Control-M Workload Automation 8.0.00 Installation Guide

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- Product information
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  - Product version (release number)
  - License number and password (trial or permanent)
- Operating system and environment information
  - Machine type
  - Operating system type, version, and service pack or other maintenance level such as PUT or PTF
  - System hardware configuration
  - Serial numbers
  - Related software (database, application, and communication) including type, version, and service pack or maintenance level

- Sequence of events leading to the issue
- Commands and options that you used
- Messages received (and the time and date that you received them)
  - Product error messages
  - Messages from the operating system, such as `file system full`
  - Messages from related software

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Contents

Chapter 1

Introduction to Control-M installation

Control-M consists of multiple components. You can install Control-M with a single installation, or you can install Control-M components individually. BMC recommends that you install Control-M with the following workflow:

- Control-M full installation (on page 12): Enables you to install the Control-M Workload Automation package with all Control-M components including Application Plug-ins, add-ons, and the Control-M Conversion tool (see Control-M installation terminology (on page 9)) on UNIX and Windows via an interactive or automatic installation. You can install with the default settings, or choose the custom installation to select the database server, database names, usernames, hostnames, and port settings.
- Control-M/Agent installation (on page 37): Enables you to install additional Control-M/Agents on different computers throughout your organization, which enables you to run jobs on multiple computers. This enhances performance and creates greater load balancing control.
- Control-M client installation (on page 43): Enables you to install additional Control-M clients on different computers throughout your organization, which enable multiple users in your organization to access Control-M.

For advanced configuration, you can install multiple instances of Control-M/Enterprise Manager (Control-M/EM) and Control-M/Server, as described in Control-M advanced installation (on page 50).

If you are installing Control-M in a cluster environment, see Control-M cluster configuration (on page 62).

Control-M Application Plug-ins

Control-M Application Plug-ins enable Control-M/Agents to interface with external applications (for example, SAP and Oracle applications), bringing Control-M functionality to an external application environment.

The following Control-M Application Plug-ins are automatically installed in a non-trial version with the Control-M full installation option:

- Control-M for PeopleSoft
- Control-M for Databases
- Control-M for SAP
- Control-M for SAP Business Objects
- Control-M for Informatica

The following Control-M Application Plug-ins are automatically installed in a trial version including the application plug-ins from the non-trial version, with the Control-M full installation option:

- Control-M for Advanced File Transfer
- Control-M for Oracle Business Intelligence
- Control-M for IBM Cognos
- Control-M for Cloud

If you do not want to install all Control-M Application Plug-ins, you can install them individually (except Control-M for Advanced File Transfer) from the Control-M Application Plug-ins DVD. After you have installed the application plug-in, verify that you have installed the latest fix pack or patch (located in the Updates directory on Control-M Application Plug-ins DVD). For more information, see Product Distribution in the *Control-M Workload Automation version 8.0.00 Release Notes*.

Control-M upgrade

If you have a previous version of Control-M, and you want to move data and configuration settings from a previous installation of Control-M/EM and Control-M/Server to newer versions of the product, use Control-M Upgrade, which is included in the installation. Control-M Upgrade automates most of the upgrade steps. Control-M/EM and Control-M/Server are upgraded as separate processes. For more information, see Introduction to Control-M Upgrade.

Language options

Support for East Asian languages (Simplified Chinese, Traditional Chinese, Japanese, and Korean) is provided for all installations at the database level.

When you create a Control-M database on an existing PostgreSQL database server, CJK settings are not inherited automatically from the database server. They must be defined during the installation.

When you create a Control-M database on an existing Oracle, or Sybase database server, CJK settings are inherited automatically from the database server.

When creating a Control-M database on an existing MSSQL database server with CJK support already present, you are explicitly asked if CJK character support is required for the new Control-M database.

For more information regarding language support, including CJK and databases, see Language and Customization.

Control-M installation terminology

The following table lists terms that are specific to the Control-M environment.

Term	Description
Control-M client	Provides the main interface to your real-time batch environment and consists of the following GUI applications: ▪ Control-M Configuration Manager ▪ Control-M Workload Automation

Term	Description
	▪ Control-M Reporting Facility
Control-M/Agent	Handles job execution and runs jobs on behalf of its requesting Control-M/Server, tracks the job processing, and sends status information back to the Control-M/Server.
Control-M Add-ons	The following Control-M Add-ons are automatically installed in a trial version, which enables you to use the Add-on functionality: ▪ BMC Batch Impact Manager ▪ Control-M/Forecast ▪ Control-M Self Service
Control-M/EM	Controls and manages your production jobs. Control-M/EM provides a single, centralized point of access and control that enables you to view, monitor, manage, and intervene in batch flow processing across the entire enterprise. Control-M/EM on Windows includes the Control-M client.
Control-M/Server	Handles job scheduling and processing needs that can be used in the Control-M environment. You can install multiple instances of Control-M/Server and each is responsible for scheduling individual jobs, managing job processing flows, and notifying Control-M/EM of job statuses.
Trial Version	Installs a trial version of Control-M Workload Automation 8.0.00 with all optional components including the following This version is intended for testing and evaluation, not for usage in a production environment. For production usage in the future, uninstall the trial version and then re-install a non-trial version. ▪ BMC Batch Impact Manager ▪ Control-M/Forecast ▪ Control-M Self Service ▪ Control-M for Advanced File Transfer ▪ Control-M for Cloud ▪ Control-M for Cognos ▪ Control-M for Oracle Business Intelligence

Term	Description
Non-Trial Version	Install the following Control-M Workload Automation base components: ▪ Control-M/Enterprise Manager ▪ Control-M/Server ▪ Control-M/Agent ▪ Control-M for SAP ▪ Control-M for SAP Business Objects ▪ Control-M for Informatica ▪ Control-M for PeopleSoft ▪ Control-M for Databases

Control-M full installation

The Control-M full installation installs the Control-M Workload Automation package with all Control-M components including Application Plug-ins, add-ons, and the Control-M Conversion tool on UNIX and Windows via an interactive or automatic installation. You can install with the default settings, or choose the custom installation to select the database server, database names, usernames, hostnames, and port settings.

Before you install Control-M, verify the requirements, as described in Control-M full installation system requirements (on page 12).

If you are installing Control-M on UNIX, complete the pre-install procedures, as described in Control-M pre-installation procedures on UNIX (on page 19) and the post install procedures, as described in Control-M post installation procedures on UNIX (on page 32).

The following procedures describe how to install Control-M on UNIX and Windows:

- Installing Control-M on UNIX (on page 30) (You need to install the Control-M client on a Windows computer)
- Installing Control-M on Windows (on page 31)

Control-M full installation system requirements

Before you install Control-M, verify that your operating system, processor, and database server are supported and have the correct amount of memory and diskspace.

Depending on your operating system, verify that your system meets one of the following requirements:

- Full installation UNIX system requirements (on page 13)
- Full installation Windows system requirements (on page 13)

NOTE: The number of processes limit must be equal to or greater than the number of expected parallel running jobs.

Full installation UNIX system requirements

The following table lists the prerequisite requirements for a UNIX platform. These values represent the minimum requirements for an entry level deployment. For higher capacity workloads, add resources.

UNIX requirements for Control-M

Resource	Specification	Requirement
Compatible processors	AIX	IBM RISC System/6000
	HP-UX	Itanium
	Oracle Solaris	SPARC
	Linux	x86_64
Hardware	All systems	DVD drive
Memory	N/A	4 GB
Diskspace BMC Software recommends that you reserve three times the amount of RAM in the system for swap space.	N/A	15 GB If you are installing Control-M with a remote database server, 15 GB are required on the database server.

Full installation Windows system requirements

The following table lists the prerequisite requirements for a Windows platform. These values represent the minimum requirements for an entry level deployment. For higher capacity workloads, add resources.

Windows requirements for Control-M

Resource	Requirement
CPU	▪ Pentium IV 2 GHz or higher ▪ Intel Xeon 64 bit ▪ AMD Opteron
Compatible processors	▪ x86 ▪ x86_64
Display	16-bit (65536) colors or higher

Resource	Requirement
Storage Media	DVD drive
Memory	4 GB
Diskspace BMC Software recommends that you reserve three times the amount of RAM in the system for swap space.	15 GB If you are installing Control-M with a remote database server, 15 GB are required on the database server.
Related software	▪ Internet Explorer version 7.0 or later ▪ Microsoft .Net Framework 4.0 Full

Control-M/Server & Control-M/EM Hardware Sizing Template

Provide the following input:

All values must be maximum values including future planning.

Control-M/Enterprise Manager

- **New Installation (First time install of EM on site)**
  - Number of Jobs defined for this EM:
  - Maximum Number of Active Jobs per Day (from Peak Usage Report) :
  - Maximum Number of Executions per Day (from Peak Usage Report) :
  - Maximum defined EM users:
  - Maximum concurrent EM users (logged in at the same time):
  - Database Type and Version (e.g. PostgreSQL, Oracle, Sybase, MSSQL):
  - Database configuration (local or remote)
  - Number of Datacenters (CTM/Servers) connect:
  - Is BIM/Forecasting/SelfService enabled:
    - If BIM is enabled how many Services are defined:
    - What is the average number of jobs per Service:
    - Is Forecast enabled:
    - Is Self Service enabled:
  - O.S. Platform and Version (e.g. HP 11.31, Solaris, AIX)
  - List of other applications/programs that will be residing on the machine
  - Intended Hardware to be used - if there is any (

  - Model:
  - Number of CPU's:
  - Number of Cores/CPU:
  - Speed of CPU Mhz:
  - RAM:
- Version of EM that is Intended to be Installed
- If possible, Machine Spec according to the following website – http://www.spec.org/cpu2000/results/rint2000.html

- **Upgrade from an Existing Installation**
  - Is response time today on existing installation satisfactory?
  - How loaded is the machine today? (Measurement of CPU and Memory peek values)
  - Current Existing EM Version

Control-M/Server (For each Datacenter)

- Maximum Daily Job Count
- Maximum Daily Job Executions
- Number of Agents connected to the server
- How many of the Agents are using Agentless technology
- Required Average Job Processing Rate for 15 Minutes (optional)
- Required Job Submission Rate for 15 Minutes (optional)
- O.S. Platform and Version (e.g. HP, Solaris, AIX)
- Database Type and Version (e.g. PostgreSQL,Oracle, Sybase, MSSQL)
- Database configuration (local or remote)
- Intended Hardware to be used - if there is any (Model, Number of CPU's, CPU MHz, RAM, Disks)
- Version of Control-M/Server that is Intended to be Installed

Database server requirements

The following table lists the database server options for the Control-M full installation.

Database server options

Database server	Description	Version
PostgreSQL (BMC-supplied)	Installs automatically in the background when you install Control-M.	▪ 8.3.7 (*UNIX*) ▪ 9.0.4 (*Windows)*
Oracle	A customer-supplied existing Oracle full enterprise/standard edition database server must be present. An Oracle instant client is supplied in the background when you install Control-M. For more details, see Oracle requirements (on page 17).	▪ 11 ▪ 10
Sybase Adaptive Server Enterprise (ISO1 character set)	A customer-supplied existing Sybase full database server must be present. A Sybase client must be installed separately on each computer that hosts Control-M. For more details, see Sybase requirements (on page 18).	▪ 15.7 ▪ 15.5 ▪ 15.0.3 ▪ 15.0.2
MSSQL	A customer-supplied existing MSSQL full database server must be present. An MSSQL client that includes the osql component must be present on any computer that hosts Control-M.	▪ 2012 ▪ 2008 ▪ 2005

The following table contains the parameter information required to install Control-M on supported database servers. Check with your system administrator for the exact information required.

Database server resource requirements

Database server	Host name	Port	Service name	Server alias name	Database server administrator password	Database location	Log location
PostgreSQL	Yes	Yes			Yes	Yes **(UNIX only)**	
Oracle	Yes	Yes	Yes		Yes	Yes	
Sybase				Yes	Yes	Yes	Yes
MSSQL	Yes		Yes		Yes	Yes	Yes

Oracle requirements

The following table lists the parameters and recommended values for an existing Oracle database server.

Oracle requirements

Parameter	Value
DB_BLOCK_SIZE	8192
OPTIMIZER_MODE	ALL_ROWS
CURSOR_SHARING	FORCE
PROCESSES	300
Redolog groups	3
Redolog size	150
SGA_TARGET	900 MB
PGA_AGGREGATE_TARGET	200 MB
MEMORY_TARGET	1100 MB (*Oracle 11 and later only*)

Sybase requirements

To install Control-M on UNIX with a Sybase database, ensure that you have met the following requirements:

- The database server and client character sets must be the same and must be set to either **iso_1** or **utf8**.
- The Sybase database server and client is not part of the installation package and must exist at your site before you install Control-M.
- BMC recommends the following:
  - The size of the default data cache is the following:
    - **Large**: 800MB
    - **Medium**: 500MB
    - **Small**: 300MB
  - The Sybase log device is set to **dsync off** on all Control-M related devices.
  - The number of online engines are at least the following:
    - **Large**: 4
    - **Medium**: 2
    - **Small**: 1

The following table lists the parameters and values for an existing Sybase database server with 8-KB paging.

Database server configuration

Parameter	Value
dynamic allocation on demand	1
procedure cache	90000
number of user connections	200
additional network memory	49152
max network packet size	8192
number of devices	40
max memory	375000
number of open objects	6000 +
number of open indexes	7500

Parameter	Value
number of open partitions	2000
number of pre-allocated extent	4
number of locks	40000
user log cache	8192
tcp no delay	1
deadlock checking period	1000
housekeeper free write percent	10
runnable process search count	2000
recovery interval in minutes	10
Allocate max shared memory	1

Control-M pre-installation procedures on UNIX

Before you install Control-M, you need to complete the following procedures:

- Configuring a user account on UNIX (on page 20): Describes how to configure specific parameters for Control-M
- Setting environment variables in UNIX (on page 21): Describes how to set environment variables in UNIX, which enables you to view messages from the console
- Verifying operating system levels and patches (on page 29): Describes how to verify operating system level and patches with Control-M requirements
- UNIX system parameter modification: Describes how to modify HP-UX, AIX, Oracle Solaris, and Linux system parameters, which enables you to allocate resources for Control-M components

If you want to install Control-M with Sybase, see Preparing a Control-M installation on UNIX with Sybase (on page 86).

NOTE: If you are installing a Control-M/Agent, note the following:

- The Control-M/Agent can be installed only in the home directory of the account or in one of its subdirectories. The home directory must be located on the local file system.
- The home directory can be a symbolic link to another location if the location is on the local disk.
- The permissions of the account home directory must allow read and execute permissions to all users and full permission to the account owner (755 as a minimum).

- If you plan to use non-root mode for this agent, BMC Software recommends that the agent owner be the only user in its primary group. The reason is that in non-root mode, some of the files created by the agent are accessed using group permissions and are therefore writable by any user in the agent primary group.

