Oracle® Communications
EAGLE Element Management System

Upgrade/Installation Guide

Release 45.0

E52509 Revision 1

August 2014

ORACLE®

CAUTION: Use only the guide downloaded from the Oracle Technology Network (OTN) (http://www.oracle.com/technetwork/indexes/documentation/oracle-comms-tekelec-2136003.html).
Before upgrading your system, access the My Oracle Support web portal (https://support.oracle.com) and review any Knowledge Alerts that may be related to the System Health Check or the Upgrade.

Before beginning this procedure, contact My Oracle Support and inform them of your upgrade plans.
Refer to Appendix A for instructions on accessing My Oracle Support.

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1.0 INTRODUCTION

E5-MS release 45.0 is the first release of E5-MS product. The product shall be installed for the first time at all the customer sites. For FOA customer, there is a need to support incremental upgrade as the FOA customers shall be required to do an incremental upgrade to the final E5-MS Release 45.0 build over the FOA spin. There is no need to support live upgrade in E5-MS release 45 as Release 45.0 being the first release, there is no live E5-MS system in the field.

Release 45.0.1 is a maintenance release 45.0.1 after 45.0. Existing customers, who are at release 45.0, will be upgraded to 45.0.1. In addition, E5-MS Release 45.0.1 will also be installed for first time for some customers.

Both release 45.0 and 45.0.1 of E5-MS have been developed and tested using JRE 6 on CentOS 6.2 (64 bit) version. The end user interface is based on a Java 6 client interface.

1.1 PURPOSE AND SCOPE

This document is the Technical Reference for the upgrade procedure of E5-MS. The target audience is those Tekelec employees and agents involved with the installation, upgrade of Tekelec's E5-MS product along with the customers who will use E5-MS to manage the Eagles in their network.

The current version of the document is based on E5-MS release 45.0 and 45.0.1.

1.2 REFERENCES

1.2.1 External References

NA

1.2.2 Internal References

[1] TEKELEC Acronym Guide, MS005077, *Latest Revision*, TEKELEC
[2] TR007263, Technical Reference, E5-MS Backup and Restore, Latest Revision, TEKELEC

1.3 ACRONYMS AND TERMINOLOGY

Table 1: Acronyms

Acronym	Description
E5-MS	Eagle 5 – Management System
FOA	First Office Application
RPM	Red Hat Package Manager. E5-MS software shall be delivered in form of RPM packages.

Table 2. Definition of terms

Term	Definition
Backup	Generation of a copy of the existing configuration files, database tables and other data which can be used later to bring the E5-MS system to the previous configured state.
Primary server	In a failover setup, an E5-MS server which has the E5-MS processes up and where a user can connect to through a client
Restore	Using a previously generated copy of backup, to bring the E5-MS system back to a state when the backup was generated.
Standalone server	A single E5-MS server with no support for failover
Standby server	In a failover setup, an E5-MS server that monitors the state of primary server and has no E5-MS processes up. It becomes primary on detecting a shutdown of primary server and all the E5-MS processes come up.

2.0 E5-MS INSTALLATION PROCEDURE (STANDALONE SERVER)

Purpose	Requirements	Time Required
Installation of E5-MS	1. Admin (root) login of target E5-MS server. 2. E5-MS RPM copied onto the target E5-MS server. If RPM file is on an external media, then it should be mounted to the target E5-MS server.	1 Hour

Following is the procedure to install E5-MS –

2.1 RELEASE 45.0

S. No.	Step	Expected Output
1	Login to target machine using administrator (root) login.	-
2	Verify if user 'mysql' exists on the system.	`# egrep -i "^mysql" /etc/passwd`
3	User 'mysql' exists on the system if the command gives output similar to that given here.	`# mysql:x:518:518::/home/mysql:/bin/bash`
4	If 'mysql' user exists on system, delete the user by issuing the given command.	`# userdel mysql`
5	Verify if group 'mysql' exists on the system.	`# egrep -i "^mysql" /etc/group`
6	Group 'mysql' exists on the system if the command gives output similar to that given here.	`# mysql:x:518:`
7	If 'mysql' group exists on system, delete the group by issuing the given command.	`# groupdel mysql`

8	Install E5-MS RPM by isssuing the given command.	`# rpm -ivh` **<Path to E5-MS RPM>**
		`# rpm -ivh E5-MS-45.0.0-45.0.0_450.28.0.x86_64.rpm`
		`Preparing... ########################################### [100%]`
		`1:E5-MS ########################################### [100%]`

9	Move to "/Tekelec/WebNMS/bin/" directory by isssuing the given command.	`# cd /Tekelec/WebNMS/bin/`

10	Execute the UniqueIDLinux.sh script to generate a Unique Machine ID for the system using the MAC ID of the system.
	Note down the Unique Machine ID genertaed by the script.
		`# sh UniqueIDLinux.sh`
		`Your Unique Machine ID is` **2abVDag3S3**
		`Note:`
		`Please use the Unique Machine ID shown above to get Your License Key.`

		Unique Machine ID is encoded version of the MAC address. This Unique Machine ID will be used only for key Generation. This information will not be disclosed to any other sources. Press any key to exit.....
11	Send the Unique Machine ID to the Oracle sales representative. The Oracle sales representative shall then send the Unique Machine ID to the Oracle PS team.	-
12	Oracle PS team shall generate an E5-MS license file in LAT tool using the Unique Machine ID provided. The license thus generated shall be applicable to the specific machine where E5-MS is installed.	-
13	Copy the E5-MS license file to the target machine where E5-MS has been installed.	-
14	On the taget machine, move to "/Tekelec/WebNMS/bin" directory by isssuing the given command.	cd /Tekelec/WebNMS/bin/
15	Start E5-MS server by using the given command. When required, provide appropriate inputs shown as highlighted. **Note**: For the first time after fresh installation, E5-MS server must be started using startnms.sh script and not using the e5msService. This is because on first startup, it shows the E5-MS license agreement and needs manual inputs regarding licensing.	# sh startnms.sh <<Messages captured in LOG MESSAGES ON STARTING E5-MS SERVER AFTER INSTALLATION are displayed. Keep pressing enter key each time message "Press Enter to continue..." is shown on screen.>> Do you accept the LICENSE AGREEMENT (y/n)**Y** ******* REGISTRATION ******* HOST NAME IS e5ms1 Press 1 to provide the User Name and License File path 2 to Exit Choose an Option :: **1** Enter User Name : **<Provide the user name to whom E5-MS license has been issued>** Enter The License File path : **<Path to E5-MS license file>** Created table ANNOTATION Created table Alert

		Created table CORBANode Created table CRITERIAPROPERTIES Created table Event Created table GMapSymbol Created table GroupTable Created table IpAddress Created table MAPPEDPROPERTIES Created table MAPUSERPROPS Created table ManagedGroupObject Created table ManagedObject Created table MapContainer Created table MapDB Created table MapGroup Created table MapLink Created table MapSymbol Created table Network Created table Node Created table PolledData Created table PortObject Created table Printer Created table SnmpInterface Created table SnmpNode Created table SwitchObject Created table TL1Interface Created table TL1Node Created table Tek_Secu_MapUserGrpEagleNode Created table Tek_Secu_MapUsergrpCmdClass Created table Tek_Secu_PasswordConfig Created table Tek_Secu_UserInfo Created table Tek_inventory_card Created table Tek_inventory_eagleNode Created table Tek_inventory_frame Created table Tek_inventory_shelf Created table Tek_inventory_slot Created table TopoObject Created table tek_scheduler_task Created table ObjectTypes Created table USERTABLE Created table HOSTS Created table PORTS Created table ENGINES Created table USERS

		Created table TrapDisabledMO Created table CHILDRENSTATUS Created table OBJECTSTOLINK Created table ObjectSchedulerRUNNABLE Created table TaskAudit Created table DeviceAudit Created table AttributeAudit Created table ConfigTasks Created table ConfigTaskDetails Created table ConfigAttributes Created table PendingTasks Created table PendingDevices Created table DeviceList Created table DeviceListDetails Created table DeviceUserProps Created table TaskToDeviceListMap Created table PollingObjects Created table ConfigProvider Created table PollingAttributes Created table Providers Created table StatsTables Created table ThresholdObjects Created table CustomView Created table CustomViewProps Created table CustomViewColumns Created table PanelTree Created table Reports Created table DataCollectionAttributes Created table UserPasswordTable Created table UserGroupTable Created table ViewPropertiesTable Created table ViewsToGroupTable Created table ViewToOperationsTable Created table OperationsTreeTable Created table NamedViewToAuthorizedViewTable Created table NotificationLog Created table VarBindLog Created table PolicyObject Created table PolicyActionCondition Created table POLICYUSERPROPS Created table DBPOLICY Created table PolicyScheduleTime

		Created table AlertPolicyObject Created table ENGINETABLE Created table USMTABLE Created table MonitorNmsParameter Created table OperationsTable Created table BEFailOver Created table PollIDToKeyMap Created table ProvisioningVariantProps Created table ProvisioningVariant Created table UserConfTable Created table NetworkInventory Created table AuthAudit Created table REPORTS_HOURLY Created table REPORTS_DAILY Created table UIDataIdVsPRId Created table ProvisionResult Created table UserInputData Created table StageIdVsConfigId Created table WIDGETLEVEL Created table WIDGETASSOCIATION Created table WIDGET Created table WIDGETCRITERIA Created table WIDGETDATASOURCE Created table DASHBOARDCOLUMNS Created table CCTVVIEWS Created table CCTV Created table DASHBOARD Created table FAULTREPORTS_HOURLY Created table FAULTREPORTS_DAILY Created table SendEmailEventAction Created table SendEmailAlertAction Created table FilterCommandEventAction Created table FilterCommandAlertAction Created table tek_cmi_cmdclasses Created table tek_cmi_commands Created table tek_cmi_cmdclass_cmd_map Created table tek_cmi_cmd_params Created table tek_cmi_cmd_param_values Created table tek_cmi_cmd_param_map Created table tek_cmi_cmd_param_validation Created table tek_cmi_cmd_param_lookup Created table tekelec_meas_headers

```
Created table tekelec_meas_reports
Created table tek_lui_slk_capacity
Created table tek_lui_slk_reptstatcard
Created table tek_lui_slk_capacity_arch
Created table tek_lui_config_data
Created table tek_lui_link_data
Created table tek_lui_measurements
Created table tek_lui_linkdata_timestamp
Created table tek_rprt_rept_stat_card
Created table tek_rept_tokens
Created table tek_nbi_nms_config
Created table tek_snmp_agent_config
Created table tek_nbi_ftp_config


Tekelec Corporation.


Starting Tekelec E5-MS "Primary" Server Modules,
please wait
This edition of Tekelec EAGLE 5 - Management System
with release 45.0.0 is a registered version in name
of EMS in company Aricent.


Process : ParseMeasReports                [ Started ]
Process : MeasurementScheduler            [ Started ]
Process : TL1CustomViewsMgr               [ Started ]
Process : CommunicationBEProcess          [ Started ]
Process : NmsSUM                          [ Started ]
Process : StartProvModule                 [ Started ]
Process : SnmpAgentProcess                [ Started ]
Process : NmsTftpServer                   [ Started ]
Process : WebNMSMgmtBEProcess             [ Started ]
Process : UtilizationScheduler            [ Started ]
Process : TL1DiscProcess                  [ Started ]
Process : NMSTAServer                     [ Started ]
Process : StorageServer                   [ Started ]
Process : EMSInitializationProcess        [ Started ]
Process : UserConfigProcess               [ Started ]
Process : E5msSchedulerProcess            [ Started ]
Process : WebNMSBackUp                    [ Started ]
Process : RunJSPModule                    [ Started ]
Process : MapServerBE                     [ Started ]
Process : ProcessTest                     [ Started ]
Process : CLIFactoryBinder                [ Started ]
```

		Process : RunRmiRegistry [Started] Process : EventMgr [Started] Process : DBServer [Started] Process : StartTelnetClient [Started] Process : NmsPolicyMgr [Started] Process : NMSMServer [Started] Process : NbiProcess [Started] Process : TL1EventProcess [Started] Process : Collector [Started] Process : TL1GatewayProcess [Started] Process : CMISchedulerInitiator [Started] Process : ParsingScheduler [Started] Process : AdminModuleInit [Started] Process : DataMgmtRPI [Started] Process : NMSSAServer [Started] Process : NmsAuthenticationManager [Started] Process : NmsConfigurationServer [Started] Process : WebNMSAgentApp [Started] Process : NmsAuthManager [Started] Process : StorageServerFE [Started] Process : AuthorizationManagerFE [Started] Process : StartTelnetClientFE [Started] Process : PollFE [Started] Process : ExampleFE [Started] Process : TopoFE [Started] Process : MServerFE [Started] Process : ProvisioningFE [Started] Process : CommunicationFEProcess [Started] Process : TAServerFE [Started] Process : SAServerFE [Started] Process : AuthenticationManagerFE [Started] Process : NmsSAServerFE [Started] Process : EventFE [Started] Process : MapFE [Started] Process : PolicyFE [Started] Process : AlertFE [Started] Process : UserConfigProcessFE [Started] Process : ConfigFE [Started] Process : NmsMainFE [Started] Process : WebNMSMgmtFEProcess [Started] Verifying connection with web server ... verified

		Tekelec E5-MS Server modules started successfully at Nov 01,2013 04:17:59 AM Please connect your client to the web server on port: 9090
16	Launch a new session on the machine and login using administrator (root) login.	
17	Move to /Tekelec/WebNMS/bin directory by isssuing the given command.	# cd /Tekelec/WebNMS/bin/
18	Execute installE5MSSchema.sh script to populate CMI and Measurement data in E5-MS database. When required, provide the default MySQL user's password (public). This script shall take about half an hour to complete. **Note**: After successful script completion, E5-MS server restart is needed once for the data to be populated in E5-MS application.	# sh installE5MSSchema.sh Please enter MySql password: **public** Data insertion for Measurement module: Start Table tekelec_meas_reports: Start Table tekelec_meas_reports: Done! Data insertion for Measurement module: Done! Data insertion for CMI module: Start Table tek_cmi_cmdclasses: Start Table tek_cmi_cmdclasses: Done! Table tek_cmi_commands: Start Table tek_cmi_commands: Done! Table tek_cmi_cmdclass_cmd_map: Start Table tek_cmi_cmdclass_cmd_map: Done! Table tek_cmi_cmd_params: Start Table tek_cmi_cmd_params: Done! Table tek_cmi_cmd_param_values: Start Table tek_cmi_cmd_param_values: Done! Table tek_cmi_cmd_param_map: Start Table tek_cmi_cmd_param_map: Done! Table tek_cmi_cmd_param_validation: Start Table tek_cmi_cmd_param_validation: Done! Table tek_cmi_cmd_param_lookup: Start Table tek_cmi_cmd_param_lookup: Done! Data insertion for CMI module: Done!
19	Stop the E5-MS server using the given command.	# service e5msService stop Stopping E5-MS server... MySql server to be stopped Done.
20	Start the E5-MS server using the given command. Output similar to that given here is displayed on console.	# service e5msService start Tekelec Corporation.

