grass valley
A BELDEN BRAND

MOMENTUM V5.2.2

MEDIA ASSET MANAGEMENT SYSTEM

Installation Guide

Issue 1 Revision 1

2019-04-04

FCC Compliance

In order to comply with FCC/CFR47: Part 15 regulations, it is necessary to use Mini HDMI to HDMI high-quality triple-screened cable assemblies with integrated ferrite suppression at both ends.

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Important Safety Information

This section provides important safety guidelines for operators and service personnel. Specific warnings and cautions appear throughout the manual where they apply. Please read and follow this important information, especially those instructions related to the risk of electric shock or injury to persons.

Symbols and Their Meanings

Indicates that dangerous high voltage is present within the equipment enclosure that may be of sufficient magnitude to constitute a risk of electric shock.

Indicates that the user, operator or service technician should refer to the product manuals for important operating, maintenance, or service instructions.

This is a prompt to note the fuse rating when replacing fuses. The fuse referenced in the text must be replaced with one having the ratings indicated.

Identifies a protective grounding terminal which must be connected to earth ground prior to making any other equipment connections.
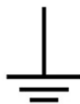
Identifies an external protective grounding terminal which may be connected to earth ground as a supplement to an internal grounding terminal.

Indicates that static sensitive components are present, which may be damaged by electrostatic discharge. Use anti-static procedures, equipment and surfaces during servicing.

Indicates that the equipment has more than one power supply cord, and that all power supply cords must be disconnected before servicing to avoid electric shock.

The presence of this symbol in or on Grass Valley equipment means that it has been tested and certified as complying with applicable Underwriters Laboratory (UL) regulations and recommendations for USA.

The presence of this symbol in or on Grass Valley equipment means that it has been tested and certified as complying with applicable Canadian Standard Association (CSA) regulations and recommendations for USA/Canada.

The presence of this symbol in or on Grass Valley equipment means that it has been tested and certified as complying with applicable Underwriters Laboratory (UL) regulations and recommendations for USA/Canada.

The presence of this symbol in or on Grass Valley equipment means that it has been tested and certified as complying with applicable Intertek Testing Services regulations and recommendations for USA/Canada.

The presence of this symbol in or on Grass Valley product means that it complies with all applicable European Union (CE) directives.

The presence of this symbol in or on Grass Valley product means that it complies with safety of laser product applicable standards.

Warnings

A warning indicates a possible hazard to personnel, which may cause injury or death. Observe the following general warnings when using or working on this equipment:

- Appropriately listed/certified mains supply power cords must be used for the connection of the equipment to the rated mains voltage.

- This product relies on the building's installation for short-circuit (over-current) protection. Ensure that a fuse or circuit breaker for the rated mains voltage is used on the phase conductors.

- Any instructions in this manual that require opening the equipment cover or enclosure are for use by qualified service personnel only.

- Do not operate the equipment in wet or damp conditions.

- This equipment is grounded through the grounding conductor of the power cords. To avoid electrical shock, plug the power cords into a properly wired receptacle before connecting the equipment inputs or outputs.

- Route power cords and other cables so they are not likely to be damaged. Properly support heavy cable bundles to avoid connector damage.

- Disconnect power before cleaning the equipment. Do not use liquid or aerosol cleaners; use only a damp cloth.

- Dangerous voltages may exist at several points in this equipment. To avoid injury, do not touch exposed connections and components while power is on.

- High leakage current may be present. Earth connection of product is essential before connecting power.

- Prior to servicing, remove jewelry such as rings, watches, and other metallic objects.

- To avoid fire hazard, use only the fuse type and rating specified in the service instructions for this product, or on the equipment.

- To avoid explosion, do not operate this equipment in an explosive atmosphere.

- Use proper lift points. Do not use door latches to lift or move equipment.

- Avoid mechanical hazards. Allow all rotating devices to come to a stop before servicing.

- Have qualified service personnel perform safety checks after any service.

Cautions

A caution indicates a possible hazard to equipment that could result in equipment damage. Observe the following cautions when operating or working on this equipment:

- This equipment is meant to be installed in a restricted access location.
- When installing this equipment, do not attach the power cord to building surfaces.
- Products that have no on/off switch, and use an external power supply must be installed in proximity to a main power outlet that is easily accessible.
- Use the correct voltage setting. If this product lacks auto-ranging power supplies, before applying power ensure that each power supply is set to match the power source.
- Provide proper ventilation. To prevent product overheating, provide equipment ventilation in accordance with the installation instructions.
- Do not operate with suspected equipment failure. If you suspect product damage or equipment failure, have the equipment inspected by qualified service personnel.
- To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.
- This unit may have more than one power supply cord. Disconnect all power supply cords before servicing to avoid electric shock.
- Follow static precautions at all times when handling this equipment. Servicing should be done in a static-free environment.
- To reduce the risk of electric shock, plug each power supply cord into separate branch circuits employing separate service grounds.

Electrostatic Discharge (ESD) Protection

Electrostatic discharge occurs when electronic components are improperly handled and can result in intermittent failure or complete damage adversely affecting an electrical circuit. When you remove and replace any card from a frame always follow ESD-prevention procedures:

- Ensure that the frame is electrically connected to earth ground through the power cord or any other means if available.
- Wear an ESD wrist strap ensuring that it makes good skin contact. Connect the grounding clip to an *unpainted surface* of the chassis frame to safely ground unwanted ESD voltages. If no wrist strap is available, ground yourself by touching the *unpainted* metal part of the chassis.
- For safety, periodically check the resistance value of the antistatic strap, which should be between 1 and 10 megohms.
- When temporarily storing a card make sure it is placed in an ESD bag.
- Cards in an earth grounded metal frame or casing do not require any special ESD protection.

Battery Handling

This product may include a backup battery. There is a danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions. Before disposing of your Grass Valley equipment, please review the *Disposal and Recycling Information* at:

http://www.grassvalley.com/assets/media/5692/Take-Back_Instructions.pdf

Cautions for LCD and TFT Displays

Excessive usage may harm your vision. Rest for 10 minutes for every 30 minutes of usage.

If the LCD or TFT glass is broken, handle glass fragments with care when disposing of them. If any fluid leaks out of a damaged glass cell, be careful not to get the liquid crystal fluid in your mouth or skin. If the liquid crystal touches your skin or clothes, wash it off immediately using soap and water. Never swallow the fluid. The toxicity is extremely low but caution should be exercised at all times.

Environmental Information

European (CE) WEEE directive.

This symbol on the product(s) means that at the end of life disposal it should not be mixed with general waste.

Visit www.grassvalley.com for recycling information.

Grass Valley believes this environmental information to be correct but cannot guarantee its completeness or accuracy since it is based on data received from sources outside our company. All specifications are subject to change without notice.

If you have questions about Grass Valley environmental and social involvement (WEEE, RoHS, REACH, etc.), please contact us at environment@grassvalley.com.

On Receipt of the Momentum System

Any equipment is supplied in dedicated packaging provided by the manufacturer and should not be accepted if delivered in inferior or unauthorized materials.

Carefully unpack the system components and check them against the packing list. If there is anything incorrect notify your Grass Valley Partner, or Grass Valley, at once. Check that the equipment has not been damaged in transit. If any damage has occurred notify your Grass Valley Partner (or Grass Valley directly) and the carrier immediately. Always retain the original packing materials if possible, they could prove useful should it ever be necessary to transport or ship the system units.

Always read the *Installation Guide*, *Configuration Guide* and the *Operator's Guide* (separate manuals) carefully, it will provide you with helpful hints and tips about care and maintenance and help you get the most out of your Momentum system.

In the unlikely event of an equipment failure, contact your Grass Valley Partner, or Grass Valley, at once, contact details are at the rear of this manual.

Table of Contents

Introduction

Overview

Welcome to Momentum!

Momentum is a powerful, media asset management and workflow automation system, designed to suit the requirements of leading media organizations. An incredibly flexible, enterprise level system, Momentum features fully configurable workflows, detailed process reporting and extensive integration with third party applications and platforms, enabling you to take complete control of your media assets, operations and business processes.

Based on service-oriented architecture (SOA), Momentum provides access to your business processes through the Internet or the company intranet - supplying an extensive suite of tools for different stages of the production process.

Momentum maintains and tracks your media assets in an Oracle database, makes them searchable, augments them with rich metadata, manages various job queues, controls archive and other third party devices, and enables assets to be ingested and exported in a number of different formats.
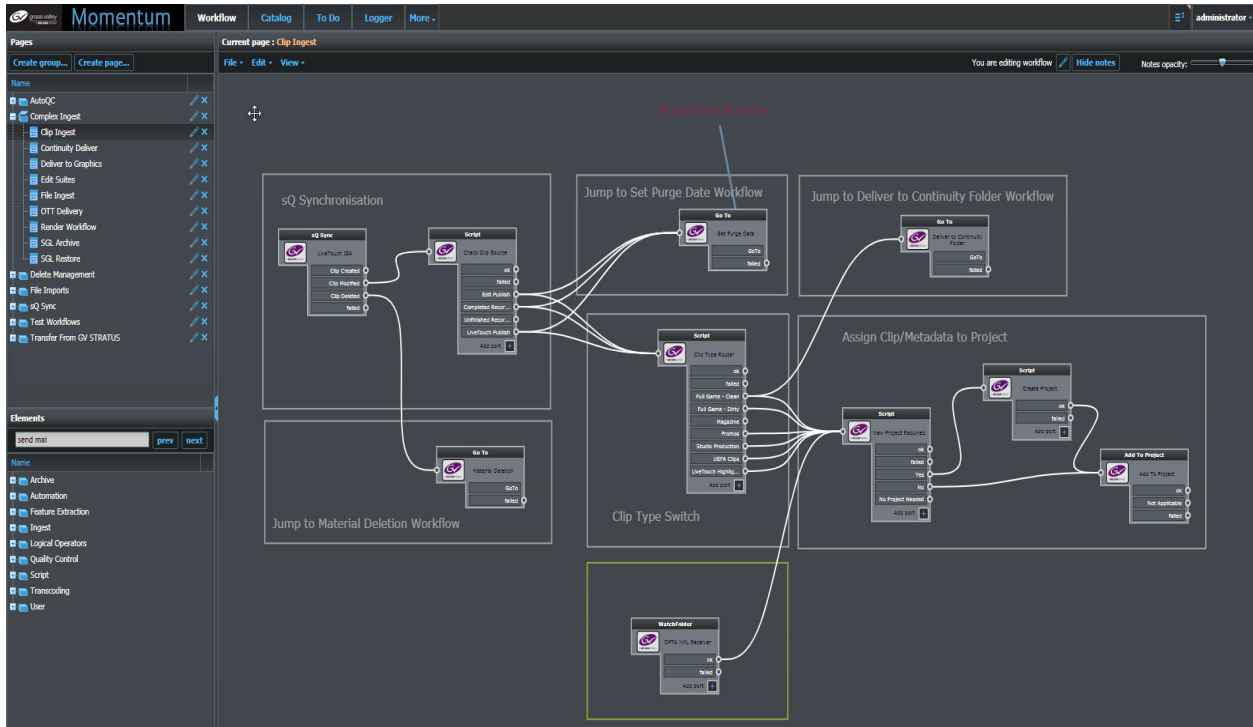

Fig. 1-1: Example Momentum Workflow Page

Most of these operations take place through managed workflows, in which you can define when and how a new or existing asset requires additional automated or manual processing to meet your needs. Powerful workflow modeling tools provide the building blocks to manage media assets on the Momentum Workflow page, a canvas on which your business processes are represented as a series of interconnected and easy-to-use schematic diagrams. Using the workflow functions, you can design and implement your workflows and the desired processing paths for the different media asset files. In addition, you can also monitor and analyze the progress of running processes and any associated tasks. As a file-based solution, Momentum is designed to deliver content to a range of targets including social media and video on demand (VOD) sites.

In summary, Momentum enables you to:

- Automate the processing of content through reliable and repeatable workflows.

- Deliver content to a range of platforms including social media and VOD applications.

- Extend your organization's capability as operations grow through configurable workflows and resource pooling.

Momentum Key Features

Momentum supports the following features:

- User configurable workflows with support for scripting in C#, Python, IronPython and Visual Basic.
- HTML5-based user interface for web browser access to a multi-user environment for media-file cataloging and faster content distribution.
- Automated media file ingest and delivery using watch folders, standard file transfer protocols, and proprietary applications Signiant and Aspera.
- Automated metadata ingest using watch folders, BXF messaging and other third party system integrations.
- Video and audio editing using the built-in editor or other integrated SAM editors.
- Desktop proxy browsing, including automated generation of proxy files.
- Integration with a wide range of third party, automated quality checking, transcoding and archive devices.
- Integration with other SAM products such as the Go! Video Timeline Editor, sQ Suite and Morpheus Playout Automation.
- Configurable metadata publishing templates for delivery to linear playout and non-linear delivery platforms.
- Web Services API for third party integration.
- Oracle 12c (12.1.0.2.0) database clustering.
- Support for Microsoft Windows 2012 with IIS for dual redundancy and user load balancing.
- Reporting and statistical analysis to understand processes and improve capacity planning.

This manual provides instructions on how to install the application and database software for a Momentum system. For information on configuring the system, see the Momentum *Configuration Guide*.

2 Installing Momentum

Momentum Architecture

The hardware components of your Momentum system will be assembled according to one of the following supported models, depending on the resilience requirement and scale of your environment:

- Momentum WorkFlow Manager large-scale**,** fully-redundant system, which includes the following:
    - The Core license package of Momentum workflow automation software module and the workflow editor.
    - Momentum media asset management software module.
    - Oracle 12c RAC Enterprise edition. across **four** CPUs
    - Two database servers, two application servers plus NAS storage
- Momentum Workflow Manager standard system, which includes the following:
    - The Core license package of Momentum workflow automation software module providing the workflow editor.
    - Momentum media asset management software module.
    - Oracle 12c RAC Enterprise or Standard edition, across **two** CPUs.
    - One database server (with 2.4 TB (8 x 300 GB hard disk drives) storage), one application server.
- Momentum WorkFlow Manager small-scale, non-redundant system, (database and application on single server) which includes the following:
    - The Core license package of Momentum workflow automation software module providing the workflow editor.
    - Momentum Media Asset Management software module.
    - Oracle 12c RAC Standard on **one** CPU

> Note: The Momentum Core License packages do not include Microsoft Windows 2012 server Release 2 64-bit software and appropriate IT hardware.

The Momentum Core License packages include the following components:

- Momentum Workflow Automation software module providing Workflow Editor and support for **five** workflow end nodes.
- Momentum Media Asset Management software module for the appropriate size of system purchased.

> Note: The Momentum Infrastructure turn-key models described above are also available as software-only solutions. in which case, equipment of an equivalent specification to that defined in Section 2.2.1 must be made available by the customer.
> Contact your SAM representative for more information.

The Momentum application must be installed on a machine where it can be the sole running application. This is because Momentum makes intensive use of both CPU and memory.

A standard installation of Momentum is based on the following components:

- Web server component
- Oracle Database
- Momentum Log

Other components can be installed depending on the required configuration. It is possible to install each component on the same server, or to distribute the configuration on different servers in order to split the processes and optimize performance.

System Requirements

This section contains the **minimum** system requirements for running Momentum but these depend on the hardware configuration of your environment, especially the degree of built-in redundancy. For more information, contact your SAM representative.

Hardware Requirements

The minimum **Database Server** requirements are:

- **Processors:** Dual CPU Intel® Xeon® E5-2620v4 2.10 GHz (8 cores; 16 threads), 20 MB Cache, 7.2 GT/s QPI, Turbo, 6 C, TDP 95 W, DDR3 1333 MHz (or an equivalent performance CPU of other vendors)
- **RAM:** 64 GB (8 x 8 GB) RDIMM, DDR3 1333 MHz, Low Voltage, Dual Rank
- **Hard Disk Drives:** RAID1 2 x 300 GB, SAS 12 Gbps, 2.5-in, 15,000 rpm (Hot-plug)
- **Power supply:** Dual, hot-plug redundant power supplies
- **Network Interface:** 1 x Quad-port Gb Ethernet network daughter card.

> Note: The performance of the database is determined by the processor performance, the total number of users and the number of database records.

The minimum **Application Server** requirements are:

- **Processors:** Dual CPU Intel® Xeon® E5-2620v4 2.1 GHz (8 cores; 16 threads), 20 MB Cache, 7.2 GT/s QPI, Turbo, 6C, TDP 95 W, DDR3 1333 MHz (or an equivalent performance CPU of other vendors)
- **RAM:** 64 GB (8 x 8 GB) RDIMM, DDR3 1333 MHz, Low Voltage, Dual Rank
- **Hard Disk Drives:** RAID1 2 x 300 GB, SAS 12 Gbps, 2.5-in, 15,000 rpm (Hot Plug)
- **Power supply:** Dual, hot-plug redundant power supplies
- **Network Interface:** 1 x Quad-port 1 Gb Ethernet network daughter card

The minimum **NAS** requirements are:

- **Interface:** iSCSI 10 GbE, 4 GB cache, dual controller

> Note: If supplied by the customer, the NAS must be a dual controller iSCSI NAS as the system uses multi-path IO (MPIO) iSCSI (i.e, requires 2 x controllers A and B each with 4 x iSCSI ports over Ethernet connections, plus 2 x control NICs.)

- **Capacity:** 6 x 1 TB Nearline-SAS 12 Gbps, 7200 rpm
- **Power supply:** Redundant 600 W power supply

The minimum **Client** requirements are:

- **Processor:** Intel Core i3-3120M dual core processor or higher
- **RAM:** Minimum 2 GB (4 GB memory recommended)
- **Graphics Card:** Any recent graphics card from vendors such as Nvidia, ATI with dedicated RAM. For HD applications the graphics adapter must have at least 256 MB RAM.
- **Monitor:** Resolution of at least 1440 x 900 (recommended).

> Note: The required hardware depends on the working video resolution of the workstation.

Application Software Requirements

The minimum non-redundant **server** requirements are:

- Microsoft Windows Server 2012 Standard R2 native English languages

> Note: The previous version of Microsoft Windows 2008 is supported but not recommended.

- Microsoft .NET Framework 4.5.1 or above.
- The Microsoft Internet Information Services (IIS) v8.0 with IIS 6 Management Compatibility pack, and the Role service ASP.NET feature activated.

  When installing IIS check that for the Web Server role services that the Common HTTP features are installed and that you select the following sub-items:
  - Static Content.
  - Default Document.
  - Directory Browsing.
  - HTTP Errors.

  When activating the IIS Management Compatibility check the sub-items are selected to install:
  - IIS Metabase Compatibility.
  - IIS VMI Compatibility.
  - IIS Scripting Tools.
  - IIS Management Console.

> Note: All components are required for the installation of Momentum to work properly.

Required Microsoft Patches

The Momentum DLL file `MantricsCPP.dll` requires the installation of certain patches that are not supplied automatically with the Microsoft Windows Update:

Description	Download URL
March 2014 servicing stack update for Windows 8.1 and Windows Server 2012 R2	https://support.microsoft.com/en-us/help/2919442/march-2014-servicing-stack-update-for-windows-8.1-and-windows-server-2012-r2
Windows RT 8.1, Windows 8.1, and Windows Server 2012 R2 update: April 2014	https://support.microsoft.com/en-us/help/2919355/windows-rt-8.1,-windows-8.1,-and-windows-server-2012-r2-update-april-2014
Update for Universal C Runtime in Windows	https://support.microsoft.com/en-us/help/2999226/update-for-universal-c-runtime-in-windows

Database Software and User Licensing

Momentum uses Oracle 12c database technology, which is supplied as one of two variants:
- Standard Edition 2
- Enterprise Edition

For Oracle licensing purposes an Oracle user is defined as any person or automated process that can access the Oracle database cluster. Oracle is licensed according to the number of database server CPUs, with each CPU having a minimum number of user licenses.

The following table shows the licensing relationship between user licenses and CPUs for an Oracle 12c database server:

Oracle Edition	Minimum CPUs	Maximum Available CPUs	Minimum User Licenses per CPU
Standard Edition 2	1	2	10
Enterprise Edition	1	Unlimited	25

Oracle Licensing Examples:

- Oracle Standard edition requires a minimum of 10 users per CPU. So a two CPU Oracle Standard Momentum system would include 20 user licenses.
- A large Momentum system requires Oracle Enterprise running on at least two CPUs in each database cluster. In this case, the system requires a minimum of 25 users per CPU. Consequently a four CPU database cluster includes 100 user licenses.

Additional user licenses (Standard or Enterprise Edition accordingly) can be added if the original licenses are often all in use.

The system does not stop working if user licenses are exceeded, and usage is through trust but it is the customer's responsibility to ensure that the database is adequately licensed. However, the Oracle Corporation reserves the right to audit the system at any time to ensure the database is within the user licensing limits.

> Note: As a result of Oracle licensing restrictions, the large redundant Momentum systems must use the Oracle 12c Enterprise Edition. The smaller Momentum systems use the Oracle 12c Standard Edition 2.

You will need to install the following Oracle versions:

- Oracle 12c RAC Server version 12.1.0.2.0

  If not installed, see Chapter *Installing Oracle RAC 12c Server (version 12.1.0.2.0)*.
- Oracle 12c Client on computers used to access Momentum that are not acting as Oracle Database servers (**Momentum Nodes**), see Chapter *Installing Oracle 12c Client (version 12.1.0.2.0)*.

Before you Start

Before installing the Momentum application, the server must be correctly connected to the local network in order to allow the following:

- The Momentum application to test files available on other machines connected to the network.
- Other machines to exchange data automatically with Momentum, for example, using watchfolders or emails.

- Multiple users to connect to the Momentum Web user interface from remote computers.

For the last two cases, you need to know the IP address or the network hostname of the server on which the Momentum software is installed. If your server is not properly configured or you do not know the hostname or IP address information, contact your System Administrator.

