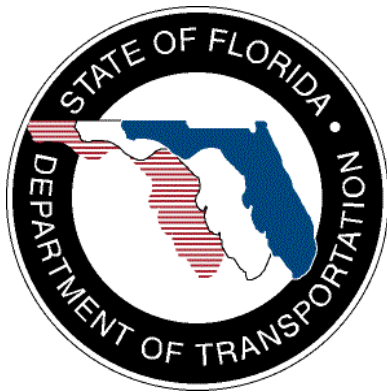


SunGuide®:

Windows Server 2008 R2 x64 SunGuide Compatibility Testing

SunGuide-TR-W2008X64



Prepared for:

Florida Department of Transportation
Traffic Engineering and Operations Office
605 Suwannee Street, M.S. 90
Tallahassee, Florida 32399-0450
(850) 410-5600

June 30, 2010

Document Control Panel			
File Name:	SunGuide-TR-W2008x64-Draft.docx		
File Location:	SunGuide CM Repository		
CDRL:	NA		
	Name	Initial	Date
Created By:	Robert Heller, SwRI	RWH	06/30/2010
	Roger Strain, SwRI	RLS	06/30/2010
Reviewed By:	Robert Heller, SwRI	RWH	06/30/2010
Modified By:	John Brisco, SwRI	JSB	06/30/2010
	Hector Iruegas, SwRI	HAI	06/30/2010
Completed By:			

Table of Contents

	Page
List of Acronyms	vi
Revision History	v
1. Scope 1	
1.1 Document Identification.....	1
1.2 Project Overview.....	1
1.3 Related Documents	2
1.4 Contacts	3
2. Test Environment	4
2.1 Windows Server 2008 R2 X64	4
2.2 SunGuide Application Server	4
2.3 Oracle Database Server.....	4
2.4 Workstation	4
3. Findings 5	
3.1 ESRI Map Objects	5
3.2 Crystal Reports	5
3.3 Data Archive.....	6
3.4 Interim Workaround.....	6
4. Notes 7	

List of Attachments

Attachment A	Record of Admin Editor Regression Testing.....	8
Attachment B	Record of Operator Interface Regression Testing	16
Attachment C	Installation of Windows Server 2008 R2 x64.....	22
Attachment D	Oracle 11G R2 Database Installation	25
Attachment E	Oracle 11G R2 Client Installation	33
Attachment F	Creating New Database on Oracle 11G R2.....	38

List of Acronyms

C2C	Center To Center
Data	Data Requirements
DMS	Dynamic Message Sign
EDT	Editors
FAT	Factory Acceptance Test
FDOT	Florida Department of Transportation
GAM	GUIs and Menus
GEN	General
GUI	Graphical User Interface
IC	Integration Case
ICD	Interface Control Document
ITN	Invitation to Negotiate
ITS	Intelligent Transportation Systems
PERF	Performance
RPG	Response Plan Generator
SICP	Software Integration Case Procedures
SIP	Software Integration Plan
SRS	Software Requirements Specification
SwRI	Southwest Research Institute
TMC	Transportation Management Center
TSS	Traffic Sensor Subsystem
VAR	Various

REVISION HISTORY

Revision	Date	Changes
DRAFT	06/30/2010	Initial Release

1. Scope

1.1 Document Identification

This document reports the results of compatibility testing between SunGuide Release 5.0 and Microsoft Windows Server 2008 x64. The intent of the testing was to identify major problem areas of incompatibility; it did not exercise the software in an exhaustive manner over a long period of time.

1.2 Project Overview

The Florida Department of Transportation (FDOT) is conducting a program that is developing SunGuide software. The SunGuide software is a set of Intelligent Transportation System (ITS) software that allows the control of roadway devices as well as information exchange across a variety of transportation agencies. The goal of the SunGuide software is to have a common software base that can be deployed throughout the state of Florida. The SunGuide software development effort was based on ITS software available from the state of Texas. In addition to the reuse of software (along with customization of this software), a number of new software modules are being developed. The following figure provides a graphical view of the software.

