

# ESP

## Installation Procedure





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## **READ ME FIRST**

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## 1. OVERVIEW

This document explains the installation procedures for the following products:

**EspControl, EspBatch and EspAuto versions V7.1.3 and above.**

### **IMPORTANT NOTE:**

Please refer to the implementation detail below that explains the organization of Cronus products considering different application environments on same domain and applications environments on different domains or partitions.

#### **EspControl Installation ONLY**

- Single Software AG **eco71.xml** or **croec71.xml** license required.
- Install the ECO Base on “**Development**” environment **ONLY**.
  - o ECO Base includes Adabas files, Natural modules and ECO scripts.
- **Additional** ECO Script environments should be added only **after** completing the initial ECO installation. Use **\$CRONUS/install/INSTALL** with option **UPDATE**, executed from “Development” (initial installation) server or application environment to install additional environments.
- The ECO scripts required for subsequent ECO applications environments are automatically transferred to target environments or partitions. (**ssh** should be **configured prior** to installations)

#### **EspBatch, EspAuto and EspControl installation**

##### **Multiple Domains (different hardware partitions)**

- **Multiple** Software AG **eba71.xml** or **croeb71.xml**, **eat71.xml** or **croea71.xml** and **eco71.xml** or **croec71.xml** licenses are required for **each** of the **domains**.
- Execute **\$CRONUS/install/INSTALL** to install the EBA and ECO Bases for **each** of the **application environments**.
  - o Base includes Adabas files, Natural modules and scripts.

##### **Single Domain (single partition)**

- **Single** Software AG **eba71.xml** or **croeb71.xml**, **eat71.xml** or **croea71.xml** and **eco71.xml** or **croec71.xml** licenses are required for **each** of the **domains**.
- Execute **\$CRONUS/install/INSTALL** to install the Base for **FIRST** application environment.
  - o Base includes Adabas files, Natural modules and scripts.



- 
- **Additional** EBA/ECO environments should be added only after completing the initial EBA/ECO installation. Execute **\$CRONUS/install/INSTALL** with option **UPDATE** to install additional EBA/ECO environments for each of the subsequent application environments.
    - o Separate Adabas Databases and Natural fusers are required for subsequent installations.

**NB General – New path for license file with Natural 9**

- The SAG environment variable \$NATDIR is replaced with \$NAT\_HOME – for downwards compatibility Software AG recommends setting \$NATDIR equal to \$NAT\_HOME. The Cronus installation scripts use \$NATDIR and aborts if it is not set. *(same applies for Adabas v64 - \$ADADIR and \$ADADATADIR should be equal)*
- Install the Cronus software with the same **user-id** or at least the same **group-id** that was used to install Natural. The installer user-id will automatically become the EspMenu administrator account.
- The required license file(s) should be placed in the default Software AG License Key directory **prior** to installation. (**\$SAG/common/conf** and **not** \$SAG/common/LKey anymore).
- Remote SHELL communication (SSH) needs to be configured prior to installation regardless of number of domains/partitions. (Refer to section 7 of this document)

**Configuration details following the installation on each of these products are detailed in the user documentation.**



## 2. INSTALLATION STEPS

- a. Unpack the software
- b. Create a NATPARM profile Module
- c. Create Cronus Adabas Database(s) using 'dbgen', update NATPARM
- d. Update DB parameters
- e. Verification of "sudo" access (if EspBatch is required)
- f. Verification and setup of Perl packages
- g. Verify Remote Communication (ssh) If EspControl is required\*\*  
*\*\*this can be done at a later stage.*
- h. Run the Linux INSTALL script
- i. Execute the Natural INSTALL program
- j. Start ESP Job scheduler (if required)
- k. Start ESP Auto Scheduler (if required)
- l. Start ESP Auto Scanner (if required)

## 3. PRE-REQUISITES

- The required **Software AG** Products are **installed** and in working order. (At a minimum you need Natural and Adabas installed and configured)
- Familiarity with SAG product set-up especially "Natparm"
- The User-ID "sag" has super user access (*sudo*) access as a "root" user to define **the Linux Remote communication protocol**.
- The installation and configuration for '*sudo*' or similar software has been done, the user-id '**sag**' should have **free** access to '*sudo su*' (switch user) without prompt for password.
- If **EspControl** is **also installed**, the remote shell (*ssh*) has been configured as detail in **Section 7** and/or **Section 8** in this document. **Please do not continue with the installation unless you have confirmed that the remote-shell or secure-shell configuration is 100% correct.**
- **Perl packages** required for EspBatch (internet access is required for the installation)
  - **CPAN**
  - **SFTP::Foreign**
  - **LWP::UserAgent**
  - **File::Slurp**Packages can be downloaded from **cpan.perl.org**



If **Natural Security** is installed

- Access to Natural environment must be set with **AUTO=ON** for the install user during the installation.
- 'Logon to Library' messages **must** be suppressed.
- Access to the Natural library **ESPSOFT** must be PUBL for installation.
- The installer needs full access to the Natural load utility SYSOBJH.  
(Administrator Services, Utility defaults, SYSOBJH – Set to **A** and **Y** to Default)

```

sag@drslinap1d:~$
22:54:14 *** NATURAL SECURITY *** 2020-01-14
- Template for SYSOBJH Utility -

A/D Function Nat Err CPr NRe Ext FDT MfD MfR App Del Par Rep Status
-----
A Unload A A A A A A A A A A A A Allowed
A UnDeLi A A A A A A A A A A A A Allowed
A Load A A A A A A A A A A A A Allowed
A Delete A A A A A A A A A A A A Allowed
A Scan A A A A A A A A A A A A Allowed

General Admin A FSEC A FDIC A Transfer only N (Y/N)

Y Applies as default profile
Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
Help Exit AddOp Flip Next Canc
    
```

- Set the Administrator Services, General Option – “Free access to functions via Application interfaces” to **R**.

```

sag@drslinap1d:/opt/softwareesp/Natural/user$
03:00:27 *** NATURAL SECURITY *** 2020-06-25
- Set General Options -

Created ... 2020-01-13 by OS-INPL
Modified .. 2020-06-25 by DBA

-----
Transition period logon ..... N (Y,N)
Activate Security for Development Server File ..... N (Y,N)
Maximum number of logon attempts ..... 5 (1-9)
Suppress display of logon messages ..... Y (Y,N)
Lock user option ..... N (N, Y, F, X, Z)
User password history ..... N (N, *, Y)
Free access to functions via Application interfaces R (N, Y, R)
Minimum number of co-owners ..... 0 (0-3)
Deletion of non-empty libraries allowed ..... N (Y,N)
Overwriting of defaults possible ..... Y (Y,N)
Display DBID/FNR of FSEC ..... N (Y,N)
Exit functions with confirmation ..... N (Y,N)
Logging of maintenance functions ..... N (Y,N)
-----

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
Help Exit AddOp Flip Next Canc
    
```

- Set the STEPLIBs for ESPSOFT
  - SYSLIBS
  - SYSSEC
  - SYSEXT

For further assistance on Natural Security setup please consult your Natural Administrator.

**Don't not continue to install EspSuite unless you have performed this setup in Natural Security.**



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## 4. ASSUMPTIONS

For the installation the following is assumed:

- The account for the administrator of Software AG products is called "**sag**".
- The **group** to which the **administrator** and **users** of Software AG products are assigned to is called "**sag**".
- The root directory for Software AG products is **/opt/softwareag** or defined via variable **\$SAG**
- The Software AG products Natural (optional Natural Security) and Adabas have been installed and configured.

### **Linux permissions**

Directories and files will be created with permissions according to the **umask** setting.

The **recommended** **umask** setting for Cronus software is therefore "**002**" which is **not** the default for Software AG products. This would create directories with permissions "drwxrwxr-x" and files with the permissions "-rw-rw-r--".

**NOTE** On most systems the administrator is required to set the system 'default' **UMASK** setting to **002**, see **umask(1)** for your particular Operating System.

If **umask 022** is used files will be created with the permissions "-rw-r--r--" which does **NOT** allow anyone in the '**sag**' group to write to these files. If **umask 022** is used directories will be created with the permissions "drwxr-xr-x" which does **NOT** allow anyone in the '**sag**' group to write to these directories.



## 5. EXTRACT CRONUS SOFTWARE

Create a temporary directory on the Linux platform and copy the contents of the supplied media (CD-ROM/DVD) to the newly created or an existing Linux directory (see instructions below).

As the user-id "**sag**" (or your SAG admin account)

Linux-prompt:> **mkdir /opt/InstallImages/cronus**

Linux-prompt:> **chmod 777 /opt/InstallImages/cronus**

Linux-prompt:> **cp -rp <my\_dvd>/Linux/\* /opt/InstallImages/cronus**

or

**Binary FTP the <Your\_OS>|cronus.vnnn.tar to /opt/InstallImages/cronus**

## 6. UNPACK THE SOFTWARE

Once the tarbal file is FTP'ed, login to the FTP'ed Linux environment and change directory (*cd \$SAG/espinstall*) to the **espinstall** directory and extract the installation files using the uncompress command "*tar xvf cronus.vnnn.tar*". (see instructions below).