Be aware of the following requirements:

- Momentum uses a number of network services that run locally on the host server. These services can sometimes be blocked by firewall software, generating an error message when Momentum starts. To resolve these errors, the firewall must be configured to allow the Momentum services to communicate on the appropriate port.
- In rare cases when using a Dongle licensing device, the Momentum license server requires Aladdin HASP HL drivers, which are installed and configured together with the Momentum software. It is recommended that you do not use other applications that rely on HASP licenses on the same server as Momentum.

The Momentum network services, by default, have the **Log On As** value set to **Local Service**. It is strongly recommended to change the **Log On As** setting in order to use the same user and password both for Momentum services and for the associated third party software services.

> Note: Windows Services cannot use mapped drives because they are visible only to the user who creates the connection. For this reason, Momentum uses UNC paths when initializing watchfolders or when it requires a path for API functionality.

Host Name Requirements

Host names must have a maximum length of **15** characters or less to allow the prefixes for the cluster services access points to be appended.

It is recommended to provide host names between servers in a cluster with a shared part and a unique part, for example: (xxx-xx1 and xxx-xx2)

In a typical scenario, you might use host names similar to the following for the four host servers and the NAS:

- **Oracle DB Server 1:**   MOM-ORA1
- **Oracle DB Server 2:**   MOM-ORA2
- **Momentum App Server 1:**   mom-app-main
- **Momentum App Server 2:**   mom-app-alt
- **iSCSI NAS:**   mom-iscsi-nas

Active Directory Requirements

Prior to installing the software, the hosts need to be connected to the DNS Controller and registered on the Active Directory Domain.

In critical environments a dedicated local Active Directory controller and dedicated DNS controller is ideal to separate the system from other Network maintenance and upgrades.

Initial Installation Overview

An initial installation of the Momentum application requires the following steps:

1 Install the Oracle RAC 12c Server Database, see Chapter *Installing Oracle RAC 12c Server (version 12.1.0.2.0)*.

2 Install the Oracle 12c Client software on the Momentum nodes, see Chapter *Installing Oracle 12c Client (version 12.1.0.2.0)*.

3 Log in as Administrator.

4 Run the Momentum Installers.

5 Import the Momentum Database Structure (by running MomentumDB.msi).

6 License Momentum.

7 Configure the Momentum server, node and other associated XML files.

8 Run Momentum and start to configure workflows.

Running the Momentum Installers

By default, Momentum contains the following re-distributable MSI packages; it is recommended to install all packages supplied in the installation bundle:

Installation Package	Description
`Momentum Etere Receiver.msi`	Installs a component which connects to the ingest workflow element Etere receiver. (Optional)
`MomentumWeb.msi`	Installs the Momentum Web component and the License service.
`MomentumDB.msi`	Creates the Database schema.
`Momentum LogListener.msi`	Installs the application that provides log information.
`MomentumServer.msi`	Installs the application that enables Momentum to control nodes such as transcoders, QC software, etc.
`MomentumNode.msi`	Installs the application that enables Momentum to register nodes on the Momentum Server.
`MomentumWatchfolder.msi`	Installs the application that enables Momentum to monitor the activities on a specified target folder.
`MomentumBXF Receiver.msi`	Installs a component which connects to a Morpheus server for communication by way of BXF messages.

Installation Package	Description
`Momentum Metadata Change Notifier.msi`	Installs the Metadata Change Notifier utility, used to synchronize metadata changes between two Momentum systems or a Momentum - Morpheus system.
`Momentum Schedules Receiver.msi`	Installs a component to receive schedule files from a Morpheus Playout Automation system.
`Momentum StorNext plugin.msi`	Installs the capability to communicate with a StorNext archiving system.

If **MomentumNode.msi** is installed on a machine other than the database server, then the installation must include an **Oracle 12c Client** in order to create the connection with the Momentum Oracle Database Server. For information on installing Oracle, see Chapter *Installing Oracle 12c Client (version 12.1.0.2.0)*.

To run the Momentum installers:

1 Log in as a user with Administrator privileges.

2 Using Windows Explorer, locate the installation MSI package file and double-click it. The installer welcome window appears.

Running MomentumWeb.msi

During the installation process, select the installation address as follows:

1 Select a website if there is more than one website present, otherwise use the Default website.

2 Select the name of the Virtual Directory - the default name is **Momentum**.

3 Click the Disk Cost button to select the volume where Momentum is to be installed.

Running MomentumDB.msi

Run **MomentumDB.msi** to install the Momentum database schema. During the installation process, select:

- The installation folder
- The Database Schema credentials

> Note: To run this installer correctly, the Oracle 12c Database Server must be available.

To import the Momentum database structure:

1 Run the **MomentumDB.msi** installer.

2 Select the destination folder for the installation files.

3 Select the Name of the database schema (an upper-case name is recommended, e.g., **MOMENTUMDB**).

> Note: This name is used in several configuration files such as the
> MomentumConfig.xml file in order to select the Momentum current
> DB schema configuration.

4 Select a password (a lower-case password is recommended, using the same name as the schema).

5 Decide whether to install or extract the database.
   - The **Install** option automatically creates the required files in the folder selected in step 2.
   - The **Extract** option creates files in the folder:

     `C:\Program Files\Mantrics S.r.L\MomentumDB.`

     The file `InstallDB20.vbs` is a script which needs to be run from a command prompt while specifying the parameters:

     `<User_name>,<Password> <Destination_folder>`

     This script copies the files contained in the file `MDV_RIF.DMP` which is a reference dump of the database.

6 Click **Next** to start creating the schema.

7 Review the log file to check that the database schema was created successfully.

> Note: The log file resides in the installation folder selected in the first step of
> the installation. If errors are reported, remove the Oracle 12c Server
> application, delete the directory C:\app, then reinstall the Oracle
> database.

Assigning Permissions to IIS Processes

The installation of the **MomentumWeb** component creates a web site managed by Internet Information Services (IIS).

To enable the IIS processes to access the Momentum configuration files:
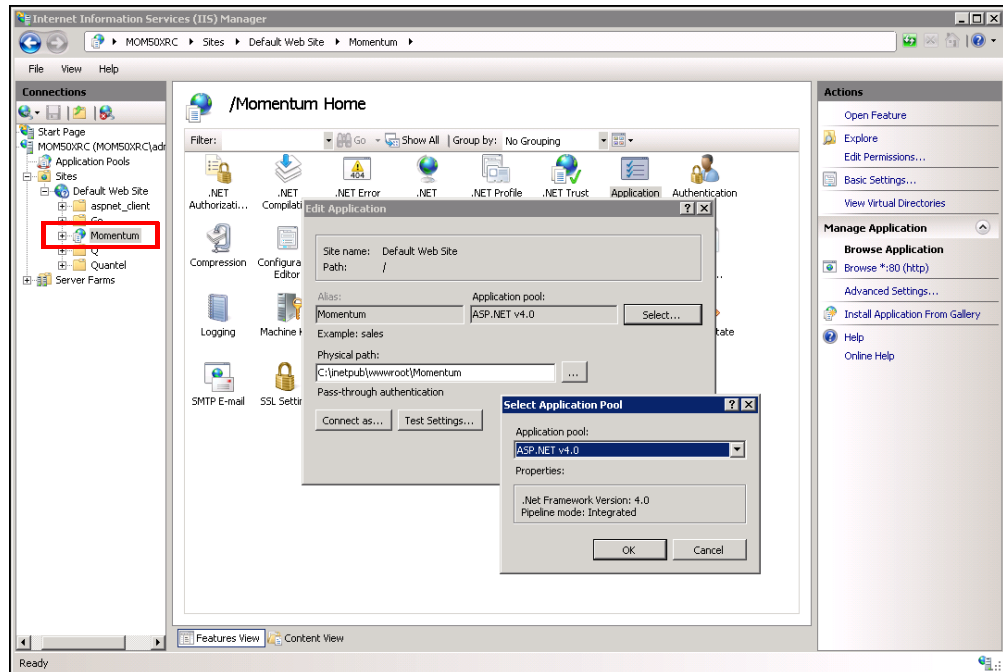
1 Start the IIS Manager and select the **Momentum** site:

Fig. 2-2: IIS Edit Application Dialog

2 Edit the ASP.NET impersonation settings.

3 Select the Administrator user.

4 Click **Set** and enter the user credentials.

5 Click **OK** to save the settings.

> Note: Log in as Administrator when installing the software.

Running Momentum LogListener.msi

In the Select Installation folder window, select the destination path and the preferred location to install the program by clicking the Disk Cost button. Also select the **Just me** option if the program is to be used only by the current user, or select **Everyone** to share it with other accounts.

Running MomentumServer.msi

In the Select Installation folder window, select the destination path and the preferred location to install the program by clicking the Disk Cost button. In addition, select the option **Everyone** (recommended) to share it with other accounts or the option **Just me** if the program is to be used only by the current user.

Running MomentumNode.msi

In the Select Installation folder window, select the destination path and the preferred location to install the program by clicking the Disk Cost button. In addition, select the

option **Everyone** (recommended) to share it with other accounts or the option **Just me** if the program is to be used only by the current user.

> Note: To configure the Momentum Server and Node farm, see the Momentum *Configuration Guide.*

Creating Configuration Files

After installing a Momentum Server or Node, navigate to:

- `C:\Program Files\Mantrics S.r.L\Momentum Node` or
- `C:\Program Files\Mantrics S.r.L\Momentum Server`

and run the executable file: `CreateConfigFiles.exe`.

This application automatically creates example versions of the configuration files needed to run Momentum. These example files have a `-Sample.xml` suffix. When configuring Momentum, open the example versions of the configuration files, change the required settings and save them with the same name before removing the file suffix.

> Note: When upgrading a version of Momentum, simply copy your backed-up configuration files back to the `C:\Mantrics` folder and overwrite the new configuration files.

Running the Momentum Watchfolder.msi

In the Select Installation folder window, select the destination path using the **Browse** button. Select the option **Everyone** (recommended) to share it with other accounts or the option **Just me** if the program must be run only by the current user.

Running the Momentum BXFReceiver.msi

In the Select Installation folder window, select the destination path using the **Browse** button. Select the option **Everyone** (recommended) to share it with other accounts or the option **Just me** if the program must be run only by the current user.

Licensing Momentum

Momentum is licensed by way of a single license file (`License.lic`) that is associated with the MAC address of the license server and defines the licensed Momentum components that were purchased.

To obtain the license file, proceed as follows on the intended license server:

1 Run the following Windows command to find the Physical (MAC) Address of the License server.

`getmac`

Use the Physical Address returned at the top of the list for the Transport Name:

`\Device\Tcpip_...`

> Note: You can also run the command `ipconfig /all` and use the physical address listed under: Ethernet adapter Local Area Network Connection.

2 Inform your SAM sales representative of the MAC address by email.

3 The license administrator will return a license file (`License.lic`) as an email attachment.

4 Save the file to the default installation folder:

    `C:\Mantrics\rlm`

    Momentum will read the license file on start-up and provide access to all licensed components.

Licensing Using a Momentum Dongle

In certain cases, Momentum may be licensed by way of a hardware dongle as described in the following steps:

1 Connect the dongle to the license server.

2 Navigate to the directory `C:\Mantrics\rlm` and double-click the file `rlm.exe`. This generates the file: `license_config.txt`.

3 Open the file `license_config.txt` and retrieve the dongle ID.

4 Request the license from your SAM representative by providing the dongle ID and your company information.

Install the license:

5 On the license server, save the license file `license.lic` provided by your SAM representative in the directory `C:\Mantrics\rlm`.

Complete the licensing procedure:

6 Connect the HASP HL USB dongle to the license server.

7 Make sure that the driver is correctly installed and that the dongle is recognized by the operating system.

8 Go to **Control Panel > Administrative Tools > Service**s and restart the service **MomentumRLM License Server**.

> Note: If you are using the SafeNet Sentinel USB dongle, install the related driver by running the `SentinelProtectionInstaller.exe` file located in the `C:\Mantrics\rlm` directory.

Using MPIO iSCSI to Present NAS Logical Unit Numbers to Hosts

Oracle ASM is a volume manager and file system for Oracle database files that supports Oracle Real Application Clusters (Oracle RAC) configurations, see Chapter *Installing Oracle RAC 12c Server (version 12.1.0.2.0)*.

It is necessary to present a Raw Block Mode Partition and **not** a share to the Oracle Hosts and NTFS Partitions for the application server hosts.

During installation of the Momentum Core the eight ports of the SAN/NAS Dual Controller are connected to the database and application hosts using two dedicated Ethernet connections each, to segregate iSCSI traffic from the general network traffic.

iSCSI is used for the two iSCSI connections to each host multi-path IO as opposed to NIC Teaming. These iSCSI nodes have globally unique names using an iSCSI Qualified Name (IQN), for example: an IQN name might be:
company_a.com.<*Database_Server_Hostname*>.

For example, during a typical installation a virtual hard disk partition (generally about 500 GB) is created on the SAN. Over multi-path iSCSI this is presented as a single raw MBR LUN to the two Windows 2012 R2 Standard Servers that will be used to form the Oracle Cluster.

The 500 GB disk can then be divided into five equal partitions of 100 GB each and these five partitions are used during the Installation of Oracle Grid 12c when ASM storage needs to be specified.

In addition two 20 GB virtual hard disk partitions are constructed on the SAN. Over Multi-path iSCSI this is presented as two raw disks, formatted as **NTFS MBR** drives for the Windows Enterprise servers to use as Quorum and backup Quorum disks for the Windows 2012 R2 Enterprise failover cluster.

A large (1.8 TB or greater) virtual disk is also created on the SAN. Over Multipath iSCSI this is presented as a single raw drive formatted as an **NTFS GPT** drive that will be used by the Windows 2012R2 Enterprise managed cluster as a file-share for the media, proxies, thumbnails, STL files and XML files.

If there is a requirement for more storage this would be created using a similar method or by using a SAMBA share.

Running Momentum

After installing the Momentum software, configure the application using the processes described in the *Momentum Configuration Guide*.

After configuring Momentum, start the software as follows:

1 On the Windows Server, select **Control Panel > Administrative Tools > Services**.

2 Right-click on each one of the following services and select **Properties**:

- Momentum RLM License Server
- MomentumServer
- MomentumNode
- Momentum Streaming
- Momentum WebHooks
- Momentum Watchfolder (if installed)
- Momentum BXF Receiver (if installed)
- Momentum Etere Receiver (if installed)
- Momentum Morpheus server (if installed)
- Momentum Metadata Change Notifier (if installed)
- Momentum Schedules Receiver (if installed)

3 Select the **LogOn** tab and enter the Administrator user details.

4 Make sure that the following Windows services are running:
   - IIS Admin Services
   - World Wide Web Publishing Service

5 Start the following Momentum services (available services may vary depending on the requirements of the specific installation):
   - IIS Admin Services
   - World Wide Web Publishing Service
   - Momentum RLM License Server
   - MomentumServer
   - MomentumNode
   - Other Optional Momentum Services (if installed)

6 Start the web browser and log into Momentum as described in the *Momentum Operator's Guide*.

Upgrading Momentum

Before upgrading Momentum to a newer version, we strongly recommend that you read the *Release Notes* provided with the software, to check whether modifications to the database structure are necessary in order to perform the upgrade.

> Note: If upgrading Momentum from an earlier, non-consecutive version of the software (e.g., v4.x.x to v5.x.x) make sure that you check, and where necessary install, additional supporting redistributable patches supplied with intermediate software releases, see step 4 below.

To upgrade the current version of Momentum to a newer version:

1 Create a backup copy of the directory `C:\Mantrics` to store the XML configuration file and the license file.

2 Open the **Control Panel > Administrative Tools > Services** window and stop the following services:
   - IIS Admin Services
   - World Wide Web Publishing Services
   - Momentum Node
   - Momentum Server
   - Momentum Watchfolder
   - Mantrics RLM License Server
   - Other Optional Momentum Services (if installed)

3 Open the **Control Panel > Programs > Programs and Features** window, and uninstall the following Momentum packages:
   - Momentum LogListener
   - Momentum Node
   - Momentum Server
   - Momentum Watchfolder

- Momentum BXF Receiver
- Momentum Web
- Other Optional MomentumServices (if installed)

4 Check the content of previous software releases for any relevant Windows patches and updated redistributable packages that might be required as described below:

- **When upgrading from Momentum versions 4.x.x to version 5.x.x, install the following components:**

  Microsoft Windows 7 update: **KB2999226**

  Microsoft Visual C++ 2005 Service Pack 1 Redistributable Package MFC Security Update: **8.0.50727.6195**

  Microsoft Visual Studio 2015 Redistributable Package: **vc_redist.x64.exe**

- **When upgrading from Momentum version 5.0.1 to version 5.1.x, (or above) no additional Microsoft re-distributables or patches are required.**

5 Install the Momentum re-distributable packages that contain the latest desired version available from the FTP download site; contact your sales representative for details.

6 Replace the files from the backup copy in the directory `C:\Mantrics`.

7 Some Momentum installers (v5.0.1, v5.1.3 and v5.1.4, etc.) include a zip file named **MDBVersionTool** which contains an application to update the Momentum database for that version.

   Ensure that the Momentum database has been updated to include relevant updates from previous Momentum releases by running the appropriate `MDBVersionTool-<Momentum version>.zip` file as follows:

- **When upgrading from Momentum versions 4.x.x to version 5.0.1, 5.1.1 or 5.1.2, run the v5.0.1 MDBVersionTool** *before* **starting the services for the new Momentum version.**

- If upgrading to Momentum versions 5.1.3 or 5.1.4 from any previous version, run the MDBVersionTool supplied with the specific Momentum installer as each MDBVersionTool contains all necessary changes from the previous releases.

8 Ensure that the Momentum Web Server uses the correct ASP.NET package (**ASP.NET v4.0+)** by setting the application pool in Microsoft IIS as follows:

- Select: **Administrative Tools > Internet Information Services (IIS) Manager**
- In the **Connections** pane, expand the server node and click **Sites**.
- Select the Momentum web site.
- In the **Actions** pane, select **Basic Settings** to open the Edit Application dialog, see Figure 2-3:
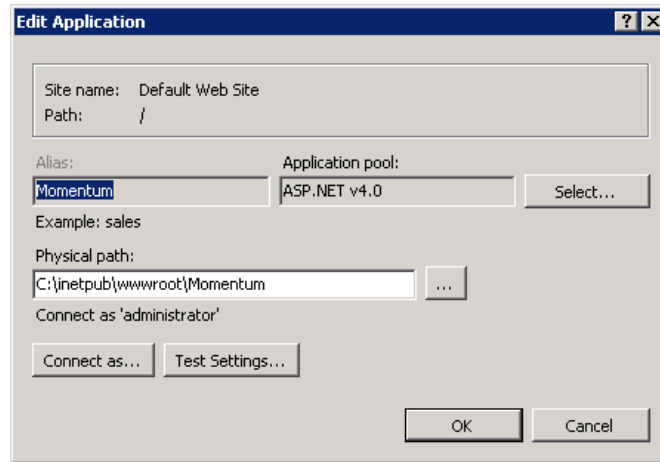
Fig. 2-3: IIS Edit Application Dialog

- Make sure that the **Application pool** field is set to **ASP.NET v4.0**.

  If not set to ASP.NET v4.0, your browser will display an IIS version error when you attempt to login to Momentum.

9 Open the **Control Panel > Administrative Tools > Service**s window and restart the services listed in step 2.

Backing-up the Momentum Configuration Files

The directory `C:\Mantrics` contains the Momentum configuration files and information that is not part of the database. It is recommended to back up the directory `C:\Mantrics` on all servers that are part of the Momentum Infrastructure.

A backup of the database is scheduled each night. Momentum stores the backup copy on the server disk as the live database is on external redundant storage.

Installing Oracle RAC 12c Server (version 12.1.0.2.0)

Overview

> Note: Recent updates to Microsoft Windows Server 2012 R2 (Standard Edition) require that Oracle 12c (12.1.0.2.0) must be installed for use with Momentum version 5.1 and above.

Momentum requires a working installation of an Oracle 12c Real Application Clusters (RAC) database to manage the workflow data. This section contains instructions for installing an Oracle 12c version 12.1.0.2.0 database on a Windows Server 2012 R2 Standard Edition operating system. The procedures apply to both **Oracle Database Standard Edition 2** and **Oracle Database Enterprise Edition**.