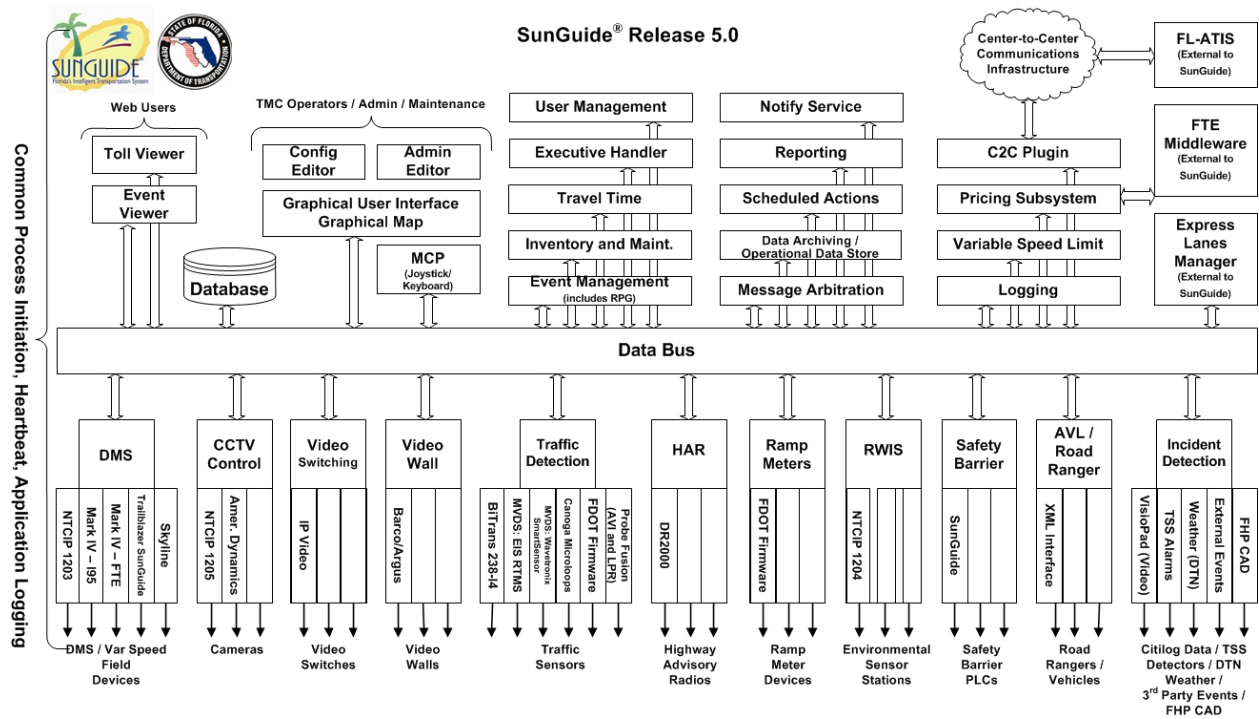


Figure 1-1 - High-Level Architectural Concept

The SunGuide development effort began in October 2003, four major releases have been developed and this document is addressing the fifth release of the software. After the development, the software will be deployed to a number of Districts and Expressway Authorities throughout Florida and support activities will be performed.

1.3 Related Documents

The following documents were used to develop this document:

- *Southwest Research Institute*[®] (SwRI) Qualification Response: *Response to the Invitation to Negotiate (ITN): Statewide Transportation Management Center (TMC) Software Library System, Negotiation Number: ITN-DOT-02/03-9025-RR*, SwRI Proposal No. 10-35924, dated: November 18, 2002.
- SwRI Technical Proposal: *Technical Proposal for Invitation to Negotiate (ITN): Statewide Transportation Management Center Software Library System, Negotiation Number: ITN-DOT-02/03-9025-RR*, SwRI Proposal No. 10-35924, dated: January 31, 2003.
- SwRI Cost Proposal: *Cost Proposal for Invitation to Negotiate (ITN): Statewide Transportation Management Center Software Library System, Negotiation Number: ITN-DOT-02/03-9025-RR*, SwRI Proposal No. 10-35924, dated: January 31, 2003.
- SwRI BAFO letter: *Southwest Research Institute*[®] Proposal No. 10-35924, “*Invitation to Negotiate (ITN): Statewide Transportation Management Center Software Library System*”, Reference: *Negotiation Number: ITN-DOT-02/03-9025-RR*, dated: May 5, 2003.
- FDOT procurement document: *Invitation To Negotiate (ITN), Negotiation Number: ITN-DOT-02/03-9025-RR, Statewide Transportation Management Center Software Library System*, dated: October 21, 2002.
- FDOT Scope of Services: *Statewide Transportation Management Center Software Library System: Scope of Services*, September 22, 2003.
- FDOT Requirements Document: *Statewide Transportation Management Center Software Library System: Requirements Specification*, June 3, 2003.
- Southwest Research Institute, *TMC Software Study*, November 15, 2001.
- Southwest Research Institute, *Introduction to an Operational Concept For the Florida Statewide Library*, FDOT – OCD – 1.0, March 31, 2002.
- *Standard Written Agreement Modification #22 for SunGuide*[®] *Software Release 4.3 ,5.0*, January 10, 2010
- World Wide Web Consortium (W3) website: <http://www.w3.org>.
- SunGuide Project website: <http://sunguide.datasys.swri.edu>.

1.4 Contacts

The following are contact persons for the SunGuide software project:

- Elizabeth Birriel, ITS Central Office, elizabeth.birriel@dot.state.fl.us, 850-410-5606
- Arun Krishnamurthy, FDOT SunGuide Project Manager, Arun.Krishnamurthy@dot.state.fl.us, 850-410-5615
- David Chang, Consultant Project Manager, David.Chang@dot.state.fl.us, 850-410-5622
- Khue Ngo, Senior ITS Analyst, khue.ngo@dot.state.fl.us, 850-410-5579
- Steve Dellenback, Map Task Lead, sdellenback@swri.org, 210-522-3914
- Robert Heller, SwRI Project Manager, rheller@swri.org, 210-522-3824

2. Test Environment

SwRI established a test environment that consisted of the hardware and software as follows:

- SunGuide Application Server
- Oracle Database Server
- Workstation

2.1 Windows Server 2008 R2 X64

Both the SunGuide Application Server and the Oracle Database Server were x64 based servers on which Windows Server 2008 R2 was installed. This is the latest server operating system available from Microsoft at the time of testing. As of the R2 version, Microsoft has removed support for 32 bit (x86) processors, which means only 64 bit processors can run the OS. If districts are running 32 bit servers and do not plan on upgrading them, but do want to run Windows Server 2008 (release 1), additional testing may be required. It is expected that most systems either already use 64 bit processors, or that they will be upgraded to such processors when the new operating system is put into use.

