following parameters are required:

Parameter	Description
DATSIZE=180	
ESIZE=120	
LFILE=(227,DBID,FNR)	Construct system file
LFILE=(135,DBID,FNR)	Construct Spectrum secured file
LFILE=(136,DBID,FNR)	Construct Spectrum unsecured file

➢ To allow Construct Spectrum to communicate with Natural Security:

1 Access the Natural Security main menu.

2 Invoke the Administration Services main menu.

3 Invoke the General Options menu.

4 Set the Free access to functions via interface subprograms property to "Y".

SMA Tables

The following table identifies the Construct dataset name and the corresponding job and step names

Dataset Name	Job Name	Step Name
SPE431.ERRN	I061	1371
SPE431.INPL	I061	1370
SPE431.IUPD	I061	1372
SPE431.LOAD	I055	1370
SPE431.SYS1	I050	1372
SPE431.SYS2	I050	1373
SPE431.SYSF	I050	1375
SPE431.SYSH	I500	1370

Activating the Construct Spectrum Administration Subsystem

To use the Construct Spectrum Administration subsystem, you must first activate the system. Perform the following series of updates and system-related functions to use the supplied demo application and samples.

Step 1 — Verify System File Assignments

This step ensures that the profile was created correctly.

➢ To verify the system file assignments:

1 Invoke Natural using the new SYSSPEC profile.

2 Log onto the SYSSPEC library.

3 Issue the VERIFY command.

4 Enter “LF” to verify logical files.
The following output is displayed:

```
Construct System File (LFILE 227) checked successfully
Spectrum Secured File (LFILE 136) checked successfully
Spectrum Unsecured File (LFILE 135) checked successfully
FNAT System File checked successfully
FUSER System File checked successfully
FDIC System File checked successfully
```

If any file fails to verify:

- Correct the SYSSPEC profile
- Restart your Natural session
- Reissue the VERIFY command

Step 2 — Verify Natural Subtask Support

If your operating system supports multiple Natural batch sessions in one address space (for example, MVS), use the Multi-Tasking Verification utility to verify that your environment is configured correctly. Then, test that the Construct Spectrum services are operating correctly.

Using the Multi-Tasking Verification Utility

The TESTTASK utility verifies that your batch Natural nucleus and ADALNK are reentrant. To run Construct Spectrum services in an environment that supports multiple Natural batch sessions in one address space, both conditions are required.

Before using the TESTTASK utility, ensure the following:

- The ADALNK member is updated to the correct SVC and the RENT flag is set correctly. For example:

```
*&RENT  SETB 0              Non-reentrant ADALNK    .sg62.
&RENT   SET 1            Reentrant ADALNK      .sg62.
```

- The RENT parameter group is included in the assembling and linking of ADALNK.
- The Natural batch nucleus INCLUDEs the ADALNK module and the INCLUDE statement for ADAUSER is removed.
- The batch nucleus specifies ADAPRM=ON.
- The batch nucleus link specifies the RENT parameter.

To start multiple Natural tasks, define the TESTSTSK module as a subtask started by TESTTASK. If your batch nucleus or ADALNK is not reentrant, the job that runs TESTTASK will not end. Otherwise, tracing is written to the job output showing the execution status of the subtasks.

The following JCL excerpt shows the parameters required to call TESTTASK:

```
LOGON SYSSPEC
GLOBALS IM=D ID=/ IA=:
TESTTASK
*/ETID=12301,STACK=(LOGON SYSSPEC;TESTSTSK 10)
*/ETID=12302,STACK=(LOGON SYSSPEC;TESTSTSK 10)
*/ETID=12303,STACK=(LOGON SYSSPEC;TESTSTSK 10)
*/ETID=12304,STACK=(LOGON SYSSPEC;TESTSTSK 10)
*/ETID=12305,STACK=(LOGON SYSSPEC;TESTSTSK 10)
.
FIN
/*
```

The job must also define work file 1. This work file can be routed to a printer device.