For more detailed information see the links to Oracle online documentation provided in Section Further Information on page 61 or go to:

https://docs.oracle.com/database/121/RIWIN/toc.htm

Overview of the Cluster Server Infrastructure

Figure 3-4 provides a schematic overview of the Momentum database infrastructure, showing the interconnectivity between the database server nodes and the other elements of the architecture.
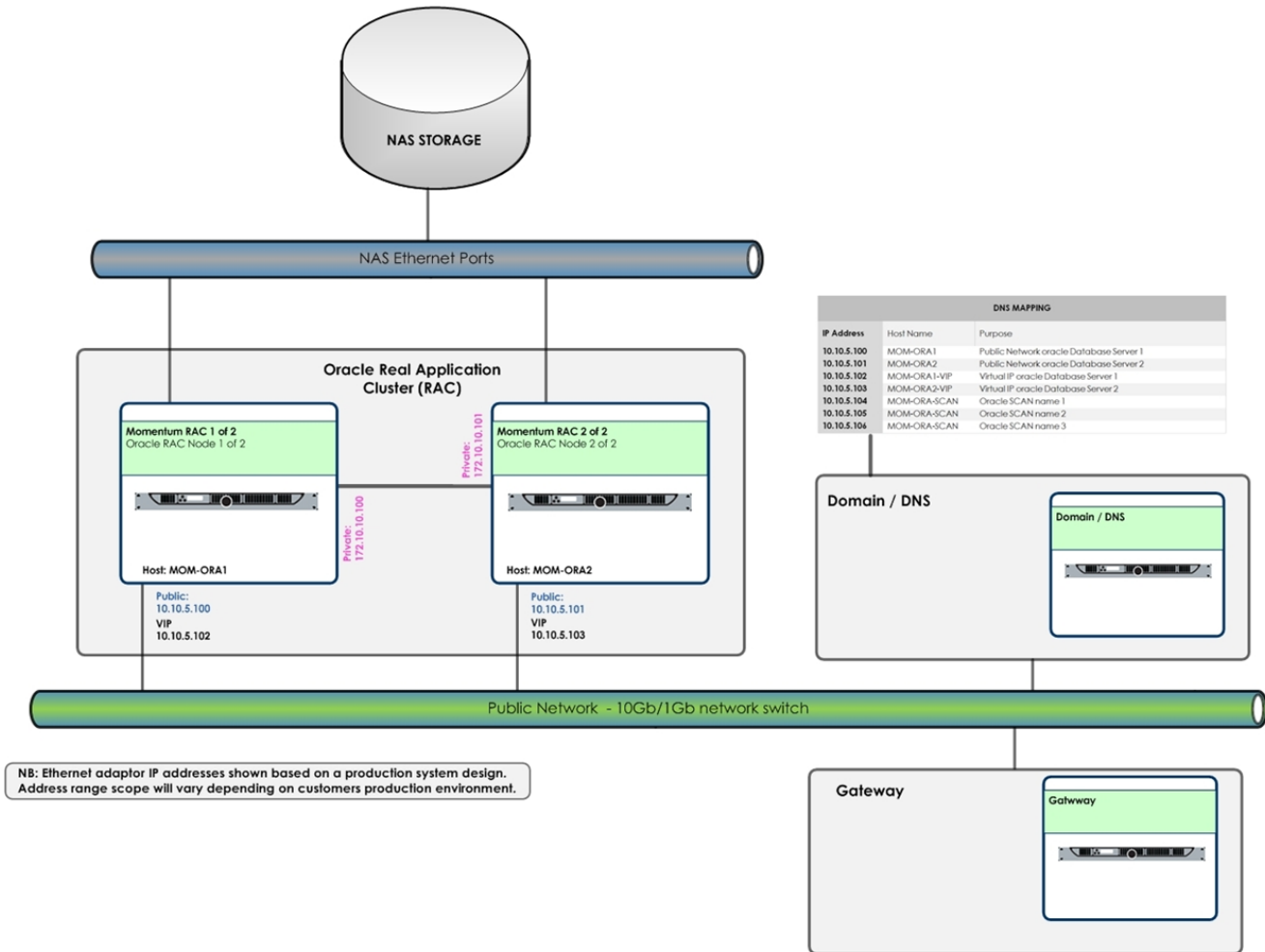
Fig. 3-4: Overview of Momentum Oracle Infrastructure (Oracle Database Cluster)

For more information about the hardware specifications, see the Momentum *Technical Datasheet*.

Before starting the Database Installation

Pre-installation Checklist

It is recommended to review the following pre-installation checklist to make sure that you satisfy all requirements before starting the Oracle installation:

• Confirm that your server operating system is Microsoft Windows Server 2012 R2.

> Note: Any references to Microsoft Windows Server in these procedures refer to the Standard edition.

- Log in to servers as a user with administrator privileges. You could use the Oracle Installation user, if available, see Creating the Installation User.
- Check the network interface requirements, see Section Network Interface Requirements on page 24.
- Check that the available TEMP disk space is at least 1 GB, see Section Checking Available Disk Space for the Temp Directory on page 23.
- Use a command prompt to ping the localhost. Ensure that it responds and that you do not receive an IPv6 reply.

> Note: The IPv6 protocol must be disabled for both Public and Private NICs.

- Turn off the Windows Firewall (if active) on all the cluster nodes before installing Oracle RAC, see Section Temporarily Deactivating the Windows Firewall on Windows Servers on page 24.
- Turn off any anti-virus protection system.
- Make a backup of the Registry.
- Disable Windows Media Sensing for TCP/IP in the Registry, see <Section Disabling Windows Media Sensing for TCP/IP in the Registry on page 25.

Checking Available Disk Space for the Temp Directory

You must have at least 1 GB of disk space available for use by the temporary directory (**C:\Windows\Temp**) when installing the database software. If you do not have sufficient space, then make additional space by deleting any unnecessary files. If the available disk space is still less than the required amount of 1 GB, then increase the partition size of the disk or set the **TEMP** environment variable to point to a different hard drive. Ensure that the environment variables **TEMP** and **TMP** both point to the location of the TEMP directory, for example:

- `TEMP=C:\WINDOWS\TEMP`
- `TMP=C:\WINDOWS\TEMP`

It is also important to note that the temporary directory must reside in the same directory path on each node in the cluster.

For the Windows operating system, the default settings of the temporary directory are usually acceptable for the installation of Oracle.

If necessary, you can modify the settings of the TEMP environment variable as follows:

1 From the Control Panel, select **System > Advanced System Settings**.

2 In the **System Properties** windows, select the **Advanced** tab, then click **Environment Variables**.

3 Modify the settings of the TEMP environment variable in the user variables list as required.

Network Interface Requirements

Each server node of the cluster must have the following network interfaces (NICs):

- One NIC for public interconnection.

  The NIC name must be the same on each node of the cluster, e.g. **Public**

- One NIC for private interconnection

  The NIC name must be the same on each node of the cluster, e.g. **Private**. A back-to-back connection bypass switch is ideal, however, NIC Teaming is not appropriate in this environment.

Disk Drive Requirements

Each server requires access to two disks, as follows:

- A local disk on which to install the Oracle Home software.
- A raw disk shared with the other node through NAS/SAN protocol (iSCSI, or Fibre Channel).

For more detailed information on the disk sizes, features, etc. see the Momentum *Technical Datasheet*.

The shared disk must be available before staring the Oracle installation, see Section Configuring Storage for Oracle Grid Infrastructure and Oracle RAC on page 30.

Virtual Memory Setup

If your server has between **4 GB** and **16 GB** of RAM, then configure a paging file of at least the same size as the RAM.

If your server has more than **16 GB** of RAM, then set the paging file to **16 GB**.

Temporarily Deactivating the Windows Firewall on Windows Servers

When planning to install Oracle RAC software on Windows servers, you must disable the Windows Firewall feature on **all** nodes of a cluster before starting the installation.

If the Windows firewall is not disabled, then remote copy and configuration assistants such as virtual IP configuration assistant (VIPCA), Network Configuration Assistant (NETCA) and Oracle Database Configuration Assistant (DBCA) will fail during the Oracle RAC installation.

> Note: The Windows Firewall should never be enabled on a NIC that is used as a cluster interconnect (private network interface) or for accessing an Oracle ASM network.

After the installation is successful, you can enable the Windows Firewall for the public connections. To ensure correct operation of the Oracle software, however, you must add certain executables and ports to the Firewall exception list on all nodes of the cluster. See the Oracle documentation for further information:

https://docs.oracle.com/database/121/CWWIN/postinst.htm#CWWIN125

Configuring Networks for Oracle Grid Infrastructure and Oracle RAC

Refer to the following Oracle online documentation for information on network requirements:

https://docs.oracle.com/database/121/CWWIN/networks.htm#CWWIN473

Disabling Windows Media Sensing for TCP/IP in the Registry

Windows Media Sensing must be disabled for the private network adapters.

To disable Windows Media Sensing for TCP/IP, you must set the value of the **DisableDHCPMediaSense** parameter to **1** on each node. As you need to modify the Windows registry to disable Media Sensing, first make a backup of the registry and confirm that you can restore it using the methods described in your Windows documentation.

Disable Windows media sensing for TCP/IP as follows:

1 Make sure that you have backed-up the Windows Registry.

2 Run the registry editor (`Regedt32.exe`).

3 Locate the following registry key:

`HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\Tcpip\Parameters`

4 Enter the following registry value for data type DWORD of the Parameters subkey:

Value Name: `DisableDHCPMediaSense`

Data Type: `REG_DWORD -Boolean`

Value: `1`

5 Exit the registry editor and restart the computer.

6 Repeat steps **1** through **5** for each node in your cluster.

Refer to the following Oracle online documentation for more detailed information on disabling Windows Media Sensing:

https://docs.oracle.com/database/121/CWWIN/networks.htm#CWWIN473

Complying with Host Naming Conventions

The hostname of each node must use only the characters **a-z**, **A-Z**, **0-9**, and the dash or minus sign (**-**). Hostnames including the underscore character (**_**) are not supported.

The following naming convention is recommended for the cluster nodes:
- Node 1:   **MOM-ORA1**
- Node 2:   **MOM-ORA2**

Complying with NIC Naming Conventions

> Note: Do not use the names PUBLIC and PRIVATE (all caps) for the public or private (interconnect) network connection names.

The following naming convention for the NIC network adapters is recommended:
- Public network adapter: **Public**
- Private network adapter: **Private**

The **NIC name** and **Bind order** must be the same on each node of the cluster. Remember that the name is case-sensitive.

Interconnection and Configuration of the Network Adapters

The NICs must be interconnected as follows:

Public Network Adapter:

The **Public** NIC must be connected to a network switch for the public subnet and also to a gateway that is reachable on the network.

The Public Ethernet adapter must have the following configuration for TCP/IPv4:
- A Static IP address.
- A Subnet Mask able to communicate with the public sub-LAN.
- A Default Gateway that is reachable on the network (by the ping command).
- DNS mapping as defined in Section , below.

Private Network Adapter:

The **Private** NIC must be connected to a dedicated network switch or alternatively, connected to the other node using a back-to-back interconnection.

The Private Ethernet adapter must have the follow configuration for TCP/IPv4:
- A static IP address.
- A Subnet Mask able to communicate with the other private IP in the cluster.
- No DNS.
- No Gateway.

> Note: The IPv6 protocol must be disabled for both Public and Private NICs.

DNS Mapping, Host Mapping, Virtual IPs and SCAN Requirements

Each Oracle Server node in the cluster requires a Virtual IP (VIP) node and three Single Client Access Name (SCAN) VIP nodes to implement the Oracle cluster.

The VIP node address must be in the same subnet as the Public IP address. The hostname of the VIP node is constructed from the public hostname together with the case-insensitive suffix **-VIP**. For example:

- Public node hostname: **node1**
- VIP node hostname: **node1-VIP**

You must also configure three additional mappings for the SCAN VIP node, which is a single name that resolves to three IP addresses in the public network. The SCAN hostname must be mapped to three IP addresses in the same subnet on the Public IP address and is constructed from the Public node hostname together with the case-insensitive suffix **-SCAN**. For example:

- Public node hostname: **node1**
- SCAN node hostname: **node-SCAN**

The following table shows an example of the possible mappings on DNS:

IP Address	Hostname	Purpose
10.10.5.100	MOM-ORA1	Public Network Oracle Database Server 1
10.10.5.101	MOM-ORA2	Public Network Oracle Database Server 2
10.10.5.102	MOM-ORA1-VIP	Virtual IP Oracle Database Server 1
10.10.5.103	MOM-ORA2-VIP	Virtual IP Oracle Database Server 2
10.10.5.104	MOM-ORA-SCAN	Oracle SCAN Name 1
10.10.5.105	MOM-ORA-SCAN	Oracle SCAN Name 2
10.10.5.106	MOM-ORA-SCAN	Oracle SCAN Name 3

You must also include a mapping in the hosts file on each node of the cluster, as follows (example showing entry for the VIP host only):

- `10.10.5.102      MOM-ORA1-VIP        MOM-ORA1-VIP.domain`
- `10.10.5.103      MOM-ORA2-VIP        MOM-ORA2-VIP.domain`

A possible IP configuration for the private network could be as follows:

- Private IP for node 1: 172.10.10.100, 255.255.255.0
- Private IP for node 2: 172.10.10.101, 255.255.255.0

Configuring Users, Groups & Environments for Oracle Grid & RAC

For additional information on users, groups and environments, see the following Oracle online documentation:

https://docs.oracle.com/database/121/CWWIN/usrgrps.htm#CWWIN483

Domain Registration

Both Oracle servers must be registered to a domain and a domain administrator must register the two nodes in that domain.

Overview of the Oracle Installation User and Home User Accounts

In the Oracle 11.2 installation, a default built-in user, usually the domain Administrator was used to install all Oracle services under the local system. From Oracle version 12.1 it is recommended to install the database under an **Installation User** and a **Home User**, which is selected during installation.

This section introduces the concept of the Oracle **Home User**, which enables you to define a user with non-administration privileges that can perform DBA operations. For more detailed information, see the Oracle online documentation:

https://docs.oracle.com/database/121/CWWIN/usrgrps.htm#CWWIN483

> Note: It is still possible to install Oracle RAC 12c in 11.2 mode, using the built-in user, (e.g. Administrator (domain)) but this approach is not recommended.

Momentum is installed on Oracle RAC using the following two domain users that are members of the Administrators group:

- Installation User (e.g., **ora_install**)
- Home User (e.g., **ora_home**)

The **Installation User** has the credentials to install the Oracle software and the **Home User** is selected during installation. The Windows Domain Administrator must first create these two users and assign the privileges as described in the following sections.

Creating the Installation User

- **The domain user must be explicitly declared as a member of the local Administrators group on each node in the cluster (see the following procedure.)** It is not sufficient for the domain user to inherit membership from another group.
- The Installation User must be in the same domain on each node.

  For example, you could not use a user DBADMIN\dba1 on the first node and then a user RACDBA\dba1 on the second node.
- Another local user of the same name must not exist on any of the nodes.

  For example, if you use **RACDBA\dba1** as the installation user, none of the nodes can have a local user account **NODE1\dba1**.

After creating the database Installation User, the following procedure for Microsoft Windows 2012 describes how to make the **Installation User** a member of the **Administrators** group:

1 Open **Server Manager > Tools**.

2 Select **User Accounts > Manage User Accounts**.

3 Open the tab **Advanced**.

4 In the section **Advanced user management** click the button **Advanced**.

5 Open the folder **Groups**.

This displays the **Local Users and Groups** dialog.

6 Right-click the group **Administrators** and select **Properties**.

7 Check whether your Installation User is listed in the Members section.

8 If the Installation User is not listed, click **Add...**

This displays the **Select Users, Computers, Service Accounts, or Groups** dialog.
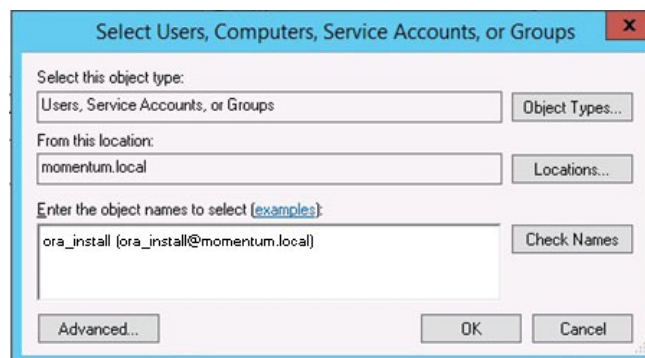
Fig. 3-5: Adding the Oracle Installation User

9 Enter your Oracle Installation User, then click **OK**.

This adds the Oracle installation user to the administrators group. In Figure 3-5, the Oracle installation user is: **ora_install**.

10 Login again as the installation user.

Creating the Home User

The Oracle database **Home User** must not be a member of the Administrators group. When creating an Oracle Home User for an Oracle RAC installation, then the user must be a Windows domain user, and the user must also be a member of the same domain on each node in the cluster.

Configuring Storage for Oracle Grid Infrastructure and Oracle RAC

Preparing Disk Partitions for Oracle ASM

On Windows Server 2012, the procedure to create an Oracle partition requires you to run commands from the command line using the disk partition utility **DiskPart**.

As an Oracle 12c Momentum environment features external redundancy, only a single partition is required. Assuming that a 500 GB raw disk is shared across the two nodes of the cluster, create a single partition using slightly less (e.g., 2 GB) than the total available disk space (500 - 2 = 498 GB or 509952 MB). The partition is formatted during the Oracle Grid installation.

> **Note:** The actual size of the partition will usually be agreed to suit the client's specific requirements.

You will need to prepare the disk partitions when each node in the cluster is able to see the shared unit disk, as follows:

1 From a command prompt on an existing node in the cluster, run the DiskPart utility.

Enter: `C:\> diskpart`

This switches to the diskpart prompt: `DISKPART>`

2 List the available disks, then, by specifying its disk number (*n*), select the disk on which you want to create the partition.

Enter: `DISKPART>list disk`

Enter: `DISKPART>select disk n`

3 Create an extended partition:

Enter: `DISKPART>create part ext`

4 Once the extended partition is available, create a logical drive of the desired size (in MB), using the following syntax:

`DISKPART> create part log [size=n] [offset=n] [noerr]`

> **Note:** You will need available disk space of 100 GB or more.

5 Repeat steps **2** through **4** to add any additional partitions, if required.

The recommended configuration has a single partition for Oracle **home** and the Oracle database files.

6 Check all nodes in the cluster to ensure that the partition is visible from all nodes, and ensure that the partition has not been assigned a drive letter by Windows. If any partitions have drive letters assigned, then remove the drive letters as follows:

  a Right-click the partition in the Windows Disk Management utility.

  b Select **Change Drive Letters and Paths...** from the menu.

  c Click **Remove** in the **Change Drive Letter and Paths** dialog.

Set-up the single disk partition as follows:

Note: In the following example, a partition of 38 GB is created to demonstrate the process.

7 Open Server Manager - Disk Management Console. Verify that there is the raw disk. Figure 3-6 shows an unpartitioned raw disk with available space of 39.7 GB.
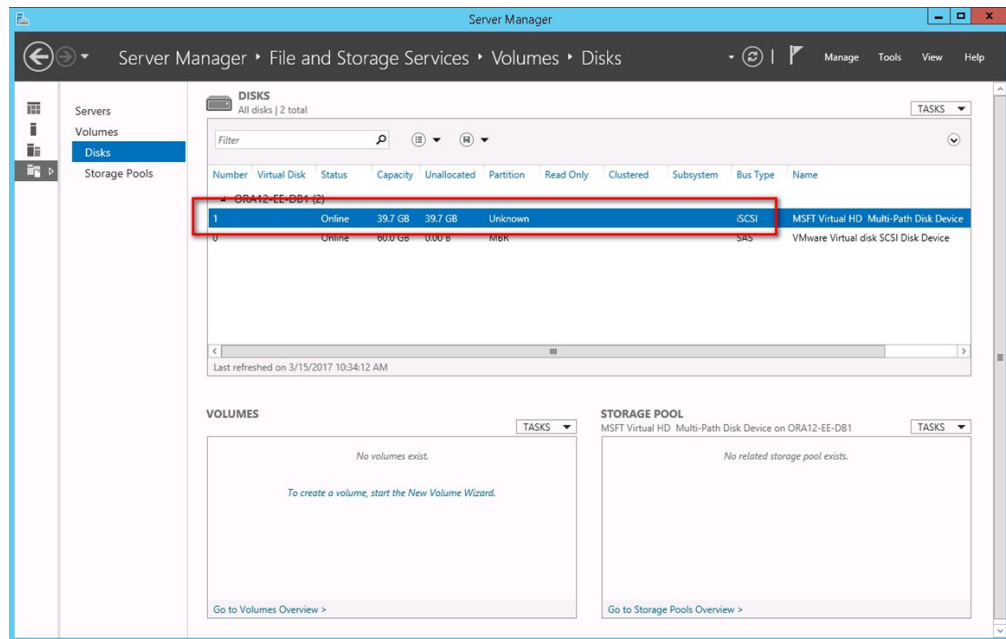
Fig. 3-6: Disk Management in the Windows Server Manager

8 Open a command prompt (as Admin) and run the DiskPart utility to create a single partition of 38912 MB as shown in the following example script:

```
C:\Windows\system32>diskpart

Microsoft DiskPart version 6.3.9600

Copyright (C) 1999-2013 Microsoft Corporation.

On computer: ORA12-EE-DB1

DISKPART> list disk

Disk ###   Status          Size       Free      Dyn   Gpt

--------   -------------   -------    -------    ---   ---

Disk 0     Online           60 GB      0 B

Disk 1     Online           39 GB     39 GB

DISKPART> select disk 1

Disk 1 is now the selected disk.

DISKPART> create part ext

DiskPart succeeded in creating the specified partition.

DISKPART> create part log size=38912

DiskPart succeeded in creating the specified partition.

DISKPART> exit
```

After creating the partition, Windows might inform you that you need to format the disk before use. Select **Cancel** to avoid formatting the disk at this point.

Fig. 3-7: Cancel Disk Format Operation

9 If Windows automatically allocates a drive letter to the new partition, remove the drive letter as described previously.

Installing the Oracle Grid Infrastructure Software

To install the Oracle Grid infrastructure software, first download the zip files from the FTP repository as follows:

1 Download and unzip the following Oracle files for patch set 12.1.0.2.0 using the **extract here** option:

- `p21419221_121020_platform_5of10.zip`

- `p21419221_121020_platform_6of10.zip`

In the following Grid Installation procedure, the screen examples refer to an environment with the following names:

- Public hostnames: **ORA12-EE-DB1**, **ORA12-EE-DB2**
- VIPs: **ORA12-EE-DB1-VIP**, **ORA12-EE-DB2-VIP**
- SCAN: **ORA12-EE-DB-SCAN**
- Public Network adapter name: **Public**

Verify the Cluster Using runcluvfy or cluvfy

Use the Oracle cluster verification utility (**runcluvfy**) to prepare for the software installation. This helps to ensure that you have completed the required system configuration and pre-installation steps so that your Oracle Grid Infrastructure or Oracle Real Application Clusters (Oracle RAC) installation completes successfully.

Verify the cluster as follows:

1 Make sure that your Installation user is a member of the Local Administrators group, see above.

If the user is not a member of the Local Administrators group you might receive the error message: **Access denied.** If this occurs, see Section Troubleshooting Access Denied Messages with ASM Storage on page 60.

