CHAPTER 2

Installing and Configuring the Cisco Workload Agent for OS/390

This chapter describes the procedures for installing and configuring the Cisco Workload Agent for OS/390 and includes the following sections:

- Preparing to Install the Cisco Workload Agent for OS/390
- Installing the Cisco Workload Agent for OS/390
- Configuring the Cisco Workload Agent for OS/390

Preparing to Install the Cisco Workload Agent for OS/390

This section tells you how to prepare for installation of the Cisco Workload Agent for OS/390. It includes the following sections:

- Verifying Prerequisites
- Configuring the IBM TCP/IP Stack
- Configuring the Sterling SOLVE:TCPaccess Stack
- Enabling the TN3270E Server Application
- Enabling Application Services WLM Participation
- Configuring the LocalDirector
- Setting APF Authorization

Verifying Prerequisites

Before installing the Cisco Workload Agent for OS/390, make sure you have the following software installed at the indicated levels:

- The Cisco Workload Agent for OS/390 requires OS/390 V2R5 or higher.
- The Cisco Workload Agent for OS/390 requires the CEE.SCEELKED data set, which contains the C support routines. Modules from this library are linked with the Cisco Workload Agent for OS/390. This library is distributed with OS/390.
- If you want SOLVE:TCPaccess to provide the automatic host and service application WLM registrations necessary for MNLB participation, the Cisco Workload Agent for OS/390 requires Sterling SOLVE:TCPaccess 5.2 or above, plus PTF TP07189.

Configuring the IBM TCP/IP Stack

To enable the IBM TCP/IP stack to participate in MNLB, add the following four statements to the TCPIP stack's PROFILE configuration file:

IPCONFIG SYSPLEXROUTING

DEVICE *devvipa1* **VIRTUAL 0**

LINK *linkvipa1* **VIRTUAL 0** *devvipa1*

HOME *cluster_ip_address linkvipa1*

The IPCONFIG statement with the SYSPLEXROUTING keyword enables the IBM TCPIP host to participate in MNLB.

The DEVICE statement with the VIRTUAL keyword defines a virtual interface to the TCP/IP stack. The virtual interface will be used for a virtual IP address (VIPA) associated with a cluster IP address.

The LINK statement associates the DEVICE statement with a HOME address.

The HOME statement identifies the cluster IP address.

Configuring the Sterling SOLVE:TCPaccess Stack

To enable the Sterling SOLVE:TCPaccess stack to participate in MNLB, add the following statements to the TCPCFG00 configuration file:

MEDIA CLUSTER MTU(4096) NAME(CLUSTER)

NETWORK IPADDRESS(*cluster_IP_address***) SUBNET(255.255.255.0)**

The MEDIA CLUSTER statement enables SOLVE:TCPaccess to participate in MNLB by registering the host and service applications identified in the APPCFG00 SERVICE statements to the WLM.

The NETWORK statement must immediately follow the MEDIA statement. The NETWORK statement identifies the MNLB cluster IP address. The cluster IP address, expressed in dotted notation, is a VIPA address. This statement enables SOLVE:TCPaccess to accept packets with a destination IP address of the cluster IP address.

If both the MEDIA and NETWORK statements are configured as shown, all applications configured with SERVICE statements in the APPCFG00 configuration file are automatically enabled for MNLB. The service name specified in the NAME keyword on the SERVICE statement must be specified as a groupname in the Cisco Workload Agent for OS/390 service map configuration file. Any services not configured in the service map file do not participate in MNLB.

Enabling the TN3270E Server Application

To enable the TN3270E server application to participate in MNLB, add the following statement to the TELNETPARMS specification:

WLMCLUSTERNAME TN3270E

The parameter that follows WLMCLUSTERNAME (in this case, TN3270E) must also be specified as a groupname in the Cisco Workload Agent for OS/390 service map configuration file. For more information, see the **SERVICEMAP** keyword in the "Configuring the Cisco Workload Agent for OS/390" section on page 2-20 and the **GROUPNAME** keyword in the "Mapping the Service Application" section on page 2-22.