2.2 SunGuide Application Server

Testing was performed with the SunGuide Release 5.0 branch of code. It is anticipated that all districts will be upgrading to SunGuide Release 5.0 shortly after its formal release. Previous versions of the applications should be quickly phased out; therefore testing against these versions was not considered necessary.

2.3 Oracle Database Server

The latest database server available from Oracle for the Windows x64 platform when testing was started was Oracle 11G R2. A later version was available for other platforms, and has since been released for Windows x64, and could be the subject of further tests if desired by FDOT.

2.4 Workstation

Client testing against the Windows Server 2008 x64 servers was performed on a 32 bit platform running Windows XP SP3. Client interaction with the servers is not affected by the 32 bit vs. 64 bit configurations, so it is anticipated that any Windows client with XP or later should work similarly, regardless of the server operating system or architecture.

3. Findings

SwRI identified two major areas of incompatibility between SunGuide and Windows Server X64:

- ESRI Map Objects
- Crystal Reports

An additional issue was detected with Data Archive, but this issue has a simple fix.

The primary problem that was discovered was related to the fact that Windows Server 2008 R2 is only available on 64 bit platforms, and is intended to be an exclusively 64 bit operating system. There is a 32 bit compatibility layer, but during testing this layer did not appear to provide sufficient compatibility in the test environment. Use of this compatibility layer appears to be discouraged, and it is important to attempt to move to native 64 bit libraries and applications wherever possible.

3.1 ESRI Map Objects

The ESRI MapObjects library is used by the AVL/RR subsystem to determine street locations of vehicles when they report location information as latitude and longitude and by the C2C Plug-in to supply county information for device data sent to FL-ATIS. This sort of functionality has also been considered for future enhancements, including integration of INRIX traffic data and enhancement of weather report information provided by DTN. During testing, SwRI was unable to configure the library for use in the Windows Server 2008 R2 x64 environment.

Thirty two bit libraries can be used on 64 bit operating systems, but must be installed in a manner which allows the system to properly handle the target environment the library was built for. No x64 compiled MapObjects libraries are available, and ESRI no longer provides that product. During installation, required DLLs are registered by the InstallShield tool. The documentation of InstallShield indicates that DLLs registered by it should be installed correctly regardless of the target operating system, whether it is 32 bit or 64 bit. Despite this, InstallShield was unable to install the 32 bit MapObjects library on the x64 server in a useable manner. Because of this, the AVL/RR components could not be tested further.

It is possible that with sufficient investigation, SwRI may be able to find a workaround to allow this library to be used. However, during the testing period, no suitable workaround was found. A better solution is likely to be identification of a new tool which contains native x64 support. ESRI provides multiple alternate products, at least one of which is likely to provide the necessary support. There are also alternate third party developers who provide similar tools, as well as open source alternatives. Any of these may prove a viable alternative to MapObjects, and should be investigated to provide a method of making SunGuide's AVL/RR and C2C Plug-in components compatible with Windows Server 2008 R2 on an x64 platform.

3.2 Crystal Reports

Two issues were noted with respect to use of Crystal Reports in the target Windows Server 2008 R2 x64 environment. One is native x64 support, the other is related to the build environment of the Reporting Subsystem.

Currently, SunGuide is designed to use Crystal Reports 11. During testing, SwRI discovered that the Crystal Reports could not run in the Windows Server 2008 x64 test environment. This is likely due to the 32 bit compatibility layer. Crystal Reports 12 is already available, and supports Windows Server 2008 x64 deployments. Upgrading to Crystal Reports 12 is the only viable option for allowing SunGuide to run in this environment while maintaining its support for providing reporting information.

An additional issue was detected in building the 64 bit applications which could make use of Crystal Reports 12. SunGuide uses a set of libraries to interface to the Crystal Reports server process. These libraries currently work with Visual Studio 2008, which is the environment that SunGuide was built with through release 4.3. Beginning with release 5.0, SunGuide components have been built with Visual Studio 2010. However, the Crystal Reports libraries are not currently compatible with Visual Studio 2010. The Reporting Subsystem can continue to be built with Visual Studio 2008, but it would be beneficial for all processes to be built in the same environment. An updated version of the libraries is expected to be available in the future, so resolution of this issue will likely be a matter of waiting for an updated release from the vendor.

3.3 Data Archive

While starting the system, Data Archive was unable to successfully start up. After investigation, it appeared that this was due to the version of a client library used by Data Archive being too far out of date when compared with the version of Oracle being used in the test environment. Once Data Archive was recompiled with an updated library from the current version of Oracle, the issue was resolved. This change will need to be incorporated into the build process once FDOT indicates that all districts will be moving to the new version of Oracle. It is unknown whether the newer client library would work with older versions of Oracle, so it is highly recommended that all installations be based on the same current version of Oracle.