		Process : ParseMeasReports [Started] Process : MeasurementScheduler [Started] Process : TL1CustomViewsMgr [Started] Process : CommunicationBEProcess [Started] Process : NmsSUM [Started] Process : StartProvModule [Started] Process : SnmpAgentProcess [Started] Process : NmsTftpServer [Started] Process : WebNMSMgmtBEProcess [Started] Process : UtilizationScheduler [Started] Process : TL1DiscProcess [Started] Process : NMSTAServer [Started] Process : StorageServer [Started] Process : EMSInitializationProcess [Started] Process : UserConfigProcess [Started] Process : E5msSchedulerProcess [Started] Process : WebNMSBackUp [Started] Process : RunJSPModule [Started] Process : MapServerBE [Started] Process : ProcessTest [Started] Process : CLIFactoryBinder [Started] Process : RunRmiRegistry [Started] Process : EventMgr [Started] Process : DBServer [Started] Process : StartTelnetClient [Started] Process : NmsPolicyMgr [Started] Process : NMSMServer [Started] Process : NbiProcess [Started] Process : TL1EventProcess [Started] Process : Collector [Started] Process : TL1GatewayProcess [Started] Process : CMISchedulerInitiator [Started] Process : ParsingScheduler [Started] Process : AdminModuleInit [Started] Process : DataMgmtRPI [Started] Process : NMSSAServer [Started] Process : NmsAuthenticationManager [Started] Process : NmsConfigurationServer [Started] Process : WebNMSAgentApp [Started] Process : NmsAuthManager [Started] Process : StorageServerFE [Started] Process : AuthorizationManagerFE [Started]

		Process : StartTelnetClientFE [Started] Process : PollFE [Started] Process : ExampleFE [Started] Process : TopoFE [Started] Process : MServerFE [Started] Process : ProvisioningFE [Started] Process : CommunicationFEProcess [Started] Process : TAServerFE [Started] Process : SAServerFE [Started] Process : AuthenticationManagerFE [Started] Process : NmsSAServerFE [Started] Process : EventFE [Started] Process : MapFE [Started] Process : PolicyFE [Started] Process : AlertFE [Started] Process : UserConfigProcessFE [Started] Process : ConfigFE [Started] Process : NmsMainFE [Started] Process : WebNMSMgmtFEProcess [Started] Starting Tekelec E5-MS "Primary" Server Modules, please wait This edition of Tekelec EAGLE 5 - Management System with release 45.0.0 is a registered version in name of EMS in company Aricent. Verifying connection with web server ... verified Tekelec E5-MS Server modules started successfully at Nov 06,2013 06:55:03 AM Please connect your client to the web server on port: 9090

Note:

1. E5-MS stores the machine credentials (system username and password) in encrypted format on disk. These are needed for port forwarding mechanism while connecting to EAGLEs on ssh protocol. System admin can update the system username and password using procedure given in section 13.0.
2. For connecting to EAGLEs, telnet and ssh services should be installed and up on the server.
3. For receiving measurement data from EAGLEs, ftp/sftp service should be installed and up on the server.
4. Firewall on E5-MS server must be disabled. It is essential for clients to successfully connect to the E5-MS server.

2.2 RELEASE 45.0.1

S. No.	Step	Expected Output
1	Login to target machine using administrator (root) login.	-
2	Verify if user 'mysql' exists on the system.	`# egrep -i "^mysql" /etc/passwd`
3	User 'mysql' exists on the system if the command gives output similar to that given here.	`# mysql:x:518:518::/home/mysql:/bin/bash`
4	If 'mysql' user exists on system, delete the user by issuing the given command.	`# userdel mysql`
5	Verify if group 'mysql' exists on the system.	`# egrep -i "^mysql" /etc/group`
6	Group 'mysql' exists on the system if the command gives output similar to that given here.	`# mysql:x:518:`
7	If 'mysql' group exists on system, delete the group by issuing the given command.	`# groupdel mysql`

8	Install E5-MS RPM by isssuing the given command. The installation process will install E5-MS RPM.	`# rpm -ivh` **<Path to E5-MS 45.0.1 RPM>**
		`# rpm -ivh E5-MS-45.0.1-45.0.1_450.33.0.x86_64.rpm`
		`Preparing... ########################################## [100%]`
		`1:E5-MS ########################################## [100%]`

9	Move to "/Tekelec/WebNMS/bin/" directory by isssuing the given command.	`# cd /Tekelec/WebNMS/bin/`

10	Execute the UniqueIDLinux.sh script to generate a Unique Machine ID for the system using the MAC ID of the system.
	Note down the Unique Machine ID genertaed by the script.
		`# sh UniqueIDLinux.sh`
		`Your Unique Machine ID is` **2abVDag3S3**
		`Note:`
		`Please use the Unique Machine ID shown above to get Your License Key.`
		`Unique Machine ID is encoded version of the MAC address.`
		`This Unique Machine ID will be used only for key Generation.`
		`This information will not be disclosed to any other sources.`
		`Press any key to exit.....`

11	Send the Unique Machine ID to the Oracle sales representative. The Oracle sales representative shall then send the Unique Machine ID to the	-

	Oracle PS team.	
12	Oracle PS team shall use the Unique Machine ID provided to generate an E5-MS license file using the LAT tool. The license thus generated shall be applicable to the specific machine where E5-MS has been installed.	-
13	Copy the E5-MS license file to the target machine where E5-MS has been installed. **Note**: The user name to whom E5-MS license has been issued and the path of license file should be noted to be used during the first time E5-MS server startup.	-
14	On the taget machine, move to "/Tekelec/WebNMS/bin" directory by isssuing the given command.	`cd /Tekelec/WebNMS/bin/`
15	**Note**: Primary and Secondary servers need to be behind a single firewall and should not have their individual firewalls turned ON. Client machine used to access E5-MS client and managed EAGLE(s) could be on other side of the firewall. In case a firewall is enabled between E5-MS servers and client or E5-MS servers and managed EAGLE(s), use the procedure given in **OPENING PORTS USED BY E5-MS IN CASE OF FIREWALL** to open the ports used by E5-MS.	-
16	Use the procedure given in **PROCEDURE TO CREATE E5-MS SSL CERTIFICATE** to generate SSL certificate needed for HTTPS based access for E5-MS.	-

17	Move to /Tekelec/WebNMS/bin directory and Start E5-MS server by using the given command. When required, provide appropriate inputs shown as highlighted.
	
	Note: For the first time after fresh installation, E5-MS server **must** be started using startnms.sh script and not using the e5msService. This is because on first startup, it shows the E5-MS license agreement and needs manual inputs regarding licensing.
		`# sh startnms.sh`
		
		`<Messages given in` **`LOG MESSAGES ON STARTING E5-MS SERVER AFTER INSTALLATION`** `are displayed. Keep pressing enter key each time message "Press Enter to continue..." is shown on screen>`
		
		`Do you accept the LICENSE AGREEMENT (y/n)`
		
		`y`
		
		`******* REGISTRATION *******`
		
		`HOST NAME IS e5ms9`
		
		`Press 1 to provide the User Name and License File path`
		
		`2 to Exit`

		Choose an Option :: 1 Enter User Name : **<Provide the user name to whom E5-MS license has been issued>** Enter The License File path : **<Path to E5-MS license file>** Created table ANNOTATION Created table Alert Created table CORBANode Created table CRITERIAPROPERTIES Created table Event Created table GMapSymbol Created table GroupTable Created table IpAddress Created table MAPPEDPROPERTIES Created table MAPUSERPROPS Created table ManagedGroupObject Created table ManagedObject Created table MapContainer Created table MapDB Created table MapGroup Created table MapLink Created table MapSymbol Created table Network Created table Node Created table PolledData Created table PortObject Created table Printer Created table SnmpInterface Created table SnmpNode Created table SwitchObject Created table TL1Interface Created table TL1Node Created table Tek_Secu_MapUserGrpEagleNode Created table Tek_Secu_MapUsergrpCmdClass Created table Tek_Secu_PasswordConfig Created table Tek_Secu_UserInfo Created table Tek_inventory_card Created table Tek_inventory_eagleNode Created table Tek_inventory_frame

		Created table Tek_inventory_shelf Created table Tek_inventory_slot Created table TopoObject Created table tek_scheduler_task Created table ObjectTypes Created table USERTABLE Created table HOSTS Created table PORTS Created table ENGINES Created table USERS Created table TrapDisabledMO Created table CHILDRENSTATUS Created table OBJECTSTOLINK Created table ObjectSchedulerRUNNABLE Created table TaskAudit Created table DeviceAudit Created table AttributeAudit Created table ConfigTasks Created table ConfigTaskDetails Created table ConfigAttributes Created table PendingTasks Created table PendingDevices Created table DeviceList Created table DeviceListDetails Created table DeviceUserProps Created table TaskToDeviceListMap Created table PollingObjects Created table ConfigProvider Created table PollingAttributes Created table Providers Created table StatsTables Created table ThresholdObjects Created table CustomView Created table CustomViewProps Created table CustomViewColumns Created table PanelTree Created table Reports Created table DataCollectionAttributes Created table UserPasswordTable Created table UserGroupTable Created table ViewPropertiesTable Created table ViewsToGroupTable

		Created table ViewToOperationsTable
		Created table OperationsTreeTable
		Created table NamedViewToAuthorizedViewTable
		Created table NotificationLog
		Created table VarBindLog
		Created table PolicyObject
		Created table PolicyActionCondition
		Created table POLICYUSERPROPS
		Created table DBPOLICY
		Created table PolicyScheduleTime
		Created table AlertPolicyObject
		Created table ENGINETABLE
		Created table USMTABLE
		Created table MonitorNmsParameter
		Created table OperationsTable
		Created table BEFailOver
		Created table PollIDToKeyMap
		Created table ProvisioningVariantProps
		Created table ProvisioningVariant
		Created table UserConfTable
		Created table NetworkInventory
		Created table AuthAudit
		Created table REPORTS_HOURLY
		Created table REPORTS_DAILY
		Created table UIDataIdVsPRId
		Created table ProvisionResult
		Created table UserInputData
		Created table StageIdVsConfigId
		Created table WIDGETLEVEL
		Created table WIDGETASSOCIATION
		Created table WIDGET
		Created table WIDGETCRITERIA
		Created table WIDGETDATASOURCE
		Created table DASHBOARDCOLUMNS
		Created table CCTVVIEWS
		Created table CCTV
		Created table DASHBOARD
		Created table FAULTREPORTS_HOURLY
		Created table FAULTREPORTS_DAILY
		Created table SendEmailEventAction
		Created table SendEmailAlertAction
		Created table FilterCommandEventAction

		Created table FilterCommandAlertAction Created table tek_cmi_cmdclasses Created table tek_cmi_commands Created table tek_cmi_cmdclass_cmd_map Created table tek_cmi_cmd_params Created table tek_cmi_cmd_param_values Created table tek_cmi_cmd_param_map Created table tek_cmi_cmd_param_validation Created table tek_cmi_cmd_param_lookup Created table tekelec_meas_headers Created table tekelec_meas_reports Created table tek_lui_slk_capacity Created table tek_lui_slk_reptstatcard Created table tek_lui_slk_capacity_arch Created table tek_lui_config_data Created table tek_lui_link_data Created table tek_lui_measurements Created table tek_lui_linkdata_timestamp Created table tek_rprt_rept_stat_card Created table tek_rept_tokens Created table tek_nbi_nms_config Created table tek_snmp_agent_config Created table tek_nbi_ftp_config <Messages given in **LOG MESSAGES ON STARTING E5MS SERVER** are displayed on console>
18	Launch a new session on the E5-MS machine and login using administrator (root) login.	-
19	Move to /Tekelec/WebNMS/bin directory by isssuing the given command.	# cd /Tekelec/WebNMS/bin/
20	Execute installE5MSSchema.sh script to populate CMI and Measurement data in E5-MS database. When required, provide the MySQL root user's password (default password is 'public'). This script shall take about half an hour to complete. **Note**: After successful script completion, E5-MS server restart is needed once for the data to be populated in E5-MS application.	# sh installE5MSSchema.sh Please enter MySql password: **public** <Messages given in **LOG MESSAGES ON INSTALLATION OF E5MS SCHEMA** are displayed on console>
21	Stop the E5-MS server using the given command.	# service e5msService stop Stopping E5-MS server...

	Note: Restart of the server is required to populate CMI data on E5-MS GUI.	MySql server to be stopped Done. <Messages given in **LOG MESSAGES ON STOPPING E5MS SERVER** are displayed on the console where E5MS server was started in step 17>
22	Start the E5-MS server using the given command. Output similar to that given here is displayed on console.	# service e5msService start Starting E5-MS server... Starting mysql / bin/safe_mysqld: line 199: my_print_defaults: command not found bin/safe_mysqld: line 204: my_print_defaults: command not found nohup: redirecting stderr to stdout Starting mysqld daemon with databases from /Tekelec/WebNMS/mysql/data STOPPING server from pid file /Tekelec/WebNMS/mysql/data/e5ms8.pid 140801 16:54:39 mysqld ended / [root@e5ms8 bin]# <Messages given in **LOG MESSAGES ON STARTING E5MS SERVER** are displayed on console>

3.0 E5-MS INSTALLATION PROCEDURE (PRIMARY AND STANDBY SERVERS)

In failover setup, there shall be two two servers, one working as a primary server and the other working as a standby server. Primary server is the active server where all the E5-MS processes are started and the standby server is one where only MySQL is started and the E5-MS processes are not started. The standby server keeps monitoring the primary server and in case the primary server fails, it takes over the role of primary by starting all the E5-MS processes. In failover setup, database and configuration files are replicated between primary and standby servers.

