

# **National Groundwater Modelling System**

**NGMS(prod) r.1.4 Installation Manual**

Peter Gijsbers



**Draft**

Prepared for:

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<i>Client</i>	<b>Environment Agency for England and Wales</b>						
<i>Title</i>	<b>National Groundwater Modelling System</b>						
<i>Abstract</i>							
<p><b><i>This document describes the installation of NGMS r.1.4 (based on the Delft-FEWS 2008.02 release).</i></b></p> <p><b><i>This document is derived from the installation manual for NFFS 7.4</i></b></p>							
<i>References</i>			<p><b><i>EA Contract Reference Number 11915</i></b></p> <p><b><i>EA Purchase Order: 30200304</i></b></p>				
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# 1 Introduction

The document describes release 105330\_NGMS\_1.4 which is based on Delft-FEWS 2008.02.

The release documentation includes the following information:

- the procedure for installing the different NGMS components at the production infrastructure
- a description of the changes in the system functionality

This document relates to NGMS Release 1.4 that will be released to the Environment Agency on 1<sup>st</sup> of September 2008.



## 2 Installation Procedure

### 2.1 Introduction

The installation procedure covers the following topics:

- Overview of important file locations
- An overview of the individual NGMS components to be installed
- Detailed instructions of the upgrade to NGMS 1.4 (next chapters)

Please note that this installation procedure assumed preconfigured files for the Master Controller components. For installation instructions from scratch, or in situations where this manual does not provide sufficient detail, one is recommended to check out the FEWS administration or FEWS installation guide at the FEWS-documentation website: <http://public.deltares.nl/display/FEWSDOC/Delft-FEWS+Administrators%27+guide>

### 2.2 File Locations

File	Location on CD
<b>DVD-MC</b>	
Database update script (2008.01 → 2008.02)	/mc.2008.02/oracle/script/data_update.sql (in mc.2008.02-19774.zip)
Database creation scripts	/mc.2008.02/oracle/script/ (in mc.2008.02-19774.zip)
Database populator	/mc.2008.01/populator (in mc.2008.02-19774.zip)
mastercontroller.jar	/deploy/mastercontroller/mastercontroller.jar (in mc.2008.02-19774.zip)
Startup scripts	/mc.2008.02/scripts/*.* (in mc.2008.02-19774.zip)
Installation of Tomcat 5.5	apache-tomcat-5.5.26.zip
jboss 4.0.2 installation	jboss-4.0.2.zip
JBOSS configuration	/jboss-4.0.2/server (in pollux.produx.ntnl.zip)
Oracle 10g driver	/jboss-4.0.2/server/fews/lib/ojdbc14.jar
Admin Interfaces	/Admin_Interfaces/*.war+*.xml (in pollux.produx.ntnl.zip)
Archive Server	/ArchiveServer/archive-server.war (in mc.2008.02-19774.zip)
ArchiveServer properties for Tomcat	/tomcat/common/classes (in pollux.produx.ntnl.zip)
NGMS docu-web	NGMSDocWeb.zip
<b>DVD-FSS</b>	
Delft-FEWS binaries	/DelftFewsBinaries/bin.zip
Regional FewsShell Configuration	/FewsShellsRegions/FewsShellRegion.zip*.*
MCproxy and Root config files	/Region/*.*.zip (in NGMS_prod.zip)
McProxy jar files	included above
<b>DVD-OC+CM</b>	
Delft-FEWS binaries	/DelftFewsBinaries/bin.zip
Java Virtual Machine	/DelftFewsBinaries/jre.zip
Operator Clients (incl NGMSLauncher)	/OperatorClients/NGMS_prod.zip
Config Manager (incl NGMSLauncher)	/ConfigManager/NGMS_prod.zip
System Management	System_Management.zip

File	Location on CD
<b>Documentation</b>	
Installation	root of CDs

### 2.3 Overview of NGMS Components

NGMS Component	Update required?	Comment
<b>Unix Servers</b>		
MC (Application) Server	Yes	New Master Controller (*.jar) file and configuration file
MC and DB server	Yes	new regions: all
Administration Interfaces	Yes	New *.war file and context.xml per MC
Application Manager (Tomcat)	no	Assuming v.5.5 is installed
Database	Yes	Create scripts creating new tables and/or columns
Archive Server	Yes	new
<b>Forecasting Shell Servers</b>		
Delft FEWS binaries	Yes	
FewsShell Configurations	Yes	
Root Configurations	Yes	
MC Proxy	Yes	
<b>Operator Client</b>		
Delft FEWS binaries	Yes	
Root Configurations	Yes	
Java Virtual Machine	No	

## 2.4 Overall Installation Checklist

### 2.4.1 Unix/ linux Servers

NR	Description	prod. done
3.2	Create dedicated user accounts	
3.3	Create database instances for all regions	
3.4	Create database instances for JMS page store	
3.5	Create database instance for archive server	
3.6	JBoss installation and configuration	
3.7	Tomcat 5.5 Deployment	
3.8	Setup of Samba shared directories	
3.9	Deployment and configuration of the MasterController (mc.2008.01)	
3.10	Deployment of the Administrator Interfaces	
3.11	Starting the MasterControllers	
3.12	Install the Archive Server	
3.13	Deployment of the NGMS documentation website	
3.14	Deployment of the Admin Interface Portal Pages	

### 2.4.2 Forecasting Shell Servers

NR	Description	Production done
4.2	Create FSS-instance Root directories	
4.3	Copy of the Delft-FEWS binaries	
4.4	Check MC Proxy configurations	
4.5	Update of Region Configuration	
4.6	Create the MC Proxy Windows service	
4.7	Start the MC Proxy	

### 2.4.3 System management configuration

NR	Description	Production done
7.2	Update Configuration using the Configuration Manager	
7.3	Add missing MC Workflows	
7.4	Update of Task Properties using the Admin Interface	
7.5	Create Workflow mappings using the Admin Interface	

### 3 Installation Details Linux/unix Servers

#### 3.1 Introduction

The order of updating to NGMS 1.4 should be carried on a **region by region** basis. The database update plays an important role. First the backend of the production system should be upgraded to NGMS 1.4 followed by the release of the Operator Client to a limited group of users (testers).

For the production system, the following Identifiers will be used

Region	SID	MC-directory	MCID
Anglian	ngan01	/srv/fews/mc/mcs/ng/anmc01	NGANMC01
Midlands	ngmi01	/srv/fews/mc/mcs/ng/mimc01	NGMIMC01
NorthEast	ngne01	/srv/fews/mc/mcs/ng/nemc01	NGNEMC01
NorthWest	ngnw01	/srv/fews/mc/mcs/ng/nwmc01	NGNWMC01
Southern	ngso01	/srv/fews/mc/mcs/ng/somc01	NGSOMC01
SouthWest	ngsw01	/srv/fews/mc/mcs/ng/swmc01	NGSWMC01
Thames	ngth01	/srv/fews/mc/mcs/ng/thmc01	NGTHMC01
Wales	ngcy01	/srv/fews/mc/mcs/ng/cymc01	NGCYMC01
	fewsjms		
	ngmsarch		

- Copy of the new Delft-FEWS binaries
- Stop the Master Controllers
- Update the databases
- Update JBoss and Tomcat
- Update the Master Controller binaries
- Start the Master Controllers

#### 3.2 Create dedicated user accounts

*General procedure: Stopping the MasterControllers*

Purpose	Account	Password
deploy jboss	jboss	jboss
deploy tomcat	tomcat	tomcat
deploy mcs	mcngms	n1wldelftngms

### 3.3 Create database instances for all regions

Several PL/SQL scripts are supplied to create the associated database objects. See File Locations (2.2) for details. The scripts are called:

tbs_user_creation.sql	Tablespace and user creation script.
schema_creation.sql	Creates the tables required by the FEWS system.
view_creation.sql	Creates the views required by the application

Note: The CD contains an additional test\_schema\_creation.sql script. This script creates tables used in the applications unit tests etc. The objects created by this script are not required in the production database and this script should not be run.

*General procedure: Create regional database instance*

Step	Description
1	Log in on the corresponding database server as user "sysdba" or as the Oracle database owner
2	Check that the environment variable ORACLE_SID points to the correct database instance.
3	Make sure the variables storadat1 and storadat2 in the script tbs_user_creation.sql point to the directory where the Oracle data files are stored and update if necessary. (e.g. storadat1=/oracle/data/ &strSID/dbfiles01) (&strSID is a variable which will be replaced by the SID of the database instance.)
4	Open Oracle SQL*Plus as 'sysdba'
5	Run tbs_user_creation.sql. Usage @tbs_user_creation.sql nlwldelftngms password
6	Run schema_creation.sql. Usage @schema_creation.sql nlwldelftngms
7	Run view_creation.sql. Usage @view_creation.sql nlwldelftngms
8	Close Oracle SQL*Plus

Each regional database should have been created using procedures referenced above.

Given the size of NGMS model outputs, the following sizes are recommended as a start for the various table spaces<sup>1</sup>. Adjust the settings if required:

SID	NLWLDELFTNGMSLOB01	NLWLDELFTNGMSDAT01	NLWLDELFTNGMSIDX01
ngan01	30 GB	3 GB	1 GB
ngmi01	20 GB	3 GB	1 GB
ngne01	20 GB	3 GB	1 GB
ngnw01	20 GB	3 GB	1 GB
ngso01	20 GB	3 GB	1 GB
ngsw01	20 GB	3 GB	1 GB
ngth01	20 GB	3 GB	1 GB
ngcy01	20 GB	3 GB	1 GB
ngmsarch	1 Gb	1 GB	1 GB
fewsjms	20 GB	3 GB	1 GB

1. Dependent on usage of the system, these table spaces may need to be expanded in future.

The regional databases must contain a bare minimum of data before the associated Master Controllers can be started. An application is provided to populate the database with the baseline data. This application is distributed with the Master Controller distribution and can be found in the populator directory. Use of this program will delete all contents of the database.