3.4 Interim Workaround

While the AVL/RR, C2C Plug-in, and Reporting systems have issues related to Windows Server 2008 R2 x64, it is possible to configure SunGuide to run in an environment which is predominantly based on that operating system and architecture. All other SunGuide processes work correctly in the environment; therefore a single server could be set aside to run only the AVL/RR, C2C Plug-in, and Reporting processes. That server could continue to run a 32 bit version of Windows Server 2003, as all current servers run. Due to the architecture of the SunGuide system, moving these two components to a different server is a relatively simple task, and could allow the remainder of the system to benefit from the newer environment while the incompatible components continue to run in their existing environment until proper, 64 bit compatible solutions are available.

4. Notes

Attachment A
Test record of Admin Editor

For each of the following object types, go to the listed Admin Editor screen, add an object, test communication if a real device exists, edit the object, and delete the object. During this process, have an Operator Map open to view the specified dialogs to verify that the device appears correctly and is removed.

Subsystem	Object Type	Action	Pass	Fail	N/T	Notes	
AVL/RR	Beats	Add	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Unable to test due to Windows 2K8R2 compatibility issue	
		Edit	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
		Delete	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
	Radios	Add	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
		Edit	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
		Delete	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
	Operators	Add	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
		Edit	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
		Delete	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
	Vehicles	Add	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
		Edit	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
		Delete	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
CCTV/VS	Cameras	Add	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
		Edit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
		Delete	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	Destinations	Add	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
		Edit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
		Delete	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Minor Error	
	Sources	Add	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
		Edit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
		Delete	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Data Archive	Properties	Edit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Passed after updating Oracle client library	
DMS	Approved Words	Add	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
		Delete	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	Connection Types	Edit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
		Fonts	Add	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			Edit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Manufacturers	Delete	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
		Polling Names	Add	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			Process				

Subsystem	Object Type	Action	Pass	Fail	N/T	Notes
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Signs	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
Event Management	Activity Types	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Agencies	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Agencies Contacts	Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Edit Agency Contacts	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Modify	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Comment Types	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Event Status Types	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Event Types	Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Injury Types	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Organizations	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Locations	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Counties	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Lane Maps	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Lane Types	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	

Subsystem	Object Type	Action	Pass	Fail	N/T	Notes
	Reference Points	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Roadways	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete				Not an option
	Mailing Lists	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Mailing List Contacts	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Procedural Errors	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Abbreviations	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	<input type="checkbox"/>	■	<input type="checkbox"/>	Error
		Delete	<input type="checkbox"/>	■	<input type="checkbox"/>	Error
	Device Templates	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Message Templates	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Vehicle Colors	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Vehicle States	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Vehicle Makes	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Vehicle Models	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Vehicle Types	Add	Standardized			Can't be changed by SunGuide
		Edit	Standardized			Can't be changed by SunGuide
		Delete	Standardized			Can't be changed by SunGuide

Subsystem	Object Type	Action	Pass	Fail	N/T	Notes
Express Lanes	Holidays	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Segments	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Daily Schedules	Rate Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Segment/Rate Schedules	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Toll Rate Signs	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
HAR	Radios	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
Incident Detection	Citilog Cameras	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
Inventory/Maintenance	Equipment	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Locations	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	<input type="checkbox"/>	■	<input type="checkbox"/>	Error
	Vendors	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
Reporting	Report Groups	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	Unable to test due to Windows 2K8R2 compatibility issue
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
RMS	Controllers	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	

Subsystem	Object Type	Action	Pass	Fail	N/T	Notes
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Special Events	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Groups	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
RWIS	Poll Cycles	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Stations	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
Safety Barrier	Stations	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
Scheduled Actions	Schedules	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Sequences	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
TSS	Detectors	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Poll Cycles	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	Possible change
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
TVT	Alternate Routes	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	Possible change
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Destinations	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Matching Routes	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	Possible change
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Message Templates	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	

Subsystem	Object Type	Action	Pass	Fail	N/T	Notes
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Travel Time Links	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
VSL	Groups	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Plans	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
Miscellaneous	Centers	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
User Management	Groups	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Workstations	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Users	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	

Green→ Just as an FYI
 Yellow→ Minor issues/Could be a problem which occurred only once
 Red→ Bug or Issue needing correction

AVL/RR

Beats

Edit→ Driver must be started to edit a BEAT

Delete→ BEAT can not be active to delete

CCTV/VS

Video Destinations

Delete→ The destination can only be deleted when the CCTV Driver is stopped.

Event Management

Counties

Delete→ Unable to delete a county with roadways and directions defined. However you can delete a county without roadways and directions defined. This was probably an attempt to keep EM events valid.

Roadways

Delete→ This is not an option. If a roadway must be deleted it needs to be done from the database

Abbreviations

Edit→ Unable to edit words such as “Car Pool”, but can edit “CarPool”. It appears to be reading up to the space.