**NOTE: We assume that user-id sag has a "umask" setting of 002. This means that the files and directories will be created with the correct permissions for the installation. This is not the default for user id "sag".**

Login to Linux as user-id "**sag**"

**Example:**

Linux-prompt:> **cd /opt/InstallImages/cronus**

Linux-prompt:> **umask 002**

Linux-prompt:> **tar xvf cronus.vnnn.tar**

**(where vnnn is the version as per supplied software)**



## 7. LINUX-SHELL SETUP:

### 7.1 Verify & SETUP LINUX-SHELL:

**NOTE: Skip this section if you are not installing EspControl or you want to setup EspControl at a later stage. Cronus has a template that can be used.**

Before installing the ESP software, please configure the **preferred** remote-access communication method. The remote-access communication (regardless of **how many** servers are being accessed) **used by EspControl as the underlying transport protocol**. It plays a significant role in the communication process used by EspControl.

EspControl supports two communication layers: Either use **'rsh'** (un-secured remote-shell) or **'ssh'** (secure-remote-shell) – we recommend using ssh.

**NOTE** On most systems the administrator is required to set the system **'default' UMASK** setting to **002**, see **umask(1)** for your particular Operating System.

#### Guideline for Secure Shell (ssh) setup

The examples shown below can be used as a 'guideline' to configure the remote-access program **'ssh'**.

The following commands should be repeated for **each** of the different **users** that will be using the **EspControl LifeCycle** application, on **each** of the EspControl LifeCycle environments. Should you prefer to make use of a dedicated transfer user-id, please continue with this section, but it is explained in more detail in Section 7 of this documentation.

#### User HOME directory

The user's home directory (\$HOME) should have a permission of **755** ("**-rwx--x--x**" ) or lower

#### a. Generate SSH certificates

```
Linux-prompt:> cd $HOME
Linux-prompt:> ssh-keygen -t dsa
```

```
Linux-prompt:> ssh-keygen -t dsa
Generating public/private dsa key pair.
Enter file in which to save the key (/users/cronus/.ssh/id_dsa):
Created directory '/users/cronus/.ssh'.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /users/cronus/.ssh/id_dsa.
Your public key has been saved in /users/cronus/.ssh/id_dsa.pub.
The key fingerprint is:
aa:14:c0:86:0e:c4:b6:c6:da:30:f5:de:fb:33:c4:78 cronus@cronus-u25
```

**b. Copy public file**

```
Linux-prompt:> cd $HOME/.ssh
```

```
Linux-prompt:> ls -l
```

```
-rw----- 1 cronus sag 672 May 11 12:25 id_dsa  
-rw-r--r-- 1 cronus sag 600 May 11 12:25 id_dsa.pub
```

```
Linux-prompt:> cp id_dsa.pub authorized_keys
```

Set the permissions to **600** for **authorized\_keys**

```
Linux-prompt:> chmod 600 authorized_keys
```

```
Linux-prompt:> ls -l
```

```
-rw----- 1 cronus sag 600 May 11 12:25 authorized_keys  
-rw----- 1 cronus sag 672 May 11 12:25 id_dsa  
-rw-r--r-- 1 cronus sag 600 May 11 12:25 id_dsa.pub
```

**c. Share the authorized keys files**

After configuring the **ssh-keys** on **all** servers, share (append) the different certificates to the **authorized\_keys** on **each** of the servers.

For the purpose of this example we have 3 servers: **DEV**, **QA** and **PROD**.

**Copy the authorized\_keys file to a temporary file**

On **DEV** you should have

```
~home/.ssh/authorized_keys
```

```
cp authorized_keys authorized_keys.dev
```

On **QA** you should have

```
~home/.ssh/authorized_keys
```

```
cp authorized_keys authorized_keys.qa
```

On **PROD** you should have

```
~home/.ssh/authorized_keys
```

```
cp authorized_keys authorized_keys.prod
```

**Transfer the temporary authorized\_keys file to remote servers**

On **DEV**

```
ftp authorized_keys.dev to QA server
```

```
ftp authorized_keys.dev to PRD server
```

On **QA**

```
ftp authorized_keys.qa to DEV server
```

```
ftp authorized_keys.qa to PRD server
```



On **PROD**

ftp authorized\_keys.prod to **QA** server  
 ftp authorized\_keys.prod to **DEV** server

**Concatenate (merge) the authorized\_keys files**

On **DEV** server

```
cat authorized_keys.qa >> authorized_keys
cat authorized_keys.prod >> authorized_keys
```

On **QA** server

```
cat authorized_keys.dev >> authorized_keys
cat authorized_keys.prod >> authorized_keys
```

On **PROD** server

```
cat authorized_keys.dev >> authorized_keys
cat authorized_keys.qa >> authorized_keys
```

**d. Define known\_hosts file**

Authenticate each of the servers **including** current development environment to the required "ssh" environment:

**On DEV and QA and PROD Server**

Linux-prompt:> **ssh <DEV\_server\_name> ls -l**

The authenticity of host 'DEV\_server\_name' can't be established.  
 RSA key fingerprint in md5 is: fe:56:84:9e:d1:2a:4c:22:4b:61:3a:ed:b3:45:a9:c4  
 Are you sure you want to continue connecting(yes/no)? **yes**  
**Accept any warning messages**

**On DEV and QA and PROD Server**

Linux-prompt:> **ssh <QA\_server\_name> ls -l**

The authenticity of host 'QA\_server\_name' can't be established.  
 RSA key fingerprint in md5 is: fe:56:84:9e:d1:2a:4c:22:4b:61:3a:ed:b3:45:a9:c4  
 Are you sure you want to continue connecting(yes/no)? **yes**  
**Accept any warning messages**

**On DEV and QA and PROD Server**

Linux-prompt:> **ssh <PROD\_server\_name> ls -l**

The authenticity of host 'QA\_server\_name' can't be established.  
 RSA key fingerprint in md5 is: fe:56:84:9e:d1:2a:4c:22:4b:61:3a:ed:b3:45:a9:c4  
 Are you sure you want to continue connecting(yes/no)? **yes**  
**Accept any warning messages**

**e. Test the SSH commands (on all servers)**

```
ssh <DEV-server-name> -l <your-user-id> ls -l
ssh <QA-server-name> -l <your-user-id> ls -l
ssh <PROD-server-name> -l <your-user-id> ls -l
```

You should **NOT** be prompted to supply a password or see any other displays/prompts other than the contents listing of your home directory on the local and remote servers.



```
scp $SAG/sagenv <DEV-server-name>:/tmp/xxx
scp $SAG/sagenv <QA-server-name>:/tmp/xxx
scp $SAG/sagenv <PROD-server-name>:/tmp/xxx
```

You should **NOT** be prompted to supply a password or see any other displays/prompts other than the Progress bar as shown below.

```
Linux-prompt:> scp myfile.txt cronus-u25:/tmp
Linux-prompt:> scp myfile.txt cronus-u25:/tmp/xxx
myfile.txt 100% |*****| 1077 00:00
```

Repeat the steps (a) through (e) for each of the EspControl users.

**Guidelines for Remote Shell (rsh) setup**

**NOTE:** Skip this section if 'ssh' is the required protocol.

The examples shown below are to be used as a 'guideline' to configure the remote-access program 'rsh'.

The following commands should be repeated on each of the different servers that form part of the EspControl LifeCycle environment.

**Setup for 'rsh/remsh'**

Also see: *man hosts.equiv(1)* documentation.

**If you are using Linux enable normal rcp, rsh and rlogin.**

```
Define a /etc/hosts.equiv file
root-Linux-prompt: # cd /etc
root-Linux-prompt: # vi hosts.equiv
```

Add the server names and user-id's or + to allow access for all users (see examples below).

```
Limited Access per user
<DEV-server-name> sag
<QA-server-name> sag
<PROD-server-name> sag
```

or

```
Full access for all users
<DEV-server-name> +
<QA-server-name> +
<PROD-server-name> +
```

Repeat this on each of the servers.