Configuring a user account on UNIX

This procedure describes how to configure specific parameters for Control-M. The account cannot contain any data in the account.

The Control-M/EM, Control-M/Server, and Control-M/Agent owner can be a local user, an LDAP user, or an NIS user, but the Control-M/Server and Control-M/Agent account home directory must be located on a local disk and not on NFS, whereas, the Control-M/EM account home directory can be located on a local disk or NFS.

➢ To configure a user account on UNIX:

1. Create a user account, as shown in the following example.

   */usr/sbin/***useradd -u** *<numeric_user_id>* **-g** *<user_group>* **-d** *<user_home>* **-s** *<user_shell>* *<user_name>*

   The *<user_shell>* account must be defined as one of the following names or programs:

   - **/bin/csh**
   - **/bin/tcsh**
   - **/bin/sh**
   - **/bin/ksh** (Control-M/Agent and Control-M/EM only)
   - **/bin/bash** (Control-M/Agent only)

2. Configure the predefined limits that are designed to limit or prevent the excessive use of resources by a single process, as described in Control-M limits on UNIX accounts (on page 20).

Control-M limits on UNIX accounts

The following table describes Control-M limits on UNIX accounts.

Control-M limits on UNIX accounts

Parameter	Description
datasize	Determines the maximum size of the data segment of a process Maximum values are as follows: ▪ Oracle Solaris®: 2 GB ▪ HP-UX®: 4 GB (using third and fourth quarter enabled) ▪ AIX®: 2 GB ▪ Linux: 2 GB

Parameter	Description
stacksize	Determines the maximum size of the stack segment of a process BMC recommends 8 MB on all UNIX computers.
coredumpsize	Determines the maximum size that a core dump can reach BMC recommends setting this value to **datasize** to generate a complete core dump if a failure occurs.
descriptors	Determines the maximum number of descriptors in use by a single process BMC recommends the value of 4096. **Note:** Do not set the parameter value to **unlimited**.
memoryuse	Determines the maximum amount of memory to be used by a single process BMC recommends setting this value to **unlimited**.

Setting environment variables in UNIX

This procedure describes how to set environment variables in UNIX, which enables you to see messages from the console.

➢ To set environment variables in UNIX:

- Do one of the following:
  - If you use **csh** or **tcsh**, use the following syntax:

    setenv *<envVar> <value>*

    setenv DISPLAY myhost:0.0
  - If you use **sh** or **ksh,** use the following syntax:

    <envVar>=<value>

    export *<envVar>*

    DISPLAY=myhost:0.0

    export DISPLAY

  <envVar> is the name of the environment variable.

  <value> is the value assigned to the environment variable.

UNIX system parameter modification

Before you can install Control-M, several UNIX system (kernel) parameters must be changed to allocate resources for Control-M components.

The following procedures describe how to modify kernel parameters on different UNIX systems:

- Modifying AIX system parameters (on page 22)
- Modifying HP-UX system parameters (on page 23)
- Modifying Oracle Solaris 10 and 11 system parameters (on page 25)
- Modifying Oracle Solaris 9 system parameters (on page 26)
- Modifying Linux system parameters (on page 27)
- Changing kernel parameter values (on page 28)

To modify Sybase system parameters, see Preparing a Control-M installation on UNIX with Sybase (on page 86).

Modifying AIX system parameters

This procedure describes how to modify AIX system parameters, which enables you to allocate resources for Control-M components.

➢ To modify AIX system parameters:

1. Log in as user **root**.
2. Set the **DISPLAY** environment variable, as described in Setting environment variables in UNIX (on page 21).
3. Type the following command:

   smit aio
4. Select the **Change/Show Characteristics of Asynchronous I/O** option.

   Type the parameter values, as described in AIX Asynchronous I/O parameters.

   NOTE: If your system uses more than seven hard disks for Asynchronous I/O, the **Maximum number of servers** setting must be increased by one for every active device after the seventh.
5. Click **OK** and wait for the operation to complete.
6. Click **Done**.

   Control returns to the main Asynchronous I/O menu.
7. Select the **Configure Defined Asynchronous I/O** option.
8. Press *<F12>* to exit from **smit**.
9. Log out.

10. Exit the shell prompt.

    NOTE: If **State to be configured at system start** is **Available**, you do not need to reboot the AIX system at the end of the procedure.

11. Add additional kernel parameter values, as described in Control-M kernel parameters (on page 29).

AIX Asynchronous I/O parameters

The following table describes AIX Asynchronous I/O parameters that are used to modify AIX system parameters, as described in Modifying AIX system parameters.

AIX Asynchronous I/O parameters

Parameter	Value
Minimum number of servers	1
Maximum number of servers	10
Maximum number of requests I/O	4096
Server priority	39
ASYNC I/O state to be configured at system start	Available
State of fast path	Enabled

Modifying HP-UX system parameters

This procedure describes how to modify HP-UX system parameters, which enables you to allocate resources for Control-M components.

➢ To modify HP-UX system parameters:

1. Log in as user **root**.
2. Set the **DISPLAY** environment variable, as described in Setting environment variables in UNIX (on page 21).
3. Type **sam**, select **Kernel Configuration**, and navigate to **Configurable Parameters**.
4. Change the parameter values, as follows:
   a. Navigate to **Modify Configurable Parameters** in the **Action Menu**.
   b. In the **Formula/Value** field, type the required value.

      If the default value is more than required, do not change it.
5. Add additional kernel parameter values, as described in Control-M kernel parameters.

HP-UX Kernel parameters

The following table describes the HP-UX kernel parameters with one instance of PostgreSQL.

Kernel parameters for Control-M – HP-UX

Parameter	Value
semmni	500
semmns	800
semmap	(SEMMNI+2)
semmnu	(NPROC - 4)
semvmx	16000
shmmax	600000000
shmmni	400
shmseg	16
shmmin	1
ksi_alloc_max	(NPROC*8) Eight times the value specified for the NPROC parameter.
maxdsiz	1073741824
maxdsiz_64bit	2147483648
maxssiz	134217728 bytes
maxssiz_64bit	1073741824
maxswapchunks	8200
max_thread_proc	512 This value is appropriate for a Control-M/EM and Control-M/Server installation with up to 50 Control-M definitions, 80 concurrently open ViewPoints, and 30 concurrent users. Note: If your data center requires a larger configuration, contact BMC Software Customer Support for the correct value of this parameter. For more information about Control-M definitions and ViewPoints, see the Viewpoints.

Parameter	Value
maxuprc	((NPROC*9)/10)
msgmap	(MSGTQL+2)
msgmni	NPROC
msgseg	32767
msgtql	NPROC
ncallout	(NKTHREAD+16)
ncsize	((8*NPROC+2048)+VX_NCSIZE)
nfile	(15*NPROC+2048)
nflocks	4096
ninode	(8*NPROC+2048)
nkthread	(((NPROC*7)/4)+16)
nproc	4096
shmmax	Half the amount of RAM (in bytes) on this computer.
vps_ceiling	64
maxuprc	((NPROC*9)/10)

Modifying Oracle Solaris 10 and 11 system parameters

This procedure describes how to modify Oracle Solaris 10 and 11 system parameters, which enables you to allocate resources for Control-M components.

➢ To modify Oracle Solaris 10 and 11 system parameters

1. Log in as user **root**.
2. Set the **DISPLAY** environment variable, as described in Setting environment variables in UNIX (on page 21).
3. Set kernel parameter **semmni** or project parameter **max-sem-ids** as described in the Oracle Solaris operating system instructions (not supplied by BMC Software).
4. Set the value of the **shmmax** parameter to at least 600 MB.
5. Add additional kernel parameter values, as described in Control-M kernel parameters (on page 29).

Modifying Oracle Solaris 9 system parameters

This procedure describes how to modify Oracle Solaris 9 system parameters, which enables you to allocate resources for Control-M components.

➢ To modify Oracle Solaris 9 system parameters:

1. Log in as user **root**.
2. Set the **DISPLAY** environment variable, as described in Setting environment variables in UNIX (on page 21).
3. Open the operating system configuration file **/etc/system**.
4. To set each kernel parameter, as described in Oracle Solaris 9 kernel system parameters (on page 26), add a line to the **/etc/system** file using the following format:

   set *<moduleName>*:*<moduleAbbreviation>***info_***<parameterName>***=** *<value>*

   NOTE: To set the **shmseg** parameter to 36, add the following line to the **/etc/system** file:

   set shmsys:shminfo_shmseg=36
5. Restart the computer.
6. Add additional kernel parameter values, as described in .Control-M kernel parameters.

Oracle Solaris 9 kernel system parameters

The following table describes Oracle Solaris 9 kernel parameters with one instance of PostgreSQL.

Oracle Solaris 9 kernel parameters

Parameter	Value
semmni	500
semmns	800
semmsl	150
semopm	semsys
semvmx	semsys
shmmax	600000000
shmmni	200
shmmin	1
shmseg	10

Modifying Linux system parameters

This procedure describes how to modify Linux system parameters, which enables you to allocate resources for Control-M components.

➢ To modify Linux system parameters:

1. Log in as user **root**.
2. Set the **DISPLAY** environment variable, as described in Setting environment variables in UNIX (on page 21).
3. Set the kernel parameters, as described in Linux kernel system parameters (on page 27) to values greater than or equal to those displayed in the table.
4. Add additional kernel parameter values, as described in Control-M kernel parameters (on page 29).

Linux kernel system parameters

The following table describes Linux kernel parameters with one instance of PostgreSQL.

Linux Kernel parameters

Parameter	Value
semmsl	150
semmns	800
semopm	100
semmni	200
semvmx	default set by system
kernel.shmall	600000000
kernel.shmmax	600000000
kernel.shmmni	800
file-max	65536
ip_local_port_range	32768 - 61000

The following table describes how to display the current parameter values.

Linux kernel parameter values display commands

Parameter	Command to display the parameter values
semmsl, semmns, semopm, semmni	**/sbin/sysctl -a | grep sem**
shmall, shmmax, shmmni	**/sbin/sysctl -a | grep shm**
file-max	**/sbin/sysctl -a | grep file-max**
ip_local_port_range	**/sbin/sysctl -a | grep ip_local_port_range**

Changing kernel parameter values

This procedure describes how to change kernel parameter values from a text editor.

➢ To change kernel parameter values:

1. Add the following lines to the **/etc/sysctl.conf** file

   kernel.shmall = 2097152

   kernel.shmmax = 2147483648

   kernel.shmmni = 800

   kernel.sem = 250 32000 100 128

   fs.file-max = 65536

   net.ipv4.ip_local_port_range = 32768 61000

   If the file does not already exist, create it.

   kernel.sem assigns values to four semaphore parameters in the following order: **semmsl, semmns, semopm, semmni**. All four values must be specified.

2. Type the following command:

   /sbin/sysctl -p

   The values in the **/etc/sysctl.conf** file take effect immediately.

Control-M kernel parameters

The following table lists kernel parameter values for Control-M/Server that must be added to the values in some of the UNIX systems, as described in UNIX system parameter modification. If higher values for these parameters have already been specified for the database server, the higher values must remain.

Kernel parameters for Control-M/Server – additional values

Parameter	Additional values
semmni	Add 20 + the number of Agents and remote hosts that will be connected to Control-M/Server + the number Agents with configuration definitions that differ from the default.
semmns	For all platforms except Oracle Solaris 10, add 20 + the number of Agents and remote hosts that will be connected to Control-M/Server + the number Agents with configuration definitions that differ from the default.
semmnu	For Oracle Solaris 9 (not Oracle Solaris 10), add 100 + 6 times the number agents connected to the server + the number utilities running simultaneously.

The following table lists the kernel parameter values for Control-M that must be added to the values in other UNIX systems, as described in UNIX system parameter modification. If higher values for these parameters have already been specified for the database server, the higher values must remain.

Kernel parameters for Control-M – values for all platforms

Parameter	Value
semmnu	(NPROC - 4)
Ulimit (for PostgreSQL)	▪ fsize: **unlimited** ▪ nofiles: **>1024**

Verifying operating system levels and patches

This procedure describes how to verify the operating system level and patches with Control-M requirements.

NOTE: The **check_req.sh** file is located in the **pre_req** directory on the installation DVD. However, due to changes that are applied to the operating systems, this file might not be up-to-date. BMC recommends that you download the latest version of this file from the following web site:

ftp://ftp.bmc.com/pub/control-m/opensystem/PANFT.8.0.00

If you downloaded the **pre_req.tar.Z** file from the web site, follow the instructions in the accompanying **readme** file.

➢ To verify operating system levels and patches

1. Log in as user **root**.
2. Mount the installation DVD.
3. Type the following command:

   *<dvdPath>***/pre_req/check_req.sh**
4. Complete the instructions as necessary.

   If the operating system and patches meet Control-M requirements, you are advised that the product can be installed. Otherwise, a list of missing requirements appears.

   NOTE: If the script alerts you to a missing patch, check with your system administrator or database administrator to see if the patch is included in one of the bundled packages that are installed on your computer or database.

Installing Control-M on UNIX

This procedure describes how to install the Control-M Workload Automation suite with all Control-M components including Application Plug-ins, add-ons, and the Control-M Conversion tool on UNIX. You can install with the default settings, or choose the custom installation to select the database server, database names, usernames, hostnames, and port settings.

NOTE: If you want to install multiple instances of Control-M on several computers using the same configuration, use the automatic installation, as described in this procedure.

NOTE: The default installation is interactive and uses a GUI display. XServer must be running and configured using the **DISPLAY** environment variable. If you do not have XServer available, BMC recommends that you continue with the console installation or perform an automatic installation.

Before You Begin

Ensure that you have met the following requirements:

- Verify that your operating system and database software is compatible with the current version of Control-M, as described in Control-M full installation system requirements (on page 12).
- Verify that the target computer is clean and does not have any previous Control-M version installed.
- Successful completion of Control-M pre-installation procedures on UNIX (on page 19).
- If you are installing Control-M in a cluster environment, see Control-M cluster configuration (on page 62).

➢ To install on UNIX:

1. Do one of the following:
   - Mount the installation DVD.
   - From the temporary directory that you created (see Product Distribution in the *Control-M Workload Automation version 8.0.00 Release Notes*), extract the **.tar.Z** file.

2. Set your **DISPLAY** environment variable, as described in Setting environment variables in UNIX (on page 21).
3. Type the following command:

   <*source_path***> /setup.sh**
4. Do one of the following:
   - **Interactive install**: Select the **Control-M Workload Automation 8.0.00- Full Installation** option and continue with the on-screen instructions until the installation is complete.
   - **Automatic install**: Do the following:
     a. Select the **Control-M Workload Automation 8.0.00- Full Installation** option and continue with the on-screen instructions until the **Summary** window.
     b. Click **Generate** and select the location to create the XML parameter file.
     c. Click **Yes** to quit the installation.