Delete→ Unable to delete words such as “Car Pool”, but can delete “CarPool”. It appears to be reading up to the space.

IMS

Locations

Delete→ I was able to delete a location despite it being in use. This should not be possible.

TSS

Poll Cycles

Add→ In order to add a Poll Cycle, a driver must be added, this is done through “Device Drivers”. Once this is done you are able to add Poll Cycle to Driver. One error noticed was when adding a Poll Cycle to a driver who had a Poll Cycle defined. We believe the “polling information page” should limit the driver name drop down box to only drivers who have no Poll Cycle defined.

TVT

Alternate Routes

Add→ When adding Alternate Route and a Route Name is entered “Save and Exit” must be click twice. However, when a Route Name is not entered “Save and Exit only needs to be click once.

Matching Routes

Add→ When adding Alternate Route and a Route Name is entered “Save and Exit” must be click twice. However, when a Route Name is not entered “Save and Exit only needs to be click once.

Attachment B
Test Record of Operator Interface

SUBSYS	Object Type	Action	Pass	Fail	N/T	Notes	
CCTV	Camera Blocking	Block Camera	■	<input type="checkbox"/>	<input type="checkbox"/>	Blocked multiple cameras successfully	
		Unblock Camera	■	<input type="checkbox"/>	<input type="checkbox"/>	Unblocked multiple cameras successfully	
		System wide Detection	■	<input type="checkbox"/>	<input type="checkbox"/>	Set to Enable and Disable	
	Camera Control	PTZ	■	<input type="checkbox"/>	<input type="checkbox"/>	Test ran on one camera	
		Filter	■	<input type="checkbox"/>	<input type="checkbox"/>		
		OP Status	■	<input type="checkbox"/>	<input type="checkbox"/>	Set various status	
		Presets	■	<input type="checkbox"/>	<input type="checkbox"/>	Test ran on one camera	
		Unlock/Unlock	■	<input type="checkbox"/>	<input type="checkbox"/>		
		Zoom Iris	■	<input type="checkbox"/>	<input type="checkbox"/>		
	Scheduler	Devices	Nudge	■	<input type="checkbox"/>	<input type="checkbox"/>	
			Devices	■	<input type="checkbox"/>	<input type="checkbox"/>	
			Schedules	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Sequences	Sequences	■	<input type="checkbox"/>	<input type="checkbox"/>	
Active Sequences			Edit Sequence	■	<input type="checkbox"/>	<input type="checkbox"/>	
Terminate			■	<input type="checkbox"/>	<input type="checkbox"/>		
Device Groups	Add	Add	■	<input type="checkbox"/>	<input type="checkbox"/>		
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>		
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>		
	Device Status	Put MSG up	■	<input type="checkbox"/>	<input type="checkbox"/>		
		Blank Sign	■	<input type="checkbox"/>	<input type="checkbox"/>		
Message Libraries	Device Status	Brightness	■	<input type="checkbox"/>	<input type="checkbox"/>		
		Filter	■	<input type="checkbox"/>	<input type="checkbox"/>		
		OP Status	■	<input type="checkbox"/>	<input type="checkbox"/>		
		MAS Queue	■	<input type="checkbox"/>	<input type="checkbox"/>		
		Add	■	<input type="checkbox"/>	<input type="checkbox"/>		
	Edit	Edit	■	<input type="checkbox"/>	<input type="checkbox"/>		
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>		
		Queue Manager	Filter	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Sequence Libraries	Add Lib/Seq	Add Lib/Seq	■	<input type="checkbox"/>	<input type="checkbox"/>	
			Edit Lib/Seq	■	<input type="checkbox"/>	<input type="checkbox"/>	
Delete Lib/Seq			■	<input type="checkbox"/>	<input type="checkbox"/>		
Copy Lib/Seq			■	<input type="checkbox"/>	<input type="checkbox"/>		
Move Lib/Seq			■	<input type="checkbox"/>	<input type="checkbox"/>		
Toll Lane Status	Put MSG up	■	<input type="checkbox"/>	<input type="checkbox"/>			

SUBSYS	Object Type	Action	Pas s	Fail	N/T	Notes
		Blank Sign	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Brightness	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Filter	■	<input type="checkbox"/>	<input type="checkbox"/>	
		OP Status	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Toll Rate Status	Put Rate up	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Blank Sign	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Brightness	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Filter	■	<input type="checkbox"/>	<input type="checkbox"/>	
		OP Status	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Trailblazer Status	Put MSG up	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Blank Sign	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Brightness	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Filter	■	<input type="checkbox"/>	<input type="checkbox"/>	
		OP Status	■	<input type="checkbox"/>	<input type="checkbox"/>	
		MAS Queue	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Travel Time Msg	Set On/Off	■	<input type="checkbox"/>	<input type="checkbox"/>	
	VSL Status	Brightness	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Filter	■	<input type="checkbox"/>	<input type="checkbox"/>	
		OP Status	■	<input type="checkbox"/>	<input type="checkbox"/>	
EM	Add New Event	Add Event	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Event List	Display Events	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Predefined Response Plans	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Remove Events from FLATIS	Remove	<input type="checkbox"/>	<input type="checkbox"/>	■	Unable to test
	Republish Events to FLATIS	Republish	<input type="checkbox"/>	<input type="checkbox"/>	■	Unable to test
EL/PS	Express Lanes	MiddleWare Adjustment	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Set Mode	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Offline Synchronization	Upload File	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Startup State	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
HAR	HAR Status	OP Status	<input type="checkbox"/>	<input type="checkbox"/>	■	There is no way to test without a simulator
		Filter	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Beacons	<input type="checkbox"/>	<input type="checkbox"/>	■	There is no way to test without a simulator