Test the *rsh/remsh* connection with:

```
rlogin <DEV-server-name> -l <user-id>
rsh DEV-server-name> -l <user-id> ls -l
rcp <test-file> <DEV-server-name>:/tmp
```

```
rlogin <QA-server-name> -l <user-id>
rsh QA-server-name> -l <user-id> ls -l
rcp <test-file> <QA-server-name>:/tmp
```

```
rlogin <PROD-server-name> -l <user-id>
rsh PROD-server-name> -l <user-id> ls -l
rcp <test-file> <PROD-server-name>:/tmp
```

## 7.2 LINUX-SHELL settings – using migrate user:

**NOTE: Skip this section if EspControl is not being used.**

### Setup Summary

- 1) Create a dedicated EspControl transfer user ***espcntrl*** on ALL machines.
- 2) Configure 'ssh' on each of the servers for user-id ***espcntrl***
- 3) Test ssh configuration as user ***espcntrl*** to all servers
- 4) Configure 'ssh' for each "developer" user-id(s)
- 5) Test ssh configuration for each developer user-id(s)
- 6) Merge "developer" authorized\_keys to "espcntrl" authorized\_keys
- 7) Merge *espcntrl* authorized\_keys to "developer" authorized\_keys
- 8) Run tests as developers using the *espcntrl@<machine-name>* syntax

For the purpose of this example we have 2 servers: **DEV** and **PROD**.

1. Login as a "root" user and create user-id "espcntrl".
- 2,3 Refer to [Section 6](#) points (a) through (e) for user 'espcntrl'
- 4,5 Refer to [Section 6](#) points (a) through (e) for 'developer' user-id
6. Append the "developer" authorized\_keys to "espcntrl" authorized\_keys

### Login as a super user "root"

```
Linux-prompt:> cd $HOME/.ssh
```

```
Linux-prompt:> su <root-password>
```

```
root-promptt:> cat authorized_keys >> /users/espcntrl/.ssh/authorized_keys
```



7. Copy *espcntrl* authorized\_keys to ALL servers.  
 Linux-prompt:> **cd ~espcntrl/.ssh**  
 Linux-prompt:>  
**scp authorized\_keys <PROD-server>:/users/espcntrl/authorized\_keys.new**

**Append** temp *authorized\_keys.new* to existing *authorized\_keys* on ALL servers

**On PROD**

Linux-prompt:> **cd ~espcntrl/.ssh**  
 Linux-prompt:> **cat authorized\_keys.new >> authorized\_keys**

8. Run tests as developer ID using the *espcntrl@<machine-name>* (see example below).

**As a development user-id (example 'cronus' is used)**

Linux-prompt:> **ssh espcntrl@DEV-server ls -l**  
 /users/cronus/.ssh > **ssh espcntrl@<DEV-server> ls -l**  
 The authenticity of host 'DEV-server' (172.30.3.2) can't be established.  
 RSA key fingerprint is fe:56:84:9e:d1:2a:4c:22:4b:61:3a:ed:b3:45:a9:c4.  
 Are you sure you want to continue connecting (yes/no)? **Yes**

You should **NOT** be prompted to supply a password or see any other displays/prompts other than the contents listing of your home directory on the local and remote servers

Linux-prompt:> **ssh espcntrl@PROD-server ls -l**  
 /users/cronus/.ssh > **ssh espcntrl@<PROD-server> ls -l**  
 The authenticity of host 'PROD-server' (172.30.3.2) can't be established.  
 RSA key fingerprint is fe:56:84:9e:d1:2a:4c:22:4b:61:3a:ed:b3:45:a9:c4.  
 Are you sure you want to continue connecting (yes/no)? **Yes**

You should **NOT** be prompted to supply a password or see any other displays/prompts other than the contents listing of your home directory on the local and remote servers



**Test scp as *espcntrl* user-id.**

```
Linux-prompt:> scp testfile.txt espcntrl@PROD-server:/tmp
```

You should **NOT** be prompted to supply a password or see any other displays/prompts other than the Progress bar as shown below.

```
/users/cronus> scp testfile.txt espcntrl@cronus-u25:/tmp  
testfile.txt 100% |*****| 993 00:00
```

You should **NOT** be prompted to supply a password or see any other displays/prompts other than the Progress bar as shown below.

```
Linux-prompt:> scp testfile.txt espcntrl@DEV-server:/tmp  
/users/cronus> scp testfile.txt espcntrl@cronus-sun:/tmp  
testfile.txt 100% |*****| 993 00:00
```

You should **NOT** be prompted to supply a password or see any other displays/prompts other than the contents listing of your home directory on the local and remote servers.



## 8. SETUP NATPARM(S)

For the ESP software to function properly special attributes are required to be set in the “**NATPARM**” module used when evoking a “Natural” session.

The following attributes can be modified in the **default Natural profile parameter "natparm"**. A new Natural profile can also be imported from the installation package to contains all the attributes required for the ESP software.

We recommend using Natparm Import function to create a “**new and separate**” **Natural profile** based on an existing working profile; this should be done in each of the Natural environments where the ESP software is going to be used. The workfile assignments and print device assignments must be changed to accommodate the ESP software requirement and this might affect the current application requirements.

*To create a “**duplicate**” **natparm profile**; open your “**default**” **natparm profile** and use the **SAVE AS** option from NATPARM function to save the new name for example: **espdev, espqa or espprd**.*

Alternatively, you can use the **natparm Import option** to import the example Natparm supplied with the installation package. open your “**default**” **natparm profile** and use the **SAVE AS** option from NATPARM function to save the new name for example: **espdev, espqa or espprd**.

```
Login to Linux as user-id “sag”  
Linux-prompt:> cd /opt/InstallImages/cronus/  
Linux-prompt:> cd Cronus_Esp/install/cronus_struct/system  
Linux-prompt:> cp DEFAULT.LST /tmp
```

Use the **natparm Import option** to import the example Natparm DEFAULT from /tmp and then use the **SAVE AS** option from NATPARM function to save the new name for example: **natd, natt** or **natp**.

For the purpose of this document the new NATPARM was saved as **NAT9**

Execute the Software AG **NATPARM** profile editor

```
As the user-id “sag”  
natparm parm=NAT9
```



**Update and or verify the following parameters:**

**User DBMS Assignment (UDB)**

Define the DBID (**UDB**) where you are planning to load the ESP Adabas files. The ESP Natural DDM setting for all DDMs are set to ZERO which forces the session to refer to the DBMS/**UDB** setting. If an existing NATPARM is to be used with the UDB already defined, and the ESP files are loaded in a separate Adabas Database, then the **TF** parameter should be inserted to reflect the correct file-translation to ESP Database.

File		Edit		Configuration				Search	
		Administrator DBMS Assignment							
		Transl		C		Production		Test	
				DBID	FNR	DBID	FNR		
		Admi		123	3000	31	3000	->	
		User		123	3001	31	3001	->	
				123	3002	31	3002		
				123	3003	31	3003		

Translate **all** ESP files (**3000 to 3020**) to new DBID. In the example above **DB 123** is the Application database (as per UDB) and **DB 031** the ESP Database.

**Batch Mode**

**Channels (File Names)**

**Input data**

File name (CMOBJIN) **\$CMOBJIN**

**Input commands**

File name (CMSYNIN) **\$CMSYNIN**

**Output**

File name (CMPRINT) **\$CMPRINT**

**Natural log (NATLOG) all**

Verify the following *minimum* requirements.

**Buffer Sizes:**

SAG Editor (EDTBPSIZE) **4000**

SAG Editor Logical Files **512**

Storage for sort **1024**

Source Area **4**

Work Area **10**



**Devices:**

VIDEO (No change)  
**LPT1 = \$CMPRT01**  
**LPT2 = \$CMPRT02**  
**LPT3 = \$CMPRT03**  
**LPT4 = \$CMPRT04**  
**LPT5 = \$CMPRT05**  
..  
**LPT31 = \$CMPRT31**

**Report Assignments**

Report 0 – No change  
Report 1 – **LPT1**  
Report 2 – **LPT2**  
Report 3 – **LPT3**  
Report 4 – **LPT4**  
Report 5 – **LPT5**  
..  
Report 31 – **LPT31**

**Environment Assignments**

**Steplibs**

Add **ESPSOFT** with default fuser **DBID** and **FNR** as **STEPLIB**  
Add **SYSEXT** with default fnat **DBID** and **FNR** as **STEPLIB**  
Add **SYSLIBS** with default fnat **DBID** and **FNR** as **STEPLIB**

**Limits**

Processing Loop Limit LT **0**  
MADIO **0**  
MAXCL **0**  
System Time Delay **0**

**Workfiles**

Number 1 = **\$NATWK01**  
Number 2 = **\$NATWK02**  
Number 3 = **\$NATWK03**  
Number 4 = **\$NATWK04**  
Number 5 = **\$NATWK05**  
..



..  
Number 31 = ***\$NATWK31***  
Number 32 = ***\$NATWK32***

The format of the workfiles can be left at “*default*”.

#### **Program Loading and Deletion**

The following program should be added to the NATPARM to automatically stack the ESP start-up routine.

Natural Stack Command: ***ESPSETUP***

**\*\*NB\*\*** To avoid start-up errors, **ONLY** add this routine (ESPSETUP) after you have executed the NATURAL ESP INSTALL program in LIBRARY ESPSOFT.