2 Open a command prompt as Admin.

3 Run the following command:

```
runcluvfy.bat stage -pre crsinst -n node1,node2 -verbose > out.txt
```

For the example environment, the following command is used:

runcluvfy.bat stage -pre crsinst -n ORA12-EE-DB1,ORA12-EE-DB2 -verbose > out.txt

For further information, see the Oracle documentation at:

https://docs.oracle.com/database/121/CWWIN/crswin.htm#CWWIN350

Grid UI Installation

> **Note:** During the Grid Infrastructure configuration, if any steps fail, always try to re-run the stage using the Retry button.

Install and Configure Oracle Grid Infrastructure for a Cluster using the Oracle Grid Infrastructure wizard as follows:

1 Log in to Windows with the Installation User account

2 Run the setup command from the Oracle Grid Infrastructure 12c Release 1 (12.1) installation media or download directory:

```
setup.exe
```

3 In the **Installation Option** window, select the option: **Install and Configure Oracle Grid Infrastructure for a Cluster**, then click **Next**.

Fig. 3-8: Selecting the Oracle Installation Option

4 In the **Install Type** window, select the option: **Advanced Installation** then click **Next.**
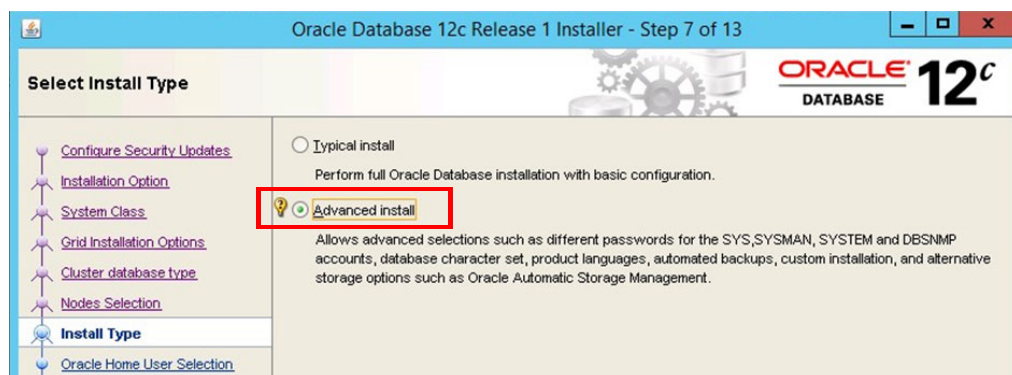
Fig. 3-9: Selecting Advanced Installation Type

5 In the **Product Languages** window, select **English** then click **Next**.
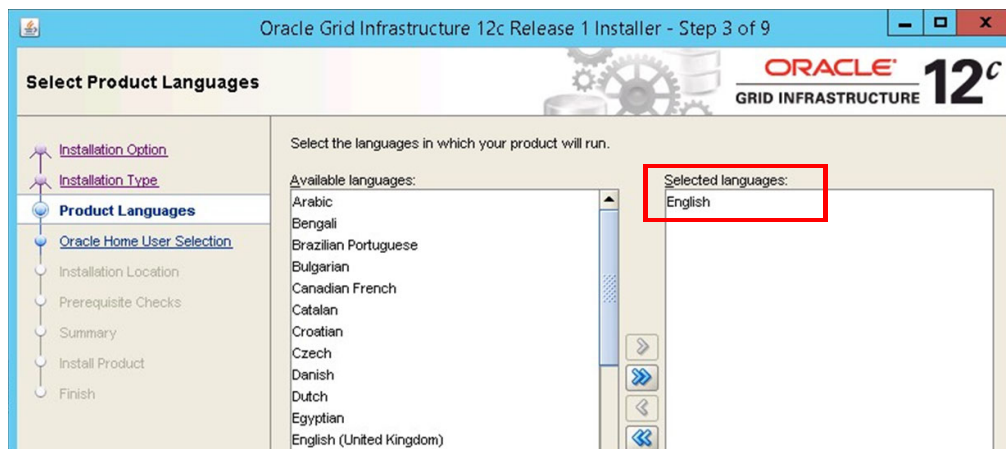
Fig. 3-10: Selecting the Language

6 In the **Grid Plug and Play Information** window, select the following settings for Single Client Access Name (SCAN) then click **Next**.

Cluster Name: **ORA12-DB-EE**

SCAN Name: **ORA12-EE-DB-scan**

SCAN Port: **1521**

Leave the checkbox **Configure GNS** unchecked then click **Next**.
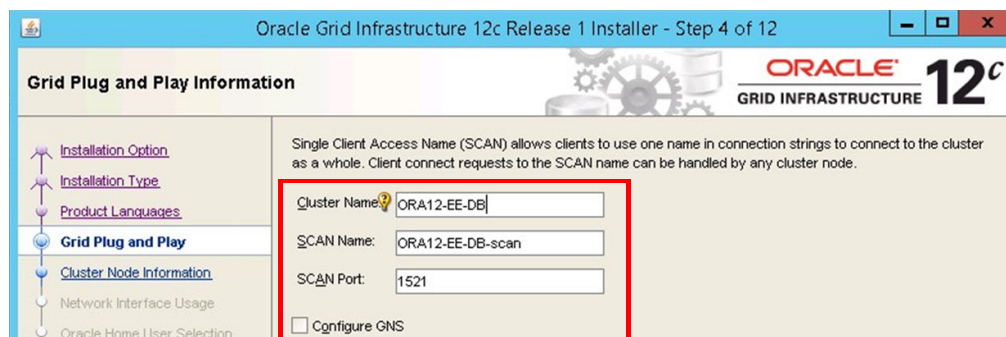
Fig. 3-11: Setting-up Oracle Grid Plug and Play

7 In the **Cluster Node Information** window, you will initially see the details for Node 1. Click **Add** to enter the details for Node 2 as follows.

NIC: Hostname

Public Hostname: **ORA12-EE-DB2.momentum.local**

Private Hostname: **ORA12-EE-DB2-vip.momentum.local**
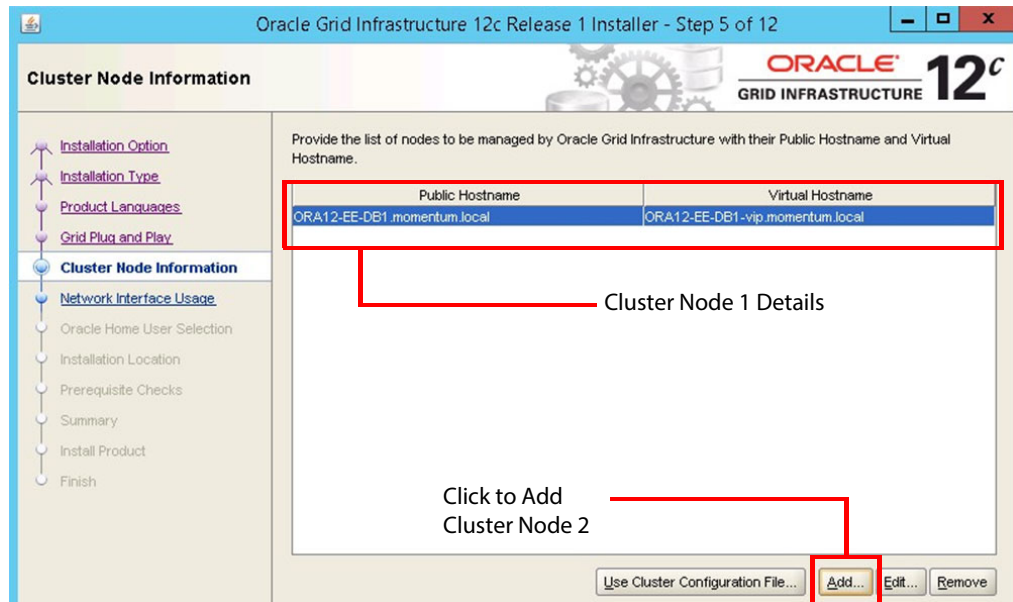
Fig. 3-12: Cluster Node Details - Node 1
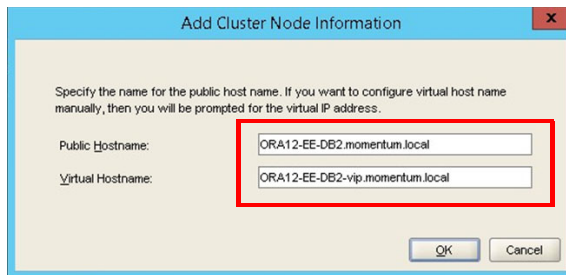
Fig. 3-13: Adding Node 2 to Cluster Node Details
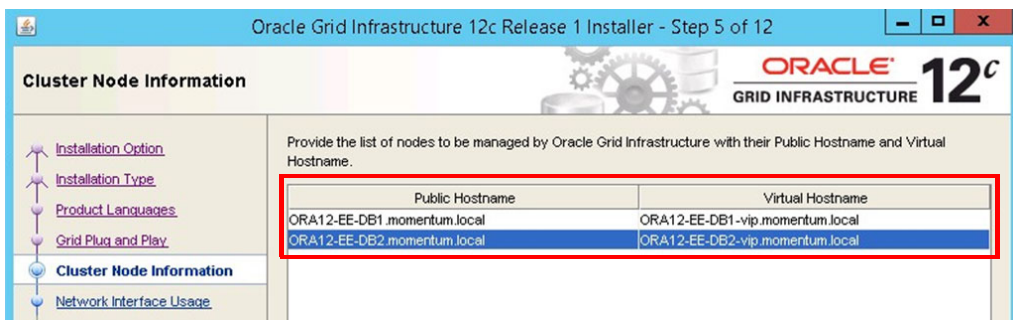
Fig. 3-14: Cluster Node Details - Nodes 1 and 2

8   In the **Network Interface Usage** window, select the following settings then click **Next**.

> Note: You must select both a Public Interface and a Private Interface in this
> step.
> The Public and Private Interface name must be the same on each node.

Interface Name:	Setting:	
Public NIC:	**Public**	
Private NIC:	**Private**	*(Not ASM & Private)*
All other NICs:	**Do Not Use**	

.
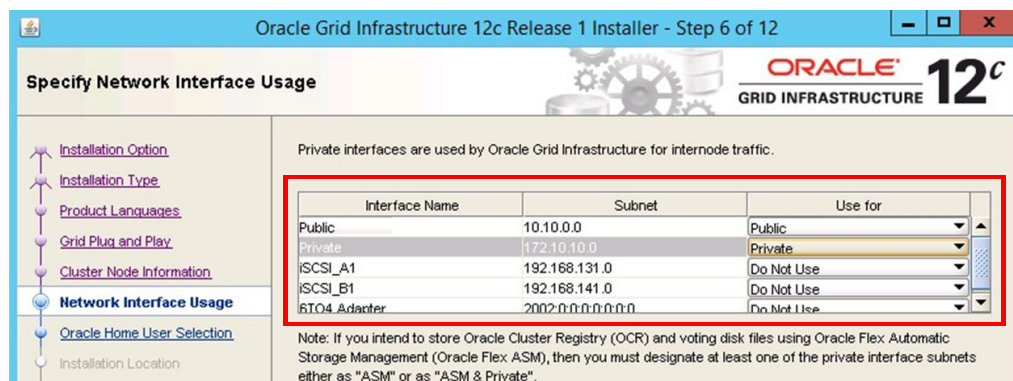
Fig. 3-15: Network Interface Usage

9   In the **Storage Option** window, select the option **Use Standard ASM for storage** then click **Next**.
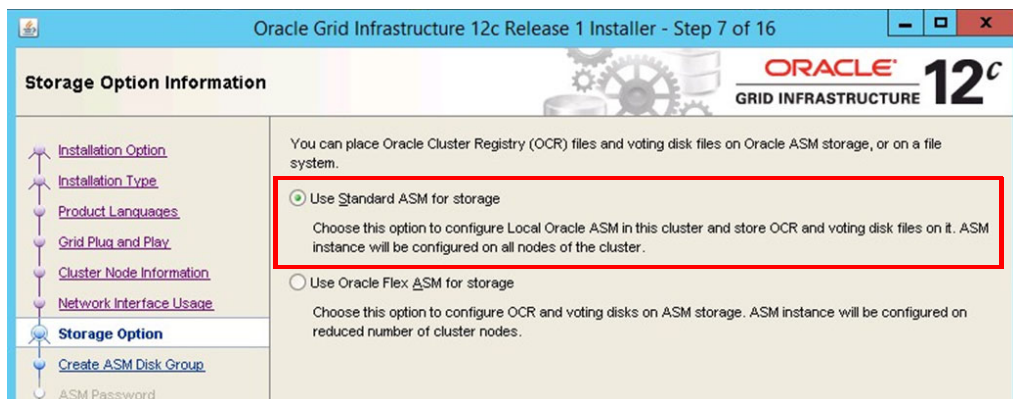
Fig. 3-16: Setting-up Oracle Grid Storage Options

10   In the **Create ASM Disk Group** window, select the following settings for automatic storage management (ASM) and then click **Next**.

Disk group name:	**DATA**	
Redundancy:	**External**	
Allocation Unit Size:	**1 MB**	*(or accept default setting)*
Add Disks:	**Candidate Disks**.	
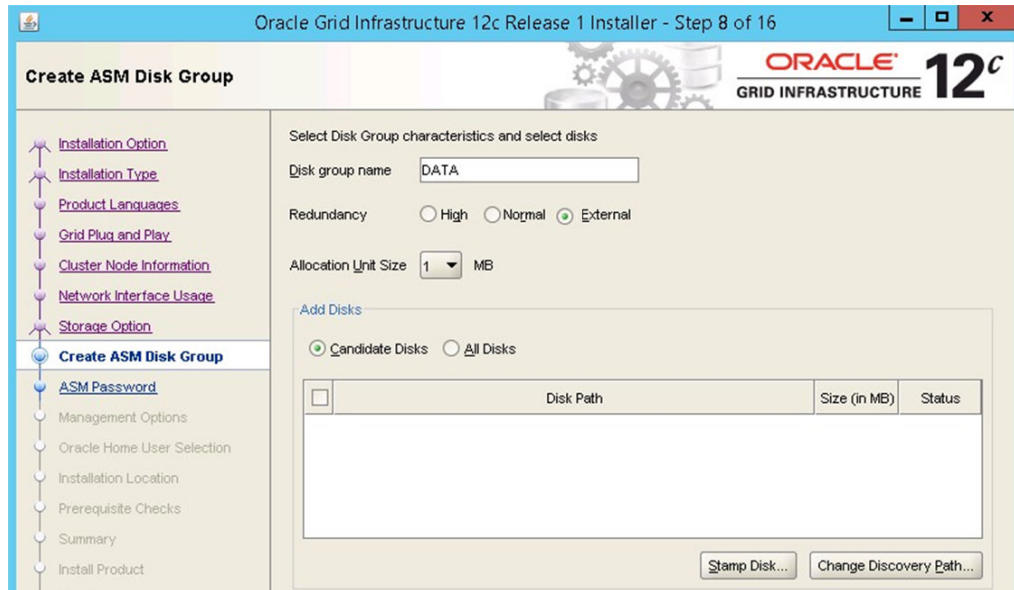
Fig. 3-17: Setting-up ASM Disk Group

   a Click **Stamp Disk...** to open the **asmtool operation** dialog enabling you to format the disk. Select the option **Add or change label** then click **Next**.
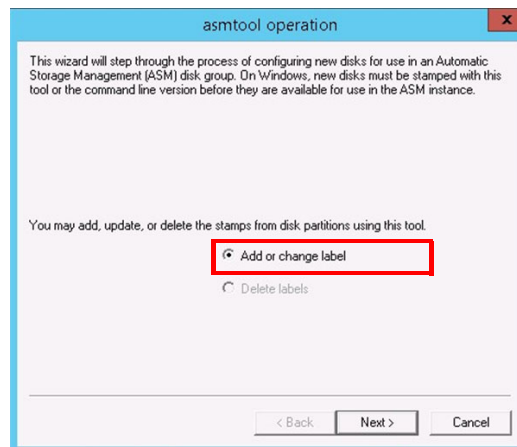
Fig. 3-18: ASMTool Add Stamps

   a   Select the partition previously create by the DiskPart utility and enter the pre-fix **DATA01** (by adding **01**), then click **Next**.
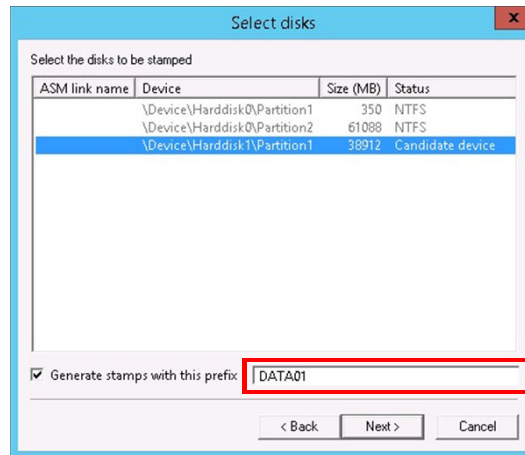
Fig. 3-19: ASMTool Stamp Prefix

b In the Stamp disks window, click Next.
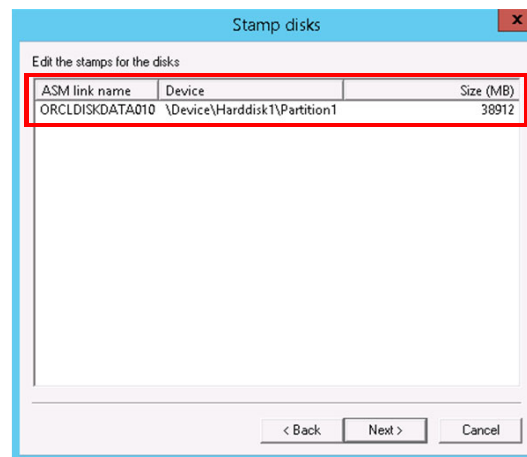
Fig. 3-20: ASMTool Stamp Disks Selected

c The Message ASM window displays a message to warn you that the ASMTool will
update the disk stamps and notify all ASM instances in the cluster.
Click **Finish** to proceed.
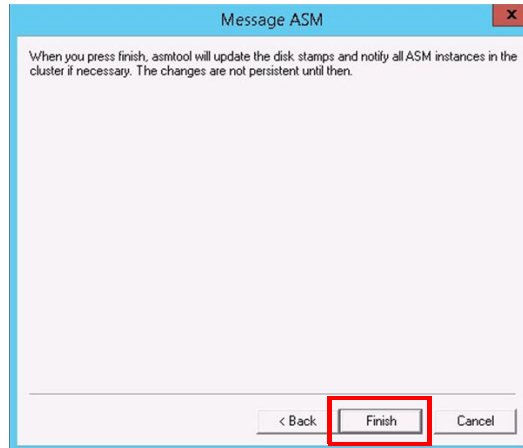
Fig. 3-21: ASMTool Complete

The specified disk is now listed in the **Add Disks** section of the **Create ASM Disk
Group** window. Click **Next** to proceed.
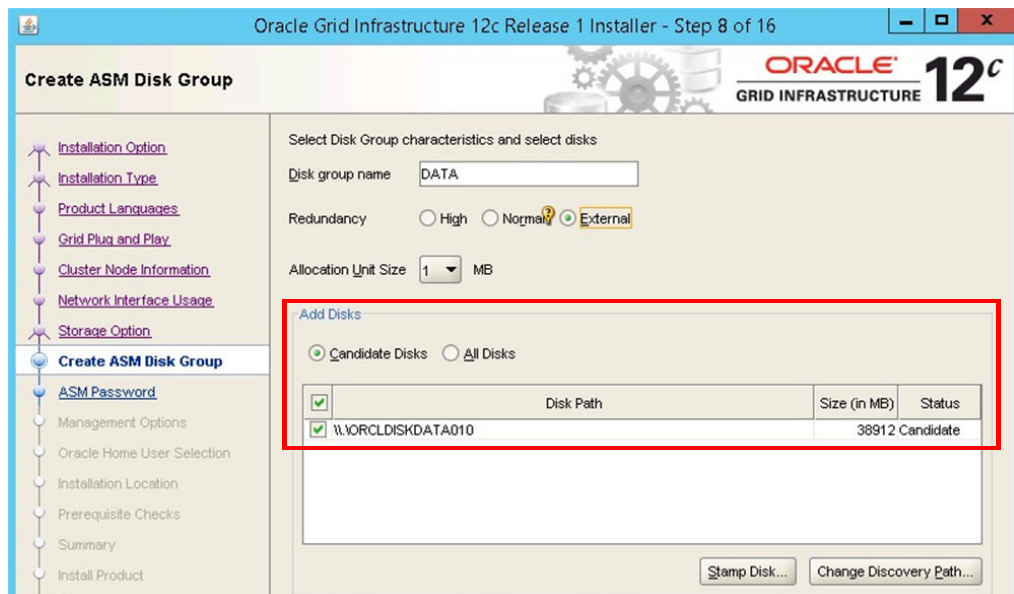
Fig. 3-22: Setting-up ASM Disk Group (Continued)