SUBSYS	Object Type	Action	Pass	Fail	N/T	Notes
	MSG Manager	Queue Manager	■	□	□	Displays all Signs and HAR
IDS	System wide Detection	Set ON/Off	■	□	□	
	System wide Camera Detection	Verify Change	■	□	□	System wide Detection changed from Enable/Disable
IMS	Inventory	Update History	□	■	□	History updates, however the filters DO NOT
		Printable Version	■	□	□	
		Filters	□	■	□	Filters DO NOT update after a change is made to history
	Vendors	Display Vendors	■	□	□	
		Filters	■	□	□	
RMS	Alarms	Alarms Display	■	□	□	
		Filter	■	□	□	
	Controls	Set Metering Status	■	□	□	
		Set OP Status	■	□	□	
		Filter	■	□	□	
		Set Range	■	□	□	
		Set Rate	■	□	□	
	Reset RMS	Reset Loops	■	□	□	
		Reset 170 SW	■	□	□	
		Reset Comms	■	□	□	
		Filter	■	□	□	
	Status Overview	Filter	■	□	□	
RWIS	Status Overview	Set OP Status	■	□	□	
		Tabs	■	□	□	All Tabs displayed correct data
		Filter	■	□	□	
SB	Status Overview	Set OP Status	■	□	□	Used Simulators for this test
		Filter	■	□	□	
		Set Lamp Status	■	□	□	Used Simulators for this test

SUBSYS	Object Type	Action	Pas s	Fail	N/T	Notes
		Set Switch Status	■	<input type="checkbox"/>	<input type="checkbox"/>	Used Simulators for this test
TSS	Detector Status	Set OP Status	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Filter	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Dynamic Linking	Probe Set On/Off	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Edit Link Placement	Place Points	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Zoom To Link	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Remove	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Add Non-TSS Link	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit Non-TSS Link	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete Non-TSS Link	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Remove Unused Nodes	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Save Link Map	■	<input type="checkbox"/>	<input type="checkbox"/>	
TVT	Travel Times	Select ALL	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Enable Links	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Disable Links	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Highlight on Map	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Alternate Routes	<input type="checkbox"/>	<input type="checkbox"/>	■	Unable to test
		Matching Routes	<input type="checkbox"/>	<input type="checkbox"/>	■	Unable to test
VS	Switching Control	Sources Displayed	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Tours Displayed	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Switching Scale	<input type="checkbox"/>	<input type="checkbox"/>	■	VS is not setup
	Video Tours	Add	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Edit	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Delete	■	<input type="checkbox"/>	<input type="checkbox"/>	
	Virtual Layout	Wall Place	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Remove	■	<input type="checkbox"/>	<input type="checkbox"/>	
		Save Layouts	■	<input type="checkbox"/>	<input type="checkbox"/>	
VSL	Segment Status	Set Enabled	■	<input type="checkbox"/>	<input type="checkbox"/>	

SUBSY	Object Type	Action	Pas s	Fail	N/T	Notes
S		Set Plan	■	<input type="checkbox"/>	<input type="checkbox"/>	

Attachment C
Installation of Windows Server 2008 R2 x64

Installing Windows Server 2008 Enterprise Release 2 x64 on Cotes

Environment Setup:

SERVER	IP	OPERATING SYSTEM	ORACLE VERSION	FUNCTION
COTES	129.162.101.109	Windows Server 2008 Enterprise Release 2 Edition x-64 bit		SG Application Server
ORACLE64R2	129.162.101.142	Windows Server 2008 Enterprise Release 2 Edition x-64 bit	11G Release 2 x 64-bit (11.2)	Oracle Database Server

Files Downloaded:

- win64_11gR2_11.2.0.1.0_client
http://www.oracle.com/technology/software/products/database/oracle11g/112010_win64soft.html
- *NetFx64.exe
<http://www.microsoft.com/downloads/details.aspx?familyid=B44A0000-ACF8-4FA1-AFFB-40E78D788B00&displaylang=en>
- Jdk-6u20-windows-i586.exe
<http://java.sun.com/javase/downloads/index.jsp>