Purpose	Requirements	Time Required
Installation of E5-MS on Primary and Standby servers	1. Admin (root) login details of target E5-MS servers (Primary and Standby). 2. E5-MS RPM copied onto the target E5-MS servers (Primary and Standby). If RPM file is on an external media, then the media should be mounted to the target E5-MS server.	2 Hours

Following are the steps of E5-MS installation in a failover setup. For clarity, we shall address the Primary server as 'server 1' and the Standby server as 'server 2'.

3.1 RELEASE 45.0

S. No.	Step	Expected Output
1	Perform steps 1 to 13 from section 2.0 on both the servers (Server 1 and 2).	-
2	Execute steps in 12.0 to setup failover.	-
3	On server 1, perform steps 14 and 15 from section 2.0. Server 1 shall start as primary server.	-
4	On server 2, perform steps 14 and 15 from section 2.0. Server 2 shall start as standby server.	-

5	On server 1, shutdown E5-MS server by issuing the command.	`# service e5msService stop`
		`Stopping E5-MS server...`
		`MySql not stopped for failover`
		`Done.`

6	On detecting shutdown of primary server, server 2 shall assume the responsibility of primary server.	`Starting to do FailOver Tasks.`
		
		`This edition of Tekelec EAGLE 5 - Management System with release 45.0.0 is a registered version in name of EMS in company Aricent.`
		
		`Process : NmsAuthenticationManager [ Started ]`
		`Process : ParseMeasReports [ Started ]`
		`Process : MeasurementScheduler [ Started ]`
		`Process : TL1CustomViewsMgr [ Started ]`

		Process : CommunicationBEProcess [Started] Process : TestProcess2 [Started] Process : NmsSUM [Started] Process : StartProvModule [Started] Process : SnmpAgentProcess [Started] Process : NmsTftpServer [Started] Process : WebNMSMgmtBEProcess [Started] Process : UtilizationScheduler [Started] Process : TL1DiscProcess [Started] Process : NMSTAServer [Started] Process : StorageServer [Started] Process : EMSInitializationProcess [Started] Process : UserConfigProcess [Started] Process : E5msSchedulerProcess [Started] Process : WebNMSBackUp [Started] Process : RunJSPModule [Started] Process : MapServerBE [Started] Process : ProcessTest [Started] Process : CLIFactoryBinder [Started] Process : RunRmiRegistry [Started] Process : EventMgr [Started] Process : DBServer [Started] Process : StartTelnetClient [Started] Process : NmsPolicyMgr [Started] Process : NMSMServer [Started] Process : NbiProcess [Started] Process : TL1EventProcess [Started] Process : Collector [Started] Process : TL1GatewayProcess [Started] Process : CMISchedulerInitiator [Started] Process : ParsingScheduler [Started] Process : AdminModuleInit [Started] Process : DataMgmtRPI [Started] Process : NMSSAServer [Started] Process : NmsConfigurationServer [Started] Process : WebNMSAgentApp [Started] Process : StorageServerFE [Started] Process : AuthorizationManagerFE [Started] Process : StartTelnetClientFE [Started] Process : PollFE [Started] Process : ExampleFE [Started] Process : TopoFE [Started]

		Process : MServerFE [Started] Process : ProvisioningFE [Started] Process : CommunicationFEProcess [Started] Process : TAServerFE [Started] Process : SAServerFE [Started] Process : AuthenticationManagerFE [Started] Process : NmsAuthManager [Started] Process : NmsSAServerFE [Started] Process : EventFE [Started] Process : MapFE [Started] Process : PolicyFE [Started] Process : AlertFE [Started] Process : UserConfigProcessFE [Started] Process : ConfigFE [Started] Process : NmsMainFE [Started] Process : WebNMSMgmtFEProcess [Started] Verifying connection with web server ... verified Tekelec E5-MS Server modules started successfully at Oct 23,2013 09:12:10 PM Please connect your client to the web server on port: 9090 The new primary server is 10.248.9.3
7	On server 1, move to /Tekelec/WebNMS/bin directory by isssuing the given command.	# cd /Tekelec/WebNMS/bin/
8	Execute installE5MSSchema.sh script to populate CMI and Measurement data in E5-MS database. When required, provide the default MySQL user's password (public). This script shall take about half an hour to complete. **Note**: As database replication has been set up between the two servers in step 2, CMI and Measurement data shall automatically be replicated from server 1 to server 2 and there shall not be need to execute installE5MSSchema.sh script on server 2.	# sh installE5MSSchema.sh Please enter MySql password: **public** Data insertion for Measurement module: Start Table tekelec_meas_reports: Start Table tekelec_meas_reports: Done! Data insertion for Measurement module: Done! Data insertion for CMI module: Start Table tek_cmi_cmdclasses: Start Table tek_cmi_cmdclasses: Done! Table tek_cmi_commands: Start Table tek_cmi_commands: Done! Table tek_cmi_cmdclass_cmd_map: Start Table tek_cmi_cmdclass_cmd_map: Done! Table tek_cmi_cmd_params: Start

		Table tek_cmi_cmd_params: Done! Table tek_cmi_cmd_param_values: Start Table tek_cmi_cmd_param_values: Done! Table tek_cmi_cmd_param_map: Start Table tek_cmi_cmd_param_map: Done! Table tek_cmi_cmd_param_validation: Start Table tek_cmi_cmd_param_validation: Done! Table tek_cmi_cmd_param_lookup: Start Table tek_cmi_cmd_param_lookup: Done! Data insertion for CMI module: Done!
9	Start E5-MS server on server 1. It shall start as standby.	# service e5msService start Starting E5-MS server... Tekelec Corporation. Checking for the availablity of the Primary Server in the Database. Found an entry. Trying to connect to the Primary Server at 10.248.9.3 Please wait ....Connected Starting Tekelec Web NMS Standby Server. The Modules will be started once it takes over as the Primary Server. Monitoring the Primary Server at 10.248.9.3
10	Shutdown E5-MS server on server 2.	# service e5msService stop Stopping E5-MS server... MySql not stopped for failover Done.
11	On detecting shutdown of primary (server 2), server 1 shall assume the responsibility of primary server.	Starting to do FailOver Tasks. This edition of Tekelec EAGLE 5 - Management System with release 45.0.0 is a registered version in name of EMS in company Aricent. Process : NmsAuthenticationManager [Started] Process : ParseMeasReports [Started] Process : MeasurementScheduler [Started] Process : TL1CustomViewsMgr [Started] Process : CommunicationBEProcess [Started] Process : TestProcess2 [Started] Process : NmsSUM [Started] Process : StartProvModule [Started]

		Process : SnmpAgentProcess [Started]
		Process : NmsTftpServer [Started]
		Process : WebNMSMgmtBEProcess [Started]
		Process : UtilizationScheduler [Started]
		Process : TL1DiscProcess [Started]
		Process : NMSTAServer [Started]
		Process : StorageServer [Started]
		Process : EMSInitializationProcess [Started]
		Process : UserConfigProcess [Started]
		Process : E5msSchedulerProcess [Started]
		Process : WebNMSBackUp [Started]
		Process : RunJSPModule [Started]
		Process : MapServerBE [Started]
		Process : ProcessTest [Started]
		Process : CLIFactoryBinder [Started]
		Process : RunRmiRegistry [Started]
		Process : EventMgr [Started]
		Process : DBServer [Started]
		Process : StartTelnetClient [Started]
		Process : NmsPolicyMgr [Started]
		Process : NMSMServer [Started]
		Process : NbiProcess [Started]
		Process : TL1EventProcess [Started]
		Process : Collector [Started]
		Process : TL1GatewayProcess [Started]
		Process : CMISchedulerInitiator [Started]
		Process : ParsingScheduler [Started]
		Process : AdminModuleInit [Started]
		Process : DataMgmtRPI [Started]
		Process : NMSSAServer [Started]
		Process : NmsConfigurationServer [Started]
		Process : WebNMSAgentApp [Started]
		Process : StorageServerFE [Started]
		Process : AuthorizationManagerFE [Started]
		Process : StartTelnetClientFE [Started]
		Process : PollFE [Started]
		Process : ExampleFE [Started]
		Process : TopoFE [Started]
		Process : MServerFE [Started]
		Process : ProvisioningFE [Started]
		Process : CommunicationFEProcess [Started]
		Process : TAServerFE [Started]

		Process : SAServerFE [Started] Process : AuthenticationManagerFE [Started] Process : NmsAuthManager [Started] Process : NmsSAServerFE [Started] Process : EventFE [Started] Process : MapFE [Started] Process : PolicyFE [Started] Process : AlertFE [Started] Process : UserConfigProcessFE [Started] Process : ConfigFE [Started] Process : NmsMainFE [Started] Process : WebNMSMgmtFEProcess [Started] Verifying connection with web server ... verified Tekelec E5-MS Server modules started successfully at Oct 23,2013 10:15:37 PM Please connect your client to the web server on port: 9090 The new primary server is 10.248.9.5
12	Start E5-MS server on server 2. It shall start as standby.	# service e5msService start Starting E5-MS server... Tekelec Corporation. Checking for the availablity of the Primary Server in the Database. Found an entry. Trying to connect to the Primary Server at 10.248.9.5 Please wait ....Connected Starting Tekelec Web NMS Standby Server. The Modules will be started once it takes over as the Primary Server. Monitoring the Primary Server at 10.248.9.5

3.2 RELEASE 45.0.1

S. No.	Step	Expected Output
1	Perform steps 1 to 15 from section	-

	2.2 on both the servers (Server 1 and 2).	
2	On Server 1, use the procedure given in **PROCEDURE TO CREATE E5-MS SSL CERTIFICATE** to generate SSL certificate needed for HTTPS based access for E5-MS.	-
3	Copy the values of ENCRYPTED_TRUST_STORE_PASSWORD and ENCRYPTED_KEY_STORE_PASSWORD from /Tekelec/WebNMS/conf/transportProvider.conf file on server 1 and paste the values in the same file on server 2. **Note**: Values to be copied from server 1 are highlighted. The value shown highligted here is just an example and the user needs to copy the specific password as listed in their file on server 1.	Copy the highlighted values from /Tekelec/WebNMS/conf/transportProvider.conf on server 1 - <ENCRYPTED_TRUST_STORE_PASSWORD>C70z67Ks4t</ENCRYPTED_TRUST_STORE_PASSWORD> <ENCRYPTED_KEY_STORE_PASSWORD>C70z67Ks4t</ENCRYPTED_KEY_STORE_PASSWORD> Paste the values in corresponding XML tags in /Tekelec/WebNMS/conf/transportProvider.conf on server 2 (by default there is no value within tags, overwrite the value if there is already one) – <ENCRYPTED_TRUST_STORE_PASSWORD></ENCRYPTED_TRUST_STORE_PASSWORD> <ENCRYPTED_KEY_STORE_PASSWORD></ENCRYPTED_KEY_STORE_PASSWORD>
4	Execute the steps in 12.1 to setup replication between the servers.	-
5	On server 1, perform step 17 from section 2.2. Server 1 shall start as primary server.	-
6	Move to /Tekelec/WebNMS/bin directory by isssuing the given command.	# cd /Tekelec/WebNMS/bin/
7	Execute installE5MSSchema.sh script to populate CMI and Measurement data in E5-MS database. When required, provide the MySQL root user's password (default password is 'public'). This script shall take about half an hour to complete. **Note**: As database replication has already been set up between the two servers, CMI and Measurement data shall automatically be replicated from server 1 to server 2 and there shall not be need to execute installE5MSSchema.sh script on server 2.	# sh installE5MSSchema.sh Please enter MySql password: **public** <Messages given in **LOG MESSAGES ON INSTALLATION OF E5MS SCHEMA**are displayed on console>
8	On server 2, perform step 17 from section 2.2. Server 2 shall start as standby server.	# sh startnms.sh <Messages given in **LOG MESSAGES ON STARTING E5-MS SERVER AFTER INSTALLATION** are displayed. Keep pressing enter key each time message "Press Enter to

		continue...” is shown on screen> Do you accept the LICENSE AGREEMENT (y/n) y ******* REGISTRATION ******* HOST NAME IS e5ms9 Press 1 to provide the User Name and License File path 2 to Exit Choose an Option :: 1 Enter User Name : **<Provide the user name to whom E5-MS license has been issued>** Enter The License File path : **<Path to E5-MS license file>** Tekelec Corporation. Checking for the availablity of the Primary Server in the Database. Found an entry. Trying to connect to the Primary Server at 10.248.10.21 Please wait .....Connected Starting Tekelec Web NMS Standby Server. The Modules will be started once it takes over as the Primary Server. Monitoring the Primary Server at 10.248.10.21
9	On server 1, shutdown E5-MS server by issuing the command. **Note**: This is needed for populating E5-MS CMI data in E5-MS GUI.	# service e5msService stop Stopping E5-MS server... MySql not stopped for failover Done.
10	On detecting shutdown of server 1 (primary), server 2 shall assume the responsibility of primary server.	Starting to do FailOver Tasks. <Messages given in **LOG MESSAGES ON STARTING E5MS SERVER** are displayed on console> The new primary server is 10.248.9.5
11	Start E5-MS server on server 1. It shall now start as standby.	[root@e5ms9 bin]# service e5msService start Starting E5-MS server... MySQL already running / [root@e5ms7 bin]# Tekelec Corporation.

		Checking for the availablity of the Primary Server in the Database. Found an entry. Trying to connect to the Primary Server at 10.248.9.5 Please wait ....Connected Starting Tekelec Web NMS Standby Server. The Modules will be started once it takes over as the Primary Server. Monitoring the Primary Server at 10.248.9.5

4.0 E5-MS UPGRADE PROCEDURE (STANDALONE SERVER)

A script 'E5MSUpgrade.sh' has been added to "/Tekelec/WebNMS/bin" dirctory in E5-MS build E5-MS_450.26.0.0. This script shall enable a user to upgrade E5-MS software/license/both. The following sections describe various procedures.