**\*\*NB\*\*** To avoid LICENSE errors, the LIBRARY SYSLIBS must be defined as STEPLIB for ESPSOFT environment.

**Save the NATPARM (repeat this for each of your environments)**

This “NATPARM” should always be used to execute the ESP software (EspBatch, EspControl, EspAuto) – it is referenced in the alias scripts located in ***\$CRONUS/natscripts***; but also used internally by the application. Verify and update the scripts if the NATPARM module is renamed.

## **9. ADABAS DATABASE REQUIREMENT**

The ESP Adabas files can co-exist in the application database but only if the file-range **3000-3020** is available. If not, we recommend a separate Adabas database to host the ESP files.

#### **Setting the Translate File parameter (TF) for a separate ESP Database**

If the ESP files are loaded in a separate Adabas database then update the **TF** parameter for your NATPARM (**See Section 8**) to reflect the correct DBID and translation table.



**9.1 Create separate ESP ADABAS Database**

This step can be ignored if the ESP files are loaded in the current application's database. (refer to section 10.2 below). Make sure to use this **DBID** when executing the Cronus **INSTALL** script.

Create a Cronus ESP Database using *dbgen*

On the Linux command prompt execute *dbgen* and follow the option on “main” menu.

For Example

**Parameters:**

```

Database ID           : 31
Database name        : ESP_DEV
Database path        : /opt/softwareag/Adabas
Maximum number of files : 4000
Command interpreter  : /bin/sh
Configuration file name : db31.conf
    
```

**Container:**

**Minimum configuration**

CONTAINER	SIZE	BLKSIZE	Root Path Name...
<i>ASSO</i>	<i>2000MB</i>	<i>8KB</i>	<i>Raw or F/system</i>
<i>DATA</i>	<i>3500MB</i>	<i>16KB</i>	<i>Raw or F/system</i>
<i>WORK</i>	<i>600MB</i>	<i>16KB</i>	<i>Raw or F/system</i>

Execute the “*adainst 031*” command to create a default *DB031.INI* file.

Insert the Cronus suggested DB **NUCPARMS** in the **\$SAG/ada/db031/DB031.INI** file.

Copy the example file from

*<installdir>/install/cronus\_struct/system/db031.ini* into the *DB031.INI* file under the section **NUCPARMS**.

```

Linux-prompt:> cd <installdir>/install/cronus_struct/system/
Linux-prompt:> cp db031.ini $ADADIR/db031/db031.ini
    
```



---

To create a database using SAG defaults copy the example Cronus INI file after the installation. Insert the Cronus suggested DB **NUCPARMS** in the **\$ADADIR/dbnnn/DBnnn.INI** file. Copy the example file from **\$CRONUS/install/system/db031.ini** into the **DBnnn.INI** file under the section **NUCPARMS**.

**NOTE:** Edit your **DBnnn.INI** and insert the **db031.ini** at the end between **NUCPARMS** and **NUCPARMS-END**.

**Start the database as “sag”**

Linux-prompt:> **adastart 031**

**9.2 Requirement on existing ADABAS Database**

The installation script will load the required ESP files in the database number provided during the installation. **PLEASE NOTE:** The ESP file numbers range from **3000 to 3020**.



## 10. INSTALL CRONUS SOFTWARE

### Assumptions

- If **Natural Security** is installed:
  - Access to Natural environment set with **AUTO=ON**
  - 'Logon to Library' message from NATSEC **must** be suppressed.
  - Access to a Natural **library ESPSOFT** defined with **PUBLIC** access.
  - **ESPSOFT** set as **STEPLIB** to all other application Libraries.
  - The installer has **full** access to the Natural load utility **SYSOBJH**.  
For further information, please consult the Natural Security Administrator.
- The Natural Parameter parm (**natparm**) has been configured.
- The **remote shell** setup (**rsh** or **ssh**) has been configured. (if EspControl is used)
- The **super-user** access "**sudo**" is configured.
- **Perl** packages are installed and configured.
- Install using user-id "**sag**" with **umask** setting of **002**.

### Installation

On the Linux Prompt execute as user-id "sag"

```
Linux-prompt:> cd <installeesp_directory>
```

```
Linux-prompt:> cd install
```

```
Linux-prompt:> INSTALL
```

**During the installation, certain parameters will be required for confirmation:**

- Confirm path setting for \$SAG  
Cronus structure is by default created under \$SAG/cronus this parameter can be modified to enter a new path to be used for the \$CRONUS base.
- Enter the three(3) digit Adabas Database number for ESP files.
- Enter the NATPARM module name created or updated in [section 8](#) of this document.
- Enter the NATURAL Buffer Pool name to access Natural environment.
- The INSTALL script detects previously installed ESP environments and automatically perform an "UPDATE" install whereby secondary environments for EspControl and EspBatch will be installed.
- A 'CLEANUP' script is also supplied that will remove unwanted ESP environment.  
(install/cleanup.esp)



**Example INSTALL script output**

```

-----
                Cronus Consulting Install Procedure:
                (C) Copyright Cronus Consulting 2022
                ESP Base V7.2.1

%CRONUS-I-CRSINST, [Enter] to continue with NEW installation or 'Q' to
abort: <ENTER>
-----

                Cronus Consulting Install Procedure:
                (C) Copyright Cronus Consulting 2022
                ESP Base V7.2.1
                == NEW Installation ==
%CRONUS-I-SAGPATH, Found $SAG as /apps/sag - is this correct?
Press [ENTER] if this path is correct or enter SAG path: <ENTER>
%CRONUS-I-SAGPATH, Setting $SAG as /apps/sag
%CRONUS-I-ESPPATH, Setting $CRONUS base path
%CRONUS-I-ESPPATH, Use /apps/sag/cronus as $CRONUS?
[ENTER] to use default path or enter complete new path:/apps/cronus
Please enter the 3 digit ESP DBID or enter for the default of 031:021
%CRONUS-I-ESPDBID, ESP Database is set to: 021
%CRONUS-I-CCADADB, DB021 located successfully
Enter your sagenv name and path - the default is /apps/sag/sagenv:
sagenv name and path is: /apps/sag/sagenv
%CRONUS-I-SAGPATH, Loading SAG environment
%CRONUS-W-CRONHMD, Creating Cronus base directory /apps/cronus
%CRONUS-I-COPYCCS, Building Cronus Structure
%CRONUS-I-COPYSTR, Cronus Structure created successfully
Please enter the NATPARM module for ESP environment:dev21

                Installing from /usr/sag/espinstall

%CRONUS-W-CRSHOME, $CRONUS not defined.
Please enter NATURAL Buffer Pool to use (eg. natbp):natbp
Please enter the admin user-id for EspBatch (it can also be 'sag'),
this admin user must exist before you continue.
Enter the user-id:espbtch
%CRONUS-I-JBSUSER, admin user set to 'espbtch'
Enter the environment name you are installing (dev,qa,prod):dev21
Install EspControl environment (y or n?):y
Is this your development environment (y or n?):y
%CRONUS-I-COPYCCE, Building Cronus :dev21: script path
Will you be using the 3rd party spooler Xi-Text (y or n?):y
%CRONUS-I-ESPPRNT, ESP environment with XITEXT set to:Y
%CRONUS-I-COPYCCE, Scripts and paths updated successfully
%CRONUS-I-COPYCWF, WF data paths updated successfully
%CRONUS-I-LOADXIS, Loading XiText print scripts
%CRONUS-I-LOADCCE, Loading Cronus :dev21: environment
%CRONUS-I-LOADCCE, Loaded Cronus environment successfully
%CRONUS-I-CCADADB, Checking for Cronus DB021 database
%CRONUS-I-CCADADB, Cronus DB021 located successfully
%CRONUS-I-FILEFDU, Loading Cronus Adabas Files
%CRONUS-I-FILEFDU, Loaded Cronus Adabas Files
%CRONUS-I-FILEFDU, Checking logfile
%CRONUS-I-FILEFDU, Cronus Adabas files loaded successfully
%CRONUS-I-FILEFDU, Cronus FDTs saved in
/apps/sag/ada/db021/esp_fdt_dev21
    
```



```
%CRONUS-I-SYSOBJH, Start of ESPSOFT load section
%CRONUS-I-SYSOBJH, Attempting to load programs. [ENTER] to
continue:<ENTER>
CRONUS-I-SYSOBJH, ESPSOFT library modules loaded successfully
%CRONUS-I-SYSOBJH, Load reports are available:
%CRONUS-I-SYSOBJH, CMPRINT report: sysobjh.cmprint
%CRONUS-I-SYSOBJH, SYSOBJH report: sysobjh.report
%CRONUS-I-SYSOBJH, Reports locatted in:
/apps/cronus/install/esp_src_dev21
%CRONUS-I-DEMOSCL, ESPSOFT demo SCL copied successfully
%CRONUS-I-DEMOSCL, Use JS315 to import SCL CRONUS.INSTALL.SCL
from SUBSYSTEM TEMP
```

**Please add the ESP environment file 'sysenv.setup' to your default user .profile file (and others)**

This execution of the sysenv.setup file is required for access to the ESP software. We recommend adding it after the reference to the 'sagenv' file:

**Insert . /apps/cronus/sysenv.setup into your .profile or .bash\_profile**

You will have to logout and log-in again to load the new environment file.  
EspControl information note:

=====

Please complete and VERIFY the remote-shell setup, before you continue with the Natural configuration  
Press [ENTER] to complete the Linux/Unix setup...