        A confirmation message appears.
     d. Click **Yes**.
     e. Copy the automatic installation parameters file to a network location that is accessible to all computers where you want to perform an automatic installation.
     f. To run the installation script, type the following command:

        <*source_path***> /setup.sh -silent <***filename.xml***>**

   The installation logs can be found at the following location:

   *<$HOME>***/BMCINSTALL/log/BMC_Control-M_Install_***<date-time>***.log**

Installing Control-M on Windows

This procedure describes how to install the Control-M Workload Automation suite with all Control-M components including Application Plug-ins, add-ons, and Control-M Conversion tool on Windows. You can install with the default settings, or choose the custom installation to select the database server, database names, usernames, hostnames, and port settings.

NOTE: If you want to install multiple instances of Control-M on several computers using the same configuration, use the automatic installation, as described in this procedure.

Before You Begin

Ensure that you have met the following requirements:

- Verify that your operating system and database software is compatible with the current version of Control-M, as described in Control-M full installation system requirements (on page 12).
- Verify that the target computer is clean and does not have any previous Control-M version installed.
- If you are installing Control-M in a cluster environment, see Control-M cluster configuration (on page 62).

➢ To install on Windows:

1. Log in to the computer using a user ID that has Administrator permissions.

2. Do one of the following:
   - From the installation DVD, double-click the **Setup.exe** file.
   - From a command prompt window, enter **<***source_path***>\Setup.exe**.
3. Do one of the following:
   - **Interactive install**: Select the **Control-M Workload Automation 8.0.00- Full Installation** option and continue with the on-screen instructions until the installation is complete.
   - **Automatic install**: Do the following:
     a. Select the **Control-M Workload Automation 8.0.00- Full Installation** option and continue with the on-screen instructions until the **Summary** window.
     b. Click **Generate** and select the location to create the XML parameter file.
     c. Click **Yes** to quit the installation.

        A confirmation message appears.
     d. Click **Yes**.

        The automatic installation XML parameters file that is created (**<***filename***>.xml**) is relevant only for computers with the same agent instance name. Otherwise, a separate **<***filename***>.xml** file must be created for each computer, or modified manually for each computer.
     e. Copy the automatic installation parameters file to a network location that is accessible to all computers where you want to perform an automatic installation.
     f. Log in using a user ID that has Administrator permissions on the current computer.
     g. Ensure that the installation DVD is still in the DVD drive, and run the installation script, as follows:

        <*source_path***>\Setup.exe -silent <***filename.xml***>**

   The installation logs can be found at the following location:

   *<installFolder>***\BMCINSTALL\log\BMC_Control-M_Install_***<date-time>***.log**

Control-M post installation procedures on UNIX

The following procedures describe the required and optional steps after you install Control-M:

- Enabling Control-M/Agent for non-root mode (on page 33)
- Configuring the automatic startup procedure for Control-M/Agent on UNIX (optional) (on page 34)
- Automatic startup procedure for Control-M/Server on UNIX (optional) (on page 33)
- Using NFS with Control-M/Server on UNIX (optional) (on page 36)
- Setting Control-M/Agent file permissions for NFS on UNIX (on page 36)

Enabling Control-M/Agent for non-root mode

This procedure describes how to enable Control-M/Agent for non-root mode for jobs that are owned by a user that is different from the one running Control-M/Agent.

NOTE: If the only jobs run are owned by the same user that runs the Control-M/Agent, it is not necessary to take any action to set up non-root operation mode.

➢ To enable Control-M/Agent for non-root mode:

1. Log in as user **root** and run the **set_agent_mode** script using the **enable non root mode** option on each installed Control-M/Agent. The script need only be run once for each Control-M/Agent.
2. From the Control-M Configuration Manager, define a job owner password for each job owner that is used by the Control-M/Agent.
3. For an upgrade installation, you must replace the automatic startup script on each Control-M/Agent computer to reflect its root or non-root status.

   You can toggle between root mode and non-root mode on any Control-M/Agent by shutting down the Control-M/Agent from the user that is currently running the Control-M/Agent, and re-starting Control-M/Agent with the user necessary for the new mode.

Automatic startup procedure for Control-M/Server on UNIX (optional)

The database server and Control-M/Server must be running at all times on the initial Control-M/Server installation. BMC Software recommends that they be started at system startup time.

You can modify the startup procedure to ensure that the database server, Control-M/Server, and the Control-M/Server Configuration Agent are started during system startup. The command to copy the necessary startup instructions to your system startup directory is listed below.

All commands shown below must be executed as the root user.

Do not perform this procedure when installing Control-M/Server on a mirror (backup) environment.

Depending on your operating system, modify the automatic startup procedure as described in the following table:

Automatic startup procedures

Operating system	Startup procedure	Example
AIX	cp *<ctmHome>*/ctm_server/data/rc.*<controlmUser>* /etc/ Open the **/etc/inittab** file in an editor, and append the following line at the end of the file. *<controlmUser>*:2:respawn:/etc/rc.*<controlmUser>*	For a user called **controlm**, specify the following command: **cp /home/controlm/ctm_server/data/rc.controlm /etc** and in file **/etc/inittab** add: **controlm:2:respawn:/e**

Operating system	Startup procedure	Example
		tc/rc.controlm
HP-UX and HP-Itanium	cp *<ctmHome>*/ctm_server/data/rc.*<controlmUser>* /sbin/init.d/*<controlmUser>* ln -s /sbin/init.d/*<controlmUser>* /sbin/rc2.d/S980*<controlmUser>*	cp /home/controlm/ctm_server/data/rc.controlm /sbin/init.d/controlm ln -s /sbin/init.d/controlm /sbin/rc2.d/S980controlm
Oracle Solaris	cp *<ctmHome>*/ctm_server/data/rc.*<controlmUser>* /etc/rc2.d/S98*<controlmUser>*	cp /home/controlm/ctm_server/data/rc.controlm /etc/rc2.d/S98ccontrolm
Linux	cp *<ctmHome>*/ctm/scripts/rc.controlm_user /etc/rc.d/*<controlmUser>* ln -s /etc/rc.d*<controlmUser>* /etc/rc.d/rc2.d/S98*<controlmUser>*	cp /home/controlm/ctm_server/data/rc.controlm /etc/rc.d/rc2.d/S98controlm cp home/ctm/scripts/rc.ctm_user /etc/rc.d/ctm1 ln -s /etc/rc.d/ctm1/etc/rc.d/rc2.d/S98ctm1
SUSE	>SuSEconfig	

Configuring the automatic startup procedure for Control-M/Agent on UNIX (optional)

This procedure describes how to configure the startup procedure for Control-M/Agents automatically at system startup time.Consult your system administrator for the correct commands with regard to Control-M/Agent on the platform you are using. During installation of Control-M/Agent, a ready-made startup script, **rc.agent_user**, is placed in *<ctm_agentInstallFolder>/ctm/***scripts**.

NOTE: Control-M/Agents that were shut down manually are not restarted by the automatic startup procedure during a shutdown-restart operation.

➢ To configure the automatic startup procedure for Control-M/Agent on UNIX:

1. Copy the startup script **rc.agent_user** to the OS specific **init.d** directory, as described in Control-M/Agent automatic startup procedures (on page 35).
2. Create a relative path to the rc2.d directory pointing to the script in the init.d directory.
3. Run the startup procedure command as the root user.

Control-M/Agent automatic startup procedures

The following table lists the scripts for each operating system to enable the automatic startup procedures for Control-M/Agent:

Operating system	Startup procedure	Example
AIX	cp *<agentHome>*/ctm/scripts/rc.**agent_user** /etc/ *<agentUser>* Open the **/etc/inittab** file in an editor, and append the following line at the end of the file. *<agentUser>*:2:respawn:/etc/ *<agentUser>*/rc.agent_user	For a user called **agent1**, specify the following command: **cp /home/agent1/ctm/scripts/rc.agent_user /etc/agent1** and in file **/etc/inittab** add: **agent1:2:respawn:/etc/agent1/rc.agent_user**
HP-UX and HP-Itanium	cp *<agentHome>/*ctm/scripts/rc.agent_user /sbin/init.d/ *<agentUser>* ln -s /sbin/init.d/ *<agentUser>* /sbin/rc2.d/S980 *<agentUser>*	cp home/ctm/scripts/rc.agent_user /sbin/init.d/agent1 ln -s /sbin/init.d/agent1 /sbin/rc2.d/S980agent1
Oracle Solaris	cp <agentHome>/ctm/scripts/rc.agent_user /etc/init.d/rc.<agentUser>ln -s ../init.d/rc.<agentUser>/etc/rc2.d/S13<agentUser>	cp home/ctm/scripts/rc.agent_user /etc/rc2.d/S98agent1 ln -s ../init.d/rc.agent1 /etc/rc2.d/S13agent1
Linux	cp *<agentHome>*/ctm/scripts/rc.agent_user /etc/rc.d/ *<agentUser>* ln -s /etc/rc.d/ *<agentUser>* /etc/rc.d/rc5.d/S98 *<agentUser>*	cp home/ctm/scripts/rc.agent_user /etc/rc.d/agent1 ln -s /etc/rc.d/agent1 /etc/rc.d/rc5.d/S98agent1
SUSE	>SuSEconfig	

Using NFS with Control-M/Server on UNIX (optional)

This procedure describes how to use the advanced NFS file system.

NOTE: The Control-M/Server and Control-M/Agent owner can be a local user, an LDAP user, or an NIS user, but the account home directory must be located on a local disk and not on NFS.

➢ To use NFS with Control-M/Server:

1. Verify that Control-M/Server is shut down.
2. Copy the **ctm_server/proclog**, **ctm_server/proclog.save**, **ctm_server/status**, and **ctm_server/temp** directories to NFS.
3. Delete the copied directories from the local disk.
4. Place a soft link on the local disk under the **$HOME/ctm/** directory to point to the new NFS location for each of the copied directories.

Setting Control-M/Agent file permissions for NFS on UNIX

This procedure describes how to set Control-M/Agent file permissions for NFS on UNIX if you have put the output directory on an NFS file system.

➢ To set Control-M/Agent file permissions:

1. From the Control-M Configuration Manager, open the **Control-M/Agent - System Parameters** window.
2. In the **Permissions of job output files in the output directory** field, set to **666**.

   The permissions on NFS for both the output directory and the proclog directory must be **777**.

Control-M/Agent installation

The Control-M/Agent installation installs additional Control-M/Agents on different computers throughout your organization. Additional Control-M/Agents enables you to run jobs on multiple computers. This enhances performance and creates greater load balancing control.

Before you install Control-M/Agent, verify the requirements, as described in Control-M/Agent system requirements (on page 37).

If you are installing Control-M/Agent on UNIX, complete the pre-install procedures, as described in Control-M/Agent pre-installation procedures on UNIX (on page 39) and the post install procedures, as described in Control-M/Agent post installation procedures on UNIX (on page 42).

The following procedures describe how to install Control-M/Agent on UNIX and Windows via an interactive or automatic installation:

- Installing Control-M/Agent on UNIX (on page 40)
- Installing Control-M/Agent on Windows (on page 41)

Control-M/Agent system requirements

Before you install Control-M/Agent, verify that your operating system and processor are supported and that your minimum requirements for memory and diskspace are met.

Depending on your operating system, verify that your system meets one of the following requirements:

- Control-M/Agent UNIX system requirements (on page 37)
- Control-M/Agent Windows system requirements (on page 38)

Control-M/Agent UNIX system requirements

The following table lists the prerequisite requirements for Control-M/Agent on a UNIX platform. These values represent the minimum requirement for an entry level deployment. For higher capacity workloads, add resources. For sizing, see Control-M/Server & Control-M/EM Hardware Sizing Template (on page 14).

UNIX requirements for Control-M/Agent

Resource	Specification	Requirement
Hardware	AIX	IBM RISC System/6000
	HP-UX	▪ Itanium (ia64) ▪ RISC

Resource	Specification	Requirement
	Oracle Solaris	▪ SPARC ▪ x86 ▪ x86_64
	Linux	▪ x86 ▪ x86_64 ▪ IBM® zSeries ▪ Itanium (ia64)
	All Systems	DVD drive
Memory		128 MB
Diskspace BMC Software recommends that you reserve three times the amount of RAM in the system for swap space.		575 MB

Control-M/Agent Windows system requirements

The following table lists the prerequisite requirements for a Windows platform. These values represent the minimum requirement for an entry level deployment. For higher capacity workloads, add resources. For sizing, see Control-M/Server & Control-M/EM Hardware Sizing Template (on page 14).

Windows requirements for Control-M/Agent

Resource	Requirement
Computer	▪ Pentium IV 2 GHz or higher ▪ Intel Xeon 64 bit ▪ AMD Opteron
Compatible processors	▪ x86 ▪ x86_64 ▪ ia64
Display	16-bit (65536) colors or higher

Resource	Requirement
Storage Media	DVD drive
Memory	128 MB
Diskspace BMC Software recommends that you reserve three times the amount of RAM in the system for swap space.	200 MB

Control-M/Agent pre-installation procedures on UNIX

Before you install Control-M/Agent, you need to complete the following procedures:

- Configuring a user account on UNIX (on page 20): Describes how to configure specific parameters for Control-M/Agent
- Setting environment variables in UNIX (on page 21): Describes how to set environment variables in UNIX, which enables you to view messages from the console
- Verifying operating system levels and patches (on page 29): Describes how to verify operating system level and patches with Control-M/Agent requirements
- UNIX system parameter modification: Describes how to modify HP-UX, AIX, Oracle Solaris, and Linux system parameters, which enables you to allocate resources for Control-M/Agent components.

Installing Control-M/Agent on UNIX

This procedure describes how to install Control-M/Agent on UNIX. If you want to install multiple instances of Control-M/Agent on several computers using the same configuration, use the automatic installation, as described in this procedure.

NOTE: If a previous version of Control-M/Agent is detected, an upgrade is automatically performed and the parameters values from the previous version are used. You do not need to shut down the Control-M/Agent before the upgrade process begins.

NOTE: The default installation is interactive and uses a GUI display. XServer must be running and configured using the **DISPLAY** environment variable. If you do not have XServer available, BMC recommends that you continue with the console installation or perform an automatic installation.

Before You Begin

Ensure that you have met the following requirements:

- Ensure that your operating system and database software is compatible with the current version of Control-M/Agent, as described in Control-M/Agent system requirements (on page 37).
- Successful completion of Control-M/Agent pre-installation procedures on UNIX (on page 39).
- Ensure that the Internal Process Communication (IPC) subsystem is enabled.
- Verify that your locale is set to **English** before beginning the installation.

➢ To install on UNIX:

1. Log in as a Control-M/Agent user and then switch to user **root**.
2. Do one of the following:
   - Mount the installation DVD.
   - From the temporary directory that you created (see Product Distribution in the *Control-M Workload Automation version 8.0.00 Release Notes*), extract the **.tar.Z** file.