4.1 UPGRADE E5-MS LICENSE

E5-MS license upgrade shall be required in following cases –

- When a customer purchases some additional features for the currently installed version of E5-MS
- When a customer upgrades E5-MS to a new release of E5-MS – In this case, the customer must first upgrade E5-MS software to the new release by following section 4.2 and then upgrade the license for the new release. However, in case of inter release upgrade, it is recommended to use the steps given in section 4.3 to upgrade both the software and license in a single procedure.

Purpose	Requirements	Time Required
Upgrading license of E5-MS	1. Admin (root) login details of target E5-MS server 2. E5-MS license file on the target E5-MS server. If license file is on an external media, then the media should be mounted to the target E5-MS server.	5 Minutes

Following is the procedure for upgrading E5-MS license -

S. No.	Step	Expected Output
1	Login to target machine using administrator (root) login.	-
2	Check the status of E5-MS server.	`# service e5msService status` `E5-MS server is running.`

3	Shutdown E5-MS server in case it is running.	`# service e5msService stop`
		`Stopping E5-MS server...`
		`Done.`

4	Check the status of E5-MS server to verify that E5-MS server has been shut down.	`# service e5msService status` `E5-MS server is not started!`
5	Change directory to /Tekelec/WebNMS/bin.	`# cd /Tekelec/WebNMS/bin`

6	Execute the E5MSUpgrade.sh script and provide appropriate inputs shown as highlighted.
	
	The script shall upgrade the E5-MS license using the license file provided as input.
		`# sh E5MSUpgrade.sh`
		`Welcome to E5-MS Upgrade.`
		
		`Please select one of the following options:`
		`1. E5-MS License Upgrade`
		`2. E5-MS Software Upgrade`
		`3. Upgrade Both`
		`Press any other key to exit...`
		`Your Input: 1`
		
		`Please provide the path of license file (along with`

		the license file name): **/var/Upgrade/Rel45.0.1/E5MSLicense45.0.1.xml** E5-MS license upgrade is in progress... License upgrade done.
7	Start E5-MS server. Messages similar to the given shall be displayed on console.	# service e5msService start Starting E5-MS server... <Messages given in **LOG MESSAGES ON STARTING E5MS SERVER** are displayed on console>

4.2 UPGRADE E5-MS SOFTWARE (RPM)

E5-MS software (RPM) upgrade shall be required when a customer wants to install a new RPM over a currently installed RPM.

- It can be intra upgrade i.e. the RPM shall be of the same release as the currently installed one, say 45.0.
- Or inter upgrade i.e. the RPM shall be of the newer release (say 45.0.1) than the currently installed release 45.0 – In this case, the customer must also upgrade E5-MS license to the new release by following section 4.1. However, in case of inter release upgrade, it is recommended to use the steps given in section 4.3 to upgrade both the software and license in a single procedure.

Purpose	Requirements	Time Required
Upgrading E5-MS software (RPM)	1. Admin (root) login details of target E5-MS server 2. E5-MS RPM copied onto the target E5-MS server. If RPM file is on an external media, then the media should be mounted to the target E5-MS server.	15 Minutes (Depends upon the size of data in E5-MS database)

Following is the procedure to upgrade E5-MS RPM -

S. No.	Step	Expected Output
1	Login to target machine using administrator (root) login.	-
2	Change directory to /Tekelec/WebNMS/bin/backup.	# cd /Tekelec/WebNMS/bin/backup
3	Execute the BackupDB.sh script to take backup of E5MS database. After the –d option, provide a location (absolute path) on server with sufficient space for the backup file. On completion, the script will create a backup file named E5MS_Database_BackUp.sql in the user provided directory. **Note**: This backup is needed in case upgrade fails and system needs to be restored to its pre-upgrade state.	# sh BackupDB.sh –d <Path where backup file needs to be created> e.g. # sh BackupDB.sh –d /tmp Please wait! Backup of E5-MS is in progress..- E5-MS database backup file "E5MS_Database_BackUp.sql" successfully created. \ Backup of directories successfully created. | E5-MS Backup is completed.

4	Check the status of E5-MS server.	# service e5msService status E5-MS server is running.
5	Shutdown E5-MS server in case it is running.	# service e5msService stop Stopping E5-MS server... Done.
6	Check the status of E5-MS server to verify that E5-MS server has been shut down.	# service e5msService status E5-MS server is not started!
7	Change directory to /Tekelec/WebNMS/bin.	# cd /Tekelec/WebNMS/bin
8	Execute the E5MSUpgrade.sh script and provide appropriate inputs shown as highlighted. The script shall first take the bakup of existing configuration files of E5-MS. After backup, E5-MS RPM shall be upgraded. Then the configuration files shall be restored so that user changes to configuration files remain intact. Finally, the changes done in the release being installed shall be done to the installation.	# sh E5MSUpgrade.sh Welcome to E5-MS Upgrade. Please select one of the following options: 1. E5-MS License Upgrade 2. E5-MS Software Upgrade 3. Upgrade Both Press any other key to exit... Your Input: 2 Please provide the path of E5-MS RPM file (including the RPM file name): /root/Documents/E5-MS-45.0.1-45.0.1_450.33.0.x86_64.rpm E5-MS RPM provided by you is: /root/Documents/E5-MS-45.0.1-45.0.1_450.33.0.x86_64.rpm Please provide the path where JRE is installed (e.g. /Tekelec/WebNMS/jre): /Tekelec/WebNMS/jre Are you sure you want to upgrade E5-MS using the above RPM file (Y/N)? y E5-MS software upgrade is in progress! Please do not close the command terminal or interrupt the script execution...... Please wait! Backup of E5-MS is in progress..- E5-MS database backup file "E5MS_Database_BackUp.sql" successfully created. \ Backup of directories successfully created.

		\ E5-MS Backup is completed. E5-MS RPM upgrade is in progress... bin/safe_mysqld: line 199: my_print_defaults: command not found bin/safe_mysqld: line 204: my_print_defaults: command not found nohup: redirecting stderr to stdout MySQL root user's password restored successfully. RPM upgrade done. E5-MS configuration files restoration is in progress... Restore process done. Adding E5-MS release 450.33.0 changes... Release changes added. Software upgrade is completed.
9	Verify that the RPM has been upgraded to the intended version.	# rpm -qa E5-MS E5-MS-45.0.1-45.0.1_450.33.0.x86_64
10	**Note**: Primary and Secondary servers need to be behind a single firewall and should not have their individual firewalls turned ON. Client machine used to access E5-MS client and managed EAGLE(s) could be on other side of the firewall. In case a firewall is enabled between E5-MS servers and client or E5-MS servers and managed EAGLE(s), use the procedure given in **OPENING PORTS USED BY E5-MS IN CASE OF FIREWALL** to open the ports used by E5-MS.	-
11	Use the procedure given in **PROCEDURE TO CREATE E5-MS SSL CERTIFICATE** to generate SSL certificate needed for HTTPS based access for E5-MS.	-
12	Start E5-MS server. Messages similar to the given shall be displayed on console.	# service e5msService start Starting E5-MS server... <Messages given in **LOG MESSAGES ON STARTING E5MS SERVER** are displayed on console>

4.3 UPGRADE E5-MS SOFTWARE (RPM) AND LICENSE

Upgrading both E5-MS software (RPM) and license shall be required in following cases –

- When a customer purchases some additional features and wants to upgrade to a new RPM version for the currently installed release of E5-MS
- When a customer upgrades E5-MS to a new release of E5-MS

Purpose	Requirements	Time Required
Upgrading software (RPM) and license of E5-MS	1. Admin (root) login of target E5-MS server 2. E5-MS RPM copied onto the target E5-MS server. If RPM file is on an external media, then it should be mounted to the target E5-MS server. 3. E5-MS license file on the target E5-MS server. If license file is on an external media, then the media should be mounted to the target E5-MS server.	20 Minutes (Depends upon the size of data in E5-MS database)

Following is the procedure for upgrading E5-MS software (RPM) and license –

S. No.	Step	Expected Output
1	Login to target machine using administrator (root) login.	-
2	Change directory to /Tekelec/WebNMS/bin/backup.	`# cd /Tekelec/WebNMS/bin/backup`

3	Execute the BackupDB.sh script to take backup of E5MS database. After the –d option, provide a location (absolute path) on server with sufficient space for the backup file. On completion, the script will create a backup file named E5MS_Database_BackUp.sql in the user provided directory.
	
	Note: This backup is needed in case upgrade fails and system needs to be restored to its pre-upgrade state.
		`# sh BackupDB.sh –d <Path where backup file needs to be created>`
		e.g.
		`# sh BackupDB.sh –d /tmp`
		`Please wait! Backup of E5-MS is in progress..-`
		
		`E5-MS database backup file "E5MS_Database_BackUp.sql" successfully created.`
		
		`\`
		`Backup of directories successfully created.`
		
		`|`
		`E5-MS Backup is completed.`

4	Check the status of E5-MS server.	`# service e5msService status` `E5-MS server is running.`

5	Shutdown E5-MS server in case it is running.	`# service e5msService stop`
		`Stopping E5-MS server...`
		`Done.`

6	Check the status of E5-MS server to verify that E5-MS server has been shut down.	`# service e5msService status` `E5-MS server is not started!`
7	Change directory to /Tekelec/WebNMS/bin.	`# cd /Tekelec/WebNMS/bin`

8	Execute the E5MSUpgrade.sh script and provide appropriate inputs shown as highlighted. The script shall upgrade the E5-MS software and license using the RPM and license files provided as inputs.	# sh E5MSUpgrade.sh Welcome to E5-MS Upgrade. Please select one of the following options: 1. E5-MS License Upgrade 2. E5-MS Software Upgrade 3. Upgrade Both Press any other key to exit... Your Input: **3** Please provide the path of E5-MS RPM file (including the RPM file name): /root/Documents/E5-MS-45.0.1-45.0.1_450.33.0.x86_64.rpm E5-MS RPM provided by you is: /root/Documents/E5-MS-45.0.1-45.0.1_450.33.0.x86_64.rpm Please provide the path where JRE is installed (e.g. /Tekelec/WebNMS/jre): /Tekelec/WebNMS/jre Are you sure you want to upgrade E5-MS using the above RPM file (Y/N)? y E5-MS software upgrade is in progress! Please do not close the command terminal or interrupt the script execution...... Please wait! Backup of E5-MS is in progress..- E5-MS database backup file "E5MS_Database_BackUp.sql" successfully created. \ Backup of directories successfully created. \ E5-MS Backup is completed. E5-MS RPM upgrade is in progress... bin/safe_mysqld: line 199: my_print_defaults: command not found bin/safe_mysqld: line 204: my_print_defaults: command not found nohup: redirecting stderr to stdout

		MySQL root user's password restored successfully. RPM upgrade done. E5-MS configuration files restoration is in progress... Restore process done. Adding E5-MS release 450.33.0 changes... Release changes added. Software upgrade is completed. Please provide the path of license file (along with the license file name): **/var/Upgrade/Rel45.0.1/E5MSLicense45.0.1.xml** E5-MS license upgrade is in progress... License upgrade done.
9	Verify that the RPM has been upgraded to the intended version.	# rpm -qa E5-MS E5-MS-45.0.1-45.0.1_450.33.0.x86_64
10	**Note**: Primary and Secondary servers need to be behind a single firewall and should not have their individual firewalls turned ON. Client machine used to access E5-MS client and managed EAGLE(s) could be on other side of the firewall. In case a firewall is enabled between E5-MS servers and client or E5-MS servers and managed EAGLE(s), use the procedure given in **OPENING PORTS USED BY E5-MS IN CASE OF FIREWALL** to open the ports used by E5-MS.	-
11	Use the procedure given in **PROCEDURE TO CREATE E5-MS SSL CERTIFICATE** to generate SSL certificate needed for HTTPS based access for E5-MS.	-
12	Start E5-MS server. Messages similar to the given shall be displayed on console.	# service e5msService start Starting E5-MS server... <Messages given in **LOG MESSAGES ON STARTING E5MS SERVER** are displayed on console>

5.0 E5-MS UPGRADE PROCEDURE (PRIMARY AND STANDBY SERVERS)

In failover setup, there shall be two two servers, one working as a primary server and the other working as a standby server. Primary server is the active server where all the E5-MS processes are started and the standby server is one where only MySQL is started and the E5-MS processes are not started. The standby server keeps monitoring the primary server and in case the primary server fails, it takes over the role of primary by starting all the E5-MS processes. In failover setup, database and configuration files are replicated between primary and standby servers.

5.1 UPGRADE E5-MS LICENSE

E5-MS license upgrade shall be required in following cases –

- When a customer purchases some additional features for the currently installed version of E5-MS
- When a customer upgrades E5-MS to a new release of E5-MS – In this case, the customer must first upgrade E5-MS software to the new release by following section 5.2 and then upgrade the license for the new release. However, in case of inter release upgrade, it is recommended to use the steps given in section 5.3 to upgrade both the software and license in a single procedure.

Upgrading E5-MS license in a primary-standby setup is simple. The license shall be upgraded when the server is not running. So to make sure that there is no downtime of E5-MS, one needs to upgrade license on both the servers one by one.

Purpose	Requirements	Time Required
Upgrading E5-MS license on Primary and Standby servers	1. Admin (root) login details of target E5-MS servers (Primary and Standby) 2. E5-MS license file copied onto the target E5-MS servers (Primary and Standby). If license file is on an external media, then the media should be mounted to the target E5-MS server.	10 Minutes

Following is the procedure. For clarity, we shall address the Primary server as ‘server 1’ and the Standby server as ‘server 2’.