*General procedure: Populate regional database instance with base data (to be conducted for each region SID)*

Step	Description
1	Obtain the file populator.zip and unzip in a convenient location.
2	Copy the fews.master.mc.conf file into this location
3	Run the jar. (pre-requisite that Java 1.5.0_12 is available and used for this activity). Usage: java -jar populator.jar
4	If the execution fails due to a report on missing the log4j-config file, please redo step 3

*Checklist: Add database instances*

Server	SID	create TableSpace	create schema	create view	check sizes	populate
castor.produx.ntnl	ngan01					
castor.produx.ntnl	ngcy01					
castor.produx.ntnl	ngmi01					
castor.produx.ntnl	ngnw01					
castor.produx.ntnl	ngne01					
castor.produx.ntnl	ngso01					
castor.produx.ntnl	ngsw01					
castor.produx.ntnl	ngth01					

### 3.4 Create database instances for JMS page store

The JBoss application server requires a database instance for paging its message queues. Use the jbossmq\_tbs\_user\_creation script to create the table space. Please ensure that the maximum table space is large enough (at least 20 Gb) as a small maximum has severe impact on download capacity, or may even lead to system failure.

*General procedure: Create SID for jmspage store*

Step	Description
1	Log in on the corresponding database server as user "sysdba" or as the Oracle database owner and create a database instance with SID fewsjms
2	Make sure the variables storadat1 and storadat2 in the script jbossmq_tbs_user_creation.sql point to the directory where the Oracle data files are stored and update if necessary. (e.g. storadat1=/oracle/data/ &strSID/dbfiles01) (&strSID is a variable which will be replaced by the SID of the database instance.) Check that the environment variable ORACLE_SID points to the correct database instance.
3	Open Oracle SQL*Plus as 'sysdba'
4	Run jbossmq_tbs_user_creation.sql. Usage @jbossmq_tbs_user_creation.sql jbossmq jbossmqfews
5	Close Oracle SQL*Plus

### 3.5 Create database instance for archive server



Create database instance for the meta data of the archive server.

*General procedure: Create SID for archive server*

Step	Description
1	Log in on the corresponding database server as user "sysdba" or as the Oracle database owner and create a database instance with SID fewsjms
2	Make sure the variables storadat1 and storadat2 in the script jbossmq_tbs_user_creation.sql point to the directory where the Oracle data files are stored and update if necessary. (e.g. storadat1=/oracle/data/ &strSID/dbfiles01) (&strSID is a variable which will be replaced by the SID of the database instance.) Check that the environment variable ORACLE_SID points to the correct database instance.
3	Open Oracle SQL*Plus as 'sysdba'
4	Run tbs_user_creation.sql. Usage @tbs_user_creation.sql nlwldelftngms password
5	Close Oracle SQL*Plus

### 3.6 JBoss installation and configuration

Although JBoss Application Server is preconfigured as server 'fews', all configuration specific files are also provided as a dedicated subset for machine pollux.produx.nl. See File Locations (2.2) for details.

*General procedure: JBoss installation and configuration*

Step	Description
1	Log on to the required server as user "jboss"
2	Create directory /opt/jboss-4.0.2 and unzip jboss-4.0.2.zip into this directory
3	Assign execution rights to the scripts in directory /opt/jboss-4.0.2/bin
4	Check JAVA_HOME settings in file /opt/jboss-4.0.2/bin/run.conf
5	Check version of Oracle driver in /opt/jboss-4.0.2/server/fews/lib. Update from CD if version not equal to a recent 10g driver
6	Check connection string in file /opt/jboss/jboss-4.0.2/server/fews/deploy/oracle-ds.xml
7	Navigate to the directory where the JBoss server holds its jms-queue details (file): (/opt/jboss-4.0.2/server/fews/deploy/jms/) and compare queue details against queue definition as listed in appendix C
8	Copy the init scripts from the CD to /etc/init.d, check their content and assign execution rights

*General procedure: start and stop JBoss*

Step	Description
1	Log on to the required server as user "jboss"
2	To start the jboss server, go to /opt/jboss-4.0.2/bin and execute the following command line ./run.sh -c fews -b pollux.produx.ntnl > log.txt 2>&1 & Alternatively, use the init-scripts as available in /etc/init.d

Step	Description
3	<p>If JBoss has started correctly, the JBoss Web console and JMX Management console should be accessible:  <a href="http://pollux.produx.ntnl:8082/web-console/">http://pollux.produx.ntnl:8082/web-console/</a></p> <p>Alternatively, check the contents of the file <code>/opt/jboss-4.0.2/server/fews/log/server.log</code> If JBoss started correctly it should contain a line similar to:  <pre>09:08:30,171 INFO [Server] JBoss (MX MicroKernel) [4.0.2 (build: CVSTag=JBoss_4_0_2 date=200505022023)] Started in 41s:515ms</pre></p> <p>Note: It takes a while before all queues are created</p>
4	<p>To stop the jboss server, go to <code>/opt/jboss/jboss-4.0.2/bin</code> and execute the following command line <code>./shutdown.sh -s jnp://pollux.produx.ntnl -S</code>  Alternatively, use the init-scripts as available in <code>/etc/init.d</code></p>

Although not required it is very handy, if specific aliases are created to start and stop JBoss. These aliases must be inserted into the jboss user's ".profile" and the file sourced (or the user logged in once again).

```
alias stopjboss=./shutdown.sh -s jnp://pollux.produx.ntnl -S
alias startjboss=./run.sh -c fews -b pollux.produx.ntnl > log.txt 2>&1 &
```

*Checklist: Checking JBoss for production*

Server	Unzip	Assign exe rights	Check java_home	Check ojdbc	Check DB-connection	Check queues	Copy init scripts
pollux.produx.ntnl							

### 3.7 Tomcat 5.5 Deployment

The AdminInterface is deployed via Tomcat 5.5. The Tomcat 5.5 distribution for linux file can be found on the CD. See File Locations (2.2) for details.

Note that the deployment method has changed a bit as compared to release 1.3. The 1.3 installation will therefore be removed

#### General procedure: Deployment of Tomcat 5.5

Step	Description
1	Log on to the server as tomcat (or root, depends on current Tomcat owner)
2	Unzip the contents of distribution file apache-tomcat-5.5.26.zip into /opt/tomcat
3	Allocate execution rights to the scripts in /opt/tomcat/apache-tomcat-5.5.26/bin
4	If release 1.3 has been installed, stop the deployed war files in the Tomcat manager and remove the war files. Over write the context.xml and server.xml files as installed in release 1.3 with the original files as provided in the /tomcat/conf(originalFiles) directory in the distribution.
5	Copy the new context files as prepared in the /Admin_interfaces directory of the distribution into /opt/tomcat/apache-tomcat-5.5.26/conf/Catalina/localhost When starting Tomcat, it will automatically deploy the war files for the copied context files.  The preparation method applied for these config files is described on the Fewswiki: <a href="http://public.deltares.nl/display/FEWSDOC/04+Administration+Interface">http://public.deltares.nl/display/FEWSDOC/04+Administration+Interface</a> . Notwithstanding, it might be wise to
6	Check that the non-SSL HTTP/1.1 Connector is connected to port 8081
7	Check resource names and Oracle connection details for each XML-file in the Admin_interfaces directory  The resource name (e.g. /jdbc/ngmsdb/anmc01) needs to correspond to the Ai-datasource in the fews.master.mc.conf file of the associated Master controller (e.g. <datasource jndi="java:comp/env/jdbc/ngmsdb/anmc01"/>)
9	Check if additional jars are included: /MasterController/lib/xerces/*. * → /opt/tomcat/apache-tomcat-5.5-26/common/endorsed /MasterController/lib/jdbc/ojdbc14.jar → /opt/tomcat/apache-tomcat-5.5-26/common/lib /AdminInterface/fewsadmin.war/Web-inf/lib/commons-io-1.3.jar → /opt/tomcat/apache-tomcat-5.5-26/common/lib  The last one is required to solve a bug in Tomcat-5.5.26. See File Locations (2.2) for details.
10	Check the content of the Tomcat init script copied (in the previous step) from the CD to /etc/init.d, and assign execution rights (to user tomcat)

#### General procedure: start and stop Tomcat

Step	Description
1	Log on to the required server as user "tomcat"
2	To start the tomcat servlet engine run ./startup.sh from /opt/tomcat/apache-tomcat-5.5.26/bin Alternatively, use the init-scripts as available in /etc/init.d
3	If Tomcat has started correctly, the Tomcat Web Application Manager should be accessible ( <a href="http://pollux.produx.ntnl:8081/manager/html">http://pollux.produx.ntnl:8081/manager/html</a> ) and displaying the Message "OK" at the top of the web page.
5	

Step	Description
4	to stop the tomcat servlet engine: <code>./startup.sh</code> from <code>/opt/tomcat/apache-tomcat-5.5.26/bin</code> Alternatively, use the init-scripts as available in <code>/etc/init.d</code>

*Checklist: Deployment of Tomcat 5.5*

Server	Unzip	Assign exe rights	Copy AI to localhost	copy jars	init scripts
pollux.produx.ntnl					

### 3.8 Setup of Samba shared directories

SAMBA-shares need to be set up to enable data exchange between the Shell Servers and the archive-server, running on the MC server.

*General procedure: Adjustment of the Samba Shared Directories*

Step	Description
1	Log on to the server as root
2	Navigate to <code>/srv/fews/</code>
3	Create a directory <code>/FSS/REGION_NAME/win_share/fromWindows</code>
4	Create a directory <code>/FSS/REGION_NAME/win_share/toWindows</code>
5	Adjust <code>filetidy.sh</code> script where required

*Checklist: Adjustment of the Samba Shared Directories: Production*

Region	win_share	fromWindows	toWindows
Anglian	<code>/srv/fews/FSS/Anglian/win_share/</code>		
Midlands	<code>/srv/fews/FSS/Midlands/win_share/</code>		
NorthEast	<code>/srv/fews/FSS/NorthEast/win_share/</code>		
NorthWest	<code>/srv/fews/FSS/NorthWest/win_share/</code>		
Southern	<code>/fews/FSS/ Southern/win_share/</code>		
SouthWest	<code>/fews/FSS/ SouthWest/win_share/</code>		
Thames	<code>/fews/FSS/ Thames/win_share/</code>		
Wales	<code>/fews/FSS/ Wales/win_share/</code>		

### 3.9 Deployment and configuration of the MasterController (mc.2008.02)

New Master Controller files (\*.jar) need to be deployed on the servers. In addition, master controllers need to be configured for all regions.

NB This build allows configuration of direct intake of log files from the FSS via the SAMBA-share. This will not be applied yet.