---

**START OF INFORMATION NOTE:****ESP environment configuration file**

During the installation of ESP software, the file **`$CRONUS/scripts/espenv.<envname>.bsh`** is created that contains important path definitions for each of the ESP environment(s).

The **`espenv.<envname>.bsh`** file for the environment should be updated if any of the default paths are modified.

**For example:** To relocate the default spool-staging area, the environment variable **`$PRINTTMP`** which is by default located in directory **`$CRONUS/espspool_tmp`**, should be modified to reflect the new path. The **`$PRINTTMP`** environment variable references the directory that is used as temporary spool area when creating reports in Natural.

**Login environment files `sysenv.setup` & `sysenv.setup.batch` (Default configuration)**

Important environment variables are defined in the Cronus **`sysenv.setup`** file.

This file can be modified to allow global setting for a specific group or individual users.

**Important Variables**

**`CRONUS`**=\$SAG/cronus

**`PATH`**=\$PATH:/usr/local/bin

**Default aliases: (defined in `$CRONUS/sysenv.system`)**

**`alias <envname>='$CRONUS/natscripts/<envname>'`**

*Note: Additional "global" environment variables, path settings and alias can be defined to suite specific needs. By defining global settings-paths in the **`sysenv.setup`** or **`sysenv.system`** file, the amount of changes will be limited to a single file rather than changing all **`.profile`** files on the system.*

**NB Note:** After running the installation script , add the Cronus **`sysenv.setup`** script to your default **`.profile`**. In order to set the required environment variables, logout of the current session and log back in..



**Example Profile Definition:**

```
# My Profile
stty istrip
stty erase ^?
PATH=$PATH:/usr/bin:/usr/ucb:/etc:/usr/local/bin:.
export PATH
MANPATH=:/usr/man:/usr/share/man:/usr/local/man
export MANPATH
TERM=vt220 export TERM
. /opt/softwareag/sagenv                    → The Software AG environment
file
. /opt/softwareag/cronus/sysenv.setup → The Cronus environment file
```

In order to change the default **EspControl temporary path** (as per **\$ESPCCTMP**), apply the **same change** on **ALL** environments. The path should be the **SAME** on all environments. The **ESPCCTMP** definition is located in the ESP environment file:

**\$CRONUS/scripts/espenv.<envname>.bsh.**

**Important ESP variables**

<b>JBSDBD</b>	ESP Adabas Database Number (nnn)
<b>JBSENV</b>	ESP Environment Name
<b>JBSPARM</b>	Natural Parameter Definition for online and batch
<b>JBSBP</b>	Natural Bufferpool Name
<b>JBSJE</b>	EspBatch batch structure name
<b>JBSLD</b>	EspBatch logfile directory
<b>JBSJS</b>	EspBatch batch-scripts directory
<b>JBSUS</b>	EspBatch utilities directory
<b>JBSUE</b>	EspBatch utilities logs directory
<b>JBSTMP</b>	EspBatch temporary directory
<b>PRINTTMP</b>	EspBatch spool staging area
<b>ESPCCTMP</b>	EspControl scripts staging directory

**END OF INFORMATION NOTE**



## 11. LOAD ESP NATURAL PRORGAMS

Continue with this section **only** if the *cronus\_vnnn\_install* section **CRONUS-E-SYSOBJH** **failed**. It is probably related to Natural Security not being configured corrected or as suggested.

### Example error report from INSTALL script.

```
%CRONUS-I-SYSOBJH, Attempting to load programs. Enter to continue:
%CRONUS-E-SYSOBJH, ESPSOFT library loaded failed
%CRONUS-E-SYSOBJH, Investigate the error reports
%CRONUS-E-SYSOBJH, CMPRINT report: sysobjh.cmprint
%CRONUS-E-SYSOBJH, SYSOBJH report: sysobjh.report
%CRONUS-E-SYSOBJH, Reports locatted in:
      /usr/sag/cronus/install/esp_src
```

This is probably because the prerequisites were **not** followed especially with regards to defining the library **ESPSOFT** in **Natural Security**, and/or the installer does not have **full** access to execute the Natural **SYSOBJH** utility.

### If **Natural Security** is installed

- Access to Natural environment must be set with **AUTO=ON**
- 'Logon to Library' messages must be suppressed.
- Access to the Natural library **ESPSOFT** must be **PUBL** for installation. (full access)
- The installer needs **full access** to the Natural load utility **SYSOBJH**.

For further information on Natural Security setup, please consult Natural Security Administrator or refer to the Software AG Natural Security documentation.

The Natural load utility **SYSOBJH** requires pre-defined workfiles to be setup before executing the load process.

The installer (user running this installation script or commands) must have **full access** to the **SYSOBJH** utility and library **ESPSOFT** as defined in **Natural Security**.



To manually execute the SYSOBJH load process:

Set the following **workfiles 3 & 4** as temporary files and set **workfile 1** as main input file.

**Example.**

```
NATWK01=$CRONUS/install/esp_src/esp.obj.V7.n.n.sag
NATWK03=/tmp/wf3.txt
NATWK04=/tmp/wf4.txt
export NATWK01 NATWK03 NATWK04
```

Execute Natural using the “newly” created natparm “*espdev, espqa or espprd*”

```
natural parm=<your_parm> etid=$$ bp=<your_natbp_name>
or
execute the alias “espdev” “espqa” or “espprd”
```

(The aliases are set-up in the sysenv.system file and it executes the script in the \$CRONUS/natscripts directory)

On the direct command line enter “**SYSOBJH**”

- Select **Load Objects**
- Select **Load objects from Natural work file(s)**
- Select **Portable format**
- Verify the workfile name: **Work file \$NATWK01**
- Continue with defaults**
- Load all object from the workfile**
- Enter on the confirmation screen**
- You should see a message “**Load Function Started**”

Once the load has completed you will see a report with all the objects loaded – Use PF 3 or (%k3) to terminate SYSOBJH session...



---

## 12. EXECUTE THE ESP INSTALL PROGRAM

Start a Natural session using the “newly” created natparm and alias definitions located under *\$CRONUS/natscripts/ “espdev” “espqa” or “espprd”*

*natural parm=<your\_parm> etid=\$\$ bp=<your\_natbp\_name>*

On the Natural direct command prompt execute.

***LOGON ESPSOFT***

***INSTALL***

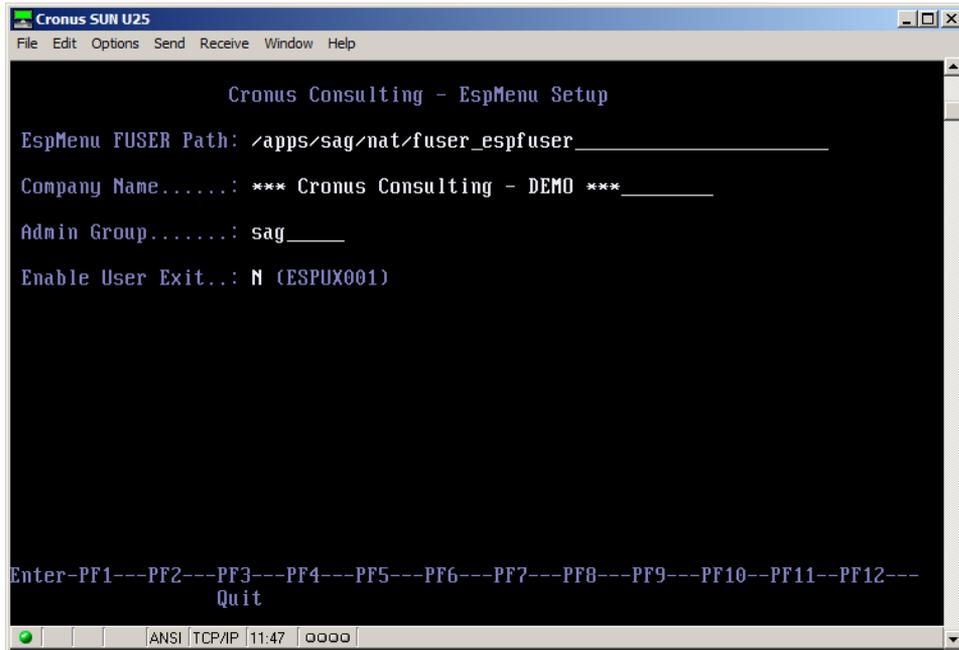
The ***INSTALL*** program installs the ESP software in the following sequence:

- **EspMenu**  
Default user menus and functions **MA\*** are defined including the administrator account MENUADM.
- **EspBatch**  
Default user menus and functions **JS\*** are defined including the ESPBATCH default configuration and environment settings.
- **EspAuto**  
Default user menus and functions **JS4\*** are defined including the ESPAUTO default configuration and environment settings.
- **EspControl**  
Default user menus and functions **CC\*** are defined.