   NOTE: If you are installing Control-M/Agent in non-root mode, log out user root and log in as the Control-M/Agent user.
3. Set your **DISPLAY** environment variable, as described in Setting environment variables in UNIX (on page 21).
4. Type the following command:

   <*source_path***>/setup.sh**
5. Do one of the following:
   - **Interactive install**: Select the **Control-M/Agent** option and continue with the on-screen instructions until the installation is complete.
   - **Automatic install**: Do the following:
     a. Select the **Control-M/Agent** option and continue with the on-screen instructions until the **Summary** window.
     b. Click **Generate** and select the location to create the XML parameter file.
     c. Click **Yes** to quit the installation.

A confirmation message appears.

d. Click **Yes**.

e. Copy the automatic installation parameters file to a network location that is accessible to all computers where you want to perform an automatic installation.

f. To run the installation script, type the following command:

<*source_path***> /setup.sh -silent <***filename.xml***>**

The installation log can be found at the following location:

*<$HOME>***/BMCINSTALL/log/BMC_Control-M_Agent_***<date-time>***.log**

Installing Control-M/Agent on Windows

This procedure describes how to install Control-M/Agent on Windows.

If you want to install multiple instances of Control-M/Agent on several computers using the same configuration, use the automatic installation, as described in this procedure.

Before You Begin

Ensure that your operating system and database software is compatible with the current version of Control-M/Agent, as described in Control-M/Agent system requirements (on page 37).

➢ To install on Windows:

1. Log in to the computer using a user ID that has Administrator permissions.
2. Do one of the following:
   - From the installation DVD, double-click the **Setup.exe** file.
   - From a command prompt window, enter **<***source_path***>\Setup.exe**.
3. Do one of the following:
   - **Interactive install**: Select the **Control-M/Agent** option and continue with the on-screen instructions until the installation is complete.
   - **Automatic install**: Do the following:

     a. Select the **Control-M/Agent** option and continue with the on-screen instructions until the **Summary** window.

     b. Click **Generate** and select the location to create the XML parameter file.

     c. Click **Yes** to quit the installation.

     A confirmation message appears.

     d. Click **Yes**.

     The automatic installation XML parameters file that is created (**<***filename***>.xml**) is relevant only for computers with the same agent instance name. Otherwise, a separate **<***filename***>.xml** file must be created for each computer, or modified manually for each computer.

e. Copy the automatic installation parameters file to a network location that is accessible to all computers where you want to perform an automatic installation.

f. Log in using a user ID that has Administrator permissions on the current computer.

g. Ensure that the installation DVD is still in the DVD drive, and run the installation script, as follows:

<*source_path***>\Setup.exe -silent <***filename.xml***>**

The installation log can be found at the following location:

*<installFolder>***\BMCINSTALL\log\BMC_Control-M_Agent_***<date-time>***.log**

Control-M/Agent post installation procedures on UNIX

The following procedures describe the required and optional steps after you install Control-M/Agent:

- Enabling Control-M/Agent for non-root mode (on page 33)
- Configuring the automatic startup procedure for Control-M/Agent on UNIX (optional) (on page 34)
- Setting Control-M/Agent file permissions for NFS on UNIX (on page 36)

Control-M client installation

The Control-M client installation option enables you to install additional Control-M clients on different computers throughout your organization. Additional clients enable multiple users in your organization to access Control-M.

Verify that your operating system meets all requirements, as described in Control-M client system requirements (on page 43).

To install the Control-M client on a Windows computer, see Installing Control-M client (on page 44).

Control-M client system requirements

The following table lists the prerequisite requirements for the Control-M client on Windows. These values represent the minimum requirement for an entry level deployment.

Control-M client system requirements

Resource	Requirement
Computer	▪ Pentium IV 2 GHz or higher ▪ Intel Xeon 64 bit ▪ AMD Opteron
Operating system	▪ Windows 7 ▪ Windows Vista ▪ Windows XP ▪ Windows Server 2008 ▪ Windows Server 2008 R2 ▪ Windows Server 2003
Compatible processors	▪ x86 ▪ x86_64
Display	16-bit (65536) colors or higher
Storage Media	DVD drive
Memory	512 MB

Resource	Requirement
Diskspace BMC Software recommends that you reserve three times the amount of RAM in the system for swap space.	1800 MB

Installing Control-M client

This procedure describes how to install the Control-M client on Windows.

If you want to install multiple instances of the Control-M client on several computers using the same configuration, use the automatic installation, as described in this procedure.

Before You Begin

Ensure that your operating system and database software are compatible with the current version of the Control-M client, as described in Control-M client system requirements (on page 43).

➢ To install on Windows:

1. Log in to the computer using a user ID that has Administrator permissions.
2. Do one of the following:
   - From the installation DVD, double-click the **Setup.exe** file.
   - From a command prompt window, enter **<***source_path***>\Setup.exe**.
3. Do one of the following:
   - **Interactive install**: Select the **Control-M client** option and continue with the on-screen instructions until the installation is complete.
   - **Automatic install**: Do the following:
     a. Select the **Control-M client** option and continue with the on-screen instructions until the **Summary** window.
     b. Click **Generate** and select the location to create the XML parameter file.
     c. Click **Yes** to quit the installation.

        A confirmation message appears.
     d. Click **Yes**.
     e. Copy the automatic installation parameters file to a network location that is accessible to all computers where you want to perform an automatic installation.
     f. Log in using a user ID that has Administrator permissions on the current computer.
     g. Ensure that the installation DVD is still in the DVD drive, and run the installation script, as follows:

<*source_path***>\Setup.exe -silent <***filename.xml***>**

The installation log can be found at the following location:

*<installFolder>***\BMCINSTALL\log\BMC_Control-M_client_***<date-time>***.log**

Control-M uninstall

To uninstall Control-M and all components including add-ons from UNIX and Windows computers, see Control-M full uninstall (on page 46).

To uninstall individual Control-M/Agents from UNIX and Windows computers, see Control-M/Agent uninstall (on page 47).

Control-M full uninstall

The following procedures describe how to uninstall Control-M and all components including add-ons from UNIX and Windows computers:

- Uninstalling Control-M on UNIX (on page 46)
- Uninstalling Control-M on Windows (on page 46)
- Performing an automatic Control-M uninstall on Windows (on page 47)

Uninstalling Control-M on UNIX

This procedure describes how to uninstall Control-M including all components from UNIX.

Before You Begin

Ensure that all jobs have ended.

➢ To uninstall from UNIX:

1. Log in as a Control-M user.
2. Navigate to the following directory:

   <*ctm_InstallFolder***> /BMCINSTALL/uninstall/DROST.8.0.00**
3. Type one of the following commands:
   - Interactive uninstall**: ./uninstall.sh**
   - Automatic uninstall: **./uninstall.sh -silent**

   Control-M is successfully removed from your computer.

Uninstalling Control-M on Windows

This procedure describes how to uninstall Control-M including all components from Windows.

Before You Begin

Ensure that all jobs have ended.

➢ To uninstall from Windows:

1. From the **Start** menu, select **Control Panel**.
2. Double-click **Add or Remove Programs** (*2003*) or **Programs and Features** (*2008*).
3. Select **BMC Control-M 8.0.00**, and click **Remove** (*2003*) or **Uninstall** (*2008*).
4. Click **OK** to continue.

   Control-M is successfully removed from your computer.

Performing an automatic Control-M uninstall on Windows

This procedure describes how to uninstall Control-M including all components from Windows via an automatic uninstall.

Before You Begin

Ensure that all jobs have ended.

➢ To uninstall from Windows:

1. Log in to the computer using a user ID that has Administrator permissions.
2. Navigate to the following directory:

   <*ctm_InstallFolder***>\BMCINSTALL\uninstall\DROST.8.0.00**
3. Type the following command:

   uninstall.exe -silent

   Control-M is successfully removed from your computer.

Control-M/Agent uninstall

The following procedures describe how to uninstall individual instances of Control-M/Agent from UNIX and Windows computers:

- Uninstalling Control-M/Agent on UNIX (on page 47)
- Uninstalling Control-M/Agent on Windows (on page 48)
- Performing an automatic Control-M/Agent uninstall on Windows (on page 48)

Uninstalling Control-M/Agent on UNIX

This procedure describes how to uninstall Control-M/Agent from UNIX.

Before You Begin

Ensure that all jobs have ended.

➢ To uninstall from UNIX:

1. Do one of the following:

- If Control-M/Agent is running as root, log in as a user **root**.
- If Control-M/Agent is running as non-root and non-root mode is enabled, do the following:

  a. Type the following command:

  *<ctm_agentInstallFolder>***/ctm/scripts/set_agent_mode**

  b. Select the **prepare for non root uninstall** option, and then log in as the Control-M/Agent owner.

2. Navigate to the following directory:

   <*Agent_InstallFolder***>/BMCINSTALL/uninstall/DRKAI.8.0.00**

3. Type one of the following commands:
   - Interactive uninstall**: ./uninstall.sh**
   - Automatic uninstall: **./uninstall.sh -silent**

   Control-M/Agent is successfully removed from your computer.

Uninstalling Control-M/Agent on Windows

This procedure describes how to uninstall Control-M/Agent from Windows.

Before You Begin

Ensure that all jobs have ended.

➢ To uninstall from Windows:

1. From the **Start** menu, select **Control Panel**.
2. Double-click **Add or Remove Programs** (*XP*) or **Programs and Features** (*Vista/7*).
3. Select **BMC Control-M/Agent 8.0.00**, and click **Remove** (*XP*) or **Uninstall** (*Vista/7*).
4. Click **OK** to continue.

   Control-M/Agent is successfully removed from your computer.

Performing an automatic Control-M/Agent uninstall on Windows

This procedure describes how to uninstall Control-M/Agent from Windows via an automatic uninstall.

Before You Begin

Ensure that all jobs have ended.

➢ To uninstall from Windows:

1. Log in to the computer using a user ID that has Administrator permissions.
2. Navigate to the following directory:

   <*Agent_InstallFolder***>\BMCINSTALL\uninstall\DRKAI.8.0.00**

3. Type the following command:

   Uninstall.exe -silent

   Control-M is successfully removed from your computer.

Control-M client uninstall

The following procedures describe how to uninstall individual instances of Control-M/Agent from UNIX and Windows computers:

- Uninstalling Control-M client on Windows (on page 49)
- Performing an automatic Control-M client uninstall on Windows (on page 49)

Uninstalling Control-M client on Windows

This procedure describes how to uninstall the Control-M client from Windows.

➢ To uninstall from Windows:

1. From the **Start** menu, select **Control Panel**.
2. Double-click **Add or Remove Programs** (*XP*) or **Programs and Features** (*Vista/7*).
3. Select **BMC Control-M 8.0.00**, and click **Remove** (*XP*) or **Uninstall** (*Vista/7*).
4. Click **OK** to continue.

   Control-M Workload Automation is successfully removed from your computer.

Performing an automatic Control-M client uninstall on Windows

This procedure describes how to uninstall Control-M client from Windows via an automatic uninstall.

➢ To uninstall from Windows:

1. Log in to the computer using a user ID that has Administrator permissions.
2. Navigate to the following directory:

   <*em_InstallFolder***>\BMCINSTALL\uninstall\DRNFT.8.0.00**
3. Type the following command:

   Uninstall.exe -silent

   Control-M is successfully removed from your computer.

Control-M advanced installation

If you have additional load balancing and geo-redundancy requirements, you can install multiple instances of Control-M/EM and Control-M/Server.

To install additional instances of Control-M/EM, see Control-M/Enterprise Manager installation (on page 50).

To install additional instances of Control-M/Server, see Control-M/Server installation (on page 54).

Control-M/Enterprise Manager installation

If you have additional load balancing and geo-redundancy requirements, you can install multiple instances of Control-M/EM with client and server components.

Before you install Control-M/EM, verify the requirements, as described in Control-M full installation system requirements (on page 12).

If you are installing Control-M/EM on UNIX, complete the pre-install procedures, as described in Control-M/EM pre-installation procedures on UNIX (on page 50).

The following procedures describe how to install Control-M/EM on UNIX and Windows:

- Installing Control-M/EM on UNIX (on page 51)
- Installing Control-M/EM on Windows (on page 52)

Control-M/EM pre-installation procedures on UNIX

Before you install Control-M/EM, you need to complete the following procedures:

- Configuring a user account on UNIX (on page 20): Describes how to configure specific parameters for Control-M/EM
- Setting environment variables in UNIX (on page 21): Describes how to set environment variables in UNIX, which enables you to see messages from the console
- Verifying operating system levels and patches (on page 29): Describes how to verify operating system level and patches with Control-M/EM requirements
- UNIX system parameter modification (on page 22): Describes how to modify HP-UX, AIX, Oracle Solaris, and Linux system parameters, which enables you to allocate resources for Control-M components

If you want to install Control-M/EM with Sybase, see Preparing a Control-M installation on UNIX with Sybase (on page 86).

Installing Control-M/EM on UNIX

This procedure describes how to install Control-M/EM on UNIX. You can install with the default settings, or choose the custom installation to select the database server, database names, usernames, hostnames, and port settings. If you want to install multiple instances of Control-M/EM on several computers using the same configuration, use the automatic installation, as described in this procedure.

NOTE: You need to install the Control-M client on a Windows computer.

NOTE: The default installation is interactive and uses a GUI display. XServer must be running and configured using the **DISPLAY** environment variable. If you do not have XServer available, BMC recommends that you continue with the console installation or perform an automatic installation.

Before You Begin

Ensure that you have met the following requirements:

- Verify that your operating system and database software is compatible with the current version of Control-M/EM, as described in Control-M full installation system requirements (on page 12).
- Successful completion of Control-M pre-installation procedures on UNIX (on page 19).

➢ To install on UNIX:

1. Do one of the following:
   - Mount the installation DVD.
   - From the temporary directory that you created (see Product Distribution in the *Control-M Workload Automation version 8.0.00 Release Notes*), extract the **.tar.Z** file.
2. Set your **DISPLAY** environment variable, as described in Setting environment variables in UNIX (on page 21).
3. Type the following command:

   <*source_path***> /setup.sh**
4. Do one of the following:
   - **Interactive install**: Select the **Control-M/Enterprise Manager** option and continue with the on-screen instructions until the installation is complete.
   - **Automatic install**: Do the following:
     a. Select the **Control-M/Enterprise Manager** option and continue with the on-screen instructions until the **Summary** window.
     b. Click **Generate** and select the location to create the XML parameter file.
     c. Click **Yes** to quit the installation.