Step 3 — Add Default System File Data

Regardless of whether you are installing for the first time or over an existing version, you must perform this step to populate the Spectrum files with the data required by version 4.3. This procedure clears the source area, loads the current Spectrum files, and generates entries required for the Broker attribute file. You must copy the entries manually.

➢ To load the required data:

1 Log onto the SYSSPEC library.

2 Invoke the SPIDATA program.
The following panel is displayed:

```
Enter default values to be used to establish service records...
  Broker ID ........ BKRnnn_____________________________
  Service qualifiers Prefix: ____ Suffix: ____
  Server Class ..... SPECTRUM_____________________________
  JCL Text Member .. BATCHTXT
  Subtask Support .. Y
  Profile FNAT DBID  ____19
  Profile FNAT FNR . ____30
Natural Security Settings...
  Servers under NSC  _
  User id .......... ________
  Password ......... ________
Mark default records to be loaded ...
  X Users            X Groups           X Domains            X Steplibs
  X Spectrum Service  X Appl Service     X Security Links
```

Use this panel to specify default settings for the records to be generated. You can use the default values for most settings.The fields you must specify are:

Field	Description
Broker ID	Specify the name of the broker to use in this environment.
Note:	*If you specified an incorrect broker ID to invoke SPIDATA, access the Construct Spectrum Administration subsystem and specify the correct broker ID.*
Subtask Support	If the TESTTASK program completed successfully, enter “Y”. If not, enter “N”.

Field	Description (continued)
Profile DBID and FNR	Specify the database ID and file number for the Natural FNAT system file in which the SYSSPEC profile is located.
Natural Security Settings	If your servers run under Natural Security, mark **Servers under NSC** and specify a user ID and password; use the specified user ID and password to start all servers.

You can also run this utility again to create new Construct Spectrum services for other environments. In that case, add a prefix or suffix to the service names and specify an alternate Server Class.

Executing the SPIDATA program displays all records that are being loaded. If any of the records already exist in your Construct Spectrum files, they are not replaced. If you are running the SPIDATA program for the first time, the output report indicates the records that were not replaced. Rename or delete the existing records and rerun the SPIDATA program, specifying only the objects you want to load.

Step 4 — Update Entire Broker Attribute File

When the SPIDATA program ends, the Natural source area contains the definitions required for the Entire Broker attribute file. Copy these definitions from the source area and paste them in your Broker attribute file.

Additionally, confirm that the following minimum global settings are set:

```
*-----------------------------------------------------------------------*
* Broker specific Attributes / Definition of global resources           *
*-----------------------------------------------------------------------*
 DEFAULTS = BROKER
   NUM-CLIENT         = 250
   NUM-CONVERSATION   = 1000
   NUM-SERVER         = 50
   NUM-SERVICE        = 500
   NUM-LONG-BUFFER    = 500
   NUM-SHORT-BUFFER   = 2000
```

Step 5 — Verify Entire Broker Attribute File

Next, use the VERIFY program to verify the additions to the Entire Broker attribute file.

➢ To verify the Broker attribute file additions:

1 Log onto the SYSSPEC library.

2 Invoke the VERIFY program.

3 Enter "AF" to verify the attribute file additions.
A confirmation panel is displayed:

```
Spectrum service                      Broker service
------------------------ ------------------------------------------------
ATTACH                   BKR057/SPECTRUM-QA/ATTACH/MAIN
                         MAIN and CMD services registered successfully
CFACTORY                 BKR057/SPECTRUM-QA/CFACTORY/MAIN
                         MAIN and CMD services registered successfully
DISPATCH                 BKR057/SPECTRUM-QA/DISPATCH/MAIN
                         MAIN and CMD services registered successfully
SECURITY                 BKR057/SPECTRUM-QA/Security/MAIN
                         MAIN and CMD services registered successfully
TIMESTAMP                BKR057/SPECTRUM-QA/TIMESTAMP/MAIN
                         MAIN and CMD services registered successfully
```

If any errors appear in the output, correct either the records in your Spectrum file or the definitions in your Broker attribute file and rerun the test.