*General procedure: Deployment of all MasterController*

Step	Description
1	Log on as 'mcngms' to the (linux) server where MasterControllers are deployed
2	Unzip <code>mc.conf.zip</code> from the CD to <code>/srv</code> such that a directory tree <code>/srv/fews/mc/mcs/ng</code> is created. See File Locations (2.2) for details
3	Unzip <code>mc.2008.02-19774.zip</code> from the CD into directory <code>/srv/fews/mc/builds/</code>
4	Go to the startup scripts directory <code>./mc.2008.02/scripts</code> and make sure the executable flag is set.
5	Check the controllers.lis.all ( <code>/srv/fews/mc/mcs/ng/</code> ) to include all regions with <code>mcid = xxmc01</code>

Although not required it is very handy, if specific aliases are created to start and stop a region specific Master Controller. These aliases must be inserted into the user's ".profile" and the file sourced (or the user logged in once again).

```
alias mcstop='NFFS_HOME=$(pwd) ../scripts/stopall.sh'
alias mcstart='NFFS_HOME=$(pwd) ../scripts/restart.sh <on same
line> nl.wldelft.fews.master.mc.systemmonitor.main.SystemMonitor'
```

*Checklist: Deployment and configuration of the MasterController Leeds test*

Server	unzip mc.conf	deploy build	set rights
pollux.produx.ntnl			

*General procedure: Configuration updates for each individual MasterController*

Step	Description
1	Log on as 'mcngms to the (linux) server where MasterControllers are deployed
2	For each region go to its Home-directory /srv/fews/mc/mcs/ng/<regionMC>
3	Check the following contents in the MC configuration file <code>fews.master.mc.conf</code> : * MCID → XXMC01 * database connection string → <code>castor.produx.ntnl:1525:SID</code> * <code>&lt;rollingbarrel&gt;</code> <code>&lt;taskruns expiredays="180"/&gt;</code> <code>&lt;logentries expiredays="5"/&gt;</code> <code>&lt;reports expiredays="5"/&gt;</code> <code>&lt;default expiredays="90"/&gt;</code> <code>&lt;/rollingbarrel&gt;</code> * AI-section: <code>&lt;datasource jndi="java:comp/env/jdbc/ngmsdb/MCid"/&gt;</code>
4	Check the Java-path references in <code>setenv.sh</code>
5	Allocate execution rights to <code>setenv.sh</code>
6	if any, remove symbolic link 'build' to the old MC-build: <code>rm build</code>
7	Create symbolic link 'build' to this MC-build Usage: <code>ln -s destination link, e.g.</code> <code>ln -s /srv/fews/mc/builds/mc.2008.02-19774</code> <code>/srv/fews/mc/mcs/ng/anmc00/build</code>
8	Repeat step 2-7 for the next region

*Checklist: Deployment and configuration of the MasterControllers for pollux.produx.ntnl*

Region	(Step 3) check MCid	(Step 3) check DB connection	(Step 3) Check roll.bar.	(Step 3) Check AI-src	(Step 4) Check setenv.sh	(Step 5) allocate exe rights	(Step 6) update symb.link
Anglian							
North East							
Midlands							
North West							
Southern							
South West							
Thames							
Wales							

### 3.10 Starting the MasterControllers

*General procedure: Starting the MasterControllers*

Step	Description
1	Log on to the required server as user "mcngms"
2	Navigate to the location where the MasterControllers are installed (/srv/fews/mc/mcs/ng/ and then navigate to a <i>regionMCId</i> directory
3	In directory <i>regionMCId</i> the "mcstart" command will run the script to start up all mc-related processes.
4	Alternatively run <code>control_all_mcs.bsh</code> with argument 'startup'
5	Wait a few minutes after startup and check MC status using the script <code>mc_status.bsh</code>

*Checklist: Starting the MasterControllers*

Region	Description	pollux.produx.ntnl		
Anglian	Start the MasterController			
North East	Start the MasterController			
North West	Start the MasterController			
Midlands	Start the MasterController			
Southern	Start the MasterController			
South West	Start the MasterController			
Thames	Start the MasterController			
Wales	Start the MasterController			
all	check MC status			

### 3.11 Install the Archive Server

The ArchiverServer is kept in a 8.war file to be deployed by Tomcat. The associated properties file has to point to the SAMBA-shares to work.

*General procedure: Instalationl of the Archive Server*

Step	Description
1	Copy the ArchiveServer.war file to a temporary directory on the MasterController Server. Files can be found on the CD. See File Locations (2.2) for details
2	Start the Apache Tomcat Web Application Manager; <code>http://pollux.produx.ntnl:8081/manager.html</code> (login as tomcat, tomcat)
3	Click on <b>INSTALL/BROWSE</b> and navigate to the ArchiceServer.war file.
4	Click 'OK' to confirm
5	Select the 'Install' button to deploy this *.war
6	Copy <code>archive-server.properties</code> from distribution to <code>/opt/tomcat-5.5.26/common/classes/archive-server.properties</code>
7	Copy <code>archive-server.properties</code> from distribution to <code>/opt/tomcat-5.5.26/common/classes/log4j.properties</code>
8	Check contents of <code>archive-server.properties</code> and compare with actual SAMBA-shares as well as the actual archive-directory

*Checklist: of Archive Server*

Server	deploy war-file	copy files	check archive-server.properties
pollux.produx.ntnl			

### 3.12 Deployment of the NGMS documentation website

As part of the NGMS, a website with static documentation materials will be delivered. The files are available on the CD. See File Locations (2.2) for details.

*General procedure: Deployment of the NGMS documentation Pages*

Step	Description
1	Log on to the MasterController server as <b>root</b>
	If an apache-webserver is not yet installed, download an apache webserver and install e.g. in /opt/apache
2	Navigate to /opt/apache/htdocs/ directory
3	Unzip the contents of NGMS-docuweb.zip into this directory
4	Open webpage in browser URL: <a href="http://pollux.produx.ntnl/index.html">http://pollux.produx.ntnl/index.html</a>

*Checklist: of the NGMS documentation Pages*

Server	apache webserver installed	copy files	open URL in browser
pollux.produx.ntnl			

**3.13 Deployment of the Admin Interface Portal Pages**

Currently, the AdminInterface Portal page is included as part of the OC-distribution with the NGMSLauncher. One may deploy this HTML-page on the Apache webserver.





## 4 Installation Details Forecasting Shell Servers

### 4.1 Introduction

Specific content of the Forecasting Shell Servers (FSS) is going to be replaced. Details can be found in the individual paragraphs below. The general procedure is as follows. All activities are carried out per FSS.

- Stop the MC Proxy
- Copy of the new Delft-FEWS binaries
- Update of Root Configurations
- Deletion of LocalDataStore (start building a new one)
- Start the MC Proxy

The directory structure on a Forecasting Shell Server allows multiple FSS instances to be set up, for multiple regions. The directory structure is shown in the diagram in appendix A.

System performance depends on the distribution of the logical instances over the machines, as well as the logical instances over the physical hard disks within one machine. MCs only have knowledge on the queue of their own logical FSSs, but have no knowledge on the queue length of FSSs from other regions. Based on performance results from the test system, the following distribution of logical instances is suggested assuming (d) for disk one and (e) for disk two

Region	Anglian	Midlands	NorthEast	NorthWest	Southern	SouthWest	Thames	Wales
<b>Region Size</b>	very large	medium	small-medium	medium	medium-large	medium-large	medium	small
<b>GW models</b>	YNN, EO, NWN, WES	WMW, ES, LF	EMY	LM, EC, FY	TI, EK, EH, NK	HA, FPDS	KV, SWC, VSA, UCG	YAZ
<b>EAHD2G MSS01</b>	FSS00(d) FSS01(e)						FSS02(e)	FSS02(d)
<b>EAHD2G MSS02</b>		FSS00(d)	FSS00(e)	FSS02(e)	FSS01(e)	FSS01(d)		
<b>EAHD2G MSS03</b>		FSS02(e)	FSS02(d)	FSS01(e)	FSS00(d)		FSS01(e)	
<b>EAHD2G MSS04</b>		FSS01(d)	FSS01(e)		FSS02(e)	FSS00(d)		FSS00(e)
<b>EAHD2G MSS05</b>	FSS02(d)			FSS00(d)		FSS02(e)	FSS00(e)	FSS01(d)

## 4.2 Create FSS-instance Root directories

Please pay attention to the distribution over the hard disks. Since the system is IO bound for ca. 33% of its runtime, proper allocation is beneficial for performance.

*General procedure: create FSS instance for all regions*

Step	Description
1	Log into respective machine
2	Open a file browser/manager (Windows Explorer/Total Commander)
3	Create a directory <code>d:\ngms</code> and <code>e:\ngms</code>
4	Unzip the <i>machined.zip</i> file from the CD (/NGMS_prod) into <code>d:\ngms</code>
5	Where required, move the region-FSS-instances to directory <code>e:\ngms</code> (check the table overview)

## 4.3 Copy of the Delft-FEWS binaries

This action needs to be repeated for each FSS-id instance on each machine. Check the table in section 4.1.