S. No.	Step	Expected Output
1	Execute steps 1 to 6 in procedure 4.1 to upgrade E5-MS license on server 2 (standby).	-

2	Start server 2. Standby server shall start monitoring server 1 (primary server) and E5-MS processes shall not start.	`# service e5msService start`
		`Checking for the availablity of the Primary Server in the Database. Found an entry.`
		`Trying to connect to the Primary Server at 10.248.9.3`
		`Please wait .......Connected`
		`Starting Tekelec Web NMS Standby Server. The Modules will be started once it takes over as the Primary Server.`
		`Monitoring the Primary Server at 10.248.9.3`

3	Login to server 1 (primary) using	-

	admin (root) login.	

4	Shutdown server 1 (primary).	`# service e5msService stop`
		`Stopping E5-MS server...`
		`Done.`

5	On detecting the shutdown of server 1 (primary), server 2 (standby) shall start the E5-MS processes and take over the role of primary.	`Starting to do FailOver Tasks.`
		
		`<Messages given in **LOG MESSAGES ON STARTING E5MS SERVER** are displayed on console>`
		
		`The new primary server is 10.248.21.70`

6	Execute steps 1 to 6 in procedure 4.1 to upgrade E5-MS license on server 1.	-

7	Start server 1. It shall start as standby server and start monitoring server 2 (primary) and E5-MS processes shall not start.	`# service e5msService start`
		`Checking for the availablity of the Primary Server in the Database. Found an entry.`
		`Trying to connect to the Primary Server at 10.248.21.70`
		
		`Please wait .......Connected`
		
		`Starting Tekelec Web NMS Standby Server. The Modules will be started once it takes over as the Primary Server.`

5.2 UPGRADE E5-MS SOFTWARE (RPM)

E5-MS software (RPM) upgrade shall be required when a customer wants to install a new RPM over a currently installed RPM.

- It can be intra upgrade i.e. the RPM shall be of the same release as the currently installed one, say 45.0.
- Or inter upgrade i.e. the RPM shall be of the newer release (say 45.0.1) than the currently installed release 45.0 – In this case, the customer must also upgrade E5-MS license to the new release by following section 5.1. However, in case of inter release upgrade, it is recommended to use the steps given in section 5.3 to upgrade both the software and license in a single procedure.

In software (RPM) upgrade, changes can be expected in database schema as well as configuration files.

For software upgrade in a primary-standby setup, one needs to upgrade both the servers together. Before upgrade, both E5-MS servers should be stopped. This is to ensure that the E5-MS databases for both the servers remain in sync.

Purpose	Requirements	Time Required
Upgrading E5-MS software (RPM) on Primary and Standby servers	1. Admin (root) login details of target E5-MS servers (Primary and Standby) 2. E5-MS RPM copied onto the target E5-MS servers (Primary and Standby). If RPM file is on an external media, then the media should be mounted to the target E5-MS server.	30 - 60 Minutes (Depends upon the size of data in E5-MS database)

Note that there shall be a downtime of E5-MS services during the upgrade procedure.

Following is the procedure. For clarity, we shall address the Primary server as ‘server 1’ and the Standby server as ‘server 2’.

S. No.	Step	Expected Output
1	Login to server 2 (standby) using administrator (root) login.	-
2	Change directory to /Tekelec/WebNMS/bin/backup.	`# cd /Tekelec/WebNMS/bin/backup`

3	Execute the BackupDB.sh script to take backup of E5MS database. After the –d option, provide a location (absolute path) on server with sufficient space for the backup file. On completion, the script will create a backup file named E5MS_Database_BackUp.sql in the user provided directory.
	
	Note: This backup is needed in case upgrade fails and system needs to be restored to its pre-upgrade state.
		`# sh BackupDB.sh –d <Path where backup file needs to be created>`
		e.g.
		`# sh BackupDB.sh –d /tmp`
		`Please wait! Backup of E5-MS is in progress..-`
		
		`E5-MS database backup file "E5MS_Database_BackUp.sql" successfully created.`
		
		`\`
		`Backup of directories successfully created.`
		
		`|`
		`E5-MS Backup is completed.`

4	Shutdown the E5-MS server on server 2.	`# service e5msService stop`
		`Stopping E5-MS server...`
		`MySql not stopped for failover`
		`Done.`

5	Check the status of E5-MS server to verify that server has been shut down.	`# service e5msService status` `E5-MS server is not started!`
6	Login to server 1 (primary) using administrator (root) login.	-
7	Change directory to /Tekelec/WebNMS/bin/backup.	`# cd /Tekelec/WebNMS/bin/backup`

8	Execute the BackupDB.sh script to take backup of E5MS database. After the –d option, provide a location (absolute path) on server with sufficient space for the backup file. On completion, the script will create a backup file named E5MS_Database_BackUp.sql in the user provided directory.
	
	Note: This backup is needed in case upgrade fails and system needs to be restored to its pre-upgrade state.
		`# sh BackupDB.sh –d <Path where backup file needs to be created>`
		e.g.
		`# sh BackupDB.sh –d /tmp`
		`Please wait! Backup of E5-MS is in progress..-`
		
		`E5-MS database backup file "E5MS_Database_BackUp.sql" successfully created.`
		
		`\`
		`Backup of directories successfully created.`
		
		`|`
		`E5-MS Backup is completed.`

9	Shutdown E5-MS server on server 1 (primary).	# service e5msService stop Stopping E5-MS server... MySql not stopped for failover Done.
10	Check the status of E5-MS server to verify that it has been shut down.	# service e5msService status E5-MS server is not started!
11	On server 2, change directory to /Tekelec/WebNMS/bin.	# cd /Tekelec/WebNMS/bin
12	Execute the E5MSUpgrade.sh script and provide appropriate inputs shown as highlighted. The script shall first take the bakup of existing configuration files of E5-MS. After backup, E5-MS RPM shall be upgraded. Then the configuration files shall be restored so that user changes to configuration files remain intact. Finally, the changes done in the release being installed shall be done to the installation.	# sh E5MSUpgrade.sh Welcome to E5-MS Upgrade. Please select one of the following options: 1. E5-MS License Upgrade 2. E5-MS Software Upgrade 3. Upgrade Both Press any other key to exit... Your Input: **2** Please provide the path of E5-MS RPM file (including the RPM file name): /root/Documents/E5-MS-45.0.1-45.0.1_450.33.0.x86_64.rpm E5-MS RPM provided by you is: /root/Documents/E5-MS-45.0.1-45.0.1_450.33.0.x86_64.rpm Please provide the path where JRE is installed (e.g. /Tekelec/WebNMS/jre): /Tekelec/WebNMS/jre Are you sure you want to upgrade E5-MS using the above RPM file (Y/N)? y E5-MS software upgrade is in progress! Please do not close the command terminal or interrupt the script execution...... Please wait! Backup of E5-MS is in progress..- E5-MS database backup file "E5MS_Database_BackUp.sql" successfully created. \ Backup of directories successfully created. \ E5-MS Backup is completed.

		E5-MS RPM upgrade is in progress... bin/safe_mysqld: line 199: my_print_defaults: command not found bin/safe_mysqld: line 204: my_print_defaults: command not found nohup: redirecting stderr to stdout MySQL root user's password restored successfully. RPM upgrade done. E5-MS configuration files restoration is in progress... Restore process done. Adding E5-MS release 450.33.0 changes... Release changes added. Software upgrade is completed.
13	Verify that the RPM has been upgraded to the intended version.	# rpm -qa E5-MS E5-MS-45.0.1-45.0.1_450.33.0.x86_64
14	On server 1, change directory to /Tekelec/WebNMS/bin.	# cd /Tekelec/WebNMS/bin
15	Execute the E5MSUpgrade.sh script and provide appropriate inputs shown as highlighted. The script shall first take the bakup of existing configuration files of E5-MS. After backup, E5-MS RPM shall be upgraded. Then the configuration files shall be restored so that user changes to configuration files remain intact. Finally, the changes done in the release being installed shall be done to the installation.	# sh E5MSUpgrade.sh Welcome to E5-MS Upgrade. Please select one of the following options: 1. E5-MS License Upgrade 2. E5-MS Software Upgrade 3. Upgrade Both Press any other key to exit... Your Input: **2** Please provide the path of E5-MS RPM file (including the RPM file name): /root/Documents/E5-MS-45.0.1-45.0.1_450.33.0.x86_64.rpm E5-MS RPM provided by you is: /root/Documents/E5-MS-45.0.1-45.0.1_450.33.0.x86_64.rpm Please provide the path where JRE is installed (e.g. /Tekelec/WebNMS/jre): /Tekelec/WebNMS/jre Are you sure you want to upgrade E5-MS using the above RPM file (Y/N)? y

		E5-MS software upgrade is in progress! Please do not close the command terminal or interrupt the script execution..... Please wait! Backup of E5-MS is in progress..- E5-MS database backup file "E5MS_Database_BackUp.sql" successfully created. \ Backup of directories successfully created. \ E5-MS Backup is completed. E5-MS RPM upgrade is in progress... bin/safe_mysqld: line 199: my_print_defaults: command not found bin/safe_mysqld: line 204: my_print_defaults: command not found nohup: redirecting stderr to stdout MySQL root user's password restored successfully. RPM upgrade done. E5-MS configuration files restoration is in progress... Restore process done. Adding E5-MS release 450.33.0 changes... Release changes added. Software upgrade is completed.
16	Verify that the RPM has been upgraded to the intended version.	# rpm -qa E5-MS E5-MS-45.0.1-45.0.1_450.33.0.x86_64
17	**Note**: Primary and Secondary servers need to be behind a single firewall and should not have their individual firewalls turned ON. Client machine used to access E5-MS client and managed EAGLE(s) could be on other side of the firewall. In case a firewall is enabled between E5-MS servers and client or E5-MS servers and managed EAGLE(s), use the procedure given in **OPENING**	-

	PORTS USED BY E5-MS IN CASE OF FIREWALL to open the ports used by E5-MS.	
18	On server 1, use the procedure given in **PROCEDURE TO CREATE E5-MS SSL CERTIFICATE** to generate SSL certificate needed for HTTPS based access for E5-MS.	-
19	Copy the values of ENCRYPTED_TRUST_STORE_PASSWORD and ENCRYPTED_KEY_STORE_PASSWORD from /Tekelec/WebNMS/conf/transportProvider.conf file on server 1 and paste the values in the same file on server 2. **Note**: Values to be copied from server 1 are highlighted. The value shown highligted here is just an example and the user needs to copy the specific password as listed in their file on server 1.	Copy the highlighted values from /Tekelec/WebNMS/conf/transportProvider.conf on server 1 - <ENCRYPTED_TRUST_STORE_PASSWORD>C70z67Ks4t</ENCRYPTED_TRUST_STORE_PASSWORD> <ENCRYPTED_KEY_STORE_PASSWORD>C70z67Ks4t</ENCRYPTED_KEY_STORE_PASSWORD> Paste the values in corresponding XML tags in /Tekelec/WebNMS/conf/transportProvider.conf on server 2 (by default there is no value within tags, overwrite the value if there is already one) – <ENCRYPTED_TRUST_STORE_PASSWORD></ENCRYPTED_TRUST_STORE_PASSWORD> <ENCRYPTED_KEY_STORE_PASSWORD></ENCRYPTED_KEY_STORE_PASSWORD>
20	Start E5-MS server on server 1.	# service e5msService start <Messages given in **LOG MESSAGES ON STARTING E5MS SERVER** are displayed on console>
21	Start E5-MS server on server 2. It shall start as standby server and start monitoring server 1 (primary) and E5-MS processes shall not start.	# service e5msService start Tekelec Corporation. Checking for the availablity of the Primary Server in the Database. Found an entry. Trying to connect to the Primary Server at 10.248.21.70 Please wait ....Connected Starting Tekelec Web NMS Standby Server. The Modules will be started once it takes over as the Primary Server. Monitoring the Primary Server at 10.248.21.70

5.3 UPGRADE E5-MS SOFTWARE (RPM) AND LICENSE

The procdure to upgrade E5-MS software (RPM) and license shall be similar to procedure 4.3.

For software and license upgrade in a primary-standby setup, one needs to upgrade both the servers together. Before upgrade, both E5-MS servers should be stopped. This is to ensure that the E5-MS databases for both the servers remain in sync.

Purpose	Requirements	Time Required
Upgrading E5-MS software (RPM) and license on Primary and Standby servers	1. Admin (root) login details of target E5-MS servers (Primary and Standby). 2. E5-MS license file copied onto the target E5-MS servers (Primary and Standby). If license file is on an external media, then the media should be mounted to the target E5-MS server. 3. E5-MS RPM copied onto the target E5-MS servers (Primary and Standby). If RPM file is on an external media, then the media should be mounted to the target E5-MS server.	30 – 60 Minutes (Depends upon the size of data in E5-MS database)

Note that there shall be a downtime of of E5-MS services during the upgrade procedure.

Following is the procedure. For clarity, we shall address the Primary server as 'server 1' and the Standby server as 'server 2'.

S. No.	Step	Expected Output
1	Login to server 2 using administrator (root) login.	-
2	Change directory to /Tekelec/WebNMS/bin/backup.	`# cd /Tekelec/WebNMS/bin/backup`

3	Execute the BackupDB.sh script to take backup of E5MS database. After the –d option, provide a location (absolute path) on server with sufficient space for the backup file. On completion, the script will create a backup file named E5MS_Database_BackUp.sql in the user provided directory.
	
	Note: This backup is needed in case upgrade fails and system needs to be restored to its pre-upgrade state.
		`# sh BackupDB.sh –d <Path where backup file needs to be created>`
		e.g.
		`# sh BackupDB.sh –d /tmp`
		`Please wait! Backup of E5-MS is in progress..-`
		
		`E5-MS database backup file "E5MS_Database_BackUp.sql" successfully created.`
		
		`\`
		`Backup of directories successfully created.`
		
		`|`
		`E5-MS Backup is completed.`

4	Shutdown the E5-MS server.	`# service e5msService stop`
		`Stopping E5-MS server...`
		`MySql not stopped for failover`
		`Done.`

5	Check the status of E5-MS server to verify that server has been shut down.	`# service e5msService status` `E5-MS server is not started!`
6	Login to server 1 (primary) using administrator (root) login.	-
7	Change directory to /Tekelec/WebNMS/bin/backup.	`# cd /Tekelec/WebNMS/bin/backup`
8	Execute the BackupDB.sh script to take backup of E5MS database. After the –d option, provide a location	`# sh BackupDB.sh –d <Path where backup file needs to be created>`

	(absolute path) on server with sufficient space for the backup file. On completion, the script will create a backup file named E5MS_Database_BackUp.sql in the user provided directory.
	