### 13. ESPMENU INSTALL

#### EspMenu Defaults



**Parameters:**

**FUSER Program Path:**

Natural Fuser O/S Path

**Company Name:**

Main Heading in EspMenu

**Admin Group:**

Administrator group for menu access. This group should be defined on the Linux O/S level, users that are linked to this O/S group will automatically have administrator access to **EspMenu**. The ADMIN group can be set to any existing group on the O/S or a new group can be added to match this group name.

**Enable User Exit:**

Valid values are **Yes** and **No**. If **Y** is specified, function key **PF2** is enabled while using **EspMenu**, if **PF2** is invoked the user exit **ESPUX001** is called after the termination of EspMenu. This user-exit can be modified to call a *user-defined program/menu*.

For more detail on EspMenu refer to [EspMenu documentation](#).



## 14. ESPbatch INSTALL

### EspBatch Defaults

```

Cronus SUN U25
File Edit Options Send Receive Window Help

Cronus Consulting - EspBatch Setup

Sub Systems
LOG.....: /data/sag/cronus/data/dev21/wf/LOGS_____
TEMP.....: /data/sag/cronus/data/dev21/wf/TEMP_____
NOTIFY.....: /data/sag/cronus/data/dev21/wf/NOTIFY_____
REPLIES.....: /data/sag/cronus/data/dev21/wf/replies_____
ARCHIVE.....: /data/sag/cronus/data/dev21/espools_archive_____
FMONPATH.....: /data/sag/cronus/espmon_____
FMONERR.....: /data/sag/cronus/data/dev21/wf/FMONERR_____
FMONLOG.....: /data/sag/cronus/data/dev21/wf/FMONLOG_____

Default Printer
Logical Printer ID.: laser1_____
Description.....: Laser Printer_____
Form Type.....: default_____
Physical Printer ID: laser_____

EspBatch FUSER Path: /apps/sag/nat/fuser_espuser_____

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
Quit
ANSI TCP/IP 11:58 0000
    
```

**Default Parameters:**

**PATHS:** The default logfile and workfile locations are displayed. **These paths may be modified but can also be changed after the installation using the EspBatch JS002 ESPbatch SETUP configuration utility.**

**EspBatch FUSER path:** The fuser path location for the ESP software is displayed. This value is automatically detected and should be verified before confirming the action.

**EspBatch default configuration settings**



```

Cronus SUN U25
File Edit Options Send Receive Window Help

----- Add EspBatch Parameters -----

Batch No: 0 Rollover Batch No: 9999999999 EspPause Flags: NONE
Run ID.: 0 Rollover Run ID.: 9999999999 SCL Start User: CRONUS
Status.: KILL Batch Submit User: sag Default Env ID: 21_
XI Text.: Y Batch: N Job Name Submit.: N Env Name.....: DEU21_
Abort SCL Head: Y

EspBatch Script Name: Jobsched.dev21.bsh
Setup Card Format...: ASCII GDG MAX Version..: 9999
Super Access Submit.: sudo -E GDG Access Method: INCREMENT
Super Access (JS011): sudo -E Submit Interval..: 1_
Global RC.....:

E-Mail
Sender Name..: info Domain.....: @cronus.co.za
Reply Address: info@cronus.co.za
Parameters...: sendmail -t -oi -oem -r
Notify On....: Y Address: support@cronus.co.za
Remove Logs..: N Server Type: SMTPSERVER
SMTP Server...: smtp.mweb.co.za (IP/Domain)

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
Exit Upd

ANSI TCP/IP 12:13
    
```

**PLEASE NOTE:**

When configuring "sudo" the Linux Systems Administrator must setup the option to PRESERVE the environment variables. Eg. On Solaris 10+ the `-E` parameter should be set during this setup process. Example: **“Super Access Command: `sudo -E`”**. On other O/S like AIX remove the `env_reset` default from the `sudouers` list.

To use the default values continue with **PF5 (UPD)**

**EMAIL Setup:**

Define your email **SMTP server information** – the values displayed are **example** values only.



**EspBatch Defaults**

```

Cronus SUN U25
File Edit Options Send Receive Window Help
Valid Options are: (P)arameters
Add EspBatch Environment
Environment ID.....: 21          Natural Security.....: N
Auto Login.....: N
EspBatch Path.....: /data/sag/cronus/batch/dev21
EspBatch Setup File....: /data/sag/cronus/sysenv.setup.batch
Natural FUSER path.....: /apps/sag/nat/fuser_espfuser
Natural Command.....: natural
Natural Bufferpool.....: natbp          Create Log Files.....: Y
Natural Parameter Module: dev21      Remove Scripts.....: N
Remove TEMP work files.: N

Record Hold Processing (WH)..: ___      User Database ID (UDB)....: ___
User Identification (ETID): ___      Storage for Sort (SORTSZE): ___
Zero Division (ZD)..: ___      Max DBMS Calls (MADIO)..: ___
Day Differential (DD)..: ___      Default Rep No (MAINPR)..: ___
Time Differential +-HH,MM (TD)..: ___      Page Size (PS).....: ___
Line Size (LS)..: ___      Parameter Input : S

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10---PF11---PF12---
Exit Upd
ANSI TCP/IP 12.31
    
```

To use the default values continue with **PF5 (UPD)**

**Parameters:**

- Environment ID: Numeric value used to identify the environment.
- Natural Security: Valid values are: (Y)es and (N)o. If set to (Y)es the job step will run under control of Natural Security.
- Auto Login: Valid values are: (Y)es and (N)o. If set to (Y)es Natural Security is invoked with *AUTO=ON*.
- EspBatch Path: Contains the file system path used by EspBatch for script generation and log file creation. The EspBatch Path may only be defined for the default EspBatch environment. This field is protected for other environments.
- EspBatch Setup File: Contains the file system path and name of the EspBatch environment file. The environment file contains settings required by EspBatch which include environment variables, a link to the shared libraries and execution of the "sagenv".
- Natural FUSER path: Contains the file system path of the EspBatch source code. The Natural FUSER Path may only be defined for the default EspBatch environment. This field is protected for other environments.



---

Natural Command:	Contains the name of the natural executable. Default is <b><i>natural</i></b> .
Natural Bufferpool:	The Natural Bufferpool used when submitting jobs steps using the specified environment.
Create Log Files:	Valid values are: (Y)es and (N)o. If set to (Y)es a detailed log file is created in Sub System <b>LOG</b> for each batch job. The naming convention used for these log files is <b><i>batch-id-&lt;batch no&gt;.&lt;EspBatch Env&gt;</i></b> . Batch No contains the system generated batch number and EspBatch Env contains the value of batch variable <b><i>ENVIND</i></b> .
Natural Parameter module:	The Natural parameter module used when submitting jobs steps using the specified environment.
Remove Scripts:	Valid values are: (Y)es and (N)o. If set to (Y)es the script used to submit a Job step is removed after the script has completed execution. A value of (N)o retains the script after execution.
Remove TEMP work files:	Valid values are: (Y)es and (N)o. If set to (Y)es temporary work files are removed after execution of the job step. A value of (N)o retains temporary work files.
Profile parameters:	Refer to Software AG's Natural documentation for a description of the allowable natural parameter module parameter values.
Parameter Input:	Valid values are: (S)ingle and (M)ulti. This parameter is used to control the method whereby parameters are stacked for input within a natural module. If (S)ingle is specified then the natural module must contain a single INPUT statement e.g. <b><i>INPUT #PARM1 #PARM2</i></b> . If (M)ulti is specified then each parameter must have its own INPUT statement e.g. <b><i>INPUT #PARM1, INPUT #PARM2</i></b> . Note that natural programs executed from library <b>ESPSOFT</b> are always executed with parameter input type (M)ulti. If no value is specified the parameter input type defaults to (S)ingle for all libraries except library <b>ESPSOFT</b> .