*General procedure: Copy of the Delft-FEWS binaries (repeat for each FSS-instance)*

Step	Description
1	Open a file browser/manager (Windows Explorer/Total Commander)
2	Navigate to <code>\ngms\region_FSSID\FewsShell</code> directory on the D or E drive
3	Unzip the new Delft-FEWS bin.zip file into the FewsShell directory. See File Locations (2.2) for details

## 4.4 Check MC Proxy configurations

This action needs to be repeated for each FSS-id instance on each machine. Check the table in section 4.1

*General procedure: Copy new MC Proxy files*

Step	Description
1	Open a file browser/manager (Windows Explorer/Total Commander)
2	Navigate to <code>\ngms\region_FSSID\MCPProxy</code> directory on the D or E drive
3	Open MCPProxy configuration file <code>fews.master.mcproxy.conf</code> and conduct the following checks:
4	MC-details: * MCid: NGXXMC01 * connection string <code>pollux.produx.ntnl:1099</code>
	ForecastShell details: * run path (→ drive!) * JVM path (→ full path!) * lib path (drive!)
5	MCPProxyId (to be used when creating windows service, see 4.7)

#### 4.5 Update of Region Configuration

This action needs to be repeated for each FSS-id instance on each machine. Check the table in section 4.1

*General procedure: Update of Region Configuration*

Step	Description
1	Open a file browser/manager (Windows Explorer/Total Commander)
2	Navigate to \ngms\region_FSSID\FewsShell\Region directory on the D or E drive
3	Unzip the contents of file FewsShell<region>.zip into this region directory. See File Locations (2.2) for details
4	For Anglian instances, also unzip ModulesYNN.zip and ModulesEO.zip into \ngms\region_FSSID\FewsShell\Region\Modules\Ynn resp. \EO

#### 4.6 Check archive settings in global properties file

This action needs to be repeated for each FSS-id instance on each machine. Check the table in section 4.1

*General procedure: Check global properties*

Step	Description
1	For each FSS-instance, check the global properties file. the ARCHIVE-IMPORT_DIR and ARCHIVE_EXPORT_DIR should point to the correct SAMBA-share

#### 4.7 Create the MC Proxy Windows service

This action needs to be repeated for each FSS-id instance on each machine. Check the table in section 4.1

*General procedure: create MCProxy Windows service*

Step	Description
1	Copy the MCProxy_NT_Service_Install directory from the CD to a temporary directory
2	Check/update the batch file install_service.bat for the path reference to the JVM.dll
3	Run the install_service.bat file from the MCProxy_NT_Service_Install directory with instance identifier NGNEMC00<FSSid> respectively NGNWMC00FSS00 Usage: install_service.bat <path_to_mcproxy-directory> < instance identifier>
4	To adjust service settings to run automatically. go to Control Panel → Administrative Tools → Services and setup the service. Set the service to run as the created user (nlwldelftngms). Ensure that the service is set to <u>run automatically</u> . Edit the recovery options and ensure that on first, second and subsequent failures, the <u>service is restarted under user credentials nlwldelftngms</u>

*MCproxy identifiers*

Server	drive	FSSid	MCproxy identifier	path
eahd2gmss01	d	an_FSS00	NGANMC01FSS00	d:\ngms\an_FSS00\MCPProxy
	d	cy_FSS02	NGCYMC01FSS02	d:\ngms\cy_FSS02\MCPProxy

Server	drive	FSSid	MCproxy identifier	path
	e	an_FSS01	NGANMC01FSS01	e:\ngms\an_FSS01\MCPProxy
	e	th_FSS02	NGTHMC01FSS02	e:\ngms\th_FSS02\MCPProxy
eahd2gmss02	d	mi_FSS00	NGMIMC01FSS00	d:\ngms\mi_FSS00\MCPProxy
	d	sw_FSS01	NGSWMC01FSS01	d:\ngms\sw_FSS01\MCPProxy
	e	ne_FSS00	NGNEMC01FSS00	e:\ngms\ne_FSS00\MCPProxy
	e	so_FSS01	NGSOMC01FSS01	e:\ngms\so_FSS01\MCPProxy
	e	nw_FSS02	NGNWMC01FSS02	e:\ngms\nw_FSS02\MCPProxy
eahd2gmss03	d	so_FSS00	NGSOMC01FSS00	d:\ngms\an_FSS00\MCPProxy
	d	ne_FSS02	NGNEMC01FSS02	d:\ngms\ne_FSS02\MCPProxy
	e	nw_FSS01	NGNWMC01FSS01	e:\ngms\nw_FSS01\MCPProxy
	e	th_FSS01	NGTHMC01FSS01	e:\ngms\th_FSS01\MCPProxy
	e	mi_FSS02	NGMIMC01FSS02	e:\ngms\mi_FSS02\MCPProxy
eahd2gmss04	d	sw_FSS00	NGSWMC01FSS00	d:\ngms\sw_FSS00\MCPProxy
	d	mi_FSS01	NGMIMC01FSS01	d:\ngms\mi_FSS01\MCPProxy
	e	cy_FSS00	NGCYMC01FSS00	e:\ngms\cy_FSS00\MCPProxy
	e	ne_FSS01	NGNEMC01FSS01	e:\ngms\ne_FSS01\MCPProxy
	e	so_FSS02	NGSOMC01FSS02	e:\ngms\so_FSS02\MCPProxy
eahd2gmss05	d	nw_FSS00	NGNWMC01FSS00	d:\ngms\nw_FSS00\MCPProxy
	d	cy_FSS01	NGCYMC01FSS01	d:\ngms\cy_FSS01\MCPProxy
	d	an_FSS02	NGANMC01FSS02	d:\ngms\an_FSS02\MCPProxy
	e	th_FSS00	NGTHMC01FSS00	e:\ngms\th_FSS00\MCPProxy
	e	ne_FSS01	NGNEMC01FSS01	e:\ngms\ne_FSS01\MCPProxy
	e	sw_FSS02	NGSWMC01FSS02	e:\ngms\sw_FSS02\MCPProxy

#### 4.8 Start the MC Proxy

This action needs to be repeated for each FSS-id instance on each machine. Check the table in section 4.1

*General procedure: Start the MC Proxy*

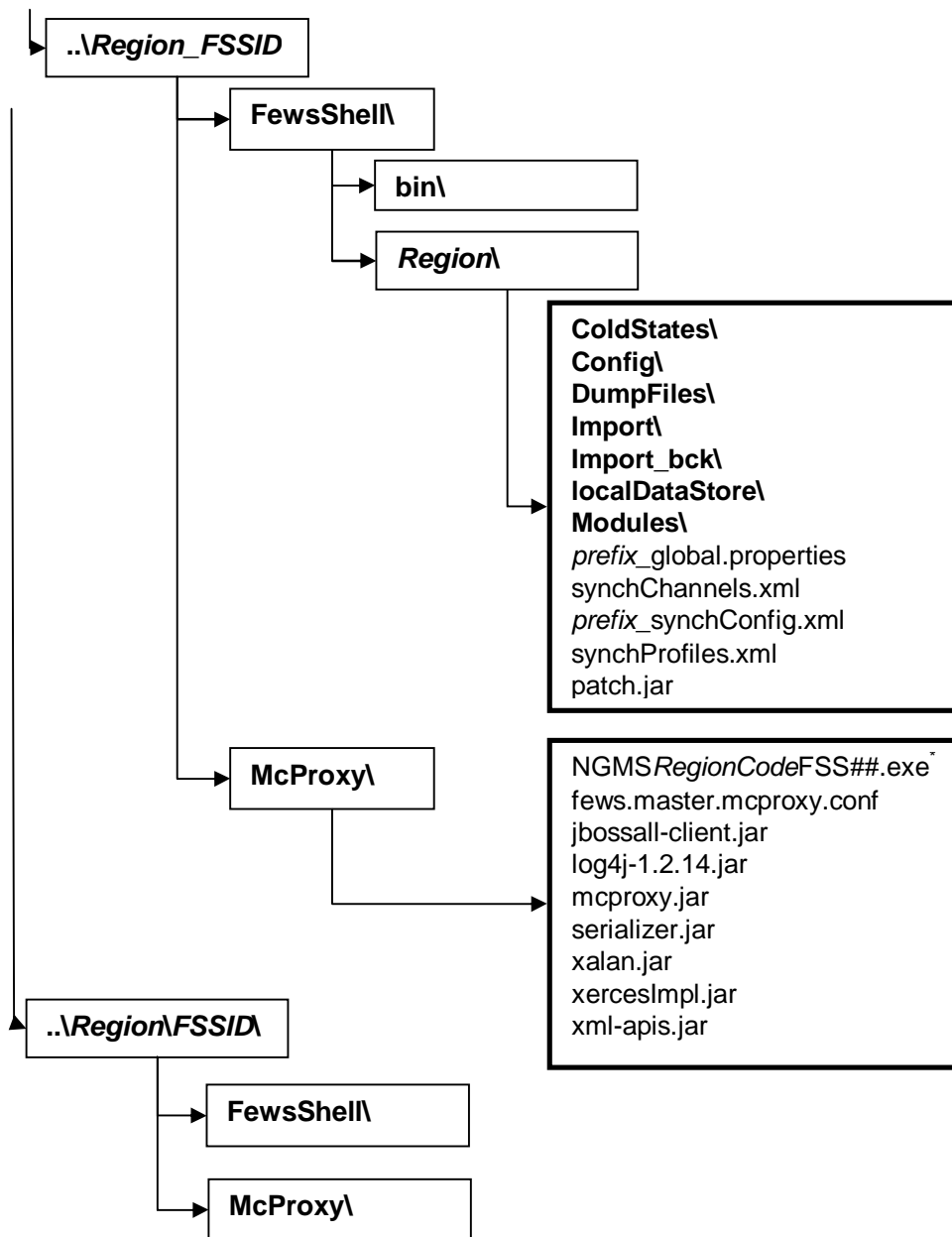
Step	Description
1	Go to Windows Start menu – Settings – Control Panel – Administrative Tools – Services.
3	Select the MC Proxy <i>Region_FSSID</i> and click on Start

#### 4.9 Checklist NGMS FSS Installation

*Checklist: of the NGMS FSS installation*

Server	drive	FSSid	copy bin	check MCPProxy conf	copy FewShell.zip	create service	update service settings	start MCproxy
eahd2gmss01	d	an_FSS00						
	d	cy_FSS02						
	e	an_FSS01						
	e	th_FSS02						
eahd2gmss02	d	mi_FSS00						
	d	sw_FSS01						
	e	ne_FSS00						
	e	so_FSS01						
	e	nw_FSS02						
eahd2gmss03	d	so_FSS00						
	d	ne_FSS02						
	e	nw_FSS01						
	e	th_FSS01						
	e	mi_FSS02						
eahd2gmss04	d	sw_FSS00						
	d	mi_FSS01						
	e	cy_FSS00						
	e	ne_FSS01						
	e	so_FSS02						
eahd2gmss05	d	nw_FSS00						
	d	cy_FSS01						
	d	an_FSS02						
	e	th_FSS00						
	e	ne_FSS01						
	e	sw_FSS02						

The directory structure of an FSS should look like:



## 5 Installation Details Config Manager

### 5.1 Introduction

The Forecasting Shell Server contains the data sets and a file based copy of the configuration required for data processing. The actual configuration files of a FEWS instance are managed and uploaded to the central database by the ConfigManager (CM). The installation of a ConfigManager is therefore very similar to the installation of an FSS. The main differences are:

- The CM does not use a MCPProxy and the corresponding Windows Service, so these do not have to be configured or installed for an OC.
- A CM does have a Config directory which is uploaded to the central database. The configuration will then be distributed to OC-instances via database synchronization
- A CM can be installed anywhere, but it is most logical to put it on a machine accessible by the Super User e.g. one of the Forecasting Shell Servers machines.