        A confirmation message appears.
     d. Click **Yes**.
     e. Copy the automatic installation parameters file to a network location that is accessible to all computers where you want to perform an automatic installation.
     f. To run the installation script, type the following command:

        <*source_path***> /setup.sh -silent <***filename.xml***>**

The installation log can be found at the following location:

*<$HOME>***/BMCINSTALL/log/BMC_Control-M_Enterprise_Manager_***<date-time>***.log**

5. Continue with Control-M/Agent post installation procedures on UNIX (on page 42).

Installing Control-M/EM on Windows

This procedure describes how to install Control-M/EM on Windows. You can install with the default settings, or choose the custom installation to select the database server, database names, usernames, hostnames, and port settings. If you want to install multiple instances of Control-M/EM on several computers using the same configuration, use the automatic installation, as described in this procedure.

Before You Begin

Ensure that your operating system and database software is compatible with the current version of Control-M/EM, as described in Control-M full installation system requirements (on page 12).

➢ To install on Windows:

1. Log in to the computer using a user ID that has Administrator permissions.
2. Do one of the following:
   - From the installation DVD, double-click the **Setup.exe** file.
   - From a command prompt window, enter **<***source_path***>\Setup.exe**.
3. Do one of the following:
   - **Interactive install**: Select the **Control-M/Enterprise Manager** option and continue with the on-screen instructions until the installation is complete.
   - **Automatic install**: Do the following:
     a. Select the **Control-M/Enterprise Manager** option and continue with the on-screen instructions until the **Summary** window.
     b. Click **Generate** and select the location to create the XML parameter file.
     c. Click **Yes** to quit the installation.

        A confirmation message appears.
     d. Click **Yes**.
     e. Copy the automatic installation parameters file to a network location that is accessible to all computers where you want to perform an automatic installation.
     f. Log in using a user ID that has Administrator permissions on the current computer.
     g. Ensure that the installation DVD is still in the DVD drive, and run the installation script, as follows:

        <*source_path***>\Setup.exe -silent <***filename.xml***>**

   The installation log can be found at the following location:

   *<installFolder>***\BMCINSTALL\log\BMC_Control-M_Enterprise_Manager_***<date-time>***.log**
4. Continue with Control-M post installation procedures on UNIX (on page 32).

Control-M/EM uninstall

The following procedures describe how to uninstall Control-M/EM on UNIX and Windows.

Uninstalling Control-M/EM on UNIX

This procedure describes how to uninstall Control-M/EM from UNIX.

Before You Begin

Ensure that all jobs have ended.

➢ To uninstall from UNIX:

1. Log in as a Control-M/EM user.
2. Navigate to the following directory:

   <*em_InstallFolder*>/BMCINSTALL/uninstall/DRNFT.8.0.00
3. Type one of the following commands:
   - Interactive uninstall**: ./uninstall.sh**
   - Automatic uninstall: **./uninstall.sh -silent**

   Control-M/EM is successfully removed from your computer.

Uninstalling Control-M/EM on Windows

This procedure describes how to uninstall Control-M/EM from Windows.

Before You Begin

Ensure that all jobs have ended.

➢ To uninstall from Windows:

1. From the **Start** menu, select **Control Panel**.
2. Double-click **Add or Remove Programs** (*2003*) or **Programs and Features** (*2008*).
3. Select **Control-M/Enterprise Manager 8.0.00**, and click **Remove** (*2003*) or **Uninstall** (*2008*).
4. Click **OK** to continue.

   Control-M/EM is successfully removed from your computer.

Performing an automatic Control-M/EM uninstall on Windows

This procedure describes how to uninstall Control-M/EM from Windows via an automatic uninstall.

Before You Begin

Ensure that all jobs have ended.

➢ To perform an automatic uninstall from Windows:

1. Log into the computer using a user ID that has Administrator permissions.
2. Navigate to the following directory:

   <*em_InstallFolder*>\BMCINSTALL\uninstall\DRNFT.8.0.00
3. Type the following command:

   Uninstall.exe -silent

   Control-M/EM is successfully removed from your computer.

Control-M/Server installation

If you have additional load balancing and geo-redundancy requirements, you can install multiple instances of Control-M/Server.

Before you install Control-M/Server, verify the requirements, as described in Control-M full installation system requirements (on page 12)

If you are installing Control-M/Server on UNIX, complete the pre-installation procedures, as described in Control-M/Server pre-installation procedures on UNIX (on page 54) and the post installation procedures, as described in Control-M/Server post installation on UNIX (on page 57).

The following procedures describe how to install Control-M /Server on UNIX and Windows via an interactive or automatic installation:

- Installing Control-M/Server on UNIX (on page 55)
- Installing Control-M/Server on Windows (on page 56)

Control-M/Server pre-installation procedures on UNIX

Before you install Control-M/Server, you need to complete the following procedures:

- Configuring a user account on UNIX (on page 20): Describes how to configure specific parameters for Control-M/Server
- Setting environment variables in UNIX (on page 21): Describes how to set environment variables in UNIX, which enables you to see messages from the console
- Verifying operating system levels and patches (on page 29): Describes how to verify operating system level and patches with Control-M/Server requirements
- UNIX system parameter modification (on page 22): Describes how to modify HP-UX, AIX, Oracle Solaris, and Linux system parameters, which enables you to allocate resources for Control-M components

If you want to install Control-M/Server with Sybase, see Preparing a Control-M installation on UNIX with Sybase (on page 86).

Installing Control-M/Server on UNIX

This procedure describes how to install Control-M/Server on UNIX. You can install with the default settings, or choose the custom installation to select the database server, database names, usernames, hostnames, and port settings. If you want to install multiple instances of Control-M/Server on several computers using the same configuration, use the automatic installation, as described in this procedure.

NOTE: The default installation is interactive and uses a GUI display. XServer must be running and configured using the **DISPLAY** environment variable. If you do not have XServer available, BMC recommends that you continue with the console installation or perform an automatic installation.

Before You Begin

Ensure that you have met the following requirements:

Verify that your operating system and database software is compatible with the current version of Control-M/Server, as described in Control-M full installation system requirements (on page 12).

- Successful completion of Control-M/Server pre-installation procedures on UNIX (on page 54).

➢ To install on UNIX:

1. Do one of the following:
   - Mount the installation DVD.
   - From the temporary directory that you created (see Product Distribution in the *Control-M Workload Automation version 8.0.00 Release Notes*), extract the **.tar.Z** file.
2. Set your **DISPLAY** environment variable, as described in Setting environment variables in UNIX (on page 21).
3. Type the following command:

   <*source_path***>/setup.sh**
4. Do one of the following:
   - **Interactive install**: Select the **Control-M/Server** option and continue with the on-screen instructions until the installation is complete.
   - **Automatic install**: Do the following:
     a. Select the **Control-M/Server** option and continue with the on-screen instructions until the **Summary** window.
     b. Click **Generate** and select the location to create the XML parameter file.
     c. Click **Yes** to quit the installation.

        A confirmation message appears.
     d. Click **Yes**.
     e. Copy the automatic installation parameters file to a network location that is accessible to all computers where you want to perform an automatic installation.
     f. To run the installation script, type the following command:

        <*source_path***>/setup.sh -silent <***filename.xml***>**

   The installation log can be found at the following location:

<$HOME>/BMCINSTALL/log/BMC_Control-M_Server_*<date-time>*.log

5. Continue with Control-M/Server post installation on UNIX (on page 57).

Installing Control-M/Server on Windows

This procedure describes how to install Control-M/Server on Windows. You can install with the default settings, or choose the custom installation to select the database server, database names, usernames, hostnames, and port settings.

If you want to install multiple instances of Control-M/Server on several computers using the same configuration, use the automatic installation, as described in this procedure.

Before You Begin

Ensure that your operating system and database software is compatible with the current version of Control-M/Server, as described in Control-M full installation system requirements (on page 12).

➢ To install on Windows:

1. Log in to the computer using a user ID that has Administrator permissions.
2. Do one of the following:
   - From the installation DVD, double-click the **Setup.exe** file.
   - From a command prompt window, enter **<***source_path***>\Setup.exe**.
3. Do one of the following:
   - **Interactive install**: Select the **Control-M/Server** option and continue with the on-screen instructions until the installation is complete.
   - **Automatic install**: Do the following:
     a. Select the **Control-M/Server** option and continue with the on-screen instructions until the **Summary** window.
     b. Click **Generate** and select the location to create the XML parameter file.
     c. Click **Yes** to quit the installation.

        A confirmation message appears.
     d. Click **Yes**.
     e. Copy the automatic installation parameters file to a network location that is accessible to all computers where you want to perform an automatic installation.
     f. Log in using a user ID that has Administrator permissions on the current computer.
     g. Ensure that the installation DVD is still in the DVD drive, and run the installation script, as follows:

        <*source_path***>\Setup.exe -silent <***filename.xml***>**

   The installation log can be found at the following location:

   <installFolder>\BMCINSTALL\log\BMC_Control-M_Server_*<date-time>*.log

Control-M/Server post installation on UNIX

The following procedures describe the optional steps after you install Control-M:

- Automatic startup procedure for Control-M/Server on UNIX (optional) (on page 33)
- Using NFS with Control-M/Server on UNIX (optional) (on page 36)

Control-M/Server uninstall

The following procedures describe how to uninstall Control-M/Server on UNIX and Windows.

- Uninstalling Control-M/Server on UNIX (on page 57)
- Uninstalling Control-M/Server on Windows (on page 57)
- Performing an automatic Control-M/Server uninstall on Windows (on page 58)

Uninstalling Control-M/Server on UNIX

This procedure describes how to uninstall Control-M/Server from UNIX.

Before You Begin

Ensure that all jobs have ended.

➢ To uninstall from UNIX:

1. Log in as a Control-M/Server user.
2. Navigate to the following directory:

   <*ctmserver_InstallFolder***> /BMCINSTALL/uninstall/DRCTV.8.0.00**
3. Type one of the following commands:
   - Interactive uninstall**: ./uninstall.sh**
   - Automatic uninstall: **./uninstall.sh -silent**

   Control-M/Server is successfully removed from your computer.

Uninstalling Control-M/Server on Windows

This procedure describes how to uninstall Control-M/Server from Windows.

Before You Begin

Ensure that all jobs have ended.

➢ To uninstall from Windows:

1. From the **Start** menu, select **Control Panel**.
2. Double-click **Add or Remove Programs** (*2003*) or **Programs and Features** (*2008*).

3. Select **Control-M/Server 8.0.00**, and click **Remove** (*2003*) or **Uninstall** (*2008*).
4. Click **OK** to continue.

   Control-M/Server is successfully removed from your computer

Performing an automatic Control-M/Server uninstall on Windows

This procedure describes how to uninstall Control-M/Server from Windows via an automatic uninstall.

Before You Begin

Ensure that all jobs have ended.

➢ To perform an automatic uninstall from Windows:

1. Log in to the computer using a user ID that has Administrator permissions.
2. Navigate to the following directory:

   <*ctmserver_InstallFolder***>\BMCINSTALL\uninstall\DRCTV.8.0.00**
3. Type the following command:

   Uninstall.exe -silent

   Control-M/Server is successfully removed from your computer.

Connecting components

This procedure describes how to connect Control-M/EM to at least one instance of Control-M/Server for both UNIX and Windows.

You do not need to do this procedure if you installed the Control-M full installation option.

➢ To connect components:

1. From a Windows computer that has Control-M/EM (full or client) installed, log in to the Control-M Configuration Manager, as described in Logging in to CCM.

   Start up the following components that are necessary to run Control-M as prompted:

   - GUI Server
   - Global Conditions Server
2. From the **Components menu,** select **New > Control-M/Server and Gateway**.
3. Select **Discover** and click **OK.**
4. In the **Specifying Control-M/Server parameters** window, type a name for the new Control-M/Server.
5. Type the name of the host computer of the Control-M host (the computer where Control-M/Server is installed).

   NOTE: If Control-M/EM and Control-M/Server were installed with the suggested default parameters, accept the suggested defaults for Control-M ID and Configuration Agent Port, otherwise, check with your system administrator.

6. Click **Next** as required.

   The Discover process detects and defines the new Control-M/Server and its gateway in the Control-M Configuration Manager.

7. If you installed Control-M on UNIX go to Control-M post installation procedures on UNIX (on page 32).

Control-M installation without Oracle database system parameter

Due to security or organizational reasons, you might not be able to log in to the oracle database server with the system user credentials during the Control-M/EM or Control-M installation process. In this situation, the Control-M user needs to be created on the Oracle database before you install Control-M, as described in Creating a Control-M user in an Oracle database (on page 59).

After you have created the Control-M user in the Oracle database, you need to change an environment variable, as described in Enabling Control-M installation without system user credentials (on page 61).

Creating a Control-M user in an Oracle database

This procedure describes how to create a Control-M user in an Oracle database. The database administrator must create this user before you install Control-M without defining the database username and password.

➢ To create a Control-M user in an Oracle database

1. Create table space with name that does not consist of one of the following strings:
   - users
   - example
   - temp
   - system
   - sysaux
   - perfstat

   BMC recommends the following table space features:
   - logging (Oracle default)
   - size
   - auto extend on extend management: automatic allocation (Oracle default)
   - segment space management automatic (Oracle default)

   EXAMPLE: CREATE TABLESPACE "MY_TABLESPACE" LOGGING DATAFILE 'E:\ORACLE11\ORADATA\ORCL\MY_TABLESPACE.ora' SIZE 250M EXTENT MANAGEMENT LOCAL SEGMENT SPACE MANAGEMENT AUTO

2. Create a profile with Oracle defaults, but it is strongly recommended to use the following profile features:
   - Unlimited idle time

- Unlimited password life time

EXAMPLE: create profile BMC_PROFILE_$USERNAME limit idle_time unlimited password_life_time unlimited

3. Create role in the database to use for the Control-M user.

   EXAMPLE: create role BMC_ROLE_$USERNAME

4. Assign the following permissions to the created role:
   - alter session
   - create procedure
   - create sequence
   - create session
   - select any dictionary
   - create synonym
   - create table
   - create trigger
   - create view

   EXAMPLE: grant alter session,create procedure,create sequence,create session,select any dictionary,create synonym,create table,create trigger,create view to BMC_ROLE_CTMUSER;

5. Create a database username that does not consist of one of the following strings and assign the created tables pace, profile, and role to it:
   - anonymous
   - perfstat
   - public
   - scott
   - sys
   - sysman
   - system

   EXAMPLE: create user CTMUSER identified by CTMPASS default tablespace $TABLESPACE_NAME quota unlimited on $TABLESPACE_NAME profile BMC_PROFILE_$USERNAME';

6. Grant explicit permissions to the user, as follows:
   - grant create table to CTMUSER;
   - grant create view to CTMUSER;

Enabling Control-M installation without system user credentials

This procedure describes how to enable Control-M installation without system user credentials from the installation process. If you perform this procedure, the Control-M user must be created in the Oracle database before you install Control-M.