11 In the **ASM Password** window, select the optio**n Use same passwords for these
accounts** then enter the password **scanner**. Click **Next to continue.**
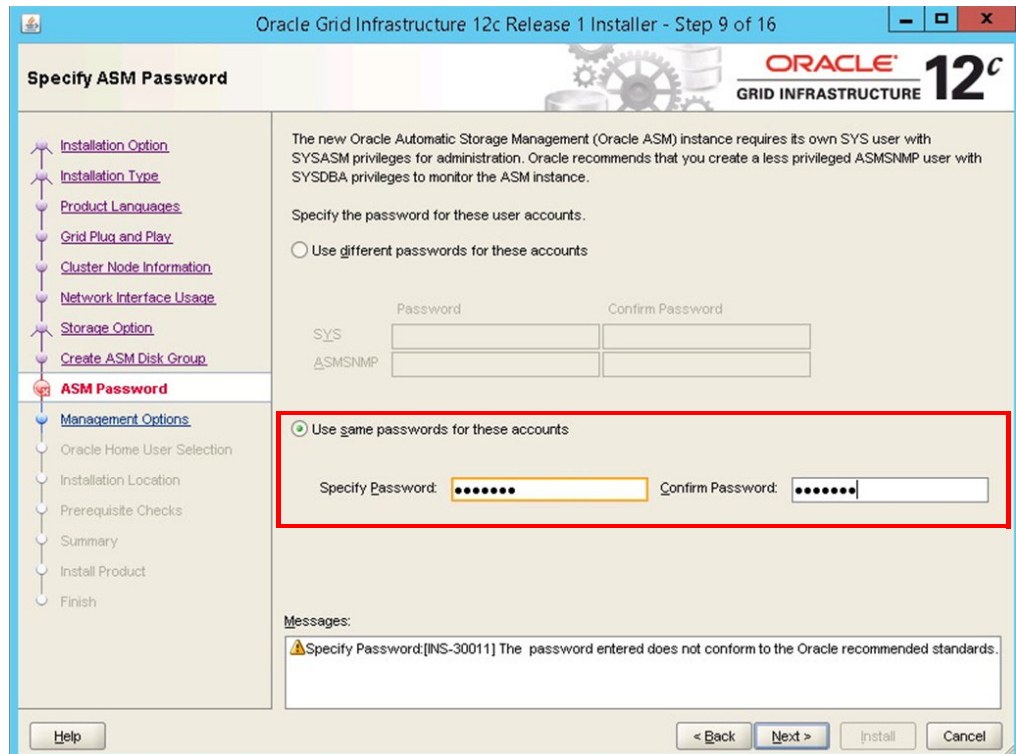
Fig. 3-23: ASM Password Definition

When warned that the ASMSNMP password does not conform to Oracle standards, click **Yes** to accept the password and continue.
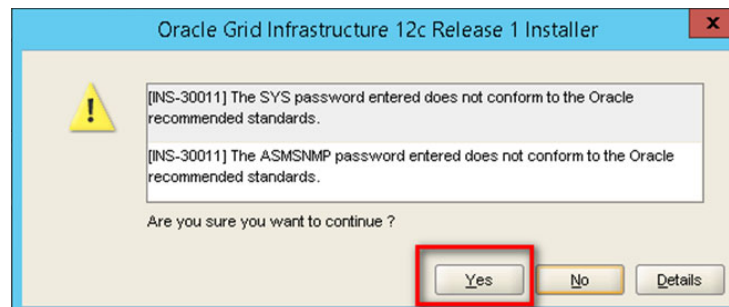
Fig. 3-24: ASM Password Warning

12 In the **Failure Isolation** window, select the option **Do not use Intelligent Platform Management Interface (IPMI)** then click **Next** to continue.
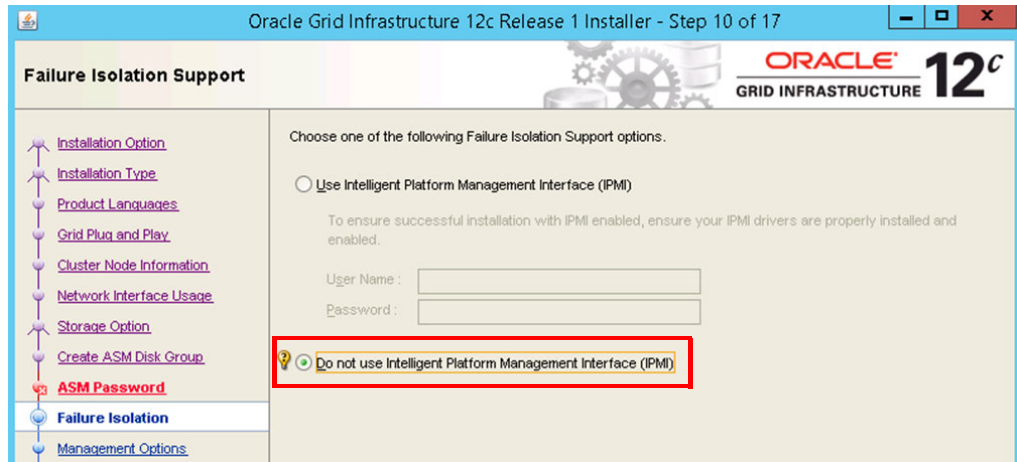
Fig. 3-25: IPMI Deactivation

13 In the **Specify Management Options** window, leave all options unselected then click **Next**.
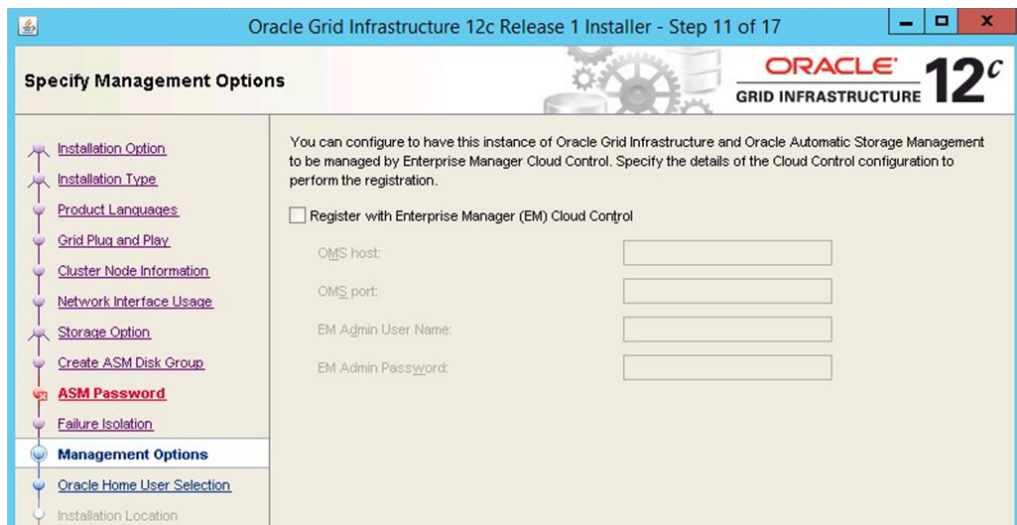
Fig. 3-26: Oracle Grid Management Options

14 In the **Oracle Home User Selection** window, specify the **Home** user (e.g., *<domain>***\ora_home**) set-up earlier in the Windows User Management windows. See Section Creating the Home User on page 29.
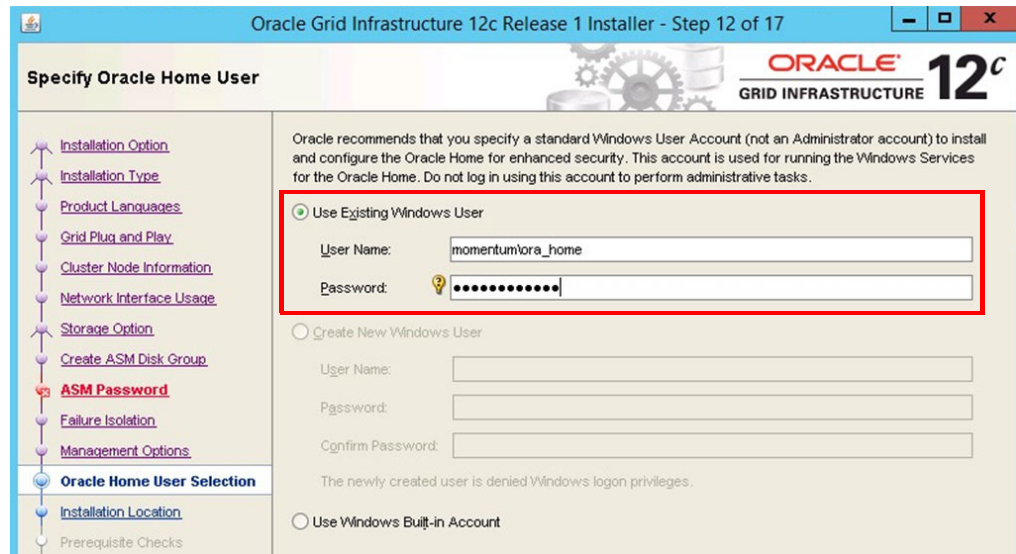
Fig. 3-27: Oracle Grid Home User Credentials

When specifying the Home user, use the syntax: ***<Domain>\<Home_username>***

For example: **Momentum\ora_home**

15   In the **Specify Installation Location** window, select the following settings

Oracle base: **C:\app\ora_home**

Software location: **C:\app\12.1.0\grid**

The default path for the Oracle base is as follows:

`C:\app\<home_user>`
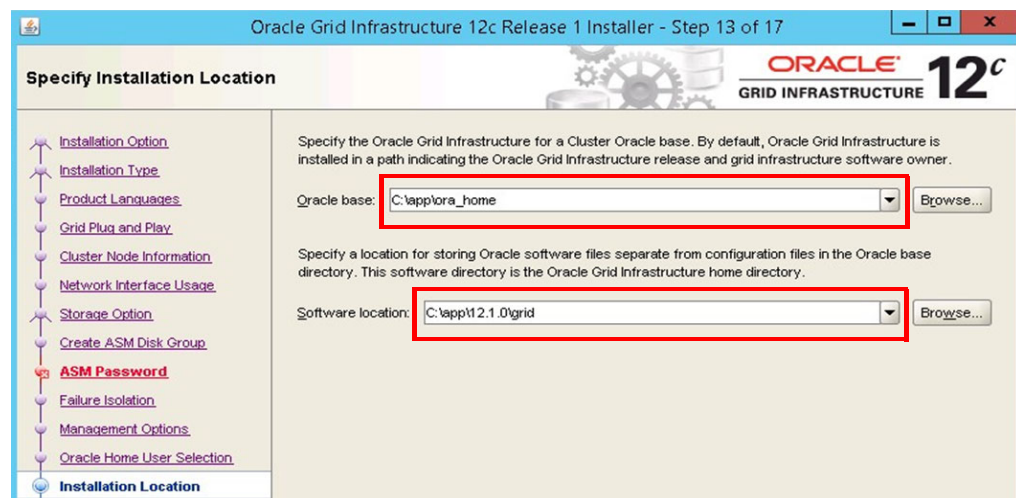
Fig. 3-28: Oracle Grid Installation Locations

The Grid installation continues to run the Prerequisite Checks.

16   On completion of the Prerequisite Checks, save the response file for future reference.

17   Click Install to start the installation of the Oracle 12c database.

Installing the Oracle 12c Database

Once you have successfully installed the Oracle Grid, run the Oracle database installer to install the Oracle 12c database as described in the following sections.

Downloading the Software

> Note: You can choose to install either Oracle Enterprise Edition or Oracle Standard Edition 2.

1 Download the following Oracle archive files for patch set **12.1.0.2.0** from the FTP repository:

Enterprise Edition:

```
p21419221_121020_platform_1of10.zip
p21419221_121020_platform_2of10.zip
```

Standard Edition 2:

```
p21419221_121020_platform_3of10.zip
p21419221_121020_platform_4of10.zip
```

2 Unzip the two archive files for the selected edition into a single directory using the **extract here** option.

Installing the Database User Interface

From the database folder, proceed as follows:

1 Run the Oracle Installer as Admin.

```
setup.exe
```

2 In the **Configure Security Updates** window skip the email address and security update fields and click **Next**.
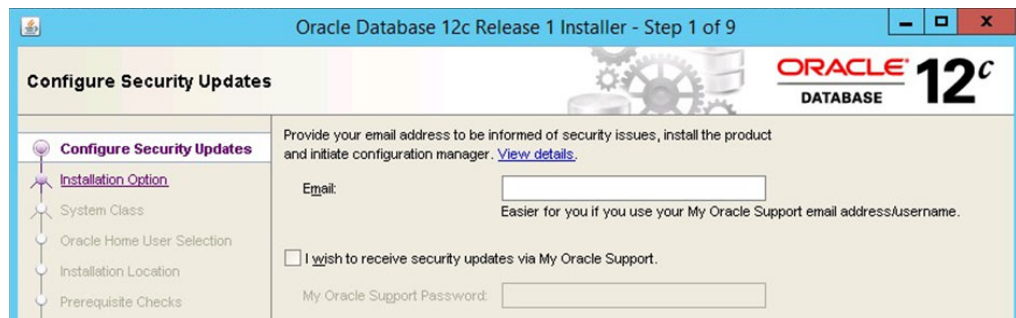
Fig. 3-29: Oracle 12c Security Updates

3 In the **Installation Option** window, select the option: **Create and configure a database** then click **Next**.
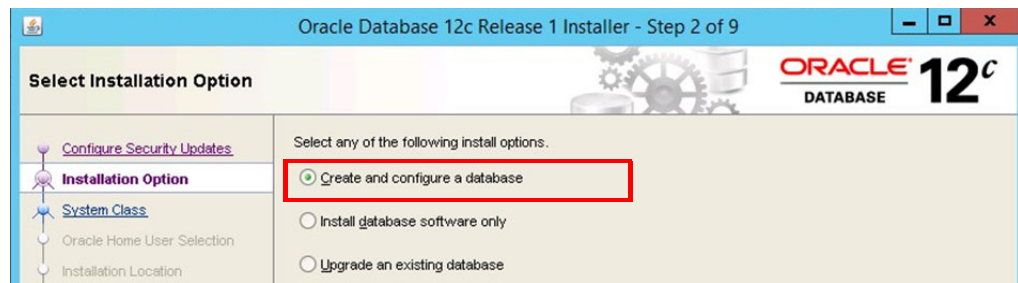
Fig. 3-30: Oracle 12c - Installation Options

4　In the **System Class** window, select **Server class** and then click **Next**.

A server class installation is a database system used in a production data center and allows you more advanced configuration options.
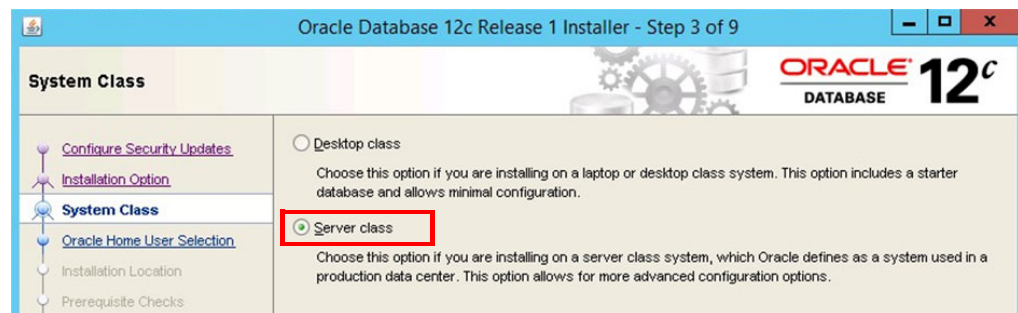
Fig. 3-31: Oracle 12c - System Class Selection

5　In the **Grid Installation Options** window, select **Oracle Real Application Clusters Database Installation** then click **Next**.
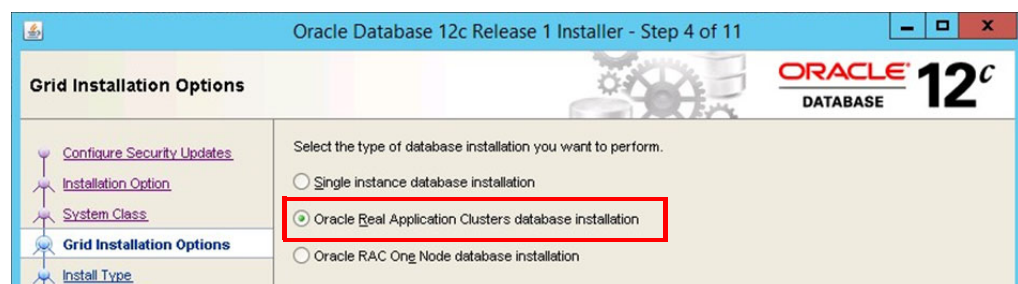
Fig. 3-32: Oracle 12c - Grid Installation Options

6　In the **Cluster database type** window, select **Admin managed** as the RAC database configuration type to tie database instances to specific servers in the cluster, then click **Next**.
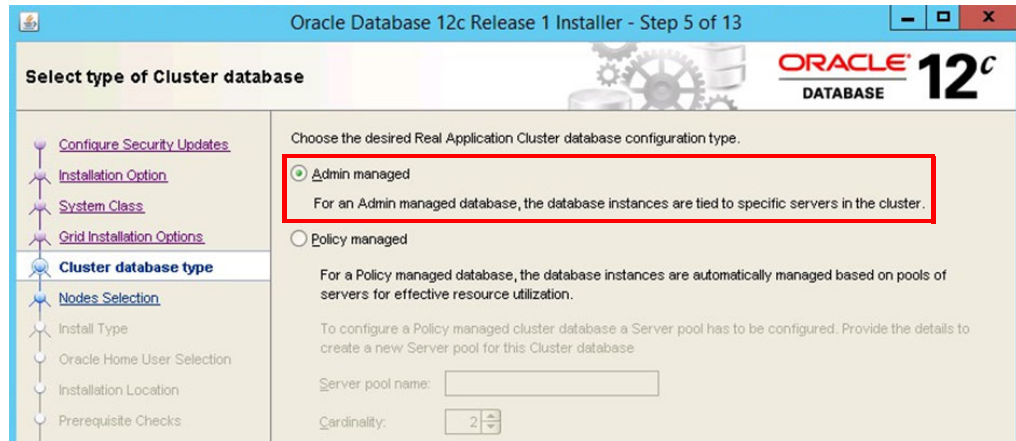
Fig. 3-33: Oracle 12c - RAC Database Configuration Type

7   In the **Nodes Selection** window, select both nodes (for example ora12-db1 and ora12-db2) on which to install Oracle RAC, then click **Next**.
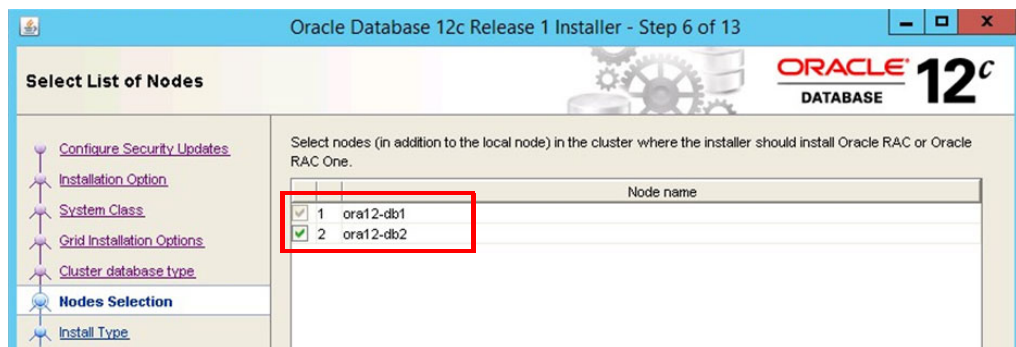
Fig. 3-34: Oracle 12c - RAC Node Selection

8   In the **Install Type** window, select **Advanced Install** then click **Next**.
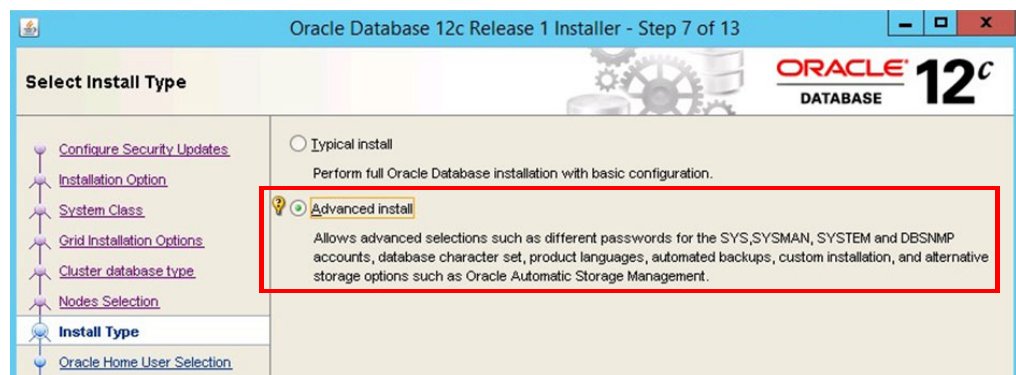
Fig. 3-35: Oracle 12c - Advanced Install Type

9   In the **Database Edition** window, select the Oracle edition of the database software you have chosen to install, either:
    • **Enterprise Edition** - requires at least **6.0 GB** disk space.

• **Standard Edition** - requires at least **5.5 GB** disk space.