The main purpose of the ConfigManager is to create a central point for configuration management and distribution over the entire system.

### 5.2 Procedure to install Config Manager

To install a Config Manager on a Windows machine which has an FSS installed one should conduct the following steps with directory assuming `d:\ngms_clients` as root.

- Copy of the Delft-FEWS binaries (1 directory)
- Copy the Java Virtual Machine (1 directory )
- Copy of the Operator Client and Config Manger directories (16 directories + 1 NGMSLauncher directory)

*General procedure: Install Config Manager*

Step	Description	Check
1	Open a file browser/manager (Windows Explorer/Total Commander)	
2	Create a directory <code>d:\NGMS_clients</code>	
3	Navigate into this directory	
4	Unzip the Delft-FEWS-Binaries (the <code>bin</code> directory will be created). See File Locations (2.2) for details	
5	Unzip the Java Virtual Machine (the <code>jre</code> directory will be created) See File Locations (2.2) for details	
6	Unzip the complete <code>/ConfigManager.zip</code> file from the CD into this <code>NGMS_clients</code> -directory. This will create 8 <code>RegionName_OC</code> , 8 <code>RegionName_CM</code> directories with content + 1 <code>NGMSSLauncher</code> directory. See File Locations (2.2) for details	

Step	Description	Check
8	The final structure looks like this \\NGMS_clients\ \\bin \\jre \\Anglian_OC \\Anglian_CM \\Midlands_OC\ \\Midlands_CM\ \\NGMSLauncher\ \\NorthEast_OC\ \\NorthEast_CM\ \\NorthWest_OC\ \\NorthWest_CM\ \\Southern_OC\ \\Southern_CM\ \\SouthWest_OC\ \\SouthWest_CM\ \\Thames_OC\ \\Thames_CM\ \\Wales_OC\ \\Wales_CM	



## 6 Installation details Operator Clients

### 6.1 Introduction

The Operator Clients directories will be renewed as well. Although its contents has hardly changed, it needs a full replace for in order it to roll it out properly. The final directory structure contains a series of 11 directories. These are subdivided in the following steps. See File Locations (2.2) for details.

- Copy of the Delft-FEWS binaries (1 directory)
- Copy the Java Virtual Machine (1 directory)
- Copy Operator Client directories (8 directories + 1 NGMSLauncher directory)

### 6.2 Procedure of updating the Operator Client directory structure for NGMS

The Operator Client roll-out will contain a full update of the (local) NGMS directory on all relevant EA pc's (desktops and laptops). This complete set of files is available on CD. In order to roll this out properly, the complete set of 11 directories must be composed from this CD. Appendix B visualises the complete structure.

The following procedure assumes the existence of a 'temporary' place on the EA Network where the whole NGMS directory structure is composed. This location is mentioned as "drive X":

*General procedure: Install Config Manager*

Step	Description	Check
1	Open a file browser/manager (Windows Explorer/Total Commander)	
2	Create a directory X:\NGMS	
3	Navigate into this directory	
4	Unzip the Delft-FEWS-Binaries (the <i>bin</i> directory will be created). See File Locations (2.2) for details	
5	Unzip the Java Virtual Machine (the <i>jre</i> directory will be created) See File Locations (2.2) for details	
6	Unzip the complete /operatorClient.zip file from the CD into this NGMS - directory. This will create 8 <i>RegionName_OC</i> , 8 with content + 1 NGMSLauncher directory. See File Locations (2.2) for details	
7	The final structure looks like this \NGMS_clients\ \bin \jre \Anglian_OC \Midlands_OC\ \NGMSLauncher\ \NorthEast_OC\ \NorthWest_OC\ \Southern_OC\ \SouthWest_OC\ \Thames_OC\ \Wales_OC\ 	

The executable, called NGMSLauncher.exe, can be found in the \bin-directory.



## 7 System and Configuration Management Tasks

### 7.1 Introduction

In the NGMS 1.3 release, a number of System and Configuration Management Tasks needs to be carried out. These tasks are typically conducted by the Super User of NGMS. E.g. in the NFFS-context, this is the responsibility of the NRFS team.

The individual activities are listed below:

- Update Configuration using the Configuration Manager (by CIS or Super User)
- Update of Task Properties using the Admin Interface (by CIS or Super User)
- Addition of Workflows and workflow mappings for new regions using the Admin Interface (by CIS or Super User)

For any details on MC-workflows, task properties updates etc. using the AdminInterface, one can also visit the FEWSDOC-wiki site at <http://public.deltares.nl/display/FEWSDOC/Delft-FEWS+Administrators%27+guide>

### 7.2 Update Configuration using the Configuration Manager

The updated configuration of each region will be distributed via the central database. This requires that the configuration is uploaded to the Master Controller by use of the ConfigManager. This upload needs to be repeated for each region.

*General procedure: Update configuration using Config manager*

Step	Description	Check
1	Start the NGMSLauncher on the machine where the ConfigManager has been installed	
2	Login in as SystemManager with systemmanager123, or as Custodian using custodian123	
3	Launch the Config Manager for a Region using the Launch Config Management button.	
4	Select the root folder (<region>_CM) in the left window and click on the import button. By default the configuration in the Config folder of your ConfigManager will be selected for import.  Check the activate import files box and add a logical description to the upload (e.g. NGMS release 1.3). Please use a sensible description as the ConfigManagement facility accommodates version management and roll back.	
5	Press the 'Validate' button to validate the configuration	
6	Login to the Master Controller (menu file→Login)	
7	Press the upload button. Give the files a version name like NGMS release 1.4. The files are now uploaded to the Master Controller.	
8	Log off and close the application	
9	Check: Delete the localDatastore directory. Start the application, logon to MC and download the configuration. If all went well, delete the Config-directory for this region.	

### 7.3 Add missing MC Workflows

All regions will require the specification of an two additional MC-workflows named MC:RollingBarrel and MC:MarkedRecordManager.

*General procedure: General procedure for MC: workflow upload*

Step	Description
0	Unzip the content of the SystemManagement directory to a temporary place.
1	Start the NGMSLauncher and log on as SystemManager
2	Open the Admin Interface Page
3	Select a Admin Interface and log in (admin, pass)
4	Navigate to: 'Workflows and FSSs' → 'Workflows'
5	Click 'Upload New workflow'
6	Enter workflowID (see table below) '
7	Select file to upload from the temporary directory
8	Click Submit
9	Once completed, check the list of specified workflows 'Workflows and FSSs' → 'Workflows'

The workflow for the MC:RollingBarrel and the MC:MarkedRecordManager are defined internally, but a dummy workflow needs to be present in order to be able to schedule an associated task. For this, a dummy XML workflow will be uploaded. Note that the workflowid must be as specified with capitals and colons.

#### Workflow Details

Region	Workflowid	File	pollux.produx.ntnl done
Anglian	MC:RollingBarrel	MC-RollingBarrel.xml	
Midlands	MC:RollingBarrel	MC-RollingBarrel.xml	
NorthEast	MC:RollingBarrel	MC-RollingBarrel.xml	
NorthWest	MC:RollingBarrel	MC-RollingBarrel.xml	
Southern	MC:RollingBarrel	MC-RollingBarrel.xml	
SouthWest	MC:RollingBarrel	MC-RollingBarrel.xml	
Thames	MC:RollingBarrel	MC-RollingBarrel.xml	
Wales	MC:RollingBarrel	MC-RollingBarrel.xml	
Anglian	MC:MarkedRecordManager	MC-MarkedRecordManager.xml	
Midlands	MC:MarkedRecordManager	MC-MarkedRecordManager.xml	
NorthEast	MC:MarkedRecordManager	MC-MarkedRecordManager.xml	
NorthWest	MC:MarkedRecordManager	MC-MarkedRecordManager.xml	
Southern	MC:MarkedRecordManager	MC-MarkedRecordManager.xml	
SouthWest	MC:MarkedRecordManager	MC-MarkedRecordManager.xml	
Thames	MC:MarkedRecordManager	MC-MarkedRecordManager.xml	
Wales	MC:MarkedRecordManager	MC-MarkedRecordManager.xml	

## 7.4 Update of Task Properties using the Admin Interface

Within all MasterControllers the MC:MarkedRecordManager, the MC:RollingBarrel and the FSS-RollingBarrels will need to be activated. To enable proper functioning of the RollingBarrel, the Marked Record Manager should run before any Rolling Barrel.

*General procedure: General procedure for rescheduling a task*

Step	Description
	<b>Deleting a scheduled task</b>
1	Start the NGMSLauncher and log on as SystemManager
2	Open Admin Interface Page
3	Select a Admin Interface and log in
4	Navigate to: 'Forecast Tasks' → 'Scheduled Tasks'
5	Find the <i>Task Name</i> (see table above) in the table on this page and press Cancel in the most right column. This deletes this task
	<b>Rescheduling a task</b>
6	Navigate to: 'Forecast Tasks' → 'Scheduled Tasks'
7	Select 'Schedule New Task'
8	Fill in the Task details (see table below)
9	Browse for the task properties file
10	Click the 'Submit' button

### Task Details

Nr	MC-MarkedRecord Manager	MC-Rolling Barrel	FSS-RollingBarrel
Regions	all	all	all
<b>Task Name/Description</b>	MC:MarkedRecordManager	MC:RollingBarrel	FSS:RollingBarrel
<b>WorkflowId</b>	MC MarkedRecordManager	MC RollingBarrel	RollingBarrel_ FSS00
<b>Task First Due Time</b>	date: today time: first region at 06:00, with 5 min. spare time between each region, i.e. 06:00 (an) 06:05 (cy) 06:10 (mi) 06:15 (ne) 06:20 (nw) 06:25 (so) 06:30 (sw) 06:35 (th)	date: today time: 15 minutes after Marked Record Manager 06:15 (an) 06:20 (cy) 06:25 (mi) 06:30 (ne) 06:35 (nw) 06:40 (so) 06:45 (sw) 06:50 (th)	date: today time: 06:15 (an) 06:20 (cy) 06:25 (mi) 06:30 (ne) 06:35 (nw) 06:40 (so) 06:45 (sw) 06:50 (th)
<b>Task Repeat Time</b>	2880 mins	2880 mins	2880 mins
<b>Properties file</b>	MC-MarkedRecordManager.xml	MC-RollingBarrel-TaskProperties.xml	FSS-RollingBarrel-00.xml

## 7.5 Create Workflow mappings using the Admin Interface

With this new release, the MC can schedule staggered tasks in time. This allows workflow mappings for FSS-RollingBarrels to be configured only once, while the system allows a delay between the tasks. A delay of 30 minutes is recommended.