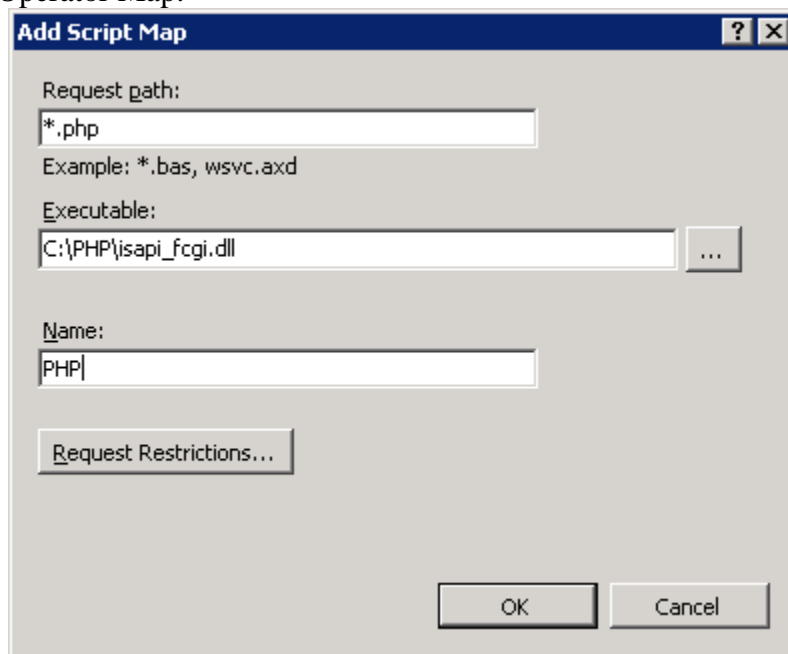
Steps for Installing Windows Server 2008 Enterprise Release 2 x64

1. Install Windows Server 2k8 Enterprise Release 2 64-bit Edition. There is no Release 2 for a 32-bit environment.
2. Add Server (Cotes) to the ADS Domain
3. Install all Windows Updates
4. Create FDOT Share on Server and add "Everyone" with "Read/Write" permissions.
6. Copy all necessary SunGuide files to FDOT share.
7. Copy necessary Oracle files to FDOT Share
8. Install Oracle Client version 11.2.0.1.0 on Server
9. After installing Oracle Client, establish a connection to Database from the Server.
 - Please install Java 6 SDK to servers running in a x64-bit environment
 - After a successful connection has been established start the SunGuide Installation. (Steps provided below)
10. After the SunGuide 5.0.1 installation is complete launch Admin Editor and Operator Map from a client computer.

SunGuide Installation

1. Check if FDOT Share has been created
2. Check if necessary SunGuide files and correct Oracle Client version have been copied to FDOT share
3. Install IIS and IIS 6 Management Compatibility role and all Sub-Roles.
 - Windows Server 2008 uses a new version of IIS (7.0) which is not compatible with IIS 6 Applications
4. Install all but "Server Side Includes" under "Application Development" section
5. Install Crystal Reports

- Crystal Reports ran successfully, however a compatibility problem was encountered when Reporting Subsystem (RS) was started. The problem appears to be with running the current x32-bit Crystal Report version on an x64-bit environment.
7. Install .Net 2.0, both servers displayed a window alerting installer .Net 2.0 is part of Windows Server 2008 Enterprise Edition. For x64-bit Servers a x64-bit version of .Net needs to be downloaded, but it is included in Windows Server 2008 Enterprise x64 Edition.
 8. Launch SunGuideInstallV5.0.1.exe to begin SunGuide software installation.
 - Followed the VDD for this procedure
 8. After the SunGuide installation is complete, change "Default Web Site" to an Application Pool with "Classic .NET AppPool" or an Application Pool set to Classic View.
 9. After the SunGuide installation is complete, change the Application Pool for SunGuideAdmin to "Classic .NET AppPool" or an Application Pool set to Classic View.
 10. Double click on "Authentication" located in the IIS section of "Default Web Site", select ASP .NET Impersonation and click "Enable" on the right hand side.
 11. Double click on "Directory Browsing" located in the IIS section of "Default Web Site" and click "Enable" on the right hand side.
 12. Double click on "Handler Mappings" located in the IIS section of "Default Web Site". Click on "Add Script Mapping" on the right hand side, fill in window with appropriate information.
 - This step is not required on SunGuide 5.0 or higher since PHP is no longer used for the Operator Map.



13. Navigate to "Request Filtering" located in the IIS section of "Default Web Site", once there highlight .config, right click and remove it from list.
14. Turn off Windows Firewall using the Domain, Private and Public tab

Attachment D
Oracle 11G R2 Database Installation

Oracle 11G Release 2 Database Installation

Files Downloaded:

- win64_11gR2_database_1of2.zip
http://www.oracle.com/technology/software/products/database/oracle11g/112010_win64soft.html
- win64_11gR2_database_2of2.zip
http://www.oracle.com/technology/software/products/database/oracle11g/112010_win64soft.html

Special Note

- If Disk 1 and Disk 2 are unzipped to different directories an error will occur. To avoid the error extract Disk 1 and Disk 2 to the same directory.