Step 6 — Verify Assembler Routines

Use the VERIFY program to verify the encryption and compression routines.

➢ To verify the assembler routines:

1 Enter "EC" from the VERIFY program.
A report is displayed, indicating the outcome of the calls:

```
Encryption and Decryption calls performed successfully
Compression and Decompression calls performed successfully
```

Step 7 — Verify USR* Subprogram Installation

Use the VERIFY program to verify that all required USR modules are available from within the current steplib chain.

➢ To verify that all required USR modules are available:

1 Enter "US" from the VERIFY program.
The program calls the USR routine to confirm its availability.

Step 8 — Verify SAG Editor Installation

Use the VERIFY program to:

- Open a SAG editor session
- Write lines to the SAG editor
- Read the lines back from the SAG editor
- Close the SAG editor session
- Write out a success/fail message

➢ To verify the installation of the SAG editor:

- Enter "SE" from the VERIFY program.

Step 9 — Verify Message Queue API

Use the VERIFY program to verify the message queue API.

➢ To verify the message queue API:

- Enter "MQ" from the VERIFY program.
The program:
  - Calls the message queue (conversation factory) APIs to pass data (as a multi-part message). This confirms that no limits are specified on broker message lengths that will cause SQUSEND/SQURECV to fail.
  - Sends the binary values from H'00' to H'FF'. This confirms that no translation routine was added to the Broker attribute file.
  - Confirms that the data it receives matches the data it sent.

Step 10 — Define Batch Transaction

In this step, create a new JCL template (BATCHTXT) you can use to launch your servers. Sample templates are supplied in the SYSSPEC library. Edit the following member for your server environment:

- For MVS, edit the BATCHJCL member.
- For DOS/VSE, edit the BATCHDCL member.
- For BS/2000, edit the BATCHBCL member.
- For other environments, create the BATCHTXT member starting with a valid Natural batch job applicable to your operating system.

Specifying a Job Name

The job name can either be a specific value or a combination of the &JOB-PREFIX&JOB-NR substitution parameters (derives a unique job name). When the JCL is generated, the &JOB-PREFIX value is assigned a two-character value associated with the server it is invoking.

Logon Parameters

If your servers run under Natural Security, supply a user ID and password as part of the LOGON SYSSPEC command. You cannot use the job name to define the user ID because the value is normally generated dynamically. Include AUTO=OFF in your Natparms.

Under Natural Security, the LOGON command should appear as follows:

```
SYSSPEC user-ID,password
```

where user ID is a valid user linked to the SYSSPEC library.

Note: Under MVS, you can also specify the USERID=YES parameter in the NATOS module and supply a USERID parameter on your job card. In that case, the USERID parameter on the job card defines the Natural Security user, not the job name.

Natural Input Parameters

Following the LOGON, the Natural input statements should appear as follows:

```
SPSSTART
&SPECTRUM-SERVICE,%
&USER-ID,%
&PASSWORD,%
&TRACE-OPTION,%
&TRACE-LOCATION,%
&Q-BROKER-ID,%
&Q-USER-ID,%
&Q-TOKEN,%
&Q-Security-TOKEN,%
&Q-CONV-ID
&PROGPARM
FIN
```

Work File 7

The JCL member should define work file 7 (CMWKF07). If you are using Natural's subtasking feature, define work file 7 as a temporary file. If you are invoking all servers as separate batch jobs, define work file as a permanent file.

Save your modified JCL member as BATCHTXT.