*General procedure: General procedure for adjusting workflow mappings*

Step	Description
1	Start the NGMSLauncher and log on as SystemManager
2	Open Admin Interface Page
3	Select a Admin Interface and log in
4	Navigate to: 'Workflows and FSSs' → 'Workflow FSS Mappings'
5	To adjust a workflow mapping, find the mapping in the table and click 'Edit' To create a new mapping, click the hyperlink 'Create New Workflow Mappings'
6	Select the proper workflowId and FSSId (see table)
7	Click the 'Submit' button

*Check: Workflow mappings to be created*

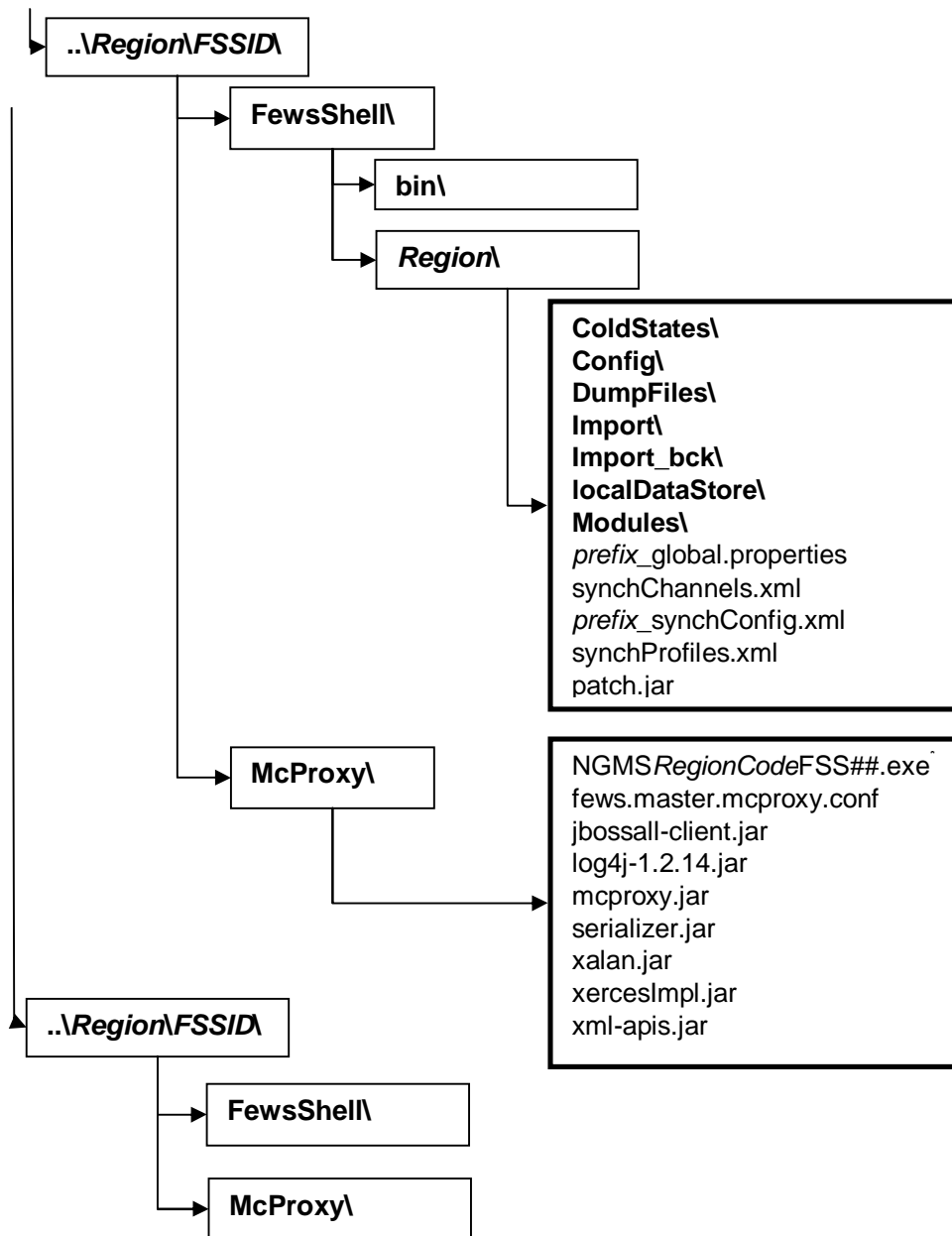
Region	WorkflowId	FSSId	pollux.produx
Anglian	RollingBarrel_FSS00	All staggered (30 min.)	
	EO_import	all	
	EO_default_scenarios	all	
	EO_modified_Historic	all	
	EO_modified_RecentActual	all	
	EO_modified_FullyLicenced	all	
	EO_modified_LongTermAverage	all	
	EO_modified_FullyLicenced_S	all	
	YNN_import	all	
	YNN_default_scenarios	all	
	YNN_modified_Historic	all	
	YNN_modified_RecentActual	all	
	YNN_modified_FullyLicenced	all	
Midlands	RollingBarrel_FSS00	All staggered (30 min.)	
	WMW_import	all	
	WMW_default_scenarios	all	
	WMW_modified_Historic	all	
	WMW_modified_RecentActual	all	
NorthEast	RollingBarrel_FSS00	All staggered (30 min.)	
NorthWest	RollingBarrel_FSS00	All staggered (30 min.)	
	LM_import	all	
	LM_default_scenarios	all	
	LM_modified_Historic	all	
	LM_modified_RecentActual	all	
	LM_modified_FullyLicenced	all	
Southern	RollingBarrel_FSS00	All staggered (30 min.)	

Region	WorkflowId	FSSId	pollux.produx
	TI_import	all	
	TI_default_scenarios	all	
	TI_modified_Historic	all	
	TI_modified_FullyLicenced	all	
	TI_modified_LongTermAverage	all	
	EK_import	all	
	EK_default_scenarios	all	
	EK_modified_Historic	all	
	EK_modified_RecentActual	all	
	EK_modified_FullyLicenced	all	
SouthWest	RollingBarrel_FSS00	All staggered (30 min.)	
	HA_import	all	
	HA_default_scenarios	all	
	HA_modified_Historic	all	
	HA_modified_RecentActual	all	
	HA_modified_FullyLicenced	all	
Thames	RollingBarrel_FSS00	All staggered (30 min.)	
	KV_import	all	
	KV_default_scenarios	all	
	KV_modified_Historic	all	
	KV_modified_FullyLicenced	all	
Wales	RollingBarrel_FSS00	All staggered (30 min.)	
	WYE_import	all	
	YAZ_import	all	
	YAZ_default_scenarios	all	
	YAZ_modified_Historic	all	
	YAZ_modified_RecentActual	all	





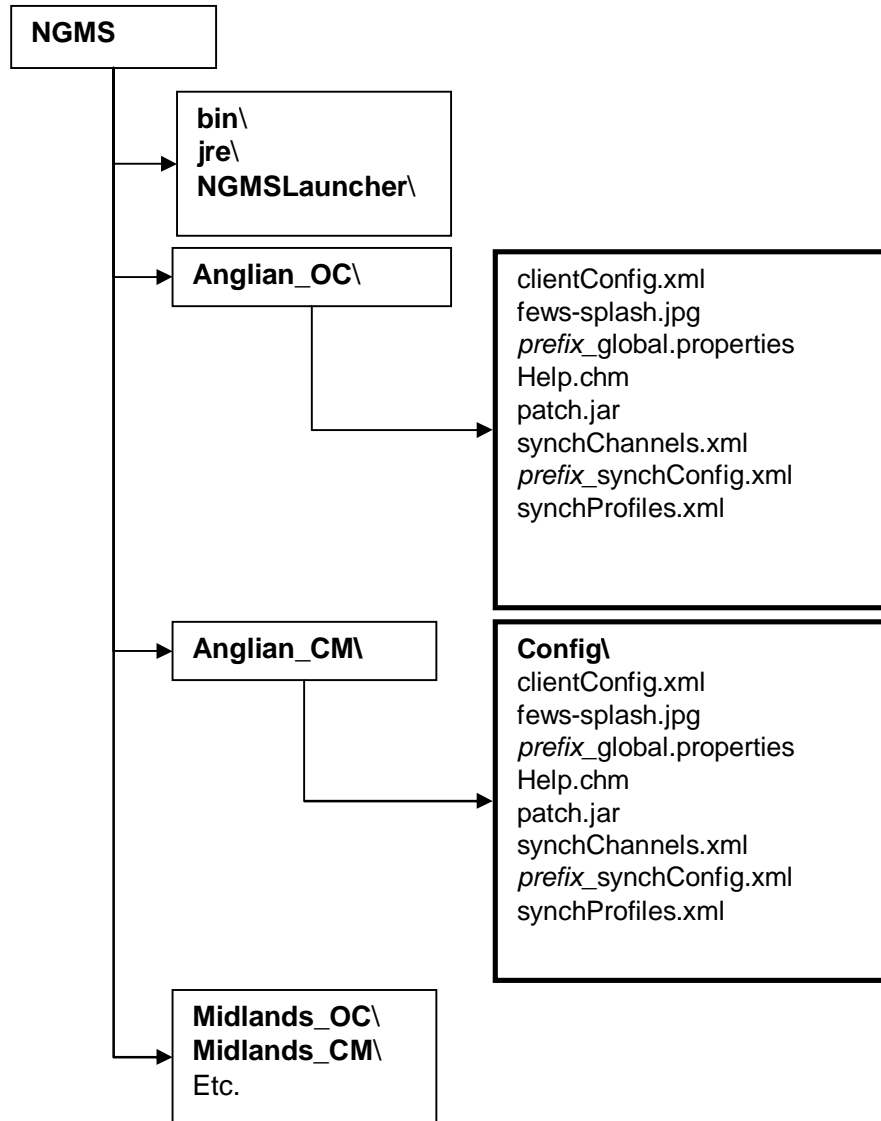
## A Directory Structure of a FSS





## B Directory Structure Operator Clients

The directory structure for Config Management includes *region\_CM* and *config\_OC* directories, while the operator clients only hold *region\_OC* directories.