Enabling Application Services WLM Participation

Any server applications that cannot use the TCP/IP stack configurations to autoregister to the WLM should autoregister directly with the WLM. If server applications cannot autoregister directly with the WLM, then you must manually register the applications by issuing the Cisco Workload Agent for OS/390 **Register** operator command. The groupname specified on the **Register** operator command must also be specified in the service map configuration file.

Configuring the LocalDirector

Before using the Cisco Workload Agent for OS/390, you must connect the LocalDirector to the Agent. To do so, use the DFP statement in the LocalDirector configuration to specify the IP address for the TCP/IP stack supporting the Agent and port number (as configured in the DFPCFG00 PORT statement). Refer to LocalDirector configuration documentation for details on the DFP statement.

Setting APF Authorization

The DFPLOAD library, which contains the Cisco Workload Agent for OS/390, must be APF-authorized. To set authorization, modify the IEAAPFxx or PROGxx member of the SYS1.PARMLIB data set, whichever is in use, where xx is the suffix of your member. If you do not have a procedure in place for modifying PARMLIB members, refer to the *OS/390 V2R5.0 MVS Initialization and Tuning Reference* for instructions.

Caution Whenever you make changes to any SYS1.PARMLIB member, make sure you can perform an IPL of your system using an alternate IPL volume or an alternate SYS1.PARMLIB member. Typographical errors can cause catastrophic errors during system initialization, leaving your OS/390 system in an unusable state.

Installing the Cisco Workload Agent for OS/390

This section describes the steps needed to install the Cisco Workload Agent for OS/390. It includes the following sections:

- Downloading and Running NSPW100.EXE
- Sending the Installation Files to the Host
- Receiving the Installation Files
- Allocating the Data Set Names for the Cisco Workload Agent for OS/390
- Specifying the Cisco Workload Agent for OS/390 JCL Execution Parameters

Downloading and Running NSPW100.EXE

All the files required to install MNLB are packaged in a self-extracting WINZIP file named NSPW100.EXE, which you can download from either of the following locations:

- http://www.cisco.com/cgi-bin/tablebuild.pl/os390
- ftp://username@ftp.cisco.com/cisco/internet/os390/

Step 1 Download NSPW100.EXE to a PC using binary mode. (The files contained in NSPW100.EXE are in EBCDIC format, so transferring the files in binary mode prevents incorrect character translation.)

Step 2 Double-click on NSPW100.EXE. The WINZIP self-extractor dialog appears.

Step 3 Enter the name of the directory in which you want to store the extracted files.

Step 4 Click **Unzip**. The following six files are extracted and stored in the specified directory:

- NSPW100.CNTL.XMIT
- NSPW100.F1.XMIT
- NSPW100.F2.XMIT
- NSPW100.F3.XMIT
- NSPW100.F4.XMIT
- NSPW100.SMPMCS.XMIT

These six files have been converted to XMIT format using the TSO Transmit facility.

Sending the Installation Files to the Host

Follow these steps to send the extracted files to the OS/390 host:

Step 1 Transfer the six files to the OS/390 host using binary mode. Set the OS/390 host FTP SITE options as follows:

LRECL=80 BLOCKSIZE=3120 RECFM=FB CYLINDERS PRIMARY=1 SECONDARY=1

The following example shows a sample FTP session for sending the files to the OS/390 host:

```
ftp mvshost.com
user: ibmuser
password: xxxxxxxx
bin
quote site lrecl=80 blocksize=3120 recfm=fb cylinders primary=1 secondary=1
put nspw100.cntl.xmit
put nspw100.f1.xmit
put nspw100.f2.xmit
put nspw100.f3.xmit
put nspw100.f4.xmit
put nspw100.smpmcs.xmit
quit
```

Receiving the Installation Files

The Receive TSO option converts the sequential data sets that you sent to the OS/390 host into PDS format. You do not need to pre-allocate the data sets. Follow these steps to receive the installation files:

Step 1 After you transfer the files to the host, use TSO option 3.4 to list the six data sets. Your list should resemble the following list, except for the *userid* and *volume*:

```
Menu  Options  View  Utilities  Compilers  Help
sssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssss
DSLIST - Data Sets Matching xxxx.NSPW*                          Row 1 of 6
Command ===>                                                Scroll ===> PAGE

Command - Enter "/" to select action                Message          Volume
------------------------------------------------------------------------------
xxxx.NSPW100.CNTL.XMIT                                               SMSC1F
xxxx.NSPW100.F1.XMIT                                                 SMSC1F
xxxx.NSPW100.F2.XMIT                                                 SMSC1F
xxxx.NSPW100.F3.XMIT                                                 SMSC1F
xxxx.NSPW100.F4.XMIT                                                 SMSC1F
xxxx.NSPW100.SMPMCS.XMIT                                             SMSC1F
****************************** End of Data Set list ***************************
```

Step 2 At the beginning of the first line of the list, enter **Receive inds(/)** as show below:

```
Command - Enter "/" to select action                Message          Volume
------------------------------------------------------------------------------
receive inds(/)NSPW100.CNTL.XMIT                                     SMSC1F
xxxx.NSPW100.F1.XMIT                                                 SMSC1F
xxxx.NSPW100.F2.XMIT                                                 SMSC1F
xxxx.NSPW100.F3.XMIT                                                 SMSC1F
xxxx.NSPW100.F4.XMIT                                                 SMSC1F
xxxx.NSPW100.SMPMCS.XMIT                                             SMSC1F
****************************** End of Data Set list ***************************
```

The following message is displayed:

```
Enter restore parameters or 'DELETE' or 'END'
```

The first data set is restored.

Step 3 Press **Enter**.

Step 4 At the beginning of the second line of the list, enter an equal sign (=) to repeat the previous command, and press **Enter**. The second data set is restored.

Step 5 Repeat Step 4 to restore the remaining four data sets.

Step 6 Press PF3, then press **Enter** to list the twelve data sets (the six sequential data sets and the six PDS data sets. Your list should resemble the following list:

```
DSLIST - Data Sets Matching HAL1.NSPW*                          Row 1 of 17
Command ===>                                                  Scroll ===> PAGE

Command - Enter "/" to select action              Message           Volume
-------------------------------------------------------------------------------
xxxx.NSPW100.CNTL                                                   SMSC18
xxxx.NSPW100.CNTL.XMIT                                              SMSC1F
xxxx.NSPW100.F1                                                     SMSC18
xxxx.NSPW100.F1.XMIT                                                SMSC1F
xxxx.NSPW100.F2                                                     SMSC18
xxxx.NSPW100.F2.XMIT                                                SMSC1F
xxxx.NSPW100.F3                                                     SMSC18
xxxx.NSPW100.F3.XMIT                                                SMSC1F
xxxx.NSPW100.F4                                                     SMSC18
xxxx.NSPW100.F4.XMIT                                                SMSC1F
xxxx.NSPW100.SMPMCS                                                 SMSC18
xxxx.NSPW100.SMPMCS.XMIT                                            SMSC1F
****************************** End of Data Set list ******************************
```

Allocating the Data Set Names for the Cisco Workload Agent for OS/390

The NSPW100.CNTL control file that you downloaded to your system includes references to several member names, such as TCPNAMES. You must allocate those data set names for the Cisco Workload Agent for OS/390, as described in the following sections:

- Allocating TCPNAMES
- Allocating JOBCARD
- Allocating ALLOCSMP
- Allocating NSPWSMP
- Allocating NSPWINST
- Allocating NSPWGO

Allocating TCPNAMES

Use member TCPNAMES in the CNTL library to customize all other installation members.

The TCPNAMES member, a REXX EXEC, lets you assign consistent data set name allocations. You can customize member TCPNAMES so that you do not need to edit the other installation members manually.

Edit and submit member TCPNAMES using the following procedure:

Step 1 Edit the data set name symbolics to be consistent with naming conventions of your site.

Step 2 Determine the name of your logon procedure from the first screen of your TSO logon.