	Note: This backup is needed in case upgrade fails and system needs to be restored to its pre-upgrade state.
		e.g.
		`# sh BackupDB.sh -d /tmp`
		`Please wait! Backup of E5-MS is in progress..-`
		
		`E5-MS database backup file "E5MS_Database_BackUp.sql" successfully created.`
		
		`\`
		`Backup of directories successfully created.`
		
		`|`
		`E5-MS Backup is completed.`

9	Shutdown E5-MS server on server 1.	`# service e5msService stop`
		`Stopping E5-MS server...`
		`MySql not stopped for failover`
		`Done.`

10	Check the status of E5-MS server to verify that server has been shut down.	`# service e5msService status` `E5-MS server is not started!`
11	On server 2, change directory to /Tekelec/WebNMS/bin.	`# cd /Tekelec/WebNMS/bin`

12	Execute the E5MSUpgrade.sh script and provide appropriate inputs shown as highlighted.
	
	The script shall upgrade the E5-MS software and license using the RPM and license files provided as inputs.
		`# sh E5MSUpgrade.sh`
		`Welcome to E5-MS Upgrade.`
		
		`Please select one of the following options:`
		`1. E5-MS License Upgrade`
		`2. E5-MS Software Upgrade`
		`3. Upgrade Both`
		`Press any other key to exit...`
		`Your Input: 3`
		
		`Please provide the path of E5-MS RPM file (including the RPM file name): /root/Documents/E5-MS-45.0.1-45.0.1_450.33.0.x86_64.rpm`
		
		`E5-MS RPM provided by you is: /root/Documents/E5-MS-45.0.1-45.0.1_450.33.0.x86_64.rpm`
		
		`Please provide the path where JRE is installed (e.g. /Tekelec/WebNMS/jre): /Tekelec/WebNMS/jre`
		
		`Are you sure you want to upgrade E5-MS using the above RPM file (Y/N)? y`
		
		`E5-MS software upgrade is in progress!`

		Please do not close the command terminal or interrupt the script execution..... Please wait! Backup of E5-MS is in progress..- E5-MS database backup file "E5MS_Database_BackUp.sql" successfully created. \ Backup of directories successfully created. \ E5-MS Backup is completed. E5-MS RPM upgrade is in progress... bin/safe_mysqld: line 199: my_print_defaults: command not found bin/safe_mysqld: line 204: my_print_defaults: command not found nohup: redirecting stderr to stdout MySQL root user's password restored successfully. RPM upgrade done. E5-MS configuration files restoration is in progress... Restore process done. Adding E5-MS release 450.33.0 changes... Release changes added. Software upgrade is completed. Please provide the path of license file (along with the license file name): **/var/Upgrade/Rel45.0.1/E5MSLicense45.0.1.xml** E5-MS license upgrade is in progress... License upgrade done.
13	Verify that the RPM has been upgraded to the intended version.	# rpm -qa E5-MS E5-MS-45.0.1-45.0.1_450.33.0.x86_64
14	On server 1, change directory to /Tekelec/WebNMS/bin.	# cd /Tekelec/WebNMS/bin
15	Execute the E5MSUpgrade.sh script and provide appropriate inputs shown	# sh E5MSUpgrade.sh Welcome to E5-MS Upgrade.

	as highlighted. The script shall upgrade the E5-MS software and license using the RPM and license files provided as inputs.	Please select one of the following options: 1. E5-MS License Upgrade 2. E5-MS Software Upgrade 3. Upgrade Both Press any other key to exit... Your Input: **3** Please provide the path of E5-MS RPM file (including the RPM file name): /root/Documents/E5-MS-45.0.1-45.0.1_450.33.0.x86_64.rpm E5-MS RPM provided by you is: /root/Documents/E5-MS-45.0.1-45.0.1_450.33.0.x86_64.rpm Please provide the path where JRE is installed (e.g. /Tekelec/WebNMS/jre): /Tekelec/WebNMS/jre Are you sure you want to upgrade E5-MS using the above RPM file (Y/N)? y E5-MS software upgrade is in progress! Please do not close the command terminal or interrupt the script execution...... Please wait! Backup of E5-MS is in progress..- E5-MS database backup file "E5MS_Database_BackUp.sql" successfully created. \ Backup of directories successfully created. \ E5-MS Backup is completed. E5-MS RPM upgrade is in progress... bin/safe_mysqld: line 199: my_print_defaults: command not found bin/safe_mysqld: line 204: my_print_defaults: command not found nohup: redirecting stderr to stdout MySQL root user's password restored successfully. RPM upgrade done.

		E5-MS configuration files restoration is in progress... Restore process done. Adding E5-MS release 450.33.0 changes... Release changes added. Software upgrade is completed. Please provide the path of license file (along with the license file name): **/var/Upgrade/Rel45.0.1/E5MSLicense45.0.1.xml** E5-MS license upgrade is in progress... License upgrade done.
16	Verify that the RPM has been upgraded to the intended version.	# rpm -qa E5-MS E5-MS-45.0.1-45.0.1_450.33.0.x86_64
17	**Note**: Primary and Secondary servers need to be behind a single firewall and should not have their individual firewalls turned ON. Client machine used to access E5-MS client and managed EAGLE(s) could be on other side of the firewall. In case a firewall is enabled between E5-MS servers and client or E5-MS servers and managed EAGLE(s), use the procedure given in **OPENING PORTS USED BY E5-MS IN CASE OF FIREWALL** to open the ports used by E5-MS.	-
18	On server 1, use the procedure given in **PROCEDURE TO CREATE E5-MS SSL CERTIFICATE** to generate SSL certificate needed for HTTPS based access for E5-MS.	-
19	Copy the values of ENCRYPTED_TRUST_STORE_PASSWORD and ENCRYPTED_KEY_STORE_PASSWORD from /Tekelec/WebNMS/conf/transportProvider.conf file on server 1 and paste the values in the same file on server 2. **Note**: Values to be copied from server 1 are highlighted. The value shown highligted here is just an example and the user needs to copy the specific password as listed in	Copy the highlighted values from /Tekelec/WebNMS/conf/transportProvider.conf on server 1 - <ENCRYPTED_TRUST_STORE_PASSWORD>C70z67Ks4t</ENCRYPTED_TRUST_STORE_PASSWORD> <ENCRYPTED_KEY_STORE_PASSWORD>C70z67Ks4t</ENCRYPTED_KEY_STORE_PASSWORD> Paste the values in corresponding XML tags in /Tekelec/WebNMS/conf/transportProvider.conf on server 2 (by default there is no value within tags, overwrite the value if there is already one) –

	their file on server 1.	<ENCRYPTED_TRUST_STORE_PASSWORD></ENCRYPTED_TRUST_STORE_PASSWORD> <ENCRYPTED_KEY_STORE_PASSWORD></ENCRYPTED_KEY_STORE_PASSWORD>
20	Start E5-MS server on server 1.	# service e5msService start <Messages given in **LOG MESSAGES ON STARTING E5MS SERVER** are displayed on console>
21	Start E5-MS server on server 2. It shall start as standby server and start monitoring server 1 (primary) and E5-MS processes shall not start.	# service e5msService start Tekelec Corporation. Checking for the availablity of the Primary Server in the Database. Found an entry. Trying to connect to the Primary Server at 10.248.21.70 Please wait ....Connected Starting Tekelec Web NMS Standby Server. The Modules will be started once it takes over as the Primary Server. Monitoring the Primary Server at 10.248.21.70

6.0 RESTORATION IF SOFTWARE UPGRADE FAILS

If software upgrade of E5-MS fails due to any reason, following steps are recommended to restore E5-MS to its previous state –

1) Do a fresh installation of E5-MS as mentioned in E5-MS installation document. Install the same version of RPM installed on the system prior to the failed attempt of upgrade.
2) During the attempt to upgade software, a backup of E5-MS database and configuration files is taken and placed at location "/var/upgrade/Backup_<Current_Version>" on the system. After installing E5-MS afresh in step 1 above, the support engineer shall need to restore E5-MS state from the above path. For restoring data, section 4.0 in Backup and Restore TR (TR007263, latest version) shall be followed.

7.0 PEER REVIEW CHECKLIST

Do not delete this checklist. It shall be used at each peer review to ensure that all necessary attributes of the document are included.

Item	Compliance
Template is used and all sections are included (NA sections are so noted, not deleted).	
All applicable TEKELEC documents are cited	
All applicable external/third party documents are cited	
Where appropriate all explicit commands are listed	
Where appropriate, all commands and files provide annotated listings	
Manufacturing/installation procedures are deemed adequate by downstream users	
Any contractual assumptions both with third party vendors and with current/potential customers are stated	
If multiple platform variants are supported, differences or explicit dependencies are stated	

8.0 LOG MESSAGES ON STARTING E5-MS SERVER AFTER INSTALLATION

Headless Exception detected. Continuing in the command line mode...

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"Development Use" means use of the Software to design, develop and/or test new Applications.

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"Site" means the specific, physical location of a Server, as set forth on your download form.

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"Software" means the computer program, in object code format only, downloaded by you and provided to you under the terms of this Agreement.

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Do you accept the LICENSE AGREEMENT (y/n) **y**

9.0 LOG MESSAGES ON STARTING E5MS SERVER

```
Tekelec Corporation.


Starting Tekelec E5-MS "Primary" Server Modules, please wait

This edition of Tekelec EAGLE 5 - Management System with release 45.0.1 is a
registered version in name of EMS in company EMS.


Process : ParseMeasReports                          [ Started ]
Process : MeasurementScheduler                      [ Started ]
Process : TL1CustomViewsMgr                         [ Started ]
Process : CommunicationBEProcess                    [ Started ]
Process : NmsSUM                                    [ Started ]
Process : SnmpAgentProcess                          [ Started ]
Process : NmsTftpServer                             [ Started ]
Process : WebNMSMgmtBEProcess                       [ Started ]
Process : UtilizationScheduler                      [ Started ]
Process : TL1DiscProcess                            [ Started ]
Process : NMSTAServer                               [ Started ]
Process : StorageServer                             [ Started ]
Process : EMSInitializationProcess                  [ Started ]
Process : UserConfigProcess                         [ Started ]
Process : E5msSchedulerProcess                      [ Started ]
Process : WebNMSBackUp                              [ Started ]
Process : RunJSPModule                              [ Started ]
Process : ProcessTest                               [ Started ]
Process : CLIFactoryBinder                          [ Started ]
Process : RunRmiRegistry                            [ Started ]
Process : EventMgr                                  [ Started ]
Process : DBServer                                  [ Started ]
Process : StartTelnetClient                         [ Started ]
Process : NmsPolicyMgr                              [ Started ]
Process : NMSMServer                                [ Started ]
Process : NbiProcess                                [ Started ]
Process : TL1EventProcess                           [ Started ]
Process : Collector                                 [ Started ]
Process : TL1GatewayProcess                         [ Started ]
Process : CMISchedulerInitiator                     [ Started ]
Process : ParsingScheduler                          [ Started ]
Process : AdminModuleInit                           [ Started ]
Process : DataMgmtRPI                               [ Started ]
```

```
Process : NMSSAServer                          [ Started ]
Process : NmsAuthenticationManager             [ Started ]
Process : NmsConfigurationServer               [ Started ]
Process : StartProvModule                      [ Started ]
Process : MapServerBE                          [ Started ]
Process : WebNMSAgentApp                       [ Started ]
Process : NmsAuthManager                       [ Started ]
Process : StorageServerFE                      [ Started ]
Process : StartTelnetClientFE                  [ Started ]
Process : PollFE                               [ Started ]
Process : ExampleFE                            [ Started ]
Process : TopoFE                               [ Started ]
Process : MServerFE                            [ Started ]
Process : ProvisioningFE                       [ Started ]
Process : CommunicationFEProcess               [ Started ]
Process : TAServerFE                           [ Started ]
Process : SAServerFE                           [ Started ]
Process : AuthenticationManagerFE              [ Started ]
Process : NmsSAServerFE                        [ Started ]
Process : EventFE                              [ Started ]
Process : MapFE                                [ Started ]
Process : PolicyFE                             [ Started ]
Process : AlertFE                              [ Started ]
Process : UserConfigProcessFE                  [ Started ]
Process : ConfigFE                             [ Started ]
Process : NmsMainFE                            [ Started ]
Process : AuthorizationManagerFE               [ Started ]
Process : WebNMSMgmtFEProcess                  [ Started ]

Verifying connection with web server ... verified

Tekelec E5-MS Server modules started successfully at Aug 01,2014 04:08:49 PM

Please connect your client to the web server on port: 8443
```