## C MasterController/Database Server details

### Identifiers

Region	SID	MC-directory	MCID
Anglian	ngan01	/srv/fews/mc/mcs/ng/anmc01	NGANMC01
Midlands	ngmi01	/srv/fews/mc/mcs/ng/mimc01	NGMIMC01
NorthEast	ngne01	/srv/fews/mc/mcs/ng/nemc01	NGNEMC01
NorthWest	ngnw01	/srv/fews/mc/mcs/ng/nwmc01	NGNWMC01
Southern	ngso01	/srv/fews/mc/mcs/ng/somc01	NGSOMC01
SouthWest	ngsw01	/srv/fews/mc/mcs/ng/swmc01	NGSWMC01
Thames	ngth01	/srv/fews/mc/mcs/ng/thmc01	NGTHMC01
Wales	ngcy01	/srv/fews/mc/mcs/ng/cymc01	NGCYMC01

Database server	Details
IP Address	10.4.161.28
Netmask	255.255.255.0
Hostname	castor.produx.ntnl
OS	SUSE 10 (processes turned off: smdrd, ndsd and namcd) Machine is not part of Novell Netware/edirectory tree.
Oracle connection port	1525
user account region SIDs	nlwldelftngms (pass01word)
JMS page store - SID <user> (pw)	fewsjms <jbossmq> (jbossmqfews)
Archive – SID <user> (pw)	ngmsarchive <nlwldelftngms> (pass01word)
Oracle version	10g (10.0.2.4)

Master controller	details
IP Address	10.4.161.29
Netmask	255.255.255.0
Hostname	pollux.produx.ntnl
OS	SUSE 10 (processes turned off: smdrd, ndsd and namcd) Machine is not part of Novell Netware/edirectory tree.
user account	support (welc0me)
JBoss account	jboss (jboss)
Tomcat account	tomcat (tomcat)
MC account	mcngms
ADmin Interface account	admin (pass)
JAVA_HOME (JDK)	/usr/lib/jvm/java-1.5.0-sun-1.5.0.12
JBOSS_HOME	/opt/jboss-4.0.2
JBOSS-Server config	/opt/jboss-4.0.2/server/fews
CATALINA_HOME (Tomcat)	/opt/tomcat/apache-tomcat-5.5.26
MC_HOME	/srv/fews/mc/mcs/ng
MC-builds	/srv/fews/mc/builds
JBoss Application Server Console	http://pollux.produx.ntnl:8082/web-console
JBoss jndi port for Master Controllers	jnp://pollux.produx.ntnl:1099
Apache Tomcat Servlet Container	http://pollux.produx.ntnl:8081/manager.html
Admin Interfaces	http://pollux.produx.ntnl:8081/fewsadmin_ngms_<mcld>

**JMS Queues details (JBoss)**

Queue Name	JNDI Name
ANMC01FSIncoming	PR/NGMS/Anglian/MC01/External/JMSQueue/FSIncoming
ANMC01FSS00MCIncoming	PR/NGMS/Anglian/MC01/FSS00/JMSQueue/MCIncoming
ANMC01FSS01MCIncoming	PR/NGMS/Anglian/MC01/FSS01/JMSQueue/MCIncoming
ANMC01Heartbeat	PR/NGMS/Anglian/MC01/Internal/JMSQueue/Heartbeat
ANMC01OCIncoming	PR/NGMS/Anglian/MC01/External/JMSQueue/OCIncoming
ANMC01SynchDispatch	PR/NGMS/Anglian/MC01/Internal/JMSQueue/SynchDispatch
ANMC01SynchIncoming	PR/NGMS/Anglian/MC01/External/JMSQueue/SynchIncoming
ANMC01SysMonIncoming	PR/NGMS/Anglian/MC01/External/JMSQueue/SysMonIncoming
ANMC01SysMonOutgoing	PR/NGMS/Anglian/MC01/External/JMSQueue/SysMonOutgoing
ANMC01SysRptDispatch	PR/NGMS/Anglian/MC01/Internal/JMSQueue/SysRptDispatch

Queue Name	JNDI Name
CYMC01FSIncoming	PR/NGMS/Wales/MC01/External/JMSQueue/FSIncoming
CYMC01FSS00MCIncoming	PR/NGMS/Wales/MC01/FSS00/JMSQueue/MCIncoming
CYMC01FSS01MCIncoming	PR/NGMS/Wales/MC01/FSS01/JMSQueue/MCIncoming
CYMC01Heartbeat	PR/NGMS/Wales/MC01/Internal/JMSQueue/Heartbeat
CYMC01OCIncoming	PR/NGMS/Wales/MC01/External/JMSQueue/OCIncoming
CYMC01SynchDispatch	PR/NGMS/Wales/MC01/Internal/JMSQueue/SynchDispatch
CYMC01SynchIncoming	PR/NGMS/Wales/MC01/External/JMSQueue/SynchIncoming
CYMC01SysMonIncoming	PR/NGMS/Wales/MC01/External/JMSQueue/SysMonIncoming
CYMC01SysMonOutgoing	PR/NGMS/Wales/MC01/External/JMSQueue/SysMonOutgoing
CYMC01SysRptDispatch	PR/NGMS/Wales/MC01/Internal/JMSQueue/SysRptDispatch

Queue Name	JNDI Name
MIMC01FSIncoming	PR/NGMS/Midlands/MC01/External/JMSQueue/FSIncoming
MIMC01FSS00MCIncoming	PR/NGMS/Midlands/MC01/FSS00/JMSQueue/MCIncoming
MIMC01FSS01MCIncoming	PR/NGMS/Midlands/MC01/FSS01/JMSQueue/MCIncoming
MIMC01Heartbeat	PR/NGMS/Midlands/MC01/Internal/JMSQueue/Heartbeat
MIMC01OCIncoming	PR/NGMS/Midlands/MC01/External/JMSQueue/OCIncoming
MIMC01SynchDispatch	PR/NGMS/Midlands/MC01/Internal/JMSQueue/SynchDispatch
MIMC01SynchIncoming	PR/NGMS/Midlands/MC01/External/JMSQueue/SynchIncoming
MIMC01SysMonIncoming	PR/NGMS/Midlands/MC01/External/JMSQueue/SysMonIncoming
MIMC01SysMonOutgoing	PR/NGMS/Midlands/MC01/External/JMSQueue/SysMonOutgoing
MIMC01SysRptDispatch	PR/NGMS/Midlands/MC01/Internal/JMSQueue/SysRptDispatch

Queue Name	JNDI Name
NEMC01FSIncoming	PR/NGMS/NorthEast/MC01/External/JMSQueue/FSIncoming
NEMC01FSS00MCIncoming	PR/NGMS/NorthEast/MC01/FSS00/JMSQueue/MCIncoming
NEMC01FSS01MCIncoming	PR/NGMS/NorthEast/MC01/FSS01/JMSQueue/MCIncoming
NEMC01Heartbeat	PR/NGMS/NorthEast/MC01/Internal/JMSQueue/Heartbeat
NEMC01OCIncoming	PR/NGMS/NorthEast/MC01/External/JMSQueue/OCIncoming
NEMC01SynchDispatch	PR/NGMS/NorthEast/MC01/Internal/JMSQueue/SynchDispatch
NEMC01SynchIncoming	PR/NGMS/NorthEast/MC01/External/JMSQueue/SynchIncoming
NEMC01SysMonIncoming	PR/NGMS/NorthEast/MC01/External/JMSQueue/SysMonIncoming
NEMC01SysMonOutgoing	PR/NGMS/NorthEast/MC01/External/JMSQueue/SysMonOutgoing
NEMC01SysRptDispatch	PR/NGMS/NorthEast/MC01/Internal/JMSQueue/SysRptDispatch

Queue Name	JNDI Name
NWMC01FSIncoming	PR/NGMS/NorthWest/MC01/External/JMSQueue/FSIncoming
NWMC01FSS00MCIncoming	PR/NGMS/NorthWest/MC01/FSS00/JMSQueue/MCIncoming
NWMC01FSS01MCIncoming	PR/NGMS/NorthWest/MC01/FSS01/JMSQueue/MCIncoming
NWMC01Heartbeat	PR/NGMS/NorthWest/MC01/Internal/JMSQueue/Heartbeat
NWMC01OCIncoming	PR/NGMS/NorthWest/MC01/External/JMSQueue/OCIncoming
NWMC01SynchDispatch	PR/NGMS/NorthWest/MC01/Internal/JMSQueue/SynchDispatch
NWMC01SynchIncoming	PR/NGMS/NorthWest/MC01/External/JMSQueue/SynchIncoming
NWMC01SysMonIncoming	PR/NGMS/NorthWest/MC01/External/JMSQueue/SysMonIncoming
NWMC01SysMonOutgoing	PR/NGMS/NorthWest/MC01/External/JMSQueue/SysMonOutgoing
NWMC01SysRptDispatch	PR/NGMS/NorthWest/MC01/Internal/JMSQueue/SysRptDispatch