Figure 3-36 shows Oracle Database 12c Enterprise Edition:
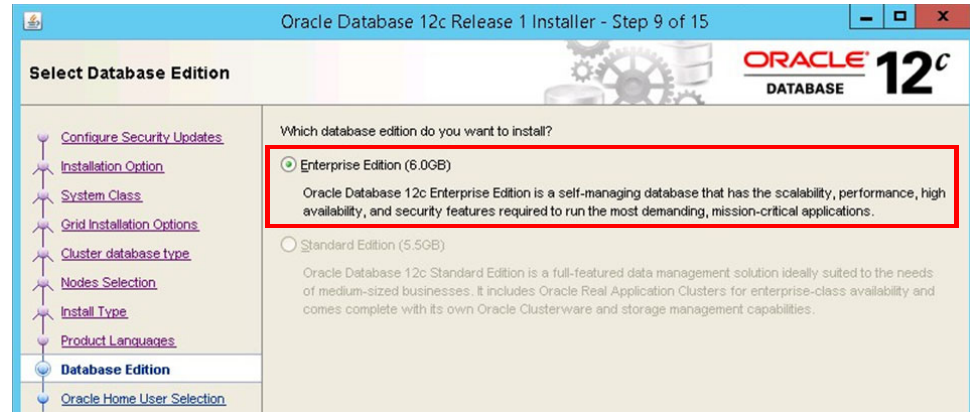
Fig. 3-36: Oracle 12c - Database Edition Selection

10 In the **Oracle Home User** window, select the same Oracle Home user (**<domain>\ora_home**) you defined in the Grid installation, then click **Next**.
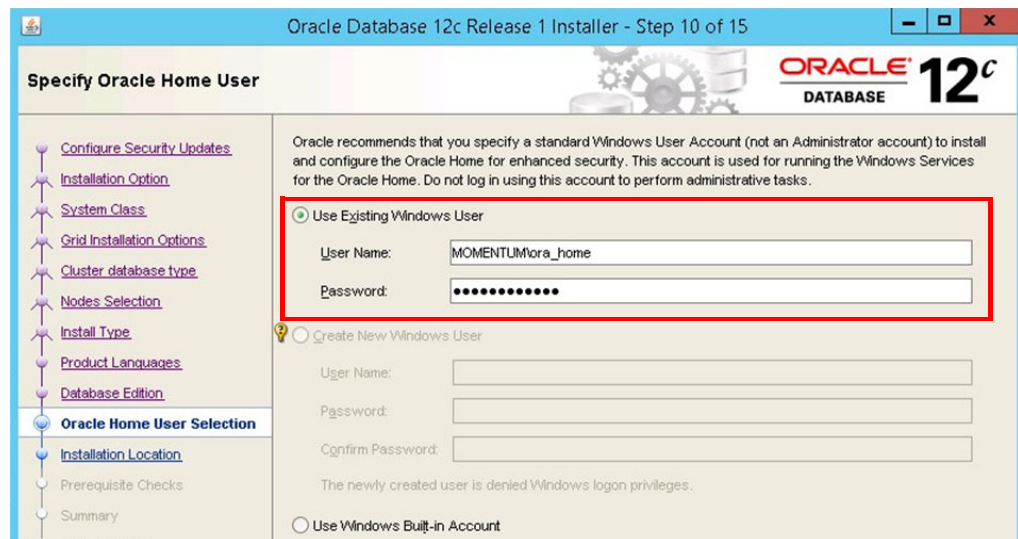
Fig. 3-37: Oracle 12c - Home User Selection

11 In the **Installation Location** window, specify paths for both the **Oracle base** directory (to contain the database configuration files) and the **Software location** (to contain the database software files) then click **Next**.
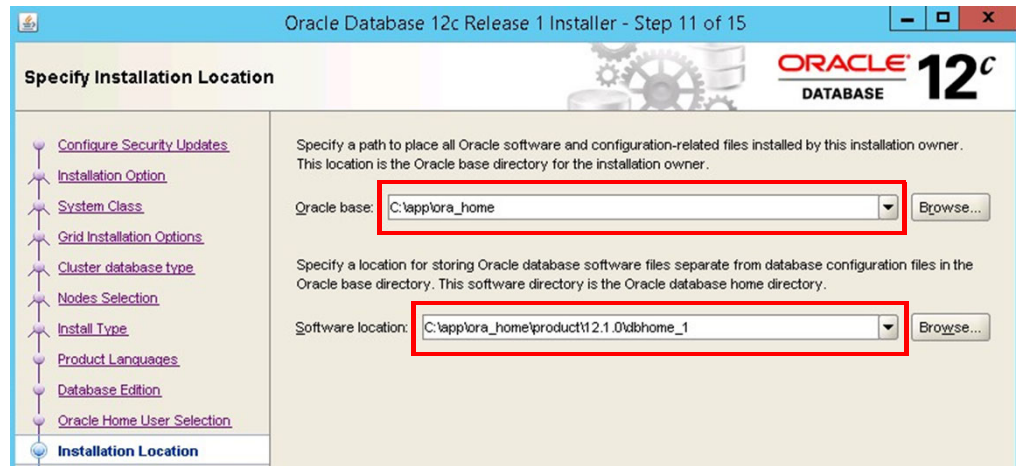
Fig. 3-38: Oracle 12c - Installation Locations

12 In the **Configuration Type** window, select **General Purpose / Transaction Processing**
as the type of database you want to create, then click **Next**.
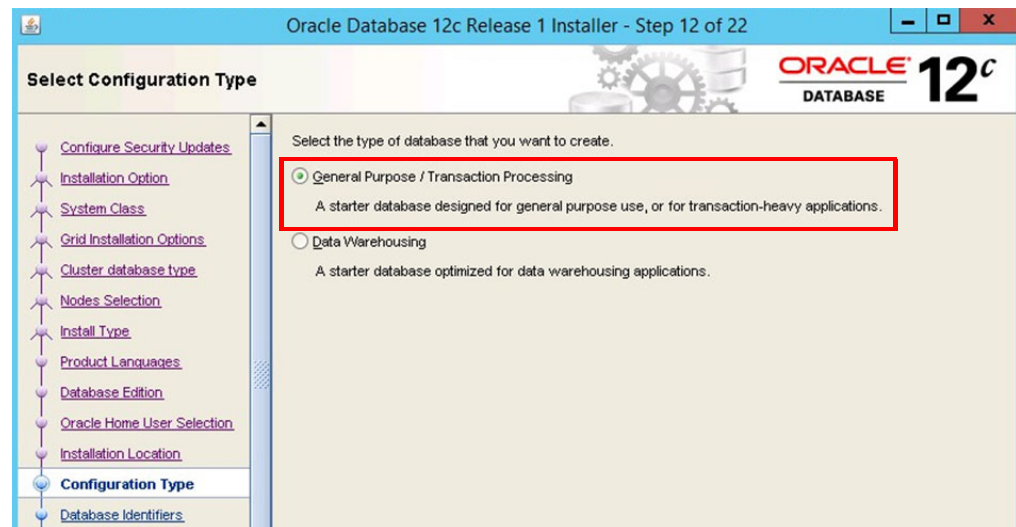
Fig. 3-39: Oracle 12c - Configuration Type

13 In the **Database Identifiers** window, accept the defaults to specify the identifiers
required for unique access to the database as follows:

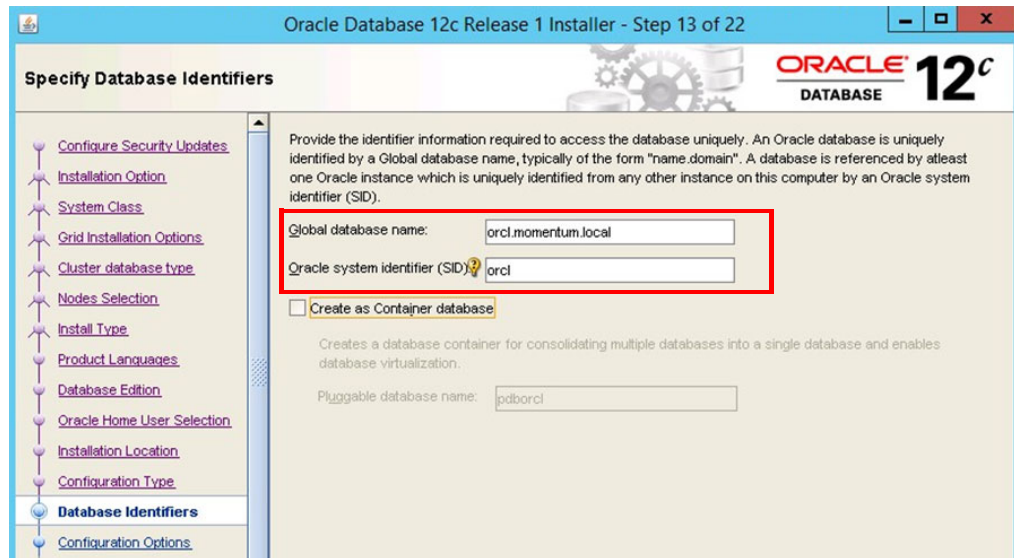Global database name: **orcl.<*domain*>**

Oracle system identifier (SID):   **orcl**

Fig. 3-40: Oracle 12c - Database Identifiers

14 In the **Configuration Options - Memory** tab, select **Enable Automatic Memory Management** and set the target database memory to 60 - 70% (typically).
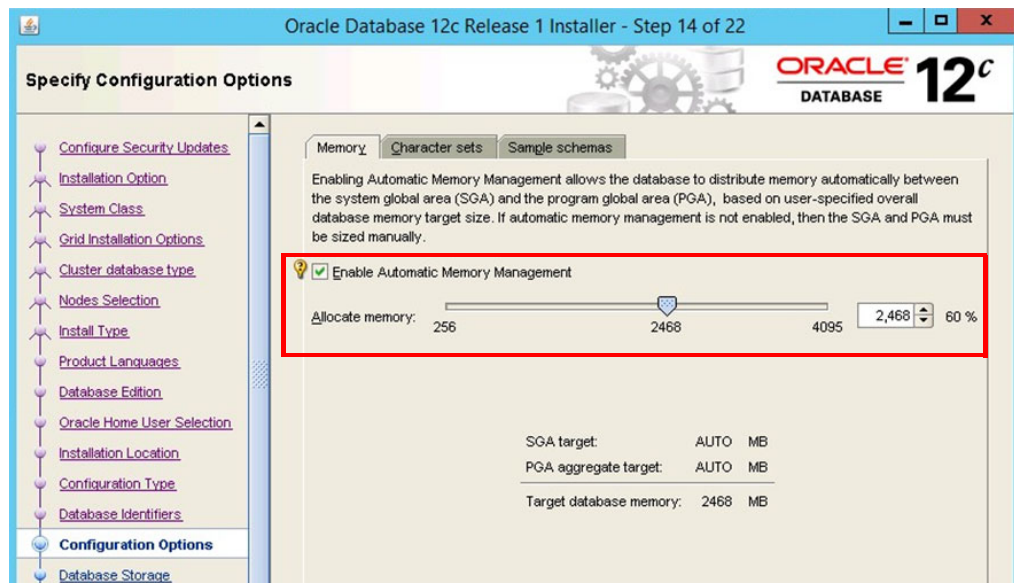

Fig. 3-41: Oracle 12c - Memory Configuration

15 In the **Configuration Options - Character sets** tab, select the character set: **Unicode (AL32UTF8)** then click **Next.**
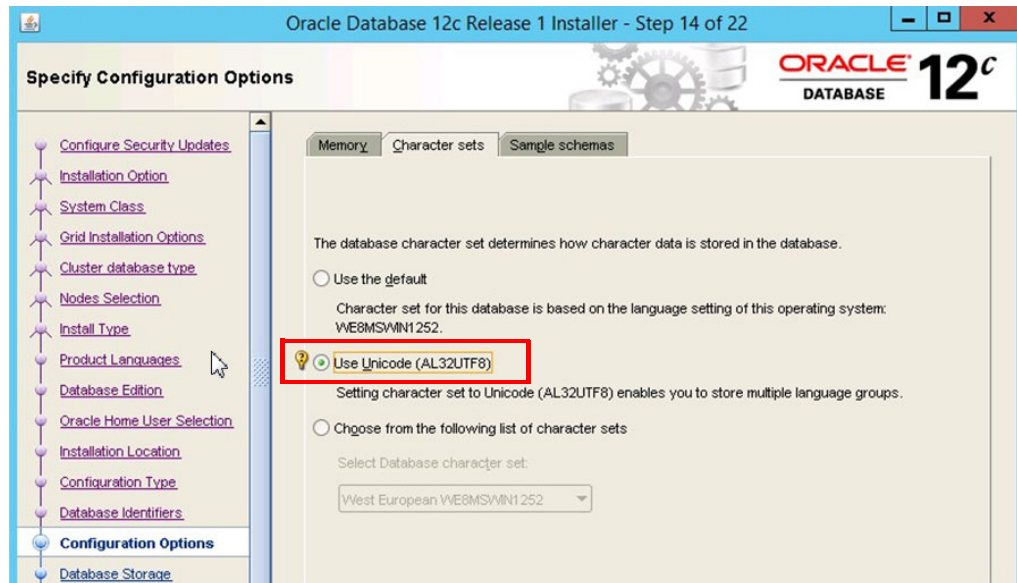
Fig. 3-42: Oracle 12c - Character Set Configuration

16 In the **Database Storage options** window, select **Oracle Automatic Storage Management** (Oracle ASM) for simplified storage administration then click **Next**.
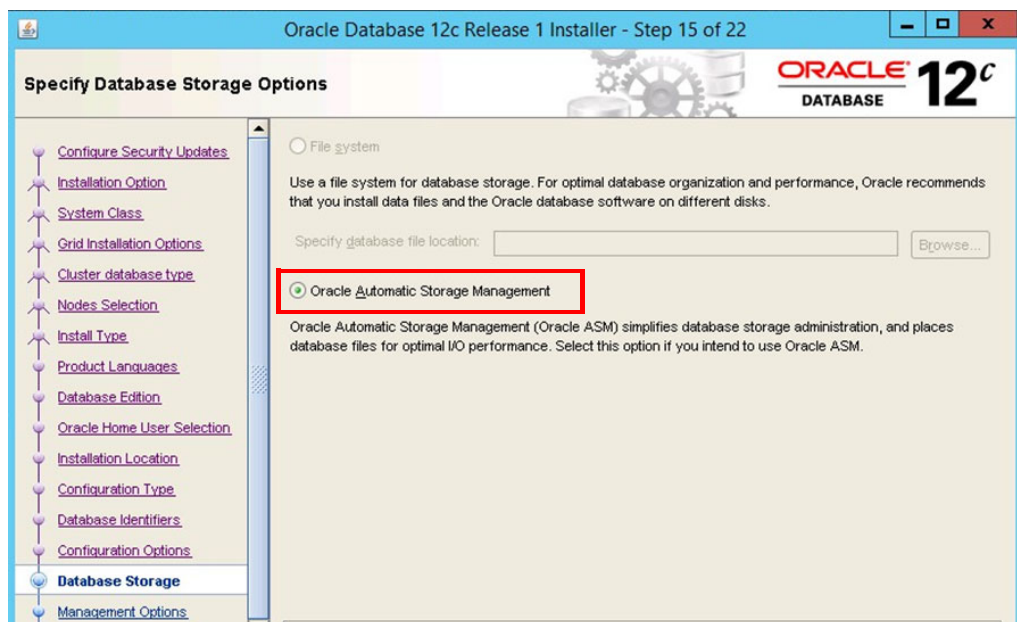

Fig. 3-43: Oracle 12c - Database Storage Options

17 In the **Management Options** window, leave the checkbox to **Register with EM Cloud Control** unchecked then click **Next**.
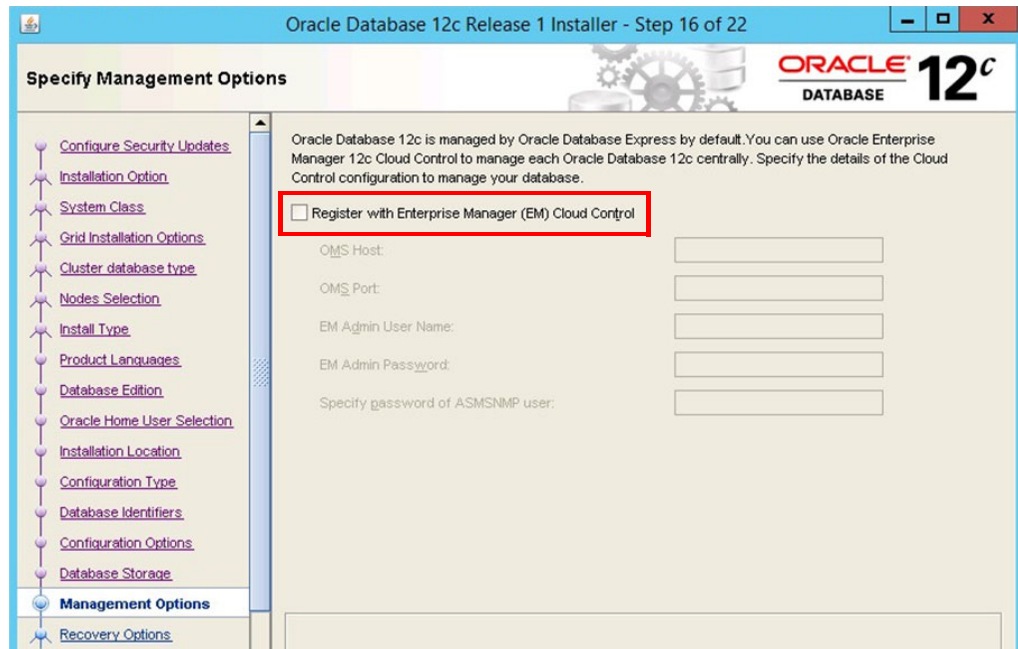
Fig. 3-44: Oracle 12c - Management Options

18 In the **Recovery options** window, leave the checkbox **Enable Recovery** unselected. Select the option **Oracle Automatic Storage Management** then click **Next**.
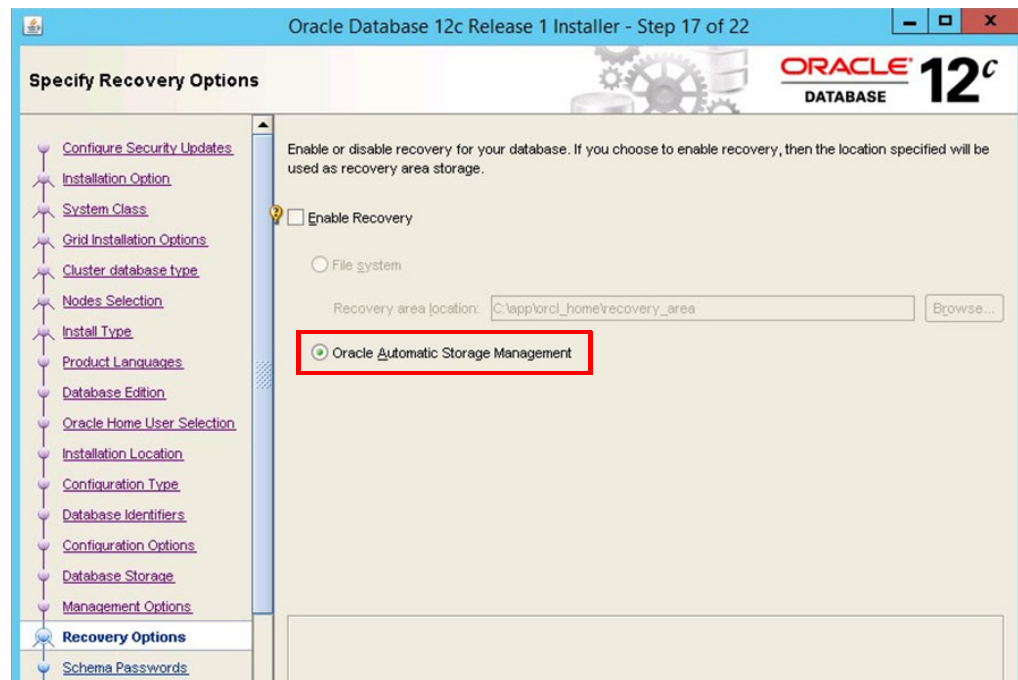

Fig. 3-45: Oracle 12c - Recovery Options

19 In the **ASM Disk Group** window, select the disk group to be used for storage of the database you are creating then click **Next**.
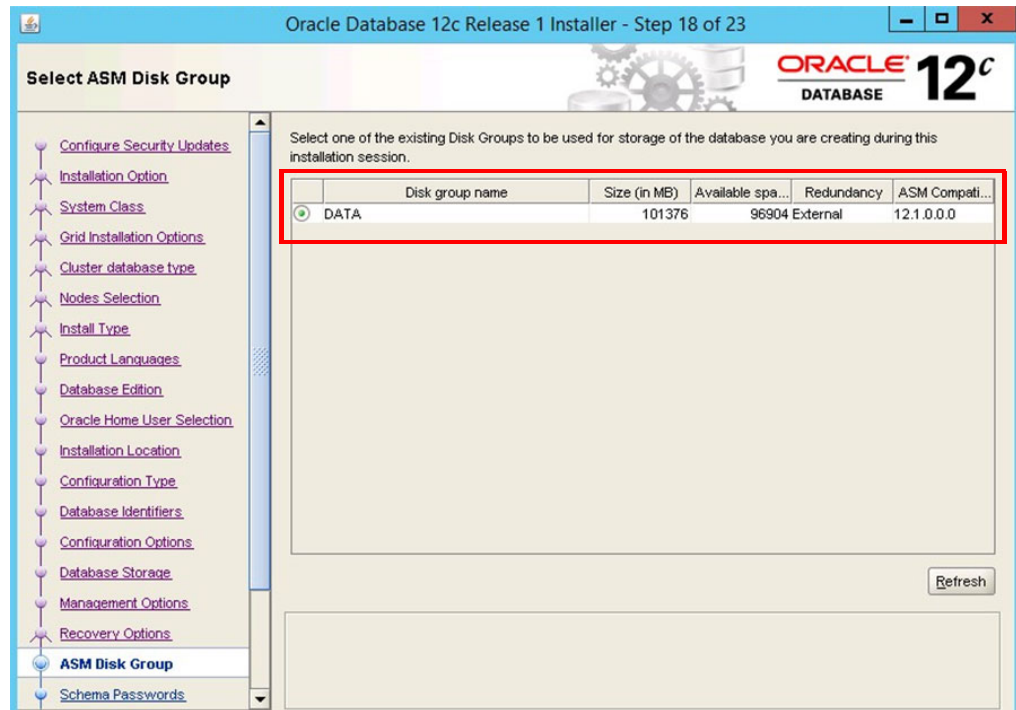
Fig. 3-46: Oracle 12c - ASM Disk Group Selection