➢ To enable Control-M installation without system user credentials

From a command line, set the following environment variable to **Y**:

DBUBUILD_WITH_NO_SYS_PASS

Control-M cluster configuration

This appendix contains detailed information on how to prepare the database server and Control-M (Control-M/EM or Control-M/Server) database data files (tablespaces or data files), for a cluster installation, as described in Database components cluster configuration (on page 62). After you have completed the database server and data files preparation, you can install Control-M interactively or automatically, on UNIX or Windows.

The following describes how to configure Control-M in a cluster environment, as follows:

- Control-M/EM cluster configuration (on page 66)
- Control-M/Server cluster configuration (on page 79)
- Control-M/Agent cluster configuration (on page 82)

Database components cluster configuration

Plan and prepare the configuration according to the information set out in this appendix. The appendix contains information specific to BMC-supplied PostgreSQL and third-party database servers (for example, Oracle, Sybase, MSSQL) that are dedicated to a Control-M application.

If you are planning for clusters on a third-party database server that is not dedicated to a Control-M application, contact the site DBA and Control-M administrator regarding specific cluster requirements.

Defining the resource group

In a PostgreSQL or dedicated third-party database server installation, the database server is always installed within the same file system, and the Control-M tablespace can reside on a different file system. Both file systems must belong to the same resource group.

Configuring the policy file

When Control-M/Server and Control-M/EM share the same database server (or Oracle instance), the following actions might be required:

- If Control-M/Server is installed with a BMC-supplied PostgreSQL database server, run the **startdb** script in the Control-M/Server account but do not run the **start_server** script in the Control-M/EM account.
- If Control-M/EM is installed with a BMC-supplied PostgreSQL database server, run the **start_server** script in the Control-M/EM account but do not run the **startdb** script in the Control-M/Server account.

The BMC-supplied PostgreSQL database server can be shut down or started using the following scripts. If the cluster vendor has a certified database policy file, BMC Software recommends that you use the file.

To start the Control-M database, use the following commands:

```
# Control-M/EM
EM_ACC=em800
EM_DIR=/export1/em800
su - $EM_USER -c $EM_DIR/bin/start_server
# Control-M/Server
CTM_ACC=ctm800
CTM_DIR=/export2/ctm800
su - $CTM_USER -c $CTM_DIR/ctm_server/scripts/startdb
```

To stop the Control-M database, use the following commands:

```
# Control-M/EM
EM_ACC=em800
DBA_PASS=<emPass> # The Control-M/EM database administrator password
EM_DIR=/export1/em800
su - $EM_USER -c $EM_DIR/ctm_em/bin/stop_server << PASSEOF
$DBA_PASS
PASSEOF
exit

# Control-M/Server
CTM_USER=ctm800
CTM_DIR=/home/ctm800
CTM_PSWD=manager
# Stop CONTROL-M/Server PG Database
su - $CTM_USER -c "$CTM_DIR/ctm_server/scripts/shutdb -p$CTM_PSWD"
```

Preparing the database for Windows

You can use the following types of implementations for the Control-M database in a Windows cluster environment:

- **clustered configuration**: A single database installation on the cluster can be accessed by both nodes. The database files are located on the shared disk and the database server availability is controlled by the cluster.
- **local database configuration**: The database server is locally installed on one of the cluster nodes. Only a database client is installed on the other node.
- **remote database configuration**: The database is installed on a non-clustered server or on a cluster different from where Control-M is installed. In this case, only database clients are installed on each of the Control-M cluster nodes.

Database pre-installation

This section discusses cluster configuration on local and remote database servers.

The database server and the Control-M database must be located on the same file system as Control-M. The PostgreSQL database server (or third-party database server dedicated to the Control-M application) and the Control-M database must always be running on the same node.

Clustered

This section describes a cluster configuration for:

- Microsoft SQL (MSSQL) Server 2005 and 2008 (on page 64)
- Oracle Real Application Cluster (RAC) (on page 65)

Microsoft SQL (MSSQL) Server 2005 and 2008

If you are working with MSSQL 2005, it must be the enterprise edition. If during installation you see that the **Virtual Server** option in the Computer Name window is disabled, this means that the enterprise edition is not present.

When MSSQL is installed on a cluster, the software binaries of the product are placed on the local drives of each one of the selected nodes and the data files are placed on the assigned disk resource on the shared drive.

The MSSQL Server services (one service is created on each cluster node) are named by default as the virtual server name. When the MSSQL resource group is moved from one node to another, the MSSQL services are stopped on the original (primary) node and started on the alternate node.

In addition to the MSSQL services resources, installation of MSSQL Server on a Windows cluster automatically creates the network name and IP address resources in the selected resource group. At that point, the MSSQL resource group becomes a virtual server and can be accessed by client applications using the virtual name.

For more information about MSSQL Server on Windows, see:

- Windows Server 2008 Clustering Whitepapers at http://www.microsoft.com/downloads/details.aspx?displaylang=en&FamilyID=75566f16-627d-4dd3-97cb-83909d3c722b
- "SQL Server 2005 Failover Clustering White Paper" at http://www.microsoft.com/downloads/details.aspx?FamilyID=818234dc-a17b-4f09-b282-c6830fead499&DisplayLang=en

Oracle Real Application Cluster (RAC)

A normal Oracle installation consists of a single Oracle instance that accesses a database on the same computer system. With RAC (formerly known as Oracle Parallel Server), multiple instances on different nodes can access the same database files simultaneously. In case of a node failure, the workload of this node will be handled by the other node of the cluster.

When the system is prepared for installation, the Oracle Universal Installer (OUI) presents the list of all cluster nodes, enabling the selection of a subset as targets. The OUI copies the Oracle software onto the first node, and then propagates the software onto the rest of the chosen nodes of the cluster. Along with all the Oracle software, Oracle Enterprise Manager (the central managing console) is automatically installed and set up. When the installation is finished, the database creation wizard and the network configuration wizard are automatically invoked.

For more information about Oracle RAC installation, see the Oracle installation documentation or the Oracle RAC whitepapers at http://www.oracle.com/technology/products/database/clustering/RACWhitepapers.html.

Oracle high availability features are only relevant for Control-M/Enterprise Manager.

Local database server configuration

This configuration is based on the concept of installing the database server on one of the cluster nodes and the database clients on the rest of the cluster nodes. In this way, the database can be accessible to all the nodes in the cluster, but it will not be maintained in a highly available manner. This configuration is not recommended for Control-M when implemented in a clustered configuration.

Remote database server configuration

When the database server is located on a remote node (not one of the cluster nodes), a database client can be installed on each of the cluster nodes and which can then be connected to the remote database server. In this type of implementation, except for the database client, additional database software does not need to be installed on the cluster.

This configuration is common when database platforms reside in a centralized location. However, the availability of Control-M in this type of configuration is tied to and dependent upon the remote database server availability.

➢ Where to Go from Here

You can continue with Installing Control-M on Windows (on page 31).

Control-M/EM cluster configuration

The following procedures describe how to configure clusters on Control-M/EM:

Creating a user account on UNIX

This procedure describes how configure specific parameters for Control-M in a cluster environment.

The account must be clean, that is, there should not be any type of data present in the account.

For a cluster environment, perform the following:

1. Create two user accounts as shown in the following example, one on each node.

   NOTE*: /usr/sbin/***useradd -u** *<numeric_user_id>* **-g** *<user_group>* **-d** *<user_home>* **-s** *<user_shell> <user_name>*

2. Both users must have identical names and identical user IDs (UID).
3. Both users' home directories should point to the same location on a shared disk.

Initial shell

The initial shell for the Control-M/EM, Control-M/Server, or Control-M/Agent account must be specified as one of the following names or programs:

- **/bin/csh**
- **/bin/tcsh**
- **/bin/sh**
- **/bin/ksh** (Control-M/Agent and Control-M/EM only)
- **/bin/bash** (Control-M/Agent only)

Setting limits for the Control-M/EM or Control-M/Server account on UNIX

UNIX computers have predefined limits that are designed to limit or prevent the excessive use of resources by a single process. If a process exceeds its limit, the operating system might kill the process without cleanup and without generating diagnostics. To avoid premature termination of running processes, use the limits specified in the following table.

You can use the limit command to check the current limits in your computer. On some operating systems, this command is reserved for "Super Users" only.

Limits for Control-M/EM or Control-M/Server Accounts on UNIX

Parameter	Description
datasize	maximum size of the data segment of a process Maximum values are as follows: ▪ Oracle Solaris®: 2 GB ▪ HP-UX®: 4 GB (using third and fourth quarter enabled) ▪ AIX®: 2 GB ▪ Linux: 2 GB
stacksize	maximum size of the stack segment of a process. BMC recommends 8 MB on all UNIX computers.
coredumpsize	maximum size that a core dump can reach BMC recommends setting this value to **datasize** to generate a complete core dump if a failure occurs.
descriptors	maximum number of descriptors in use by a single process. The recommended value is 4096. **Note:** Do not set the parameter value to unlimited.
memoryuse	maximum amount of memory to be used by a single process BMC recommends setting this value to **unlimited**.

Creating cluster resources for UNIX

If a host name is required for the installation rather that is not the default computer hostname, set the **BMC_HOST_INSTALL** environment variable to the required host name before beginning the Control-M/EM installation. You can also use this variable if there is a possibility of choosing between two or more hosts (for example, a multiple network environment), or when there is a virtual network name representing a group of hosts (for example, a cluster installation).

For information on setting variables, see Setting environment variables in UNIX (on page 21).

In a cluster environment:

- Set the **BMC_HOST_INSTALL** environment variable to the virtual network name designated for the Control-M/EM resource group. This will automatically configure Control-M/EM and the TAO Naming Service to use this virtual network name.
- Move the disk name, IP address, and network name to the installation node.

➢ Where to Go from Here

You can continue with Installing Control-M on UNIX (on page 30) using either the interactive or automatic installation options.

Setting up the Control-M/EM UNIX cluster environment

You can control and monitor the Control-M/EM server components by using either Control-M Configuration Manager administration mode or cluster administration mode.

NOTE: When defining the Control-M/EM server components in the Control-M Configuration Manager, use the virtual host name as the component name for the servers that use CORBA communication protocol. These components are the GUI Server, the Control-M Configuration Server, BMC Batch Impact Manager, Control-M/Forecast, and the Control-M Self Service Server

Control-M Configuration Manager administration mode

Control-M Configuration Manager administration mode uses the logical name support feature in the Control-M/EM Configuration Agent and the Control-M Configuration Server (see *Control-M Administration* for more information on Control-M/EM Configuration Agent and Control-M Configuration Server.)

The logical name support feature is enabled by setting the **$BMC_HOST_INSTALL** environment variable prior to starting the installation.

➢ To use Control-M Configuration Manager administration mode

1. Ensure that the BMC_EM_PROFILE_NAME environment variable has the cluster virtual name as its value.

   This value will be used as the logical name for all Control-M/EM server components you want to manage as a single group using Control-M/EM Configuration Agent.

2. Using the Control-M Configuration Manager, define each of the Control-M/EM server components using the logical name assigned to BMC_EM_PROFILE_NAME.

3. For each Control-M/EM server component you want to manage as a group:

   Open the Control-M/EM Component window of the Control-M Configuration Manager

   Set the **Host Name** field in the **Running on** area to the value of the BMC_EM_PROFILE_NAME environment variable.

   For components that use CORBA, Set the **Name** field in the **Component** area to the value of the BMC_EM_PROFILE_NAME environment variable

Control-M/EM Configuration Agent will now manage only those Control-M/EM server components whose **Host Name** is set to the BMC_EM_PROFILE_NAME value.

Cluster administration mode

When managing Control-M/EM server components in cluster administration mode, Control-M Configuration Manager and Control-M/EM Configuration Agent are not used. Instead, the cluster software is used to start, stop, and monitor the Control-M/EM server components.

In this mode, the Control-M/EM server components should be defined as resources, according to the commands described in Cluster administration mode (on page 70).

➢ To view process states from the Control-M Configuration Manager:

1. Ensure that the BMC_EM_PROFILE_NAME environment variable has the cluster virtual name as its value.

   This value will be used as the logical name in the **Running on** and **Component** areas for all Control-M/EM server components you want to manage as a single group using Control-M/EM Configuration Agent.

2. Using the Control-M Configuration Manager, define each of the Control-M/EM server components using the logical name assigned to BMC_EM_PROFILE_NAME.

3. Define the "desired state" of each of the Control-M/EM server components to **ignored**.

4. Start the Control-M/EM Configuration Agent by executing the following script from the command line:

   start_config_agent

   For additional information about monitoring of the Control-M/EM server components, and a complete list of the processes names, see Monitoring Control-M/EM processes (on page 73).

Configuring the policy file

Configure the policy file according to the instructions provided below for either the Control-M Configuration Manager administration mode or the cluster administration mode.

Using Control-M Configuration Manager administration mode

To start the Control-M/EM components, enter the following commands.

```
EM_ACC='emxxx'
EM_DIR=$EM_HOME
EM_OWNER='emuser'
EM_OWPD='empass'
EMDB_VNAME='vhemxxx'
HOSTNAME=`hostname`

# Start Control-M EM CORBA Naming Service
su - $EM_ACC -c $EM_DIR/bin/start_ns_daemon

# Start Control-M Configuration Server
```

```
su - $EM_ACC -c "$EM_DIR/bin/em cms-name $EMDB_VNAME &"


# Start the Control-M/EM Configuration Agent and the Control-M/EM Server
components
su - $EM_ACC -c $EM_DIR/bin/start_config_agent
```

NOTE: Ensure that the **BMC_EM_PROFILE_NAME** environment variable is set in the account prior starting the Control-M Configuration Server and the Control-M/EM Configuration Agent. This step is performed automatically if the **$BMC_HOST_INSTALL** environment variable is set prior to starting the installation.