Test Job Submission

➢ To test the submitted job:

1 Invoke the BATCHTST program to test the generated JCL.

2 Override any values to reflect your environment.

3 Press Enter to generate the JCL into the source area.

4 Review the JCL for validity.

The Natural input statements should now contain the following:

```
VERIFY
*
.
SPSWKF07
```

If necessary, modify the original BATCHTXT member and repeat the test. Once valid JCL is generated, rerun BATCHTST and mark the Submit option. This submits a job to run the verify steps in batch. Monitor and review the submitted job using normal operating system commands.

Step 11 — Launch the Attach Service

Next, launch the attach service that allows you to issue commands to the server.

➢ To launch the attach service:

1 Log onto the SYSSPEC library.

2 Issue the "MENU SA MS" command.
The Manage Services panel is displayed.

3 Type "I" beside the ATTACH service

4 Press Enter to initiate the attach service.

Note the name of the batch job submitted. In a few seconds, you should be able to successfully issue other commands, such as Ping (P) or Environment (EV). If the message "ETB Error 7/7 (Service not registered)" is displayed, review the job, resolve any errors in BATCHTXT, and repeat the process.

Step 12 — Launch Remaining Servers

With an attach service running, use the Initiate command to launch the Timestamp service. In a few seconds, you should be able to ping this service. If not, perform one of the following steps:

- If you are not using Natural's subtasking feature, review the JCL that was submitted and correct BATCHTXT.
- If you are using Natural's subtasking feature, enter "D" (Debug command) beside the Timestamp server. A report is displayed, indicating the outcome. For example:

```
==================================ATTACH============================
BKR057/SPECTRUM-QA/ATTACH/MAIN/B0FC1B6797BFAD01B0FC2313E9356601
Response: 1              Response code: 0000          Message ID:
Natural startup parameters ...
FNAT=(1000,1000),PROFILE=SYSSPEC, STACK=(LOGON SYSSPEC;SPSSTART
USING_CMPARM
;SPSDATA) ETID=E1834186
Response: 2              Response code: 0000          Message ID:
Data passed via CMUPARM ...
Service=TIMESTAMP,Init User=,Parent
Rid=B0FC1B6797BFAD01B0FC2313E9356601
Response: 3              Response code: 0000          Message ID:
Natural startup results ...
SPSSTART started in debug mode, for service TIMESTAMP
Checking system files ...
System files validated
Logon performed
Register performed
Server program: SPSTIMS    *DATA:   -1
Program SPSDATA invoked.    *DATA =    0
Stopping test due to debug mode
```

Review this report and try to diagnose the startup problem. Modify the Timestamp service records (using the MENU SA MM SE command), as well as the records for all other services that use the SUBTASKB service start routine. Repeat the procedure until you are able to initiate and ping all servers.

For more information, refer to *Construct Spectrum Administrator's Guide.*

Step 13 — Define JCL for Construct Windows Interface

If you are using the Construct Windows interface, you must define an additional JCL member to support Natural commands issued from the client. This text member is used by the CONSTRUCT-COMMAND Spectrum service. For a sample of the required JCL, refer to the BATCHCMD module in the SYSSPEC library. This JCL should be similar to the JCL you created for your attach servers. The only difference is the addition of the steps described below, performed immediately prior to the procedure described in **Step 10 — Define Batch Transaction**, page 52.

➢ Before performing the procedure:

1 Enter the following Natural input statements:

```
LOGON &LIBRARY
CSGCMD1
&USER-ID,%
&PASSWORD,%
&Q-BROKER-ID,%
&Q-USER-ID,%
&Q-TOKEN,%
&Q-Security-TOKEN,%
&Q-CONV-ID
&Natural-COMMAND
FIN
```

This directs the Natural output (CMPRINT) to a temporary work file. If you are using Natural Security, you must also adjust the LOGON statement to include user ID and password place holders. For example:

```
&LIBRARY,&USER-ID,&PASSWORD
```

2 Read the output from Step 1.

3 Send the output to the Construct client.
Include the following statements:

```
LOGON &LIBRARY
SPSSTART
&SPECTRUM-SERVICE,%
&USER-ID,%
&PASSWORD,%
&TRACE-OPTION,%
&TRACE-LOCATION,%
&Q-BROKER-ID,%
&Q-USER-ID,%
&Q-TOKEN,%
&Q-Security-TOKEN,%
&Q-CONV-ID
FIN
```

Adjust the logon if necessary, as described in Step 1.