20 In the **Schema Passwords** window, select the option **Use the same password for all accounts** then click **Next**. You will receive a message warning you that your selection does not conform with Oracle recommended standards. Ignore the warning and click **Yes** to continue the configuration.
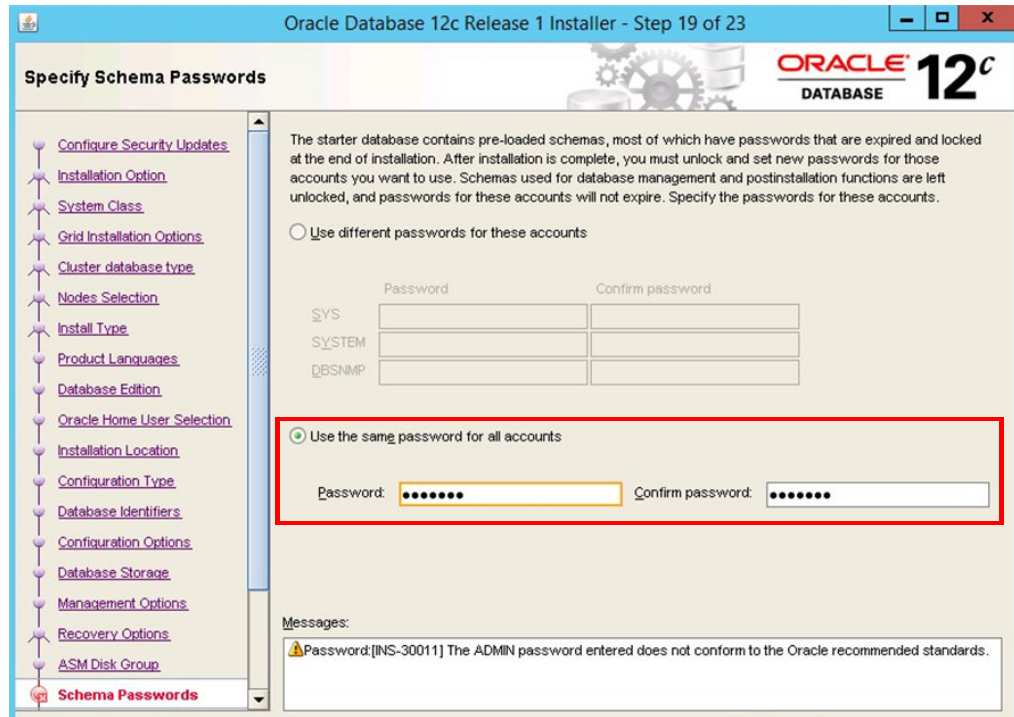
Fig. 3-47: Oracle 12c - Schema Passwords

21 On completion of the Oracle Database configuration and installation, Oracle generates a report summarizing the key database information. Click **Ok** to finish.
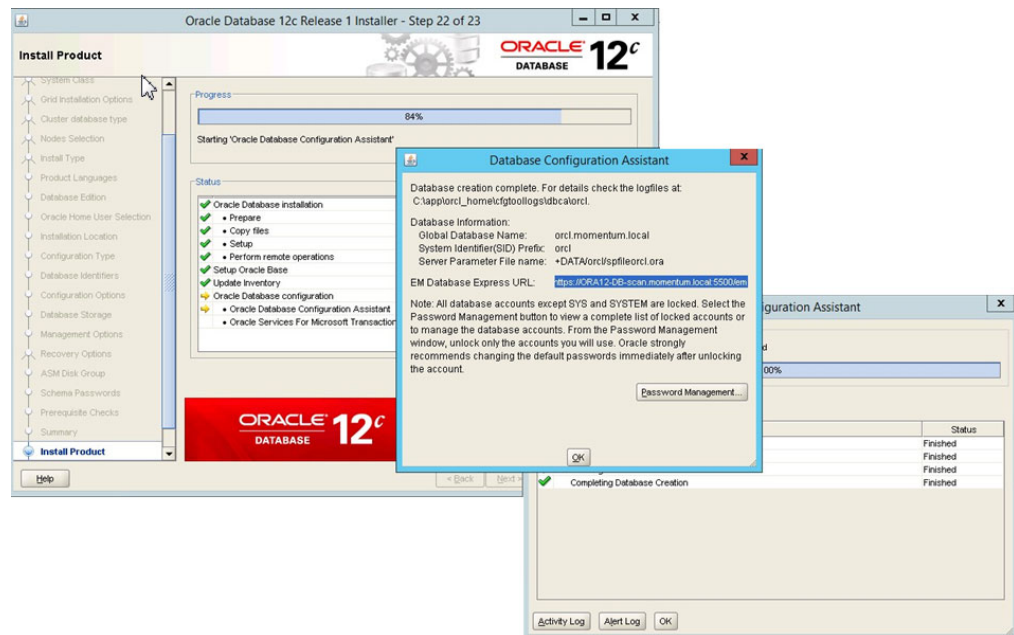

Fig. 3-48: Oracle 12c - Configuration and Installation Complete

Save the database configuration summary for future reference.

Post-installation Tasks

Activating Oracle 12c Enterprise Manager (EM) Express

On completion of the Oracle database configuration, Oracle provides the following link to Oracle EM Express, a web-based tool used to manage an Oracle 12c Database:

https://scan-host.domain:5500/em

You will, however, probably find that the link does not work immediately. If the link does not work, it is because the EM Express web application, that runs on the XDB HTTPS protocol, does not support the SCAN listener but instead uses a standard DB listener (or local listener). The Oracle Support organization recommends that you register each RAC node on its separate listener and port.

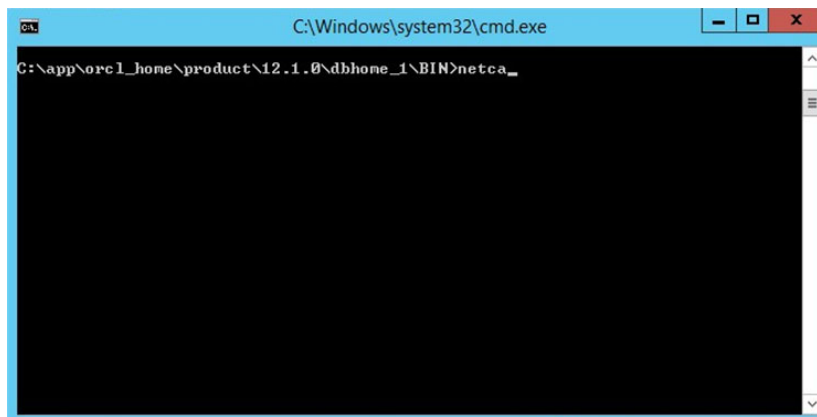Use the following procedure to activate Oracle EM Express:

Note: For more detailed reference information, see the section Further Information.

---

1   Start the Oracle Net Configuration Assistant (**netca**) UI tool from the database home path **$ORACLE_HOME/bin** (not grid) as Admin. Run the following commands:

```
cd C:\app\orcl_home\product\12.1.0\dbhome_1\BIN

netca
```


Fig. 3-49: Starting Oracle Net Configuration Assistant (netca)

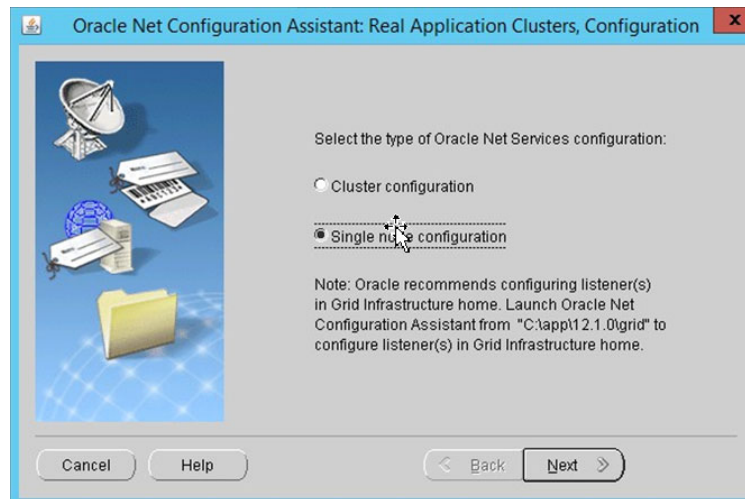2   Select the option **Single node configuration**, then click **Next**.

Fig. 3-50: Selecting Single Node Configuration

3 In the welcome dialog of the netca GUI, select the option **Listener configuration** to create a new listener for Oracle EM Express, then click **Next**.

Fig. 3-51: Selecting Listener Configuration

4 Select the **Add** option to add a listener, then click **Next.**
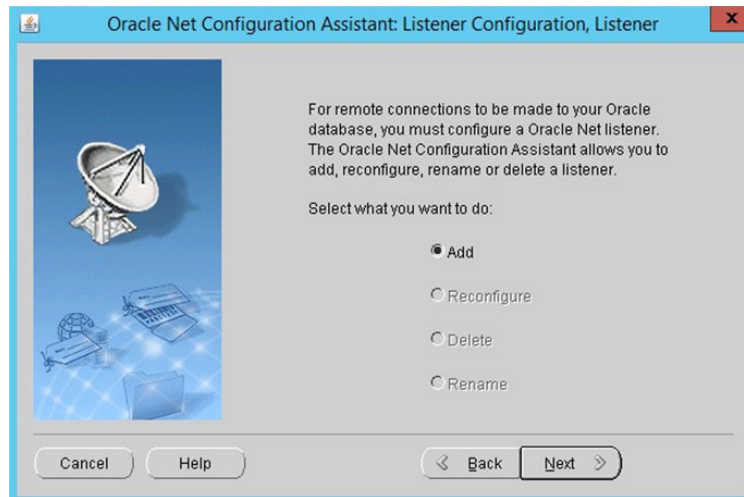
Fig. 3-52: Adding a Listener

5 Enter the name of the Listener that you want to create, then click **Next,** for example:

`LISTENERLEM` (Local EM)

Fig. 3-53: Setting the Listener Name and Account

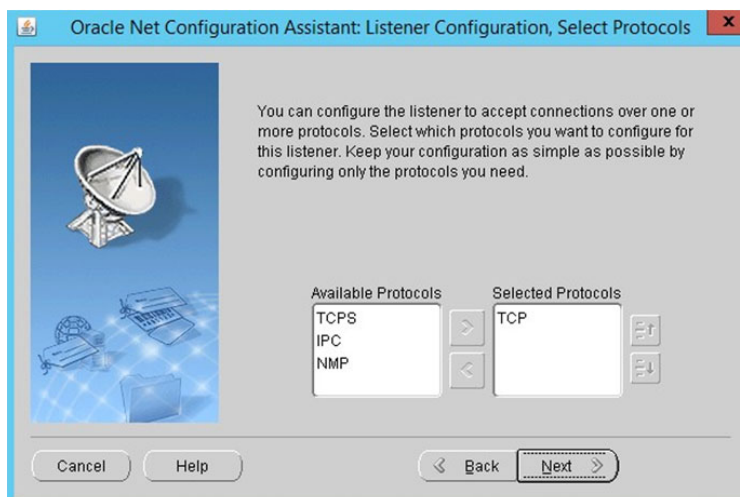6 Accept the default communication protocol: **TCP** then click **Next.**

Fig. 3-54: Setting Listener Communication Protocol

7   Select the option **Use another port number** and enter a different port number from
     the standard (1521), for example: 1522, then click **Next**.
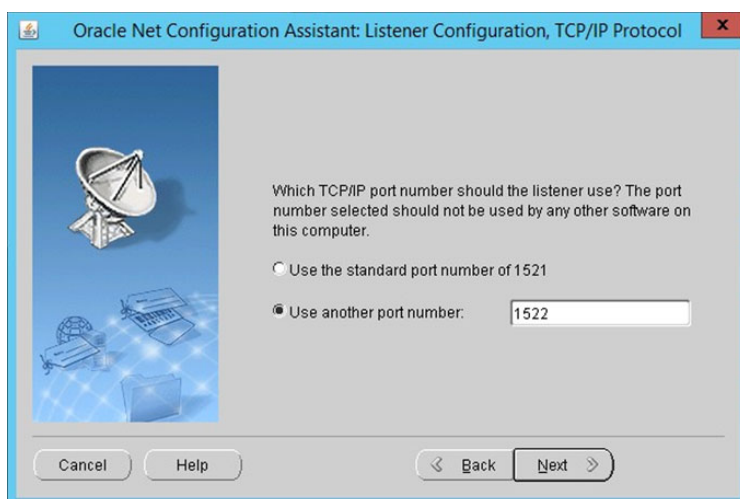
Fig. 3-55: Specifying the Port Number

8   When asked whether to configure another listener, select **No**, then click **Next**.

9   Click **Finish** to quit the **netca** utility.

10 Include mapping information for the new listener port in the Oracle network service
     names configuration file: **tnsnames.ora**

     `C:\app\orcl_home\product\12.1.0\dbhome_1\NETWORK\ADMIN\tnsnames.ora`

     Copy the syntax for the LISTENERLEM mapping from the file `listener.ora`:

```
LISTENERLEM =
  (DESCRIPTION_LIST =
    (DESCRIPTION =
      (ADDRESS = (PROTOCOL = TCP)
      (HOST = hostname_node1.domain)(PORT = 1522))
      (ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROC1522))
    )
  )
```

11 Add an alias to connect to the local instance into the same **tnsnames.ora** file:

```
LOCAL_ORCL =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP)
    (HOST = 10.10.5.83)(PORT = 1522))
    (CONNECT_DATA =
    (SERVER = DEDICATED)
    (SERVICE_NAME = orcl.domain)
    )
  )
```

12 Repeat steps **1** through **11** above on each node.

13 Update the oracle system parameter **LOCAL_LISTENER** with the new aliases as follows:

```
sqlplus / as sysdba
SQL> ALTER SYSTEM SET LOCAL_LISTENER=LOCAL_ORCL,LISTENERLEM;
System altered.
SQL> alter system register;
System altered.
SQL> exit;
```

14 Check the status of the listener as follows:

Enter: `lsnrctl status listenerlem`

You should see the registered service listed in the report as shown in bold in the following extract:

```
C:\>lsnrctl status listenerlem
LSNRCTL for 64-bit Windows: Version 12.1.0.2.0 - Production on 03-MAR-2017 14:49:29
Copyright (c) 1991, 2014, Oracle.  All rights reserved.
Connecting to (DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=ORA12-
DB1.momentum.local)(PORT=1522)))
STATUS of the LISTENER
-----------------------
Alias                     listenerlem
Version                   TNSLSNR for 64-bit Windows: Version 12.1.0.2.0 - Production
Start Date                03-MAR-2017 14:45:43
Uptime                    0 days 0 hr. 3 min. 50 sec
Trace Level               off
Security                  ON: Local OS Authentication
SNMP                      OFF
Listener Parameter File
C:\app\orcl_home\product\12.1.0\dbhome_1\network\admin\listener.ora
Listener Log File         C:\app\orcl_home\diag\tnslsnr\ORA12-
DB1\listenerlem\alert\log.xml
Listening Endpoints Summary...
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=ORA12-DB1.momentum.local)(PORT=1522)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(PIPENAME=\\.\pipe\EXTPROC1522ipc)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcps)(HOST=ORA12-DB1.momentum.local)(PORT=5500))
(Security=(my_wallet_directory=C:\APP\ORCL_HOME\admin\orcl\xdb_wallet))(Presentation=HTTP
)(Session=RAW))
Services Summary...
Service "CLRExtProc" has 1 instance(s).
  Instance "CLRExtProc", status UNKNOWN, has 1 handler(s) for this service...
Service "orcl.momentum.local" has 1 instance(s).
  Instance "orcl1", status READY, has 1 handler(s) for this service...
Service "orclXDB.momentum.local" has 1 instance(s).
  Instance "orcl1", status READY, has 1 handler(s) for this service...
The command completed successfully
C:\>
```

15 Try to access the EM Express link again by starting Google Chrome and navigating to the following address:

https://scan-host.domain:5500/em

16 Check the database connectivity by opening a Command prompt and typing:

tnsping orcl

Enabling the Oracle Transparent Application Failover (TAF) Service

After successfully installing Oracle RAC, add and enable the Oracle dedicated service Transparent Application Failover (TAF). Once enabled, the TAF service can be accessed by all Oracle clients.

To enable the TAF service:

1 Open a command prompt and launch the Oracle server control utility (**srvctl**), enter:

srvctl

2 Add the TAF service **orcltaf**, enter:

srvctl add service -s orcltaf -d orcl -r "orcl1,orcl2" -e SELECT -m
BASIC -w 5 -z 180

3 Check the TAF service, enter:

srvctl config service -s orcltaf -d orcl

4 Start the TAF service, enter:

srvctl start service -d orcl -s orcltaf

5 Check the status of the TAF service, enter:

```
srvctl status service -d orcl
```

6 The Oracle client will access this service using the following connection string in
   tnsnames.ora:

```
ORACLE_RAC =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP)
    (HOST = ORA12-EE-DB-SCAN.MOMENTUM.LOCAL)
    (PORT = 1521))
    (CONNECT_DATA =
      (SERVICE_NAME = orcltaf.MOMENTUM.LOCAL)
    )
  )
```

Setting the Password Never to Expire

To prevent the Oracle db password from expiring after the default period of six months:

1 Run SQLplus as user sysdba, enter the following commands:

```
sqlplus / as sysdba

SQL> alter profile DEFAULT limit password_life_time UNLIMITED;
```

The sqlplus query tool will return the following message to confirm the change:

```
Profile altered
```

2 Confirm that the database user with profile DEFAULT does not have an associated
   expiry date, enter:

```
SQL> select username,lock_date,expiry_date from dba_users where
profile='DEFAULT';
```

There should be no value for the field: **expiry_date**.

Troubleshooting Access Denied Messages with ASM Storage

This section describes an error message (ASM-0001), which may be returned by Oracle ASM
storage, and how to address this error if it occurs.

```
ASM-0001: could not open device \\?\volume...
```

O/S-Error: (OS-5) Access is denied.

Cause: User Account Control (UAC) may require administrators specifically to approve administrative actions or applications before they are allowed to run. If you do not supply the proper credentials, the **asmtool** and **asmtoolg** utilities report these errors.

Action: There are a few ways to resolve this problem, as follows:

- Click **Continue** in the UAC dialog box if you are logged in as an administrative user, or provide the credentials for an administrator user, then click **Continue**.
- Create a desktop shortcut to a command window. Open the command window using the Run as Administrator option, then right-click the context menu, and launch the **asmtool**.
- Configure the UAC implementation on your Windows Server to turn off UAC or to change the elevation prompt behavior for administrator users.

For more information on troubleshooting ASM storage issues, see:

https://docs.oracle.com/database/121/CWWIN/trouble.htm#CWWIN423

Note: For more detailed information on managing security and user account control (UAC) in a business or enterprise environment, see the Microsoft reference papers available from: http://technet.microsoft.com/en-us/library/cc731416(WS.10).aspx

Further Information

The following links provide links to Oracle web sites that you might find useful when installing the Oracle 12c database:

- Oracle Grid Infrastructure Installation Checklist:

  https://docs.oracle.com/database/121/CWWIN/chklist.htm#CWWIN444

- Configuring Servers for Oracle Grid Infrastructure and Oracle RAC:

  https://docs.oracle.com/database/121/CWWIN/servers.htm#CWWIN460

- Configuring Operating Systems for Oracle Grid Infrastructure and Oracle RAC:

  https://docs.oracle.com/database/121/CWWIN/prewin.htm#CWWIN168

- Deactivating the Windows Firewall feature on Windows Servers:

  https://docs.oracle.com/database/121/CWWIN/prewin.htm#CWWIN215

- Troubleshooting Oracle ASM Storage Issues

  https://docs.oracle.com/database/121/CWWIN/trouble.htm#CWWIN423

- Configuring the HTTPS Port for EM Express:

  http://docs.oracle.com/database/121/ADMQS/GUID-EB851101-07BE-4038-BB9D-06E01CC7F5D5.htm#ADMQS032

The following troubleshooting pages require you to enter your Oracle support account credentials:

https://support.oracle.com/epmos/faces/
DocumentDisplay?parent=DOCUMENT&sourceId=2016850.1&id=1604062.1

https://support.oracle.com/epmos/faces/
DocumentDisplay?parent=DOCUMENT&sourceId=2016850.1&id=1601454.1

Installing Oracle 12c Client (version 12.1.0.2.0)

Overview

Momentum node components require an installation of the Oracle 12c Client Release 1 software to connect to and communicate with the instance of Oracle 12c Server on the Momentum database servers.

Preparing the Environment for Oracle 12c Client Release 1

Enabling the Microsoft .Net Framework on Momentum Nodes

The Microsoft .Net Framework version 2.0 must be enabled on all Momentum nodes before installing the Oracle 12c Client software.

Enable the Microsoft .Net Framework on the Momentum nodes as follows:

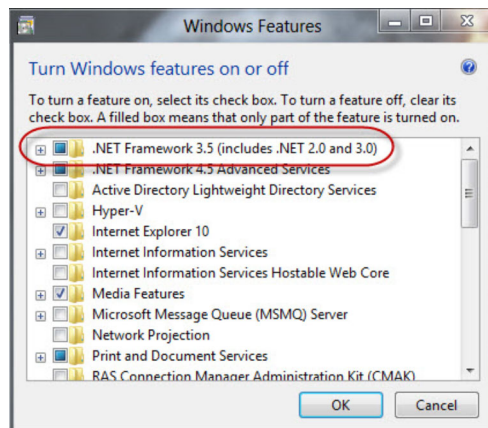1 Open: **Programs and Features > Turn Windows Features on off**
.