10.0 LOG MESSAGES ON STOPPING E5MS SERVER

```
Interrupt signal received Shutting down Tekelec E5-MS Server

Trying to Shutdown Tekelec E5-MS Server

Schedulers Stopped successfully

All Shut Down Observers Notified

Process : CommunicationFEProcess        [ Stopped ]
Process : WebNMSMgmtFEProcess           [ Stopped ]
Process : NmsSAServerFE                 [ Stopped ]
Process : StorageServerFE               [ Stopped ]
Process : StartTelnetClientFE           [ Stopped ]
Process : TAServerFE                    [ Stopped ]
Process : ExampleFE                     [ Stopped ]
Process : UserConfigProcessFE           [ Stopped ]
Process : ProvisioningFE                [ Stopped ]
Process : PolicyFE                      [ Stopped ]
Process : ConfigFE                      [ Stopped ]
Process : TopoFE                        [ Stopped ]
Process : PollFE                        [ Stopped ]
Process : AlertFE                       [ Stopped ]
Process : EventFE                       [ Stopped ]
Process : MapFE                         [ Stopped ]
Process : AuthorizationManagerFE        [ Stopped ]
Process : AuthenticationManagerFE       [ Stopped ]
Process : MServerFE                     [ Stopped ]
Process : SAServerFE                    [ Stopped ]
Process : MeasurementScheduler          [ Stopped ]
Process : SnmpAgentProcess              [ Stopped ]
Process : NbiProcess                    [ Stopped ]
Process : E5msSchedulerProcess          [ Stopped ]
Process : UtilizationScheduler          [ Stopped ]
Process : ParsingScheduler              [ Stopped ]
Process : ParseMeasReports              [ Stopped ]
Process : CMISchedulerInitiator         [ Stopped ]
Process : EMSInitializationProcess      [ Stopped ]
Process : CommunicationBEProcess        [ Stopped ]
Process : WebNMSMgmtBEProcess           [ Stopped ]
Process : DataMgmtRPI                   [ Stopped ]
```

```
Process : AdminModuleInit               [ Stopped ]
Process : NmsSUM                        [ Stopped ]
Process : TL1GatewayProcess             [ Stopped ]
Process : TL1CustomViewsMgr             [ Stopped ]
Process : TL1EventProcess               [ Stopped ]
Process : TL1DiscProcess                [ Stopped ]
Process : UserConfigProcess             [ Stopped ]
Process : StorageServer                 [ Stopped ]
Process : StartTelnetClient             [ Stopped ]
Process : CLIFactoryBinder              [ Stopped ]
Process : StartProvModule               [ Stopped ]
Process : NmsConfigurationServer        [ Stopped ]
Process : ProcessTest                   [ Stopped ]
Process : WebNMSAgentApp                [ Stopped ]
Process : WebNMSBackUp                  [ Stopped ]
Process : NmsMainFE                     [ Stopped ]
Process : NmsPolicyMgr                  [ Stopped ]
Process : EventMgr                      [ Stopped ]
Process : Collector                     [ Stopped ]
Process : MapServerBE                   [ Stopped ]
Process : NmsAuthenticationManager      [ Stopped ]
Process : NmsAuthManager                [ Stopped ]
Process : NmsTftpServer                 [ Stopped ]
Process : NMSTAServer                   [ Stopped ]
Process : NMSMServer                    [ Stopped ]
Process : NMSSAServer                   [ Stopped ]
Process : DBServer                      [ Stopped ]
Process : RunJSPModule                  [ Stopped ]
Process : RunRmiRegistry                [ Stopped ]

All Database connections disconnected

Tekelec E5-MS Server Successfully Shut Down
```

11.0 LOG MESSAGES ON INSTALLATION OF E5MS SCHEMA

```
Data insertion for Measurement module: Start
   Table tekelec_meas_reports: Start
   Table tekelec_meas_reports: Done!
Data insertion for Measurement module: Done!
Data insertion for CMI module: Start
   Table tek_cmi_cmdclasses: Start
   Table tek_cmi_cmdclasses: Done!
   Table tek_cmi_commands: Start
   Table tek_cmi_commands: Done!
   Table tek_cmi_cmdclass_cmd_map: Start
   Table tek_cmi_cmdclass_cmd_map: Done!
   Table tek_cmi_cmd_params: Start
   Table tek_cmi_cmd_params: Done!
   Table tek_cmi_cmd_param_values: Start
   Table tek_cmi_cmd_param_values: Done!
   Table tek_cmi_cmd_param_map: Start
   Table tek_cmi_cmd_param_map: Done!
   Table tek_cmi_cmd_param_validation: Start
   Table tek_cmi_cmd_param_validation: Done!
   Table tek_cmi_cmd_param_lookup: Start
   Table tek_cmi_cmd_param_lookup: Done!
Data insertion for CMI module: Done!
```

12.0 PROCEDURE TO SETUP FAILOVER

To setup failover DB replication is must. To enable DB replication one needs to set-up various GLOBAL PARAMETERS for MySQL. Also, changes need to be done in E5-MS for establishing failover between the primary and standby servers.

The following section decribes the procedure for setting up of failover in case of E5-MS R45.0 or R45.0.1 installation. In case of upgrade from R45.0 to R45.0.1 on a failover enabled setup, there will be no need for setting up replication again.

12.1 IN CASE OF FRESH INSTALLATION

In case of fresh installation, one of the servers can be assumed as 'Primary' and the other as 'Standby' server.

Before proceeding with setting up of failover, the following details should be known -

- MySQL root user's password for both primary and standby servers. Default password is 'public'.
- Hostnames for both primary and standby servers: In the procedure given below, for illustration purpose, these values shall be called 'primary server hostname' and 'standby server hostname' respectively.

S. No.	Step	Expected Output
1	Login in to primary E5MS server using user 'root'.	-

2	In the system's hosts file, add the DNS entries for both primary and standby servers as shown here.
	
	On CentOS, the hosts file is placed in '/etc' directory.
		`<PRIMARY SERVER IP> <PRIMARY SERVER HOSTNAME>`
		`<STANDBY SERVER IP> <STANDBY SERVER HOSTNAME>`
		
		e.g.
		`10.248.10.25 e5ms8`
		`10.248.10.21 e5ms9`

3	Replace the 'localhost' value in the given statement in /Tekelec/WebNMS/classes/hbnlib/hibernate.cfg.xml file with the hostname of server.	Update the following statement in /Tekelec/WebNMS/classes/hbnlib/hibernate.cfg.xml –
		`<property name="connection.url">jdbc:mysql://localhost/WebNmsDB?dumpQueriesOnException=true&jdbcCompliantTruncation=false</property>`
		
		As –
		`<property name="connection.url">jdbc:mysql://<hostname>/WebNmsDB?dumpQueriesOnException=true&jdbcCompliantTruncation=false</property>`
		
		e.g.
		`<property name="connection.url">jdbc:mysql://e5ms7/WebNmsDB?dumpQueriesOnException=true&jdbcCompliantTruncation=false</property>`

4	Move to directory /Tekelec/WebNMS/bin.	`cd /Tekelec/WebNMS/bin`
5	Change the server-id value in'startMySQL.sh' file. Any number in the range 1 to 2^32-1 can be used	Update the value - `--server-id=1`

	as the value for server-id.	To - `--server-id=<new value>`

6	Start MySQL server by invoking startMySQL.sh script.	`sh startMySQL.sh`
		
		`# bin/safe_mysqld: line 199: my_print_defaults: command not found`
		`bin/safe_mysqld: line 204: my_print_defaults: command not found`
		`nohup: redirecting stderr to stdout`
		`Starting mysqld daemon with databases from /Tekelec/WebNMS/mysql/data`

7	Move to '/Tekelec/WebNMS/mysql/bin' directory.	`cd /Tekelec/WebNMS/mysql/bin`

8	Connect to the MySQL client by executing mysql in '/Tekelec/WebNMS/mysql/bin' directory.
	
	Provide the password for MySQL root user when prompted. Default password is 'public'.
		`./mysql –uroot -p<password>`
		
		`Welcome to the MySQL monitor. Commands end with ; or \g.`
		`Your MySQL connection id is 71299`
		`Server version: 5.0.44-enterprise-log MySQL Enterprise Server (Commercial)`
		
		`Type 'help;' or '\h' for help. Type '\c' to clear the buffer.`
		
		`mysql>`

9	Login in to standby E5MS server using user 'root'.	-

10	In the system's hosts file, add the DNS entries for both primary and standby servers as shown here.
	
	On CentOS, the hosts file is placed in '/etc' directory.
		`<PRIMARY SERVER IP> <PRIMARY SERVER HOSTNAME>`
		`<STANDBY SERVER IP> <STANDBY SERVER HOSTNAME>`
		
		e.g.
		`10.248.10.25 e5ms8`
		`10.248.10.21 e5ms9`

11	Replace the 'localhost' value in the given statement in /Tekelec/WebNMS/classes/hbnlib/hibernate.cfg.xml file with the hostname of server.	Update the following statement in /Tekelec/WebNMS/classes/hbnlib/hibernate.cfg.xml –
		
		`<property name="connection.url">jdbc:mysql://localhost/WebNmsDB?dumpQueriesOnException=true&jdbcCompliantTruncation=false</property>`
		
		As –
		
		`<property name="connection.url">jdbc:mysql://<hostname>/WebNmsDB?dumpQueriesOnException=true&jdbcCompliantTruncation=false</property>`
		
		e.g.
		
		`<property name="connection.url">jdbc:mysql://e5ms8/WebNmsDB?dumpQueriesOnException=true&jdbcCompliantTruncation=false</property>`

12	Move to directory /Tekelec/WebNMS/bin.	`cd /Tekelec/WebNMS/bin`

13	Change the server-id value in'startMySQL.sh' file. Any number in the range 1 to 2^32-1 can be used as the value for server-id, however, the value used must not be same as the one used on primary server.	Update the value -
		`--server-id=1`
		
		To -
		`--server-id=<new value>`

14	Start MySQL server by invoking startMySQL.sh script.	`sh startMySQL.sh`
		
		`# bin/safe_mysqld: line 199: my_print_defaults: command not found`
		`bin/safe_mysqld: line 204: my_print_defaults: command not found`
		`nohup: redirecting stderr to stdout`
		
		`Starting mysqld daemon with databases from /Tekelec/WebNMS/mysql/data`

15	Move to '/Tekelec/WebNMS/mysql/bin' directory.	`cd /Tekelec/WebNMS/mysql/bin`

16	Connect to the MySQL client by executing mysql in '/Tekelec/WebNMS/mysql/bin' directory.
	
	Provide the password for MySQL root user when prompted. Default password is 'public'.
		`./mysql –uroot -p<password>`
		
		`Welcome to the MySQL monitor. Commands end with ; or \g.`
		`Your MySQL connection id is 71299`
		`Server version: 5.0.44-enterprise-log MySQL Enterprise Server (Commercial)`
		
		`Type 'help;' or '\h' for help. Type '\c' to clear the buffer.`
		
		`mysql>`

17	Take a backup of database from the primary server and restore the database on the standby server.	a. Run /Tekelec/WebNMS/bin/backup/BackupDB.sh script on the primary server.
		
		b. Tar the contents of /var/backup directory -
		`cd /var/backup`
		`tar cvf /tmp/backup.tar *`
		
		c. Transfer the tar file created above to the standby server -
		`scp /tmp/backup.tar root@<secondaryserverip>:/tmp/`
		
		d. Restore the tar file on the standby machine -
		`cd /var/backup`
		`tar xvf /tmp/backup.tar`
		`cd /Tekelec/WebNMS/bin/backup/`
		`./RestoreDB.sh /var/backup/E5MS_Database_BackUp.sql`

18	Execute the five MySQL commands on primary server. Replace the values given in <> by actual values.
	
	Note: In the `CREATE USER` command, the values for 'primary replication user' and 'primary replication user password' can be provided as intended by the user. However, both these values should be noted down to be used later in the `GRANT REPLICATION SLAVE` command.
		`GRANT ALL PRIVILEGES ON *.* TO root@'<primary server hostname>' IDENTIFIED BY '<primary server's mysql root user password>';`
		
		`GRANT ALL PRIVILEGES ON *.* TO root@'<standby server hostname>' IDENTIFIED BY '<primary server's mysql root user password>';`
		
		`CREATE USER '<primary replication user>'@'localhost' IDENTIFIED BY '<primary replication user password>';`
		
		`GRANT REPLICATION SLAVE ON *.* TO '<primary replication user>'@'<standby server hostname>' IDENTIFIED BY '<primary replication user password>';`
		
		`FLUSH PRIVILEGES;`
		
		e.g. if primary server hostname is 'e5ms7' and standby server hostname is

		'e5ms8' then the above commands can be as given below -
		`GRANT ALL PRIVILEGES ON *.* TO root@'e5ms7' IDENTIFIED BY 'public';`
		`GRANT ALL PRIVILEGES ON *.* TO root@'e5ms8' IDENTIFIED BY 'public';`
		`CREATE USER 'e5ms7user'@'localhost' IDENTIFIED BY 'e5ms7@123';`
		`GRANT REPLICATION SLAVE ON *.* TO 'e5ms7user'@'e5ms8' IDENTIFIED BY 'e5ms7@123';`
		`FLUSH PRIVILEGES;`

19	Execute the five MySQL commands on standby server. Replace the values given in <> by actual values.
	
	Note: In the `CREATE USER` command, the values for 'primary replication user' and 'primary replication user password' can be provided as intended by the user. However, both these values should be noted down to be used later in the `GRANT REPLICATION SLAVE` command.
		`GRANT ALL PRIVILEGES ON *.* TO root@'<primary server hostname>' IDENTIFIED BY '<standby server's mysql root user password>';`
		`GRANT ALL PRIVILEGES ON *.* TO root@'<standby server hostname>' IDENTIFIED BY '<standby server's mysql root user password>';`
		`CREATE USER '<standby replication user>'@'localhost' IDENTIFIED BY '<standby replication user password>';`
		`GRANT REPLICATION SLAVE ON *.* TO '<standby replication user>'@'<primary server hostname>' IDENTIFIED BY '<standby replication user password>';`
		`FLUSH PRIVILEGES;`
		
		e.g. if primary server hostname is 'e5ms7' and standby server hostname is 'e5ms8' then the above commands can be as given below -
		`GRANT ALL PRIVILEGES ON *.* TO root@'e5ms7' IDENTIFIED BY 'public';`
		`GRANT ALL PRIVILEGES ON *.* TO root@'e5ms8' IDENTIFIED BY 'public';`
		`CREATE USER 'e5ms8user'@'localhost' IDENTIFIED BY 'e5ms8@123';`
		`GRANT REPLICATION SLAVE ON *.* TO 'e5ms8user'@'e5ms7' IDENTIFIED BY 'e5ms8@123';`
		`FLUSH PRIVILEGES;`