4 Define work file 7 as the same dataset created by CMPRINT in Step 1.

Installing Construct Spectrum SDK Over an Existing Version

Installing Construct Spectrum SDK over an existing version involves the following steps:

1 Create a backup copy of modules in the SYSCST library.

2 Load the Natural components.

3 Load the Natural Construct models and code frames.

Each step is described in detail in the following sections.

Step 1 — Create Backup of Construct Spectrum SDK Modules in SYSCST

- Job I051, Step 1361

  If you modified any of the Construct Spectrum models in the SYSCST library, use the SYSMAIN utility to move the custom modules to a temporary library (SPVTEMP) and define this library to Natural Security. This ensures that your custom modules are not overwritten. Use the backup copy to restore your modules. Ensure that you have defined SPVTEMP to Natural Security.

  Use the following batch input to back up modules indicated:

```
LOGON SYSTEM
SYSMAIN
MENU M,ALL,CSVB*,FM,SYSCST,DBID,xxx,FNR,yyy,TO,SPVTEMP,DBID,%
xxx,FNR,yyy,REP
MENU M,ALL,CSVP*,FM,SYSCST,DBID,xxx,FNR,yyy,TO,SPVTEMP,DBID,%
xxx,FNR,yyy,REP
MENU M,ALL,CSVU*,FM,SYSCST,DBID,xxx,FNR,yyy,TO,SPVTEMP,DBID,%
xxx,FNR,yyy,REP
MENU M,ALL,CUMD*,FM,SYSCST,DBID,xxx,FNR,yyy,TO,SPVTEMP,DBID,%
xxx,FNR,yyy,REP
MENU M,ALL,CUSP*,FM,SYSCST,DBID,xxx,FNR,yyy,TO,SPVTEMP,DBID,%
xxx,FNR,yyy,REP
MENU M,ALL,CUSS*,FM,SYSCST,DBID,xxx,FNR,yyy,TO,SPVTEMP,DBID,%
xxx,FNR,yyy,REP
MENU M,ALL,CUVB*,FM,SYSCST,DBID,xxx,FNR,yyy,TO,SPVTEMP,DBID,%
xxx,FNR,yyy,REP
MENU M,ALL,CUVL*,FM,SYSCST,DBID,xxx,FNR,yyy,TO,SPVTEMP,DBID,%
xxx,FNR,yyy,REP
MENU M,ALL,CUXC*,FM,SYSCST,DBID,xxx,FNR,yyy,TO,SPVTEMP,DBID,%
xxx,FNR,yyy,REP
FNR,bbb,REP
FIN
```

  where:

- *xxx* indicates the database ID (DBID) for your FNAT system file
- *yyy* indicates the file number (FNR) for your FNAT system file
- *aaa* indicates the DBID for your FUSER system file
- *bbb* indicates the FNR for your FUSER system file

Step 2 — Load the Natural Components

- Job I061, Step 1361; SPV*nnn*.INPL dataset

  This dataset contains the Natural modules used by the Construct Spectrum SDK models and the demo application. Use the Natural INPL utility to load these modules into your development environment. The FUSER and FNAT parameters must correspond to system files that contain an existing version of Natural Construct 4.3 or later.

Note: SPVnnn.INPL must be assigned to CMWKF01.

Use the following input to the INPL utility:

```
INPL
B,Y
FIN
```

Step 3 — Load Natural Construct Models and Code Frames

Note: All Natural Construct load utilities write reports to Printer 1. Ensure that there is a CMPRT01 definition in the JCL used for these functions.