Fig. 4-56: Adding the Oracle Installation User

2 Select: **.Net Framework 3.5 (includes 2.0 and 3.0)** then click **OK.**

You can now install and configure the Oracle 12c Client, see Section .

Installing the Oracle 12c Client

To install the Oracle Grid infrastructure software, first download the zip files from the FTP repository as follows:

1 Download and unzip the following Oracle file for patch set 12.1.0.2.0 using the **extract here** option:

- `p21419221_121020_MSWIN-x86-64_7of10`

2 In the unzipped client folder run the setup executable as Administrator, enter:

`setup.exe`

Note: The user installing the software must have local administrator privileges on the client node.

This launches the Installer for the Oracle Database Client 12c Release 1.

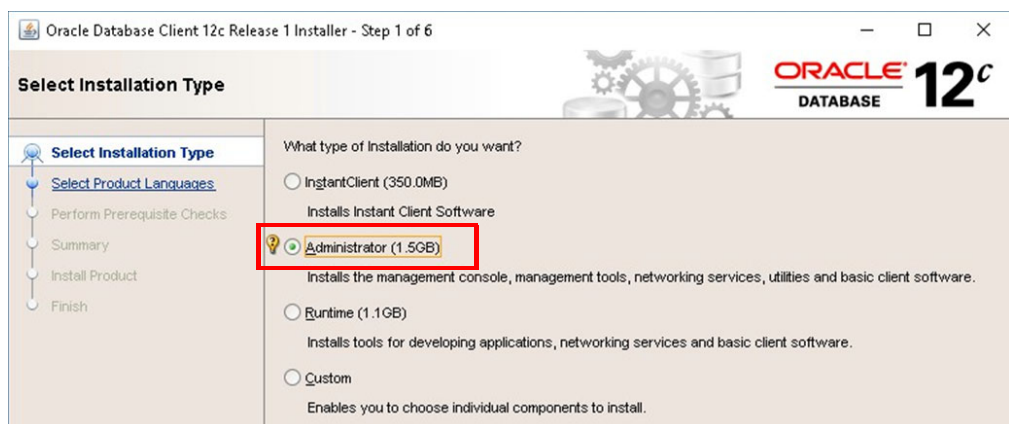3 In the **Installation Type** window, select the option: **Administrator**, then click **Next**.

Fig. 4-57: Oracle Client Installation Type

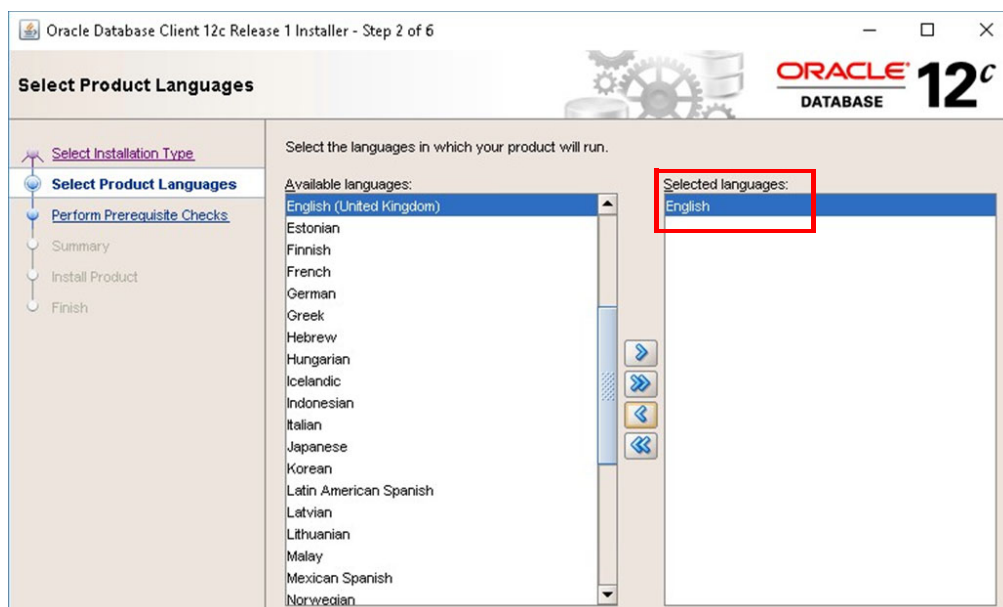4 In the **Product Languages** window, select the option: **English** then click **Next.**

Fig. 4-58: Selecting Oracle Client Language

5   In the **Oracle Home User Selection** window, select **Use Windows Built-in Account** then click **Next**.
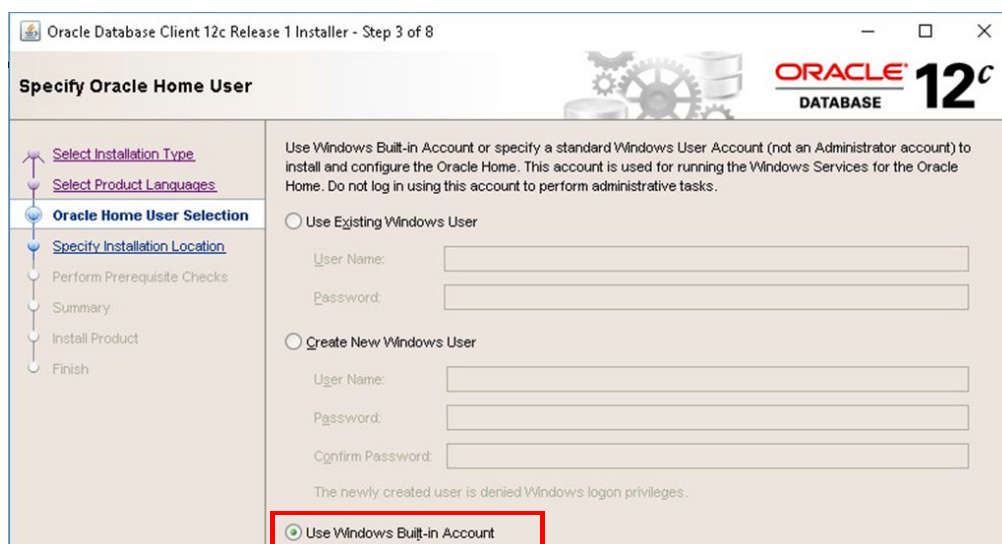

Fig. 4-59: Selecting the Oracle Home User Account

6   In the **Specify Installation Location** window, accept the default Oracle base and Software location directories, then click **Next**.

In the example shown in Figure 4-60 the admin user installing the Oracle 12c Client software is: **ora_home**.
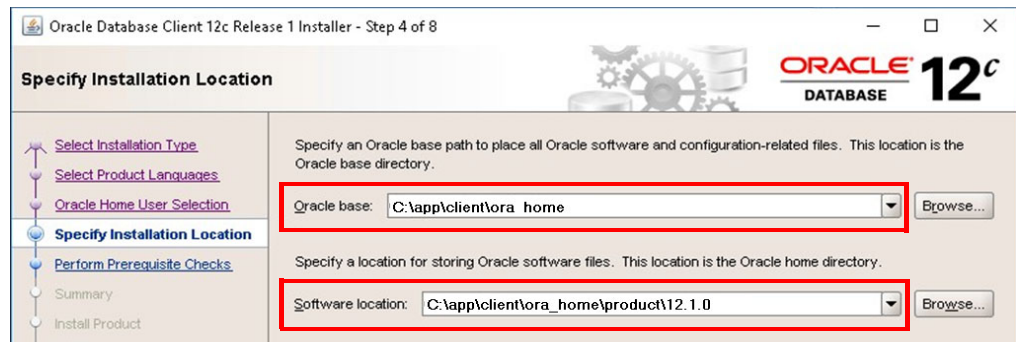
Fig. 4-60: Setting-up Oracle Client Installation Location Directories

This now starts the automatic prerequisite checks.

7 Wait for successful completion of the Prerequisite checks:
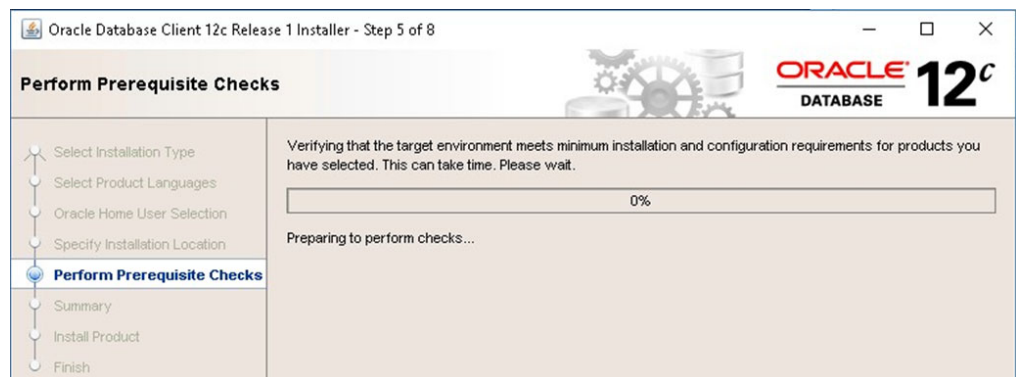
Fig. 4-61: Oracle Client 12c Prerequisite Checks

8 On successful completion of the Prerequisite Checks, the Installer displays a summary report showing the global settings of the client.

Fig. 4-62: Starting the Oracle Client Software Installation

9 Click **Save Response File** to save the summary report for future reference, then click **Install** to start the installation.

10 On successful completion of the installation, click **Close**.
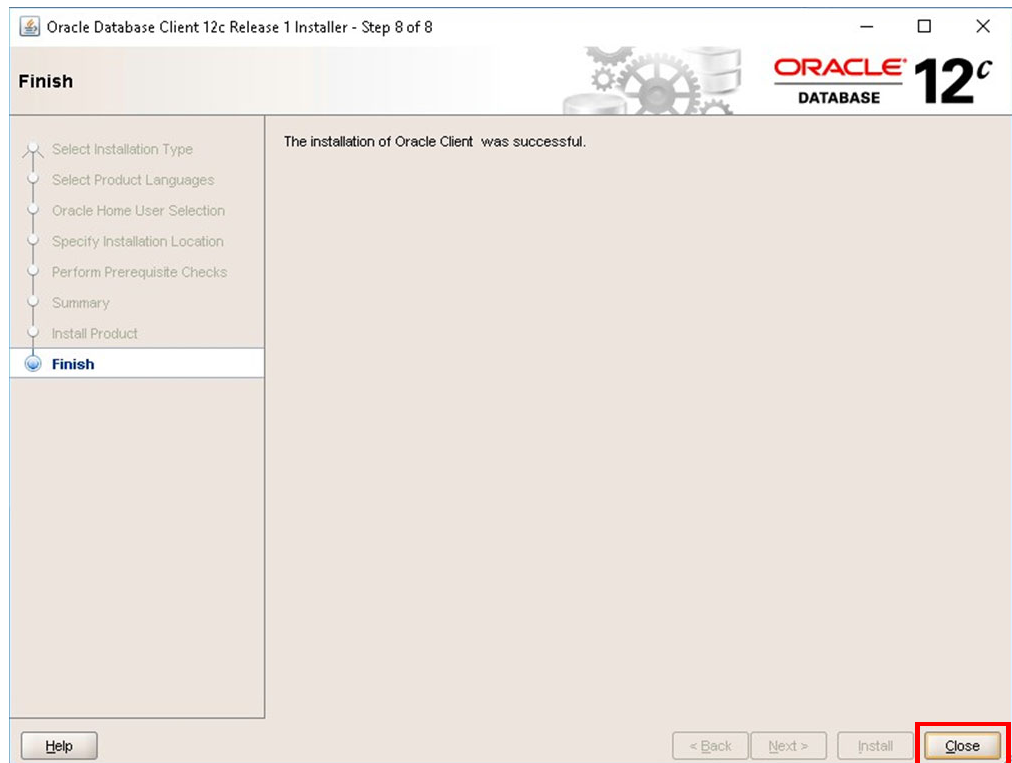
Fig. 4-63: Oracle 12c Client Installation Complete

11 Continue to install the Oracle 12c Client on all other Momentum nodes.
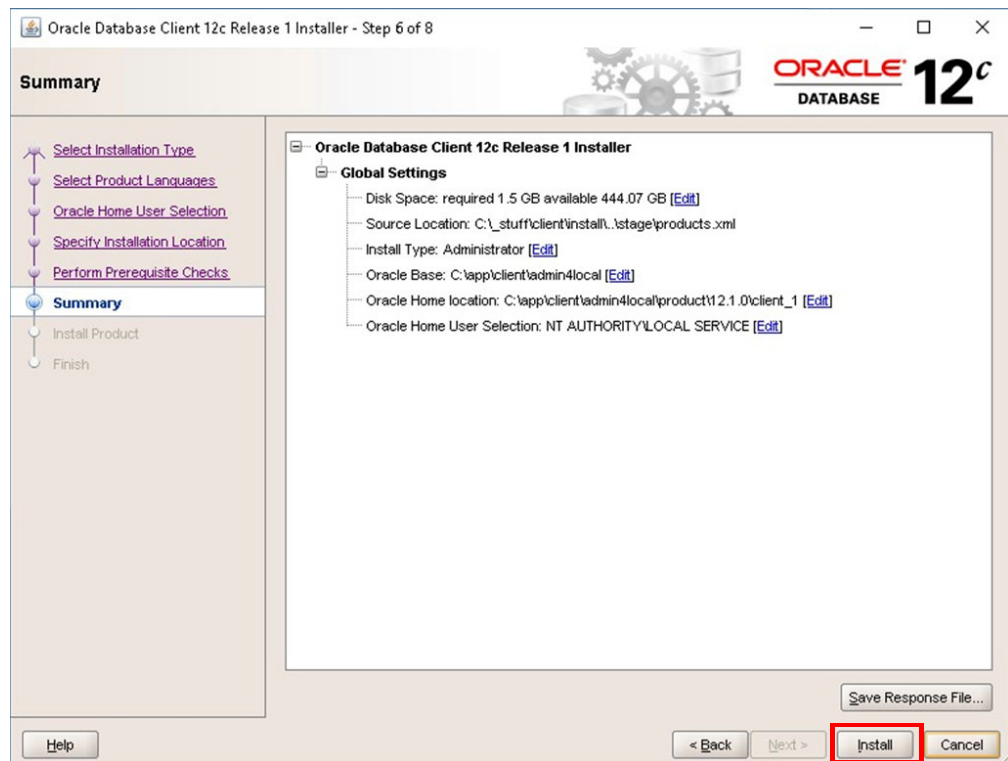
Oracle 12c Client Post-installation Tasks

Once you have successfully installed the Client software, you need to complete the tasks described in this section to enable the Oracle Client to connect to the Oracle Server.

Disabling Sqlnet Authentication Services

After successfully installing an Oracle 12c Client, it is recommended to disable the Sqlnet Authentication Services parameter in the Oracle profile configuration file **sqlnet.ora** as follows:

1 Open the **sqlnet.ora** file from the network admin directory in a text editor:

   `C:\app\ora_home\product\12.1.0\client_1\network\admin\sqlnet.ora`

2 Locate the parameter **SQLNET.AUTHENTICATION_SERVICES** and change the default value (NTS) to **None** as follows:

   `SQLNET.AUTHENTICATION_SERVICES= NONE`

   This deactivates the authentication services.

3 Save your changes and close the file **sqlnet.ora**.

Testing Connections to the Oracle Server

Test the connection between your Oracle Client and the Oracle Database Server as follows:

1. Go to the Oracle Client network sample directory:

   `C:\app\ora_home\product\12.1.0\client_1\network\admin\sample\`

2. Copy the file `tnsnames.ora` into the parent directory:

   `C:\app\ora_home\product\12.1.0\client_1\network\admin\`

3. Open the file `tnsnames.ora` in a text editor.

4. Replace the entire content of the file with the most appropriate alias from the following, depending on the server configuration:

   For a Single Instance Oracle database server:

   ```
   <orcl_alias>_si =
     (DESCRIPTION =
       (ADDRESS = (PROTOCOL = TCP)(HOST =
        <hostname or IP>)(PORT = 1521))
       (CONNECT_DATA =
         (SERVICE_NAME = orcl)
       )
     )
   ```

   For a RAC Oracle database server:

   ```
   <orcl_alias>_rac =
     (DESCRIPTION =
       (ADDRESS = (PROTOCOL = TCP)(HOST =
           <clustername-scan.domain>)(PORT = 1521))
       (CONNECT_DATA =
         (SERVICE_NAME = orcl.domain)
       )
     )
   ```

   For a RAC Oracle database server with TAF service:

   ```
   <orcl_alias>_rac_taf =
     (DESCRIPTION =
       (ADDRESS = (PROTOCOL = TCP)(HOST =
           <clustername-scan.domain>)(PORT = 1521))
       (CONNECT_DATA =
         (SERVICE_NAME = orcltaf.domain)
       )
     )
   ```

5. Save the file `tnsnames.ora` with the new alias content.

6. Open a command prompt and enter the following command to check connectivity to the Oracle Server, where `<orcl_alias>` is the Oracle net_service_name:

   `C:\Users\ora_home>tnsping <orcl_alias>`

For example, enter:

```
C:\Users\ora_home>tnsping mdvhp5
```

> Note: Note that the alias (or net_service_name) is the same name used in the
> Momentum file DBConfiguration.xml in the field <addressname>. In
> this example the DBConfiguration.xml should contain:
>
> ```
> <DBConfiguration>
>         <user>MOMENTUMDB_USERNAME</user>
>         <password>MOMENTUMDB_PASSWORD</password>
>         <addressname>mdvhp5</addressname>
> </DBConfiguration>
> ```

You should see similar output to the following to show successful connectivity from
the Oracle 12c Client:

```
C:\Users\admin4local>tnsping mdvhp5

TNS Ping Utility for 64-bit Windows: Version 12.1.0.2.0 -
Production on 20-MAR-2017 16:15:13

Copyright (c) 1997, 2014, Oracle.  All rights reserved.

Used parameter files:

C:\app\client\admin4local\product\12.1.0\client_1\network\admi
n\sqlnet.ora

Used TNSNAMES adapter to resolve the alias

Attempting to contact (DESCRIPTION = (ADDRESS = (PROTOCOL =
TCP)(HOST = 10.10.5.102)(PORT = 1521)) (CONNECT_DATA =
(SERVICE_NAME = orcl)))

OK (0 msec)

C:\Users\admin4local>
```

Client-side Recommendations

Disabling Sqlnet Authentication Services

After successfully installing an Oracle 12c client, it is recommended to disable the Sqlnet
Authentication Services parameter in the Oracle profile configuration file **sqlnet.ora** as
follows:

1 Open the **sqlnet.ora** file from the network admin directory in a text editor:

```
C:\app\ora_home\product\12.1.0\client_1\network\admin\sqlnet.ora
```

2 Locate the parameter **SQLNET.AUTHENTICATION_SERVICES** and change the default
value (NTS) to **None** as follows:

```
SQLNET.AUTHENTICATION_SERVICES= NONE
```
This deactivates the authentication services.

3 Save your changes and close the file **sqlnet.ora**.

Momentum Supported Third-party Devices

5

Supported Device Table

Momentum supports the following third-party devices:

Company	Supported Device / Application
Quality Control	
Dalet	iCR UQC
Digimetrics	Aurora
Emotion systems	eFF
Interra systems	Baton
Grass Valley	Internal QC Audio QC
Tektronix	Cerify
Telestream	VantageQC
Venera	Pulsar
VidCheck	VidChecker
Transcoding	
Capella Systems	Cambria
Dalet	iCR Transcoder
EEG	CCPlayFilePro
Ffmpeg	FFmpeg Transcoder
Harmonic	Rhozet ProMediaCarbon Rhozet WFS (includes EDL Export and Bumper edit)
Grass Valley	Alchemist XF Quasar XF FileFlow Kronos XF Media Biometrics
Telestream	Agility (includes EDL export) Flip Factory Vantage
Wohler	Audio Morph Omneon Consolidator RadiantGrid

Company	Supported Device / Application
Archiving	
Oracle Front Porch Digital	DIVA Archive DIVA Delete DIVA Partial Restore DIVA Restore
Sony	Juke Archive
Quantum StorNext	StorNext Data Management
Metadata Exchange	
Imagine	Harris Data Import
Grass Valley	BXF Metadata Exchange Morpheus Data Exchange
File Wrappers	
EVS Open Cube	MXFTk (MXF Toolkit)
File Transfer	
Aspera	Aspera FASP Transport Technology

Product Support

Providing Information to Grass Valley

If you experience any technical or operational difficulties with a Grass Valley product please do not hesitate to contact us to request assistance.

There is a lot of information you can give us that will enable us to diagnose your problem swiftly. Please read the following guidelines, as these suggestions will help us to help you.

Basic Information

- **For Units:** Provide the exact product Model, unit Serial Number and Software Version information.

Software Application

- **Inputs:** Provide full details of the Input Signals being used including any references, etc., and where they are being generated.
- **Outputs:** Provide full details of the Output Signals required and how they are being monitored.
- **System:** Provide a brief description of the system in which your equipment is currently being used.

Your Contact Details

In addition to the above, remember to provide us with your contact details to enable us to get in touch with you swiftly:

- Name(s)
- Telephone
- E-mail addresses
- Business address
- Contact Details

Customer Support

For details of our Regional Customer Support Offices, please visit the Grass Valley website and navigate to Support/Contacts Support.

http://www.grassvalley.com/support

Customers with a support contract should call their personalized number, which can be found in the contract, and be ready to provide their contract number and details.

Grass Valley Technical Support

For details of our Regional Customer Support Offices please visit the Grass Valley web site and navigate to: **Support > Customer Care**.

https://grassvalley.com/support

Customers with a support contract should call their personalized number, which can be found in their contract, and be ready to provide their contract number and details.

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