**After the INSTALL program you can execute the FAST command to load the EspMenu programs. FIN out of Natural on direct command prompt.**



**14.1 ESP scripts**

**START OF INFORMATION NOTE:**

The ESP scripts are defined in the directory **\$CRONUS/scripts**

**The following scripts are defined.**

**Eg.**

JobScheduler script	<i><b>Jobsched.&lt;env&gt;.bsh</b></i>
AutoScheduler script	<i><b>Autosched.&lt;env&gt;.bsh</b></i>
AutoScanner script	<i><b>Autoscan.&lt;env&gt;.bsh</b></i>
EspBatch Scheduler start-up script	<i><b>start.espbatch.&lt;env&gt;.bsh</b></i>
EspAuto Scheduler start-up script	<i><b>start.espauto.&lt;env&gt;.bsh</b></i>
Cronus RC script	<i><b>cronus_rc_&lt;env&gt;.bsh</b></i>
Cronus API interface script	<i><b>espapi_dev.bsh</b></i>

**EspBatch JobScheduler scripts:** Poling program used by EspBatch to submit jobs. One check to see if it is active by using function **JS012 or JS015** “Display Scheduled and Executing Jobs” (Will show "Running" next to Status: field in top right of screen) or on Linux prompt with “*ps -ef | grep Jobsched*”. If the poling program “Jobscheduler” is not running, batch jobs can still be submitted to the input queue, however execution will only commence once the “Jobscheduler” is restarted. “Jobscheduler” must be restarted from O/S prompt by executing **\$CRONUS/scripts/start.espbatch.<env>.bsh**. A logfile is available in **\$CRONUS/batch/<env\_name>/logs/JOBSCHED.<env-name>.LOG** for start-up information.

**END OF INFORMATION NOTE:**



## 14.2 Requirements for Cobol

**Skip this section if COBOL is not being used.**

If Cobol is installed and is required to be executed via EspBatch, please verify that a "cobenv" file located under **\$SAG** – (see example cobenv-file below). This file should also be referenced by your sysenv.setup.batch script in the \$CRONUS directory.

Example **cobnev** file - **\$SAG/cobenv**

```
export COBDIR=/opt/microfocus/cobol  
export PATH=$COBDIR/bin:$PATH  
export LD_LIBRARY_PATH=$COBDIR/lib:$LD_LIBRARY_PATH  
export COBPATH=/usr/sag/cobol/load
```

## 14.3 START THE EspBatch Scheduler

To start the Job-scheduler script, execute the start-up script on Linux command prompt:

**Start the EspBatch Scheduler Process**

**Eg:**

```
cd $CRONUS/scripts  
start.espbatch.<env>.bsh
```

You can view the logfile created in

**\$CRONUS/batch/<env\_name/logs/JOBSCHED.<env>.LOG** for errors.



---

## 15. ESPCONTROL INSTALL

After the *INSTALL* program execute the **FAST** command to access the EspControl menu Functions.

If **EspControl** is not yet installed or you cannot see it from the "**FAST**" menu under options "**CC**" Try installing it by manually executing Program **CINSTALL** in library **ESPSOFT**.

**PLEASE NOTE: EspControl should only be installed on the DEV environment.**

### a. **EspControl control variables are configured with function CC001**

This function is used to define the EspControl control variables. These variables are used during the execution of the migration process and are defined in two groups: **a)** Global variables – these are set once and are applicable for all environments defined in EspControl. **b)** Local variables – definitions for each of the Natural environments that form part of the EspControl environment. Information regarding the Natural program environments, libraries, host destinations and path's are defined and maintained under the local variable set-up. An environment entry should be defined for each of the Natural program environments.





**Local control variables for each environment:**

```

Cronus Consulting
File Edit Options Send Receive Window Help

CCP001          *** Cronus Consulting - DEV *** U711      11/20 15:28
CCM00102        Maintain ISR Control Variables          GAIL

Environment .....: 01
Environment Name...: Development_____
Local Indicator....: Y
Machine Name.....: cronus-u25:_____
Fuser DBID.....: 22
Fuser File Nr.....: 20
Fuser Path.....: /apps/sag/nat/fuser_dev_____
Fuser Backup Path..: /apps/sag/nat/fuser_devbck/.BCK_____
Source Staging Area: /apps/sag/nat/fuser_devbck/.SSA_____
Nat BufferPool Name: NATBP_____
Natparm Module Name: DEVCC_____
Natural Nucleus....: natural_____
Allow Source Ind...: Y
Shell Script Path..: /apps/sag/cronus/ccont_eco_____
QA Required Ind....: N

                                Clear all fields? NO_ (YES or NO)

Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Add   Quit                                     PgDn
VT220 TCP/IP 16:15 0000
    
```

**The following control variables should be defined:**

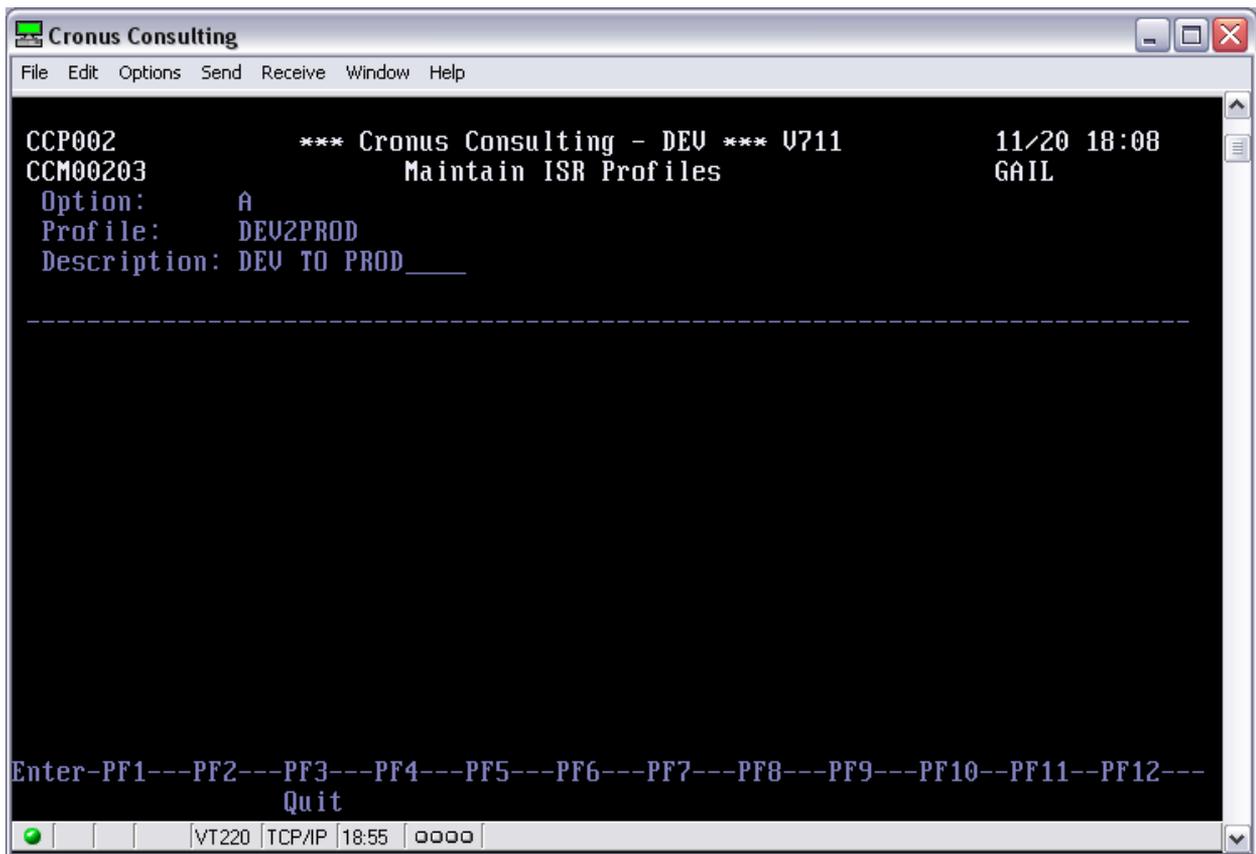
- Environment** : Environment Number
- Environment Name** : Environment Name – Description
- Local Indicator** : Local indicator to server where EspControl is running
- Machine Name** : Machine name/Host-name or IP address
- Fuser DBID** : Fuser DBID as defined in NATPARM
- Fuser File Number** : Fuser File Nr as defined in NATPARM
- Fuser Path** : Complete path to fuser
- Fuser Backup Path** : Complete path to backup fuser
- Source Staging Area** : Complete path to source save area
- (SSA should be different for each environment defined in CC001, if environment on different servers, this can be the same, but it is controlled by a code SAMESTAGE in CC010)**
- Nat buffer Pool Name** : Natural Bufferpool name for this environment
- Natparm Module Name** : Natparm that is used to access this environment (ESP)
- Natural Nucleus Name** : Natural nucleus name (must be in default path)
- Allow Source Indicator** : Indicates if source code should be allowed as default for the Environment (can be different per profile)