To stop the Control-M/EM components, enter the following commands.

```
EM_ACC='emxxx'
EM_OWNER=$EM_HOME
EM_OWPD='empass'
EMDB_VNAME='vhemxxx'
EM_DIR='/export1/emxxx'


# Stop the Control-M/EM Configuration Agent and all components
su - $EM_ACC -c "$EM_DIR/bin/em ctl -U $EM_OWNER -P $EM_OWPD -C Config_Agent
-all -cmd shutdown"


# Stop Control-M Configuration Server
su - $EM_ACC -c "$EM_DIR/bin/em ctl-U $EM_OWNER -P $EM_OWPD
-C CMS -name $EMDB_VNAME -cmd stop"
sleep 5


# Stop Control-M EM CORBA Naming Service
su - $EM_ACC -c "$EM_DIR/bin/orbadmin ns stop -local"
sleep 5
```

Cluster administration mode

To start the Control-M/EM components, enter the following commands.

```
EM_ACC='emxxx'
EM_VNAME='vhemxxx'
CTM_VNAME='vhctmxxx'
EM_DIR=$EM_HOME
```

```
# Start Control-M EM CORBA Naming Service
su - $EM_ACC -c "$EM_DIR/bin/start_ns_daemon"

# Start Control-M Configuration Server
su - $EM_ACC -c "$EM_DIR/bin/em cms -name $EMDB_VNAME"

# Start Control-M EM GUI Server
su - $EM_ACC -c "$EM_DIR/bin/em guisrv -name $EM_VNAME"

# Start Control-M EM Global Conditions Server
su - $EM_ACC -c "$EM_DIR/bin/em gcsrv"

# Start Control-M EM Gateway
su - $EM_ACC -c "$EM_DIR/bin/em gtw -dc $CTM_VNAME"
# Start Control-M Batch Impact Manager Server
su - $EM_ACC -c "$EM_DIR/bin/em bimsrv -name=$EM_VNAME &"
# Start Control-M Forecast Server
su - $EM_ACC -c "$EM_DIR/bin/em forecastsrv -gsr=$EM_VNAME &"
# Start Control-M Self Service Server
su - $EM_ACC -c "$EM_DIR/bin/em selfservicesrv -name $EM_VNAME &"
```

To stop the Control-M/EM components, enter the following commands.

```
EM_ACC='emxxx'
EM_OWNER='emuser'
EM_OWPD='empass'
EM_VNAME='vhemxxx'
HOSTNAME=`hostname`
EM_DIR=$EM_HOME
CTM_VNAME='vhctmxxx'

# Stop Control-M EM GUI Server
su - $EM_ACC -c "$EM_DIR/bin/em ctl -U $EM_OWNER -P $EM_OWPD -C GUI_Server -name
$EM_VNAME -cmd stop"
sleep 3

# Stop Control-M EM Global Conditions Server
```

```
su - $EM_ACC -c "$EM_DIR/bin/em ctl -U $EM_OWNER -P $EM_OWPD -C GCS -M $HOSTNAME
-cmd stop"
sleep 3


# Stop Control-M EM Gateway
su - $EM_ACC -c "$EM_DIR/bin/em ctl -U $EM_OWNER -P $EM_OWPD -C Gateway -dc
$CTM_VNAME -cmd stop"
sleep 3


# Stop Control-M Configuration Server
su - $EM_ACC -c "$EM_DIR/bin/em ctl-U $EM_OWNER -P $EM_OWPD
-C CMS -name $EMDB_VNAME -cmd stop"
sleep 5


# Stop Control-M EM CORBA Naming Service
su - $EM_ACC -c "$EM_DIR/bin/orbadmin ns stop -local"
sleep 5
# Stop Control-M Batch Impact Manager Server
su - $EM_ACC -c "$EM_DIR/bin/em ctl -U $EM_OWNER -P $EM_OWPD -C BIM -name
$EM_VNAME -
cmd stop"
sleep 3
# Stop Control-M Forecast Server
su - $EM_ACC -c "$EM_DIR/bin/em ctl -U $EM_OWNER -P $EM_OWPD
-C Forecast_Server -name $EM_VNAME -cmd stop"
sleep 5
# Stop Control-M Self Service Server
su - $EM_ACC -c "$EM_DIR/bin/em ctl -U $EM_OWNER -P $EM_OWPD
-C Self_Service_Server -name $EM_VNAME -cmd stop sleep 5
```

NOTE: Before defining the Control-M/EM Gateway cluster resource, the Control-M/Server should be defined using the Control-M Configuration Manager.

NOTE: Create a Gateway resource for each Control-M/Server that is connected to Control-M/EM. In the resource command line, indicate the Control-M/Server name as a value to the -dc parameter.

Commands for starting the Control-M Web Server:

```
# Start the Control-M Web Server
EM_ACC='emxxx'
EM_DIR=$EM_HOME
```

```
su - $EM_ACC -c "$EM_DIR/bin/start_web_server.sh"
```

Commands for stopping the Control-M Web Server:

```
# Stop the Control-M Web Server
EM_ACC='emxxx'
EM_DIR=$EM_HOME
su - $EM_ACC -c "$EM_DIR/bin/stop_web_server.sh"
sleep 3
```

Monitoring Control-M/EM processes

Control-M/EM components can be monitored by the Control-M/EM Configuration Agent or by the cluster.

If the components are monitored by the cluster, use the process names for the cluster monitoring definitions as specified in the following table:

Control-M/EM processes

Control-M/EM component	Process name
GUI Server	**emguisrv**
Gateway	**emgtw -dc** *dcName*
Global Condition Server (GCS)	**emgcsrv**
Control-M/EM Configuration Agent	**emmaintag**
TAO Naming Service	**Naming_Service -p ${EM_HOME}/var/ns.pid -u ${EM_HOME}/var**
BMC Batch Impact Manager Server	**embimsrv**
Control-M/Forecast	**emforecastsrv**
BMC Batch Discovery	**embatchdiscovery**
Control-M Self Service Server	**emselfservicesrv**
Control-M Configuration Manager	**emcms**

Troubleshooting a UNIX cluster installation

This phase presents troubleshooting information for the following components:

- Control-M/EM Configuration Agent (on page 74)
- Global Condition Server (on page 75)

Control-M/EM Configuration Agent

NOTE: In some cases, after setting a virtual host name online, the physical host name of the cluster node becomes unavailable. In such case, additional configuration is required for the Control-M/EM Configuration Agent. This configuration provides the ability to send life check communications to the Control-M/EM Configuration Agent using the virtual host name.

This configuration should only be used if the Control-M/EM Configuration Agent appears in the Control-M Configuration Manager as Not Responding after starting the Control-M/EM Configuration Agent.

➢ To add a HostPort system parameter for the Control-M/EM Configuration Agent:

1. Stop the Control-M/EM Configuration Agent from root_menu or by running the command **stop_config_agent** from the shell prompt (this requires the Control-M/EM DBO password).
2. In the Control-M Configuration Manager, choose **Tools > System Parameters**.
3. In the general section, select the HostPort parameter and click **New** to open the "Add New Parameter" dialog box.
4. In the **Add New Parameter** dialog box, click **Advanced**.
5. Modify the following field values:

Field	Value
Type	**General** (the default value)
Name	**HostPort** (the default value)
Value	vhemxxx:0, which is specified in the format: *virtualHostName*:*port* By specifying **0** (zero) as the port number, the Control-M/EM Configuration Agent will listen on a random port that is chosen when the Control-M/EM Configuration Agent starts. If a port other than zero is specified, the Control-M/EM Configuration Agent will use the specified port number.
Advanced field: Type	Maint Agent
Advanced field: Name	***** (the default value)
Advanced field: Host	***** (the default value)

NOTE: If the installation of the Control-M/EM components is distributed between additional hosts other then the cluster nodes, a separate condition must be specified with the physical host names of each cluster node specified in the Host Name parameter.

6. Click **Save**.
7. Start the Control-M/EM Configuration Agent.

Global Condition Server

In some cases, after setting a virtual host name online, the physical host name of the cluster node becomes unavailable. In such case, additional configuration is required for the GCS. This configuration should only be used if the GCS failed to start after a failover.

➢ To add a HostPort system parameter for the GCS:

1. Start the Control-M Configuration Manager and change the desired state of the GCS to **DOWN**.
2. Ensure that the GCS is not running on any of the cluster nodes (**ps -ef | grep gcs**).
3. In the Control-M Configuration Manager, choose **Tools => System Parameters**.
4. In the general section, select the HostPort parameter and click **New** to open the "Add New Parameter" dialog box.
5. In the "Add New Parameter" dialog box, click **Advanced**.
6. Modify the following field values:

Field	Value
Type	**General** (the default value)
Name	**HostPort** (the default value)
Value	**vhemxxx:55443**, which is specified in the format: *virtualHostName*:*port* Do not specify **0** as the port number.
Advanced field: Type	GCS
Advanced field: Name	* (the default value)
Advanced field: Host	* (the default value)

7. Click **Save**.
8. Start the GCS using the Control-M Configuration Manager.

Manually reconfiguring TAO to use the Virtual Network name

➢ To manually reconfigure TAO:

1. On the first node, hostcla, ensure the following servers are not running:
   - Control-M Configuration Server
   - Control-M/EM GUI Server
   - BMC Batch Impact Manager Server
   - Control-M/Forecast
   - Control-M Self Service Server
2. Stop the CORBA Naming Service from the root_menu or by entering the following command:

   stop_ns_daemon
3. Set the **DISPLAY** environment parameter to **terminalAddress:0**
4. Run the **orbconfigure** java utility.
5. Modify the published address to the **virtual host name** and enter the Control-M/EM virtual host name.
6. If you are using a firewall, set Control-M/EM ports (if you are not using a firewall, you can leave the default settings), and click **Next**.
7. Enter the Control-M/EM virtual host name (as referred to in the example: **vhemxxx**) and the relevant port (default: **13075**), and click **Next**.

   Ensure that the port is available and is not used by other programs on any of the cluster nodes.
8. Ensure all relevant entries in the summary reports refer to the virtual host name, and then click **Finish**.
9. Start the CORBA Naming Service from the root_menu or by entering the following command:

   start_ns_daemon

Setting up the Control-M/EM Windows cluster environment

Review the following notes if you will be installing Control-M/EM in a Microsoft Windows cluster environment:

- Do not share the IP and Network Name resources that identify the cluster with a Control-M/EM cluster instance.
- Ensure that the Network Name (virtual host name) is properly defined in the DNS or host file so it can be accessed by name or IP address from Microsoft Windows.
- Disk, IP, and Network Name resources must be online in the virtual server group where an instance of Control-M/EM on Microsoft Windows is to be installed.
- automatic installation of Control-M/EM is not supported for Microsoft Windows cluster environments.

The Control-M/EM installation requires Disk, Network Name and IP Address virtual resources to be created before you begin.

Create Control-M/EM Gateway cluster resource

Control-M/EM Gateway cluster resources must be defined manually after installation of Control-M/EM had been completed as the location of Control-M/Server is not available during the installation.

➢ To create the Control-M/EM Gateway cluster resource

1. Define Control-M/Server definition using the Control-M Configuration Manager. The **Desired State** parameter for the gateway must be set to **ignored**.
2. For each Control-M/Server defined, define a cluster resource for each gateway component. Create a new generic application resource using the details in the following table.

Control-M/EM Gateway resource definition

Resource attribute	Control-M-EM-Gateway (*CTM/SRVName*)
Description	Control-M/EM Gateway
Resource type	generic application
Group	EMxxx
Command line	*<EM_HOME>**bin*\emgtw.exe -dc *<DC_NAME>*
Current directory	*<EM_HOME>**bin*
Pending timeout in seconds	10
Dependencies	Control-M Naming Service

Create Control-M/EM Configuration Agent cluster resource

Control-M/EM Configuration Agent cluster resources must be defined manually after installation of Control-M/EM had been completed.

If the Control-M/EM Configuration Agent is activated, you must change the status of all Control-M/EM components to Ignore in the Control-M Configuration Manager.

➢ To create the Control-M/EM Configuration Agent cluster resource

1. Ensure that the BMC_EM_PROFILE_NAME environment variable has the cluster virtual name as its value.

   This value will be used as the logical name in the **Running on** and **Component** areas for all Control-M/EM server components you want to manage as a single group using Control-M/EM Configuration Agent.
2. Using the Control-M Configuration Manager, define each of the Control-M/EM server components using the logical name assigned to BMC_EM_PROFILE_NAME.

3. Define the "desired state" of each of the Control-M/EM server components to **ignored**.
4. Create Control-M/EM Configuration Agent cluster resource, as described in the following table:

Control-M/EM Configuration Agent resource definition

Resource attribute	Control-M-EM-ConfigAgent
Description	Control-M-EM ConfigAgent
Resource type	generic service
Group	EMxxx
Command line	*<EM_HOME>**bin*\emmaintag.exe
Current directory	*<EM_HOME>**bin*
Pending timeout in seconds	10
Dependencies	Network Name resource

Setting up failover nodes

Verify that the owner of the Control-M/EM cluster group is the primary node on which you installed the full Control-M/EM installation.

On each failover node, perform the following:

1. Bring the primary Disk, IP address, and Network Name cluster resources online.
2. Ensure that the Control-M CORBA Naming service remains online.
3. Perform a failover of the Control-M/EM group from the primary node to the secondary node.
4. Ensure that the Disk, IP address, and Network Name resources are online on the failover node.
5. Open a command prompt and run **Setup_files\3RD\setup_em.bat** from the installation DVD. If you are using Windows 2008, you must run the command prompt as an administrator.

   The following step applies only for a PostgreSQL installation.

6. On a PostgreSQL installation, give **Log On as a Services** permissions to the local NT user that was created for PostgreSQL by performing the following steps:
   a. From the command line (Start -> Run), run **Services.msc**
   b. Locate **PostgreSQL for Control-M/EM version xxx**
   c. Locate **.** *<name of user>* and save this name for later.
   d. Exit **Service.msc**
   e. From the command line (Start -> Run), run **secpol.msc**

f. Browse to **Security Setting -> Local Policies -> User Rights Assignments** and select **Log On as Service** policy

g. Click **Add user or group**

h. Click **Locations**

i. Select the current node name

j. In **Enter the object name to select**, enter a name for the **this account** service. This name is the *<name of user>* you saved in step c.

7. Check that the current node of Control-M/EM cluster group is online by performing the following steps:

   a. Issue the **Bring Online** command to bring the Control-M/EM cluster group on this node online.

   b. Verify that the current node is online in the Windows Cluster Administrator window.

   NOTE: When changes are made using orbconfigure (for example, when the active jobs database is configured for SSL, or the Listening Port number is changed), the Naming Service must be online. Otherwise the changes will not be set permanently.

Control-M/Server cluster configuration

The following procedures describe how to configure clusters on Control-M/Server:

- Setting up the Control-M/Server UNIX cluster environment (on page 79)
- Setting up the Control-M/Server Windows cluster environment (on page 81)

Setting up the Control-M/Server UNIX cluster environment

The following procedures describe how to set up the virtual host name, cofigure the policy file, and monitor Control-M/Server processes:

- Setting the virtual host name (on page 79)
- Configuring the policy file (on page 80)
- Monitoring Control-M/Server processes (on page 80)

Setting the virtual host name

If Control-M/Server is already installed on the shared disk, change the **Local IP Host Interface Name** to the virtual host name in **ctm_menu**.

1. From **ctm_menu** select option **5 - Parameter Customization**.
2. In the sub-menu, select option **1 - Basic Communication and Operational Parameters**.
3. In the next sub-menu, select option **1 - Local IP Host Interface Name**.
4. Enter the cluster virtual name.

These changes will set the **OS_PRM_HOSTNAME** parameter of the Control-M/Server configuration file (**${HOME}/ctm_server/data/config.dat**), to the virtual host name as the parameter value. The changes are not necessary if environment variable **BMC_HOST_INSTALL** was set to value of virtual host name prior to Control-M/Server installation

This change will not take effect until Control-M/Server is restarted.