- Job I500, Step 1361; SPV*nnn*.SYSM dataset

  This dataset contains the Natural Construct model definitions. Use a Natural job to load the Natural Construct model definitions from the Construct Spectrum SDK installation tape.

  To load these model definitions to your Natural Construct file, invoke Natural in batch with work file 1 assigned to SPV*nnn*.SYSM. Use the following input statements:

```
LOGON SYSCST
CSMLOAD
*,Y
.
FIN
```

Note: Ensure LFILE 227 for the job points to the Natural Construct system file.

Step 4 — Load Code Frames for Natural Construct Models

- Job I500, Step 1362; SPV*nnn*.SYSR dataset

  This dataset contains the code frames for the Natural Construct models. Use a Natural job similar to the one you used to load SPV*nnn*.SYSM and load the code frames from the installation tape to the same Natural Construct system file.

  To load the model code frames, invoke Natural in batch with work file 1 assigned to SPV*nnn*.SYSR. Use the following input statements:

```
LOGON SYSCST
CSFLOAD
*,Y
.
FIN
```

Installing Construct Spectrum SDK for the First Time

Installing Construct Spectrum SDK for the first time involves the following steps:

1 Load the Natural components.
2 Load the Natural Construct models and code frames.
3 Load Code Frames for Natural Construct Models.
4 Create Natural Security definitions for the demo application (optional).
5 Confirm Natparm assignments.

Each step is described in detail in the following sections.

Step 1 — Load Natural Components

- Job I061, Step 1361; SPV*nnn*.INPL dataset

  This dataset contains Natural modules used by the Construct Spectrum SDK models and the demo application. Use the Natural INPL utility to load these modules into your development environment. The FUSER and FNAT parameters must correspond to system files that contain an existing version of Natural Construct 4.3 or later.

Note: SPVnnn.INPL must be assigned to CMWKF01.

Use the following input to the INPL utility:

```
INPL
B,Y
FIN
```

Step 2 — Load Natural Construct Models and Code Frames

Note: All Natural Construct load utilities write reports to Printer 1. Ensure that there is a CMPRT01 definition in the JCL used for these functions.

- Job I500, Step 1361; SPV*nnn*.SYSM dataset

  This dataset contains the Natural Construct model definitions. Use a Natural job to load the model definitions from the Construct Spectrum SDK installation tape.

To load these model definitions to your Natural Construct file, invoke Natural in batch with work file 1 assigned to SPV*nnn*.SYSM.

Use the following input statements:

```
LOGON SYSCST
CSMLOAD
*,Y
.
FIN
```

Note: Ensure LFILE 227 for the job points to the Natural Construct system file.

Step 3 — Load Code Frames for Natural Construct Models

- Job I500, Step 1362; SPV*nnn*.SYSR dataset

  This dataset contains the code frames for the Natural Construct models. Using a Natural job similar to the one used to load SPV*nnn*.SYSM, load the code frames from the installation tape to the same Natural Construct system file.

  To load the model code frames, invoke Natural in batch with work file 1 assigned to SPV*nnn*.SYSR.

  Use the following input statements:

```
LOGON SYSCST
CSFLOAD
*,Y
.
FIN
```

Step 4 — Create Natural Security Definitions for Demo Application (Optional)

The installation procedure installs a demo application in the SPECDEMO FUSER library. If you are using Natural Security, create security definitions for this library. Normally, you define SPECDEMO as a public library.

Step 5 — Confirm Natparm Assignments

For optimal use of Construct Spectrum SDK models, use the following Natparm settings:

- ESIZE=120
- DATSIZE=180
- SYNERR=ON

SMA Tables

The following table identifies the Construct dataset names and the corresponding job and step names.

Dataset Name	Job Name	Step Name
SPV431.INPL	I061	1361
SPV431.SYSM	I500	1361
SPV431.SYSR	I500	1362