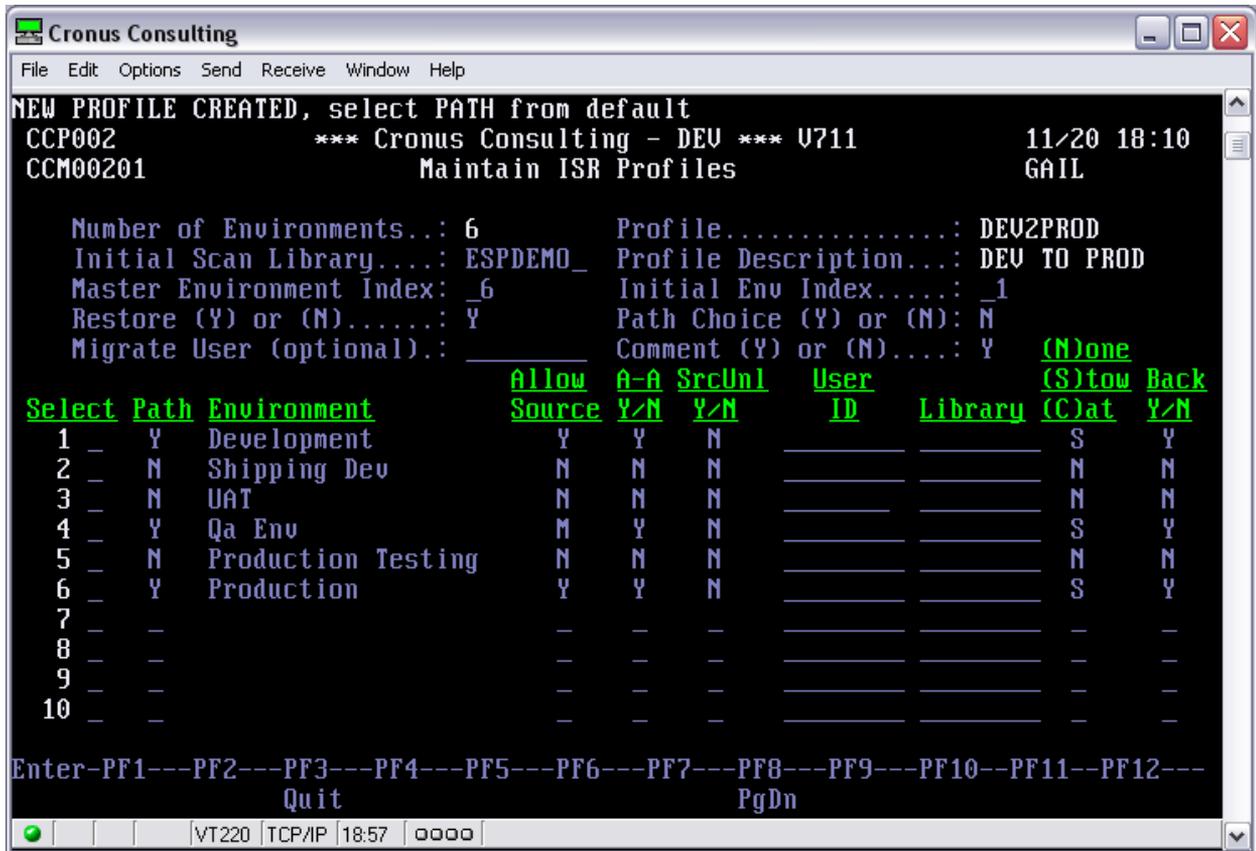
- Shell Script Path** : The complete path to EspControl Copy scripts (*ccont\_eco*) (see **Section C** below)
- QA Required Indicator** : Indicates if additional step is required before each migration (default for the environment but can be changed per profile)

**b. Create a Profile**

Once the control codes have been defined a MASTER profile will be automatically created. This can be viewed by enquiring on the profile in e. This profile is used internally by EspControl and at least one profile must be added that can be used across all environments, as a migration cannot take place without being linked to a profile. The MASTER profile may not be used in a migration.



Setup the defaults for the *DEV2PROD* profile



**c. Verify EspControl copy-scripts and path for SAG environment file**

The complete **\$CRONUS** structure which includes the EspControl copy scripts, should have been copied to the exact same path definition on each of the other servers. (execute the INSTALL script to automatically add new ECO environments)

**For example:**

On DEV server

Linux-prompt:> **echo \$CRONUS**

**/opt/softwareag/cronus**

Linux-prompt:> **cd /opt/softwareag**

Linux-prompt:> **scp -rp cronus <prod-server>:/opt/softwareag**

If there is only ONE physical server that hosts more than ONE EspControl LifeCycle environment (Natural environment), **or** different Natural versions installed, the base **\$CRONUS/ccont** directory must be **copied** to a practical name that include the environments as a suffix. If each of the EspControl LifceCycle environments (dev,qa,uat and prod) are on different physical servers keep the **\$CRONUS/ccont\_eco** directory names the **same** on all servers.



During the installation process the **`$(CRONUS/ccont_eco)`** (dev environment) directory is **automatically created** based on the original base directory **`$(CRONUS/ccont)`**

**For example:**

On DEV server (that shares QA and/or UAT Natural environments)

```
Linux-prompt:> cd $(CRONUS
```

```
Linux-prompt:> cp -rp ccont ccont_qa
```

```
Linux-prompt:> cp -rp ccont ccont_uat
```

Please ensure to **use the same path** name(s) when defining the EspControl Master Control Records in the following **Section 14 (function CC001)**

After creating the additional **`$(CRONUS/ccont_<envname>`** directories, **execute** the following **scripts** to update the **correct paths** for the EspControl copy scripts in your new directory.

**For example:**

On DEV server (that shares QA and/or UAT Natural environments)

```
Linux-prompt:> cd $(CRONUS
```

```
Linux-prompt:> cd ccont_qa
```

```
Linux-prompt:> change_pwd.bsh
```

```
Linux-prompt:> change_sag.bsh /opt/softwareag (parameter is the path for $(SAG)
```

The EspControl copy scripts are required on **each** of the environments defined in **CC001**. Please copy the **`$(CRONUS)`** base directory, retaining **ALL** file and directory **permissions**.

**d. Run Source-code scanner**

All Natural modules must be scanned using function **CC300 – Initial Source Code scanner** before they can be migrated via EspControl. EspControl keeps an inventory of modules and their dependants – it is only updated/stored during the **Source Code** scanning process. Any additional modules can be added later using function **CC050** option **PF6** (detailed in the User Documentation). If more than one environment in the Development arena has been defined in **CC001**, then each of these environments must be scanned in. The environment no is required when scanning via **CC300**. This is equal to the “environment no” reflected on **CC001**. ONLY Development source code must be scanned in.

**The source-code scanner function CC300 should only be executed ONCE. Please contact support before you execute CC300.**



The EspControl scripts are required on each of the environments defined in **CC001**. Please copy the **\$CRONUS/ccont** directory and scripts to each environment/server. (retain the execution permissions). **This does not apply to a single server installation unless you have multiple SAG product versions.**

**e. Copy *ESPERRTA* program**

The program "*ESPERRTA*" must be copied manually to each of the other "Natural" environments. This program is called by EspControl to reset the default ERROR Routine.

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The program "*ESPERRTA*" must be copied manually to each of the other "Natural" environments. This program is called by EspControl to reset the default ERROR Routine.

**g. Run Source-code scanner**

All Natural modules must be scanned using function **CC300 – Initial Source Code scanner** before it can be migrated via EspControl. EspControl keeps an inventory of modules and their dependants – it is only updated/stored during the **Source Code** scanning process.

**h. Verify LINUX-SHELL settings:**

**SSH Setup**

**Define SSH certificates**

```
ssh-keygen -t dsa
cp id_dsa.pub file in $HOME/.ssh to $HOME/.ssh/authorized_keys
Set the permissions to 600 for authorized_keys
```

The user's home directory should have a permission of 755 or lower. This allows the user to copy file between servers - copy the *authorized\_keys* to the others **hosts-servers** in the *\$HOME/.ssh* directory. (This should be done by the system administrator as root access might be required)

**Test the SSH commands**

```
ssh yourhost -l sag ls -l
scp $SAG/sagenv yourhost:/tmp/xxx
```

```
ls -l $HOME/.ssh
-rw----- 1 sag sag 600 May 11 12:25 authorized_keys
-rw----- 1 sag sag 672 May 11 12:25 id_dsa
-rw-r--r-- 1 sag sag 600 May 11 12:25 id_dsa.pub
-rw-r--r-- 1 sag sag 227 May 11 12:25 known_hosts
```



**Remember to manually authenticate any new/additional servers to your “ssh” environment:**

***ssh <server-name> ls -l***

The authenticity of host 'cronus-qa' can't be established.

RSA key fingerprint in md5 is: fe:56:84:9e:d1:2a:4c:22:4b:61:3a:ed:b3:45:a9:c4

Are you sure you want to continue connecting(yes/no)?**yes**

### **RSH/REMSH Setup**

**Enable normal rcp, rsh and rlogin**

Define a */etc/hosts.equiv* file

*10.11.1.10 sag*

*10.11.1.10 sagcrns*

**Test the rsh/remsh connection with:**

***rlogin yourhost -l sag***

***rsh yourhost -l sag ls -l***

***rcp file name yourhost:/tmp***