Queue Name	JNDI Name
SOMC01FSIncoming	PR/NGMS/Southern/MC01/External/JMSQueue/FSIncoming
SOMC01FSS00MCIncoming	PR/NGMS/Southern/MC01/FSS00/JMSQueue/MCIncoming
SOMC01FSS01MCIncoming	PR/NGMS/Southern/MC01/FSS01/JMSQueue/MCIncoming
SOMC01Heartbeat	PR/NGMS/Southern/MC01/Internal/JMSQueue/Heartbeat
SOMC01OCIncoming	PR/NGMS/Southern/MC01/External/JMSQueue/OCIncoming
SOMC01SynchDispatch	PR/NGMS/Southern/MC01/Internal/JMSQueue/SynchDispatch
SOMC01SynchIncoming	PR/NGMS/Southern/MC01/External/JMSQueue/SynchIncoming
SOMC01SysMonIncoming	PR/NGMS/Southern/MC01/External/JMSQueue/SysMonIncoming
SOMC01SysMonOutgoing	PR/NGMS/Southern/MC01/External/JMSQueue/SysMonOutgoing
SOMC01SysRptDispatch	PR/NGMS/Southern/MC01/Internal/JMSQueue/SysRptDispatch
Queue Name	JNDI Name
SWMC01FSIncoming	PR/NGMS/SouthWest/MC01/External/JMSQueue/FSIncoming
SWMC01FSS00MCIncoming	PR/NGMS/SouthWest/MC01/FSS00/JMSQueue/MCIncoming
SWMC01FSS01MCIncoming	PR/NGMS/SouthWest/MC01/FSS01/JMSQueue/MCIncoming
SWMC01Heartbeat	PR/NGMS/SouthWest/MC01/Internal/JMSQueue/Heartbeat
SWMC01OCIncoming	PR/NGMS/SouthWest/MC01/External/JMSQueue/OCIncoming
SWMC01SynchDispatch	PR/NGMS/SouthWest/MC01/Internal/JMSQueue/SynchDispatch
SWMC01SynchIncoming	PR/NGMS/SouthWest/MC01/External/JMSQueue/SynchIncoming
SWMC01SysMonIncoming	PR/NGMS/SouthWest/MC01/External/JMSQueue/SysMonIncoming
SWMC01SysMonOutgoing	PR/NGMS/SouthWest/MC01/External/JMSQueue/SysMonOutgoing
SWMC01SysRptDispatch	PR/NGMS/SouthWest/MC01/Internal/JMSQueue/SysRptDispatch
Queue Name	JNDI Name
THMC01FSIncoming	PR/NGMS/Thames/MC01/External/JMSQueue/FSIncoming
THMC01FSS00MCIncoming	PR/NGMS/Thames/MC01/FSS00/JMSQueue/MCIncoming
THMC01FSS01MCIncoming	PR/NGMS/Thames/MC01/FSS01/JMSQueue/MCIncoming
THMC01Heartbeat	PR/NGMS/Thames/MC01/Internal/JMSQueue/Heartbeat
THMC01OCIncoming	PR/NGMS/Thames/MC01/External/JMSQueue/OCIncoming
THMC01SynchDispatch	PR/NGMS/Thames/MC01/Internal/JMSQueue/SynchDispatch
THMC01SynchIncoming	PR/NGMS/Thames/MC01/External/JMSQueue/SynchIncoming
THMC01SysMonIncoming	PR/NGMS/Thames/MC01/External/JMSQueue/SysMonIncoming
THMC01SysMonOutgoing	PR/NGMS/Thames/MC01/External/JMSQueue/SysMonOutgoing
THMC01SysRptDispatch	PR/NGMS/Thames/MC01/Internal/JMSQueue/SysRptDispatch



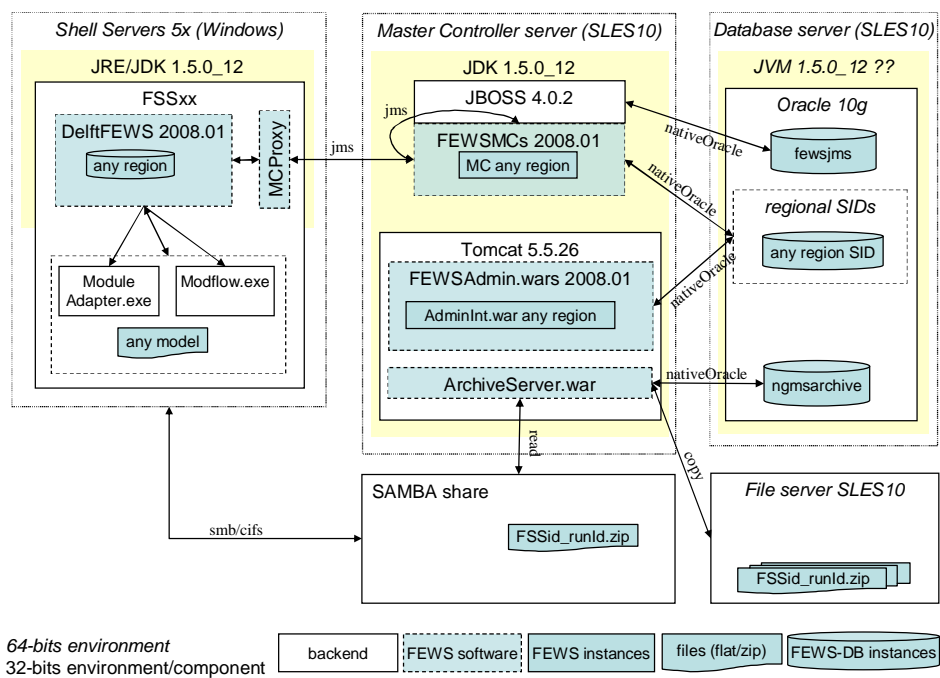


## D System infrastructure overview

### D.1 Introduction

NGMS is a set of 8 regional applications FEWS applications, which includes 8 region databases (SIDs), 8 MasterControllers, 8 AdminInterfaces and one ArchiveServer. All applications run with one JBOSS J2EE Application Server instance, one Oracle Database Server instance and one Apache Tomcat Servlet instance. The JBOSS Application Server uses one Oracle SID for its JMS-page store.

Component Layout NGMS production infrastructure



## D.2 Master Controller Server

The Master Controller server is the machine which holds the JBOSS Application Server, the Apache Tomcat Servlet Server, as well as 8 MasterController instances and the archive-server.

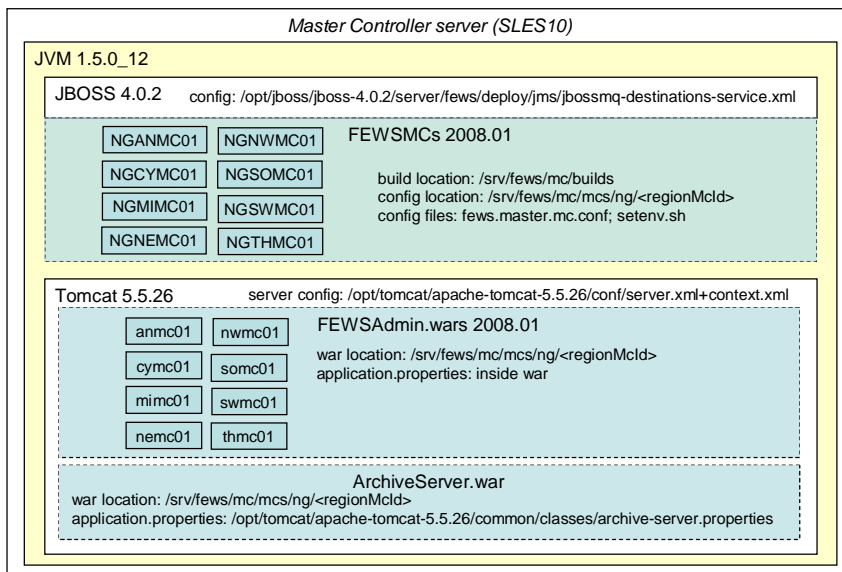
The MasterController processes instances communicate internally and with the Shell Servers and the Operator Clients via JMS using JBOSS. Communication with the Oracle database is conducted via the native Oracle interface protocols.

The Master Controller is managed and maintained via a web-based interface, called AdminInterface. This webpage provides an overview of system status, access to logging information, workflow-mappings, etc. Since all this information is held in the Oracle database, the AdminInterface basically provides a view on the database. The AdminInterface allows the MasterController to be started or shutdown where required. Each regional AdminInterface has its own war-file which is deployed in Tomcat.

All regions share one ArchiveServer, which is also packaged as a war-file to be deployed via Tomcat.

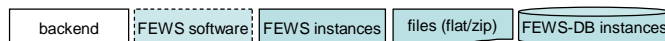
The Master controller configuration file as well as the Tomcat server configuration hold the connection details to the associated database.

Component Layout NGMS Master Controller (production infrastructure)



64-bits environment

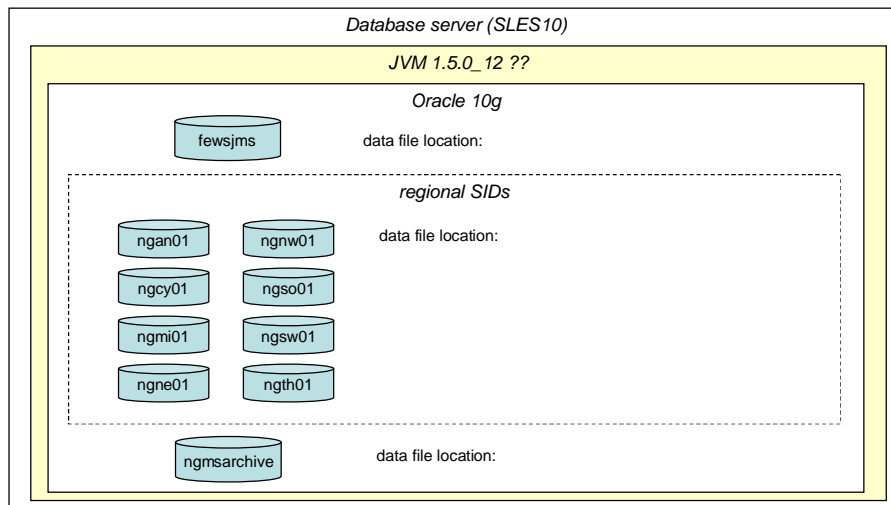
32-bits environment/component



### D.3 The database server

The database server holds the 8 regional database instances, as well as the database instance for the JMS-page store and the database instance for the archive. The database instance for the JMS-page store functions as a temporary buffer to queue messages send via JBOSS. The database instance for the archive server holds the meta data of the scenario runs archived, while the actual data is stored as a zip-file on the SAN.

Component Layout NGMS Database Server (production infrastructure)



64-bits environment  
32-bits environment/component



### D.4 The Shell Servers

Shell servers are the computational servers of the system. Each machine holds a set of logical FSS-instances, where each FFS-instance represents a regional application with one or more models and its own local (Firebird) database instance. In the test infrastructure, each machine holds one instance of each region. In the production infrastructure, more machines are available, hence resulting in a different distribution of FFS-instances.

Each FSS-instance is composed of a FEWS-binary, a regional configuration and a MCPProxy, i.e. a proxy to establish communication between the instance and the Master Controller.

The MCPProxy configuration as well as the regional configuration holds the connection details to the associated Master Controller, i.e. the server address etc. Master Controllers only are aware of a set of queue-definitions associated to FSS-identifiers, while they do not hold any Shell Server connection details.

Component Layout NGMS Shell Servers (production infrastructure)