Step 3 Determine the data set in which your logon procedure is located. It is most likely in SYS1.PROCLIB. If not, from your TSO command line execute the command **TSO LISTA**, which lists all data sets allocated to your TSO session. Your TSO logon procedure is most likely located in a data set with a final node of PROCLIB.

Step 4 Select the member containing your logon procedure, find the SYSPROC DD, and select a CMDLIB into which to copy TCPNAMES.

Step 5 If you are copying TCPNAMES into a VBA library, after copying it in delete the line numbers that appear in columns 73 through 80.

Allocating JOBCARD

Member JOBCARD in the CNTL library is used by the TCPNAMES EXEC to customize the jobcards of all other installation members. Edit and submit member JOBCARD using the following procedure:

Step 1 Edit JOBCARD with installation specifications and copy it into the CNTL data set member JOBCARD.

Step 2 If you are using JES3, replace the JOBPARM card with the following:

//*MAIN LINES=(999,W)

Step 3 Review the changes in the JCL.

Step 4 Submit ALLOCSMP (see below).

Allocating ALLOCSMP

Member ALLOCSMP allocates the data sets that contain your consolidated software inventory (CSI).

Note The Cisco Workload Agent for OS/390 must be installed into a new CSI; you cannot use a shared CSI. Data set allocation changes in this release cause attempts to install over an existing release to fail.

Edit and submit member ALLOCSMP using the following procedure:

Step 1 Edit the ALLOCSMP member

Step 2 Invoke TCPNAMES with the following format:

TCPNAMES *index dvol dunit userid*

where:

- *index* is the installation high-level index
- *dvol* is the DASD volume
- *dunit* is the DASD type
- *userid* is the user ID to which the SMP release files were uploaded

Allocating NSPWSMP

Member NSPWSMP in the CNTL library allocates the libraries that contain the Cisco Workload Agent for OS/390 base product. Edit and submit member NSPWSMP using the following procedure:

Step 1 Edit the NSPWSMP member

Step 2 Invoke TCPNAMES with the following format:

TCPNAMES *index dvol dunit userid*

where:

- *index* is the installation high-level index
- *dvol* is the DASD volume
- *dunit* is the DASD type
- *userid* is the user ID to which the SMP release files were uploaded

Step 3 Review the changes in the JCL.

Step 4 Submit NSPWSMP.

Allocating NSPWINST

Member NSPWINST in the CNTL library is used to install the base product. Edit and submit member NSPWINST using the following procedure:

Step 1 Edit the NSPWINST member

Step 2 Invoke TCPNAMES with the following format:

TCPNAMES *index dvol dunit userid*

where:

- *index* is the installation high-level index
- *dvol* is the DASD volume
- *dunit* is the DASD type
- *userid* is the user ID to which the SMP release files were uploaded

Step 3 If you are using a tape management system such as CA1, modify the label parameter on your DD statements to include EXPDT=98000:

LABEL=(1,SL,EXPDT=98000)

Step 4 If you are using JES3, replace the JOBPARM card with the following:

//*MAIN LINES=(999,W)

Step 5 Review the changes in the JCL.

Step 6 Submit NSPWINST.

Allocating NSPWGO

Member NSPWGO executes the Cisco Workload Agent for OS/390. Edit and submit member NSPWGO using the following procedure:

Step 1 Edit the NSPWGO member

Step 2 Invoke TCPNAMES with the following format:

TCPNAMES *index dvol dunit userid*

where:

- *index* is the installation high-level index
- *dvol* is the DASD volume
- *dunit* is the DASD type
- *userid* is the user ID to which the SMP release files were uploaded

Step 3 Review the changes in the JCL.

Step 4 Submit NSPWGO.

Configuring the Cisco Workload Agent for OS/390

This section describes how to customize the Cisco Workload Agent for OS/390. It includes the following sections:

- Specifying the Cisco Workload Agent for OS/390 JCL Execution Parameters
- Configuring the Cisco Workload Agent for OS/390 EXEC Parameters
- Mapping the Service Application

Specifying the Cisco Workload Agent for OS/390 JCL Execution Parameters

This section describes the JCL execution parameters for the Cisco Workload Agent for OS/390.