20	Run SHOW MASTER STATUS command on the MySQL prompt on primary server. Note the values for columns 'File' and 'Position'. Let us call them PrimaryLogFile and PrimaryLogPosition to be used later in the procedure.	`mysql> SHOW MASTER STATUS;` `+----------------+----------+--------------+-------------+` `| File	Position	Binlog_Do_DB	Binlog_Ignore_DB	Executed_Gtid_Set |` `+----------------+----------+--------------+-------------+` `| log-bin.000004	545	WebNmsDB	mysql	|` `+----------------+----------+--------------+-------------+` `1 row in set (0.00 sec)`
21	Run SHOW MASTER STATUS command on the MySQL prompt on standby server. Note the values for columns 'File' and 'Position'. Let us call them StandbyLogFile and StandbyLogPosition to be used later in the procedure.	`mysql> SHOW MASTER STATUS;` `+----------------+----------+--------------+-------------+` `| File	Position	Binlog_Do_DB	Binlog_Ignore_DB	Executed_Gtid_Set |` `+----------------+----------+--------------+-------------+` `| log-bin.000004	545	WebNmsDB	mysql	|` `+----------------+----------+--------------+-------------+` `1 row in set (0.00 sec)`
22	Execute the two MySQL commands on the primary server. In the	`CHANGE MASTER TO MASTER_HOST='<standby server hostname>', MASTER_PORT=3306, MASTER_USER='<standby replication`

	command, use the values for <StandbyLogPosition> and <StandbyLogFile> noted earlier in this procedure.	user>', MASTER_PASSWORD='<standby replication user password>', MASTER_LOG_POS=<StandbyLogPosition>, MASTER_LOG_FILE='<StandbyLogFile>'; START SLAVE;
23	Execute the two MySQL commands on the standby server. In the command, replace the values for <PrimaryLogPosition> and <PrimaryLogFile> noted earlier in this procedure.	CHANGE MASTER TO MASTER_HOST='<primary server hostname>', MASTER_PORT=3306, MASTER_USER='<primary replication user>', MASTER_PASSWORD='<primary replication user password>', MASTER_LOG_POS=<PrimaryLogPosition>, MASTER_LOG_FILE='<PrimaryLogFile>'; START SLAVE;
24	Verify that replication has been setup correctly by executing the given command at the MySQL client on the standby server. Verify the highlighted values in the command output. Both should be 'Yes' for correct replication setup.	SHOW SLAVE STATUS\G; Output similar to the follwing is displayed - *************************** 1. row *************************** Slave_IO_State: Waiting for master to send event Master_Host: e5ms7 Master_User: e5ms7user Master_Port: 3306 Connect_Retry: 60 Master_Log_File: log-bin.000001 Read_Master_Log_Pos: 98 Relay_Log_File: relay-bin.000002 Relay_Log_Pos: 233 Relay_Master_Log_File: log-bin.000001 Slave_IO_Running: Yes Slave_SQL_Running: Yes Replicate_Do_DB: Replicate_Ignore_DB: Replicate_Do_Table: Replicate_Ignore_Table: Replicate_Wild_Do_Table: Replicate_Wild_Ignore_Table: Last_Errno: 0 Last_Error: Skip_Counter: 0 Exec_Master_Log_Pos: 98 Relay_Log_Space: 233 Until_Condition: None Until_Log_File: Until_Log_Pos: 0 Master_SSL_Allowed: No Master_SSL_CA_File: Master_SSL_CA_Path: Master_SSL_Cert: Master_SSL_Cipher: Master_SSL_Key: Seconds_Behind_Master: 0 1 row in set (0.00 sec) ERROR: No query specified
25	Verify that the replication has been setup correctly by executing the given command at the MySQL client on the primary server.	SHOW SLAVE STAUS \G; Output similar to the follwing is displayed -

	Verify the highlighted values in the command output. Both should be 'Yes' for correct replication setup.	*************************** 1. row *************************** Slave_IO_State: Waiting for master to send event Master_Host: e5ms8 Master_User: e5ms8user Master_Port: 3306 Connect_Retry: 60 Master_Log_File: log-bin.000001 Read_Master_Log_Pos: 98 Relay_Log_File: relay-bin.000002 Relay_Log_Pos: 233 Relay_Master_Log_File: log-bin.000001 Slave_IO_Running: Yes Slave_SQL_Running: Yes Replicate_Do_DB: Replicate_Ignore_DB: Replicate_Do_Table: Replicate_Ignore_Table: Replicate_Wild_Do_Table: Replicate_Wild_Ignore_Table: Last_Errno: 0 Last_Error: Skip_Counter: 0 Exec_Master_Log_Pos: 98 Relay_Log_Space: 233 Until_Condition: None Until_Log_File: Until_Log_Pos: 0 Master_SSL_Allowed: No Master_SSL_CA_File: Master_SSL_CA_Path: Master_SSL_Cert: Master_SSL_Cipher: Master_SSL_Key: Seconds_Behind_Master: 0 1 row in set (0.00 sec) ERROR: No query specified

Note: The entry for primary and standby servers must also be done on the client machines' hosts file. On Windows machine, the hosts file is present at 'C:\Windows\System32\drivers\etc folder. The following two lines should be added in the hosts file –

```
<PRIMARY SERVER IP> <PRIMARY SERVER HOSTNAME>
<STANDBY SERVER IP> <STANDBY SERVER HOSTNAME>
```

e.g.

```
10.248.10.25  e5ms8
10.248.10.21  e5ms9
```

13.0 PROCEDURE TO UPDATE SYSTEM USER AND PASSWORD IN E5-MS

1. Shutdown E5-MS server.
   ```
   service e5msService stop
   ```

2. Execute /Tekelec/WebNMS/bin/E5MSConfigurationScript.sh script to update system user and its password in E5-MS.

   ```
   # sh E5MSConfigurationScript.sh
   Please enter E5-MS home path.(Absolute path till WebNMS directory)
   /Tekelec/WebNMS/
   Press 1 To update current system username and password in E5-MS
   2 To update current mysql root user's password in E5-MS
   3 To Exit
   Your Choice (1, 2 or 3): 1
   Enter Username (e.g. root): root
   Enter Password: abcd@123
   Do you want to proceed with the entered username and password?(y/n): y
   Username and Password updated successfully in E5-MS.
   ```

3. Start E5-MS server.
   ```
   service e5msService start
   ```

14.0 PROCEDURE TO UPDATE MYSQL ROOT USER'S PASSWORD

14.1 FOR STANDALONE SERVER

1. Shutdown E5-MS server
```
service e5msService stop
```

2. Start MySQL using /Tekelec/WebNMS/bin/startMySQL.sh
```
sh startMySQL.sh
```

3. Update MySQL root user's password using following steps –

   a. Login to MySQL using root user and its current password –
```
[root@e5ms-12 bin]# ./mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 5
Server version: 5.0.44-enterprise-log MySQL Enterprise Server (Commercial)
Type 'help;' or '\h' for help. Type '\c' to clear the buffer.
```

   b. Set mysql as database -
```
mysql> use mysql;
```

   c. Set new password for root user –
```
mysql> SET PASSWORD FOR 'root'@'localhost' = PASSWORD('hello');
Query OK, 0 rows affected (0.00 sec)
```

   d. Flush privileges
```
mysql> FLUSH PRIVILEGES;
```

   e. Commit the change and exit MySQL –
```
mysql> commit;
Query OK, 0 rows affected (0.00 sec)
mysql> exit
Bye
```

4. Stop MySQL using /Tekelec/WebNMS/bin/stopMySQL.sh. When prompted for password, supply the new password set in step 3.
```
[root@e5ms-12 bin]# sh stopMySQL.sh
Enter password:
STOPPING server from pid file /Tekelec/WebNMS/mysql/data/e5ms-12.pid
130910 00:45:26  mysqld ended
```

5. Execute /Tekelec/WebNMS/bin/E5MSConfigurationScript.sh script to update the new MySQL root user's password in E5-MS.
```
# sh E5MSConfigurationScript.sh
Please enter E5-MS home path.(Absolute path till WebNMS directory)
/Tekelec/WebNMS/
```

```
Press 1 To update current system username and password in E5-MS
2 To update current mysql root user's password in E5-MS
3 To Exit
Your Choice (1, 2 or 3): 2
Enter new password for MySQL root user: hello
Do you want to proceed with the entered password? (y/n) y
MySQL Password updated successfully.
```

6. Start E5-MS server.

```
service e5msService start
```

14.2 FOR FAILOVER SETUP (PRIMARY AND STANDBY SERVERS)

It is recommened to update the MySQL root user's password after E5-MS has been installed fresh on primary and standby servers and then create failover setup. This is because to update MySQL root user's password for a already established failover setup, replication needs to be stopped first, MySQL root user's password needs to be updated and then replication setup needs to re-created.

14.2.1 In case failover setup is not in place

1. Follow steps 3 to 5 in section 14.1 to update MySQL root user's password on Primary and Standby servers.
2. Follow section 12.0 to setup replication again between the two servers.

14.2.2 In case failover setup is in place

1. Stop database replication between the servers by running following commands on both Primary and Standby servers -
    a. Login to MySQL using root user and its current password –

```
[root@e5ms-12 bin]# ./mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 5
Server version: 5.0.44-enterprise-log MySQL Enterprise Server
(Commercial)
Type 'help;' or '\h' for help. Type '\c' to clear the buffer.
```

    b. `STOP SLAVE;`
    c. `RESET SLAVE;`
    d. `QUIT`
2. Shutdown standby server and then Primary server by using following command –

```
# service e5msService stop
Stopping E5-MS server...
MySql not stopped for failover
Done.
```

3. Follow steps 3 to 5 in section 14.1 to update MySQL root user's password on Primary and Standby servers.
4. Follow section 12.0 to setup replication again between the two servers.
5. Start primary server.
6. Start standby server.

15.0 PROCEDURE TO CREATE E5-MS SSL CERTIFICATE

To create SSL certificate needed for HTTPS based access for E5-MS, the user needs to execute E5MSCertificateCreationScript.sh script present in /Tekelec/WebNMS/bin directory. During execution of script, it shall ask the user for various inputs. The user should provide appropriate inputs (fitting the constraints) as highlighted in the sample script execution below –

```
[root@e5ms8 bin]# cd /Tekelec/WebNMS/bin

[root@e5ms8 bin]# sh E5MSCertificateCreationScript.sh

Welcome to E5-MS SSL Certificate creation wizard!!!

Please provide E5-MS home path (Absolute path till 'WebNMS' directory e.g.
/Tekelec/WebNMS): /Tekelec/WebNMS

Please provide the country name (e.g. US)-
(Must not be empty, permitted characters - alphabets and space): US

Please provide the state name (e.g. North Carolina)-
(Must not be empty, permitted characters - alphabets and space): North Carolina

Please provide the organization name (e.g. Oracle)-
(Must not be empty, permitted characters - alphanumeric, underscore, dot and space):
Oracle

Please provide the organization unit name (e.g. E5MS)-
(Must not be empty, permitted characters - alphanumeric, underscore, dot and space):
E5MS

Please provide the keystore password -
(Must not be empty, length at least six, space not allowed, permitted characters-
alphanumeric, !, @ and #):<provide a password fitting the constraints>

Please provide E5MS root user's password (used for E5MS client login):<>

Trying to generate encrypted password for keystore and trust store...

Creating certificates for BE in localhost server.
Certificate stored in file </Tekelec/WebNMS/Certs/server.cer>
Certificate was added to keystore
The Certificates and key files were created in /Tekelec/WebNMS/Certs and copied into
the respective conf directories
Done.

Updating keystore and trust store password in transportProvider.conf file...

Passwords successfully updated.
```

Note: The default E5-MS root user's password used for client login is ‘public’. So, for fresh installation the same password should be supplied when asked in the script. For upgrade scenario, in case this root user’s password has been changed by the customer, the updated password should be supplied when asked in the script.

16.0 OPENING PORTS USED BY E5-MS IN CASE OF FIREWALL

If a firewall is present between the E5-MS servers and its clients, the ports used by E5-MS needs to be opened on the firewall for proper functioning of E5-MS with firewall enabled.

The ports used by E5-MS, their types and purpose have been given in the table below. All these must be opened up on the firewall.

Note: Ports for SSH (22), Telnet (23) and SNMP (161) must be opened bidirectionally.

S. No.	Port and Type	Purpose
1	20 (TCP)	Data port for FTP
2	21 (TCP)	Command port for FTP
3	22 (TCP)	Port used for SSH connection
4	23 (TCP)	Port used for TELNET connection
5	69 (UDP)	TFTP service port used by WebNMS
6	161 (UDP)	SNMP port
7	162 (UDP)	SNMP trap port used for receiving traps.
8	1099 (TCP)	RMI Registry port used in Client-Server communication
9	2000 (TCP)	NMS BE port used for communication between BE and FE servers.
10	2300 (TCP)	Config Server port
11	3306 (TCP)	MySQL
12	4500 (TCP)	SAS (SNMP Applet Server) port In BE - FE combination, all SAS related information is passed through a socket.
13	4567 (TCP)	For Web NMS client server communication
14	8001 (UDP)	Web NMS Agent port.
15	8002 (UDP)	Port to receive SNMP set request from NMS
16	8443 (TCP)	for SSL connection
17	9000 (TCP)	Used by i-net Clear Reports server
18	9999 (TCP)	SUM Port
19	36001 (TCP)	NMS FE Secondary Port
20	36002 (TCP)	Web NMS Client Server communication port
21	36003 (TCP)	RMI Server Socket Port.
22	Port Range (TCP)	For NBI FTP module to transfer measurement files from E5MS to NMS using FTP (passive mode), the port range (ports used for ftp) for the FTP server needs to be configured at NMS. The ports specified in port range on NMS need to be opened on E5MS server firewall as well.

APPENDIX A. MY ORACLE SUPPORT

 **CAUTION: Use only the guide downloaded from the Oracle Technology Network (OTN)** (http://www.oracle.com/technetwork/indexes/documentation/oracle-comms-tekelec-2136003.html).

Before upgrading your system, access the **My Oracle Support** web portal (https://support.oracle.com) and review any Knowledge Alerts that may be related to the Upgrade or Installation.

Before beginning this procedure, contact My Oracle Support and inform them of your upgrade plans. If installing for an Oracle customer on a customer site, obtain the customer's Support Identifier (SI) before requesting assistance.

Web portal (preferred option): My Oracle Support (MOS) (https://support.oracle.com/)

Phone: Contact your local Oracle Global Customer Support Center (http://www.oracle.com/support/contact.html)

Make the following selections on the Support telephone menu:

1. Select '**2**' for New Service Request
2. Select '**3**' for Hardware, Networking and Solaris Operating System Support
3. Select '**1**' for Technical Issues and when talking to the agent, please indicate that you are an existing Tekelec customer