Configuring the policy file

To start the Control-M/Server, enter the following commands.

```
CTM_ACC=ctmxxx
CTM_DIR=/export2/ctmxxx
#Start Control-M/Server Configuration Agent
su - $CTM_ACC -c $CTM_DIR/ctm_server/scripts/start_ca
#Start Control-M/Server
su - $CTM_ACC -c $CTM_DIR/ctm_server/scripts/start_ctm
```

To stop the Control-M/Server, enter the following commands.

```
CTM_ACC=ctmxxx
CTM_DIR=/export2/ctmxxx
#Stop Control-M/Server Configuration Agent
su - $CTM_ACC -c $CTM_DIR/ctm_server/scripts/shut_ca
#Stop Control-M/Server
su - $CTM_ACC -c $CTM_DIR/ctm_server/scripts/shut_ctm
```

NOTE: When Control-M/Server is managed in a cluster, the cluster software starts, stops, and monitors Control-M/Server actions. When used in a cluster, if the Control-M/Server is defined on Control-M Configuration Manager, the Control-M/Server desired state defined on Control-M Configuration Manager should be set to value **ignore**.

Monitoring Control-M/Server processes

Control-M/Server monitors its own processes internally. Failover of the Control M/Server resource group is not required if only one process fails. The Supervisor process (SU) performs heartbeat monitoring of all other processes. If another process fails, SU will try several times to bring up the process. If these attempts are unsuccessful, SU will shut down Control-M/Server. Therefore, it is sufficient if you only monitor the SU process (**/export2/ctmxxx/ctm_server/exe_Solaris/p_ctmsu)**.

In addition, the Control M/Server Configuration Agent should be monitored as well (**/export2/ctmxxx/ctm_server/exe_Solaris/p_ctmca**).

To ensure that the SU processes do not become a single point of monitoring, one additional process, such as the RT (p_ctmrt), NS (p_ctmns), LG (p_ctmlg), or the TR (p_ctmtr) process, can be monitored.

You have now completed the installation of Control-M/Server on UNIX.

Setting up the Control-M/Server Windows cluster environment

To set up failover nodes for Control-M/Server, see Setting up failover nodes (on page 81).

Setting up failover nodes

Before you begin:

Verify that the PG resource is up even though it might fail after the failover.

➢ To set up failover nodes:

1. Ensure that the **Disk**, **IP address**, and **Network Name** resources are online on the failover node.
2. Run **Setup_files\3RD\setup_ctm.bat** from the installation DVD.

   The following steps are relevant only for a PostgreSQL Dedicated installation.
3. On a PostgreSQL installation, give **Log On as a Services** permissions to the local NT user that was created for PostgreSQL by performing the following steps:
   a. From the command line (Start -> Run), run **Services.msc**
   b. Locate **PostgreSQL for Server version xxx**
   c. Locate **.** *<name of user>* and save this name for later.
   d. Exit **Service.msc**
   e. From the command line (**Start -> Run**), run **secpol.msc**
   f. Browse to **Security Setting -> Local Policies -> User Rights Assignments** and select **Log On as Service** policy
   g. Click **Add user or group**
   h. Click **Locations**
   i. Select the current node name
   j. In **Enter the object name to select**, enter a name for the **this account** service. This name is the *<name of user>* you saved in step c.
4. Check that the current node of Control-M/Server cluster group is online by performing the following steps:
   a. Issue the **Move Group** command to move the Control-M/Server cluster group to the current node.
   b. Verify that the disc on which you installed Control-M/Server is accessible from this node.
   c. Issue the **Bring Online** command to bring the Control-M/Server cluster group on this node online.
   d. Verify that the current node is online in the Windows Cluster Administrator window.

   You have now completed the installation of Control-M/Server with clusters on Windows.

Control-M/Agent cluster configuration

The following procedures describe how to configure clusters on Control-M/Server:

Setting up the Control-M/Agent UNIX cluster environment

Review the following notes if you will be installing Control-M/Agent in a UNIX cluster environment. The instructions should be followed sequentially from the beginning to the end of this section.

The described solution is relevant only for Agents installed on clusters. If only Control-M/Server is installed on a cluster but the Agents are running on non-clustered hosts, no architectural changes are necessary.

Planning the Control-M/Agent configuration

When working in a clustered environment, the first step is to determine whether this is an active/active (load balancing) cluster, or a active/passive (high availability cluster).

Control-M with active/active (load balancing) clusters

Control-M does not support the use of network load balancers or broadcast IP addressing, to describe an active/active cluster. Control-M/Server must be able to connect to a definitive address on a Control-M/Agent computer that runs the job. For this reason the following configuration is recommended for an active/active cluster:

- Each node in the cluster should have a Control-M/Agent installed that listens on a non-load balanced, or broadcast IP, address. The Server-to-Agent port should be reachable without going through any network load balancer or port address translation.
- Discover each agent through Control-M/Server.
- Create a node group for the application. This is the name that should be used when scheduling jobs for this application. We recommend using the virtual name or the application name for familiarity with schedulers.
- Update or create your job definitions to refer to the node group that was created in the previous step.

Control-M with active/passive (high availability) clusters

When you implement Control-M/Agent on a UNIX cluster, a dedicated Control-M Agent is installed within each resource group to which Control-M should submit jobs. When a single application is running on the cluster, a single Control-M Agent should be installed. When multiple applications are running on the cluster, Control-M submits jobs to those applications using different Control-M Agents.

The file system on which Control-M/Agent is installed should be located on the shared disk. This file system should always be mounted to the same node as the application to which Control-M submits jobs. This file system can be

- the same file system as the application file system
- a different file system, as long as both file systems are always active on the same node (if they are not members in the same application resource group)

Each Agent should be configured to use the application virtual host name for the communication with Control-M/Server. When submitting jobs to this Agent, the NODEID parameter value for the jobs should be the virtual host name.

Before starting the implementation of Control-M/Agent on a UNIX cluster, first identify the file system where the Agent should be installed, and determine the resource group where the agent should be installed.

Creating Control-M/Agent UNIX accounts

In this procedure, Control-M/Agent is installed into the same file system as Control-M/Server (referred to in the example: **/export2**), and uses the same virtual network name as Control-M/Server (referred to in the example: **vhctmxxx**). The same procedure can be used if Control-M/Agent is installed for any other external application.

1. Create two user accounts as shown in the following example, one on each node.

   NOTE: **useradd -g controlm -s /bin/tcsh -m -d /export2/agxxxctm agxxxctm**

   This command should be invoked by a user with administrative permissions

2. Both users must have identical names (referred to in the example as: **agxxxctm**) and identical user IDs (UID).
3. Both user home directories should point to the same location on a shared disk (referred to in the example as: **/export2/agxxxctm**).

Installing Control-M/Agent

1. Install Control-M/Agent on the relevant file system on the shared disk according to the instructions provided in Control-M/Agent installation (on page 37).
2. Install the latest Fix Pack to apply the most recent software updates.
3. Run the Control-M/Agent configuration utility (either **ctmag** or **ctmagcfg**) to configure the logical Agent name. In the configuration utility, select **Logical Agent Name** from the **Advanced** menu. The logical agent name should contain the virtual network name.

4. In the Control-M/Agent configuration menu, define the Control-M/Server host name as authorized to submit jobs to this Control-M/Agent. If Control-M/Server is installed on a cluster, only the virtual network name of Control-M/Server (referred to in the example: **vhctmxxx**) should be specified.

Missing jobs

Every time a job is submitted, a process is created to monitor the job and report about its completion. This process is called Agent Monitor (AM). When the AM is started (with every job), it creates two files for the job: a status file and a "procid" file.

In a normal scenario, the AM detects the job completion, updates the "procid" file and sends a trigger to the Agent Tracker (AT) about the completion. The AT then sends the update to Control-M/Server.

In a failover scenario, while the job is still executing, the agent process is stopped and the agent file system is unmounted from the first host. In this case the job can keep running, but the "procid" file will not be updated when the job completes (the agent file system will be mounted to the backup node). Therefore, when the agent is started on the backup node, and the next AT track time arrives, it will find the original "procid" file but it will not find the actual process. This is why the job is marked as disappeared.

Workaround for missing jobs

As an optional workaround, you can define a JLOST ON statement for the jobs that run on the clustered agent (Statement=*, Code=JLOST) and execute a DO RERUN command. In this case the jobs will be automatically restarted (rerun) on the backup server when Control-M/Server determines that they have disappeared.

You must enter value greater than 0 in the MAX RERUN parameter in order for the job to be resubmitted.

Configuring the policy file

To start Control-M/Agent processes, run the following command as root user:

$AGENT_HOME/ctm/scripts/start-ag -u <*agent_account***> -p ALL**

/export2/agxxxctm/ctm/scripts/start-ag -u agxxxctm -p ALL

To stop Control-M/Agent and Tracker processes, run the following command as root
$AGENT_HOME/ctm/scripts/shut-ag -u <*agent_account***> -p ALL**

/export2/agxxxctm/ctm/scripts/shut-ag -u agxxxctm -p ALL

Monitoring Control-M/Agent processes

When monitoring Control-M/Agent processes on a cluster, use the following process names for cluster monitoring definitions:

Control-M/Agent processes

Control-M/Agent component	Process name
Control-M/Agent Listener	**p_ctmag**
Control-M/Agent Tracker	**p_ctmat**
Control-M/Agent Router	**p_ctmar**
Control-M/Agent Tracker-Worker	**p_ctmatw**
Control-M/Agent Remote Utilities Listener	**p_ctmru**
Control-M/Agent SSH connection pool	**sshcourier.jar**
Control-M/Agent Recovery (*Windows only*)	**p_ctmam**

NOTE: The Control-M/Agent Router (**p_ctmar**) is only active when working in persistent connection mode. When working in transient connection mode, only the Control M/Agent Listener (**p_ctmag**) and Tracker (**p_ctmat**) are active.

On UNIX, you might see more than one p_ctmag (one for each job).

Setting up the Control-M/Agent Windows cluster environment

Review the following notes if you will be installing Control-M/Agent in a Windows cluster environment:

- Multiple Agents can be installed on the same virtual server group or in separate virtual server groups.
- Do not share the IP and Network Name resources that identify the cluster with an Agent.
- Agents that share the same IP and Network name resources must be associated with separate Control-M/Servers.
- Disk, IP, and Network Name resources must be online in the virtual server group where Control-M/Agent is to be installed.
- Automatic installation and automatic upgrade of Control-M/Agent is not supported for Microsoft Windows cluster environments.

You have now completed the installation of Control-M/Agent with clusters.

Preparing a Control-M installation on UNIX with Sybase

This section describes how to install Control-M database on UNIX that utilizes an existing Sybase client.

You should use the installation provided with this version of the product to ensure that the Sybase component is correct for the platform you are using. Otherwise the installation might fail.

The Control-M database components must be installed automatically if you want to install Control-M/EM or Control-M/Server automatically.

Interactive installation of the Control-M database

1. Prepare the parameter information you will need for the installation. Explanations are provided in Sybase requirements (on page 18)
2. Mount the installation DVD from the root user and log off the root user before continuing with the installation.
3. Log on to the Control-M/EM or Control-M/Server account.
4. Issue the following command to activate the installation script:
   - For Control-M/EM
     <dvdPath>/**Setup_files/components/em/Sybase/setup.sh**
   - For Control-M/Server
     <dvdPath>/**Setup_files/components/ctm/Sybase/setup.sh**
5. Follow the instructions on the screen, filling in parameter values as necessary The installation log can be found in the home directory of the Control-M/EM or Control-M/Server account, for example:

   <em_Home>/**BMCINSTALL/log/sybase**_*<platform>*_**trace.log**
6. Continue with Installing Control-M on UNIX (on page 30).

Automatic installation of the Control-M database

Automatic installation is used to install Control-M components from a script or batch file. The following stages are involved:

- **Preparing the parameters file**

  This is accomplished by running the interactive installation and saving the installation parameter information to a file.

- **Running the installation using the prepared installation file**

  The Control-M components are installed automatically using the saved parameter information you specified for the interactive installation. You can reuse the parameters file to automatically install Control-M components on other computers.

➢ To prepare the automatic installation parameters file

1. Set the environment variable **BMC_SILENT_INSTALL** to value **Y**. See Setting environment variables in UNIX (on page 21) for your UNIX environment.

   The value must use a capital letter. Otherwise, an interactive installation is set instead of an automatic installation.

2. Run the interactive installation as described under

   The installation parameters are saved to *${HOME}*/**BMCINSTALL/products/products.ctl**.

   If you want to change parameter values at a later time, you can modify them using a text editor.

➢ To install automatically

1. Log on to the Control-M/EM or Control-M/Server account.
2. Set the following environment variables (see Setting environment variables in UNIX (on page 21) for your UNIX environment):

   DBO_PASSWORD to *<databaseOwnerPassword>*

   SA_PASSWORD to *<databaseAdministratorPassword>*

   <databaseOwnerPassword> is the password that will be set for the owner of the new database.

   During a client installation this is the current database owner password.

   <databaseAdministratorPassword> is the database administrator password.

3. Issue the following command:

   <dvdPath>/**Setup_files/components/em/Sybase/setup.sh -r** *<parameterFile>*

   <parameterFile> is the full path to the automatic installation parameters file.

4. Continue with Installing Control-M on UNIX (on page 30).

Installation parameters

UNIX installation parameters

Parameter or prompt	Description
Database administrator login	Database administrator logon name. This is relevant to an existing installation mode only. Default: **sa**
Database administrator password	Database administrator password. This is relevant to an Existing installation mode only.
Database name	Database name to be created. This is relevant to an Existing installation mode only.
Database owner login	Database owner logon name that will be created. This is relevant to an Existing installation mode only.
Database owner login (for client)	Existing database owner logon. This is relevant to a client installation in a distributed system only.
Database owner password	This is relevant to a client installation in a distributed system only.
Data tablespace size	Size of the Control-M database (Small, Medium, Large). This is relevant to an Existing installation mode only. Default: **Medium**
Data device full path file name	Full path to data device file name to be created. This is relevant to an Existing installation mode only.
Data device size	Amount of space (in MB) to allocate for the data portion of the database. You must take into consideration the number of jobs in Active Jobs. This is relevant to an Existing installation mode only.
Installation mode	Installation mode values: Existing or Client Default: **Existing**
Installed Sybase root directory	Location of Sybase database software (server/client).
Installed Sybase server alias name	The Sybase alias name as listed in Sybase interfaces file.
Log device full path file name	Full path to log device file name to be created. This is relevant to an Existing installation mode only.

Parameter or prompt	Description
Log device size	Amount of space (in MB) to allocate for the transaction log. This is relevant to an Existing installation mode only.