CNFG=[*configuration_member_name*|**DFPCFG00**]	Member from SYSPARM DD data set containing configuration statements. Length is 1-8 characters. The default configuration member name is DFPCFG00.
INTTRACE=[**YES**|**NO**]	Turns on internal tracing. The default is YES (turn on internal tracing).
TSIZE=[*number_4K_pages*|**256**]	Amount of storage to contain internal trace entries, in 4K increments. The default is 256 (1 Mb).

Note JCL parameters are converted to uppercase for internal processing and display.

Configuring the Cisco Workload Agent for OS/390 EXEC Parameters

You should specify a member name in the EXEC parameters. If a member name is not specified, the default values are used. The member must be located in the SYSPARM DD data set. There is only one instance of each of the following configuration statements:

CLUSTER=(*Cluster_IP_address*)	Cluster VIPA address for the Cisco Workload Agent for OS/390 in standard dotted notation (such as 13.6.10.10). This can be a name if the name is defined in the DNS server. This parameter is required. There is no default value.
WLMPOLL=[*interval*|**60**]	Amount of time in seconds to poll WLM for updated application service registrations and workload information. Choose an interval based on your host system loads. If the load fluctuates significantly, then the polling interval should be short. If the load is consistent, then the polling interval should be longer. More frequent polling increases CPU usage. Range is 60-300 seconds. The default interval is 60 seconds.
WLMINCR=[*WLM_weight_delta_interval*|**1**]	*C*hange in WLM weight required to report port preference information to the Services Manager. For example, if the WLM weight is 7 and the WLMINCR is 3, the WLM weight must change to 10 (7+3) before port preference information is reported to the Services Manager. The valid range is 1 to 3. The default is 1 (that is, any weight change at all results in a port preference report).
PASSWORD=*password*	Specifying a password enables MD5 security. This password is translated to an ASCII equivalent, consisting of characters A-Z, a-z, or 0-9. This same password must be configured in the LocalDirector for this Cisco Workload Agent for OS/390. Length is 1-64 characters. The default is no password (no MD5 security).
SERVICEMAP=[*member_name*|**DFPMAP00**]	Maps server-registered WLM application groupnames to a port number and protocol for DFP reporting to the LocalDirector. The *member_name* should be placed in the SYSPARM DD data set. The default service map member name is DFPMAP00.

TCPPORT=*tcp_port_number*	Port number on which the Cisco Workload Agent for OS/390 accepts a connection from the Services Manager. The port number must be the same as the one configured in the LocalDirector. The LocalDirector uses the port number to connect to the Cisco Workload Agent for OS/390. A port number less than 1024 may require additional RACF security authorization. This parameter is required. The valid range is 1 to 65535. There is no default value.
LOGTRACE=[**ON**|**OFF**]	Toggles external log tracing on or off. The log is written to STDOUT. The default is ON (turn on external log tracing).

Mapping the Service Application

Use the Service Application Mapping configuration file to map a TCP or UDP service application WLM registered groupname (location) to a specific protocol and port number. Each record in the file represents a single mapping entry. The keywords are defined in this section and can appear in any order, but each statement must contain all three keywords.

Note To participate in workload balancing, the groupname ***must*** be specified as a statement.

GROUPNAME=*wlm_groupname*	WLM service application registered groupname. The groupname is also referred to as *location_name* in WLM documentation. Length is 1-18 characters. The NAME keyword on the SERVICES statement in the Sterling TCP/IP APPCFG*xx* are used as groupnames in WLM registrations. The IPCLUSTERNAME statement in the IBM TCP/IP are used as groupnames in WLM registrations. If both IBM and Sterling stacks are used concurrently, the groupnames ***must*** be the same for the same service.
PROTOCOL=[**TCP**|**UDP**]	TCP or UDP protocol associated with the groupname.
PORT=*port_number*	Port number used by the application associated with the groupname.