Steps for Installing Oracle 11G Release 2 Database

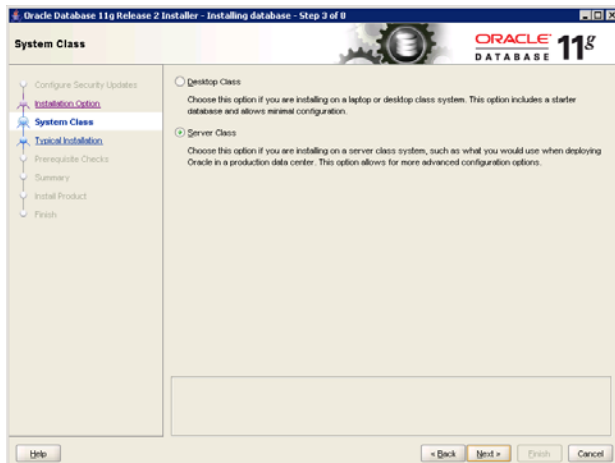
1. Add Microsoft Loopback Adapter (As described in VDD)
2. Download Oracle 11G R2 Database zip file from Oracle's website to the root directory (c:\)
3. Create a directory named 'ORACLE64' on c:\
4. Unzip [win64_11gR2_database_1of2.zip](#) to the directory created
5. Unzip [win64_11gR2_database_2of2.zip](#) to the same directory
6. Navigate to [c:\ORACLE64\database](#) and run 'setup'
7. Enter an email address if you want to be informed of Critical Security Issues in your configuration or select 'Next'. If "Next" is selected a window will pop up stating you have not provided an email address, simply click "YES".



8. Select "Create and configure a database" and click Next



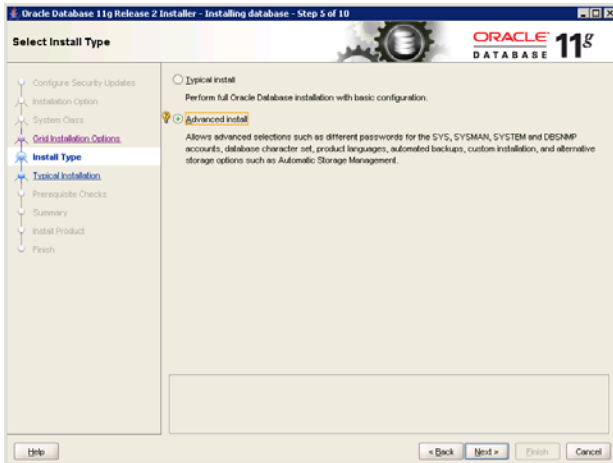
9. Select "Server Class" and click Next



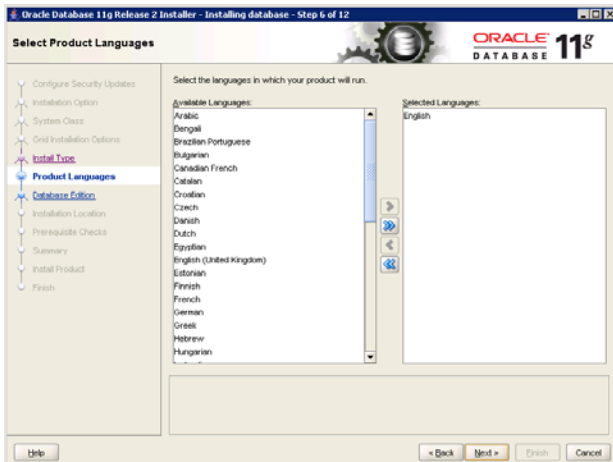
10. Select "Single instance database installation" and click Next



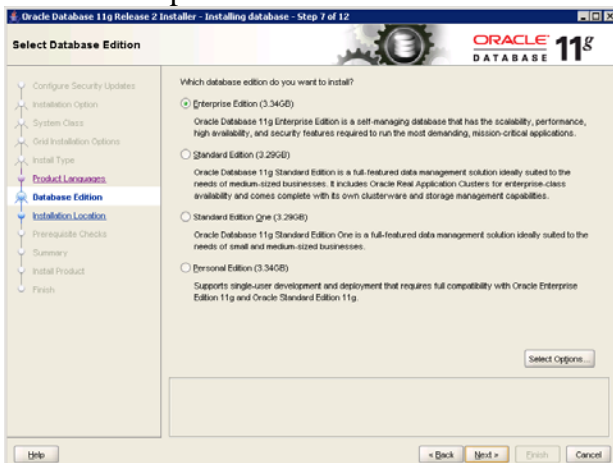
11. Select "Advanced Install" and click Next



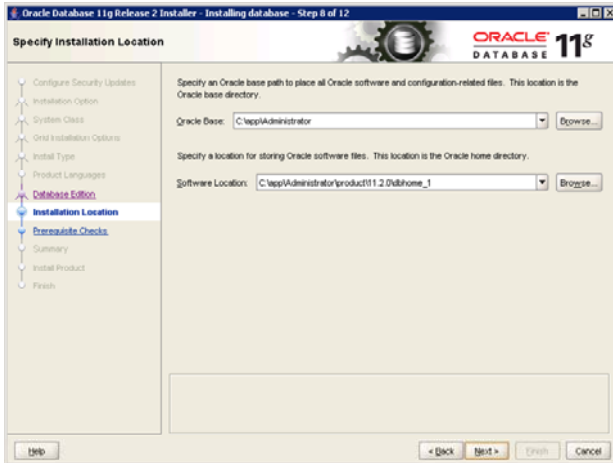
12. Leave as default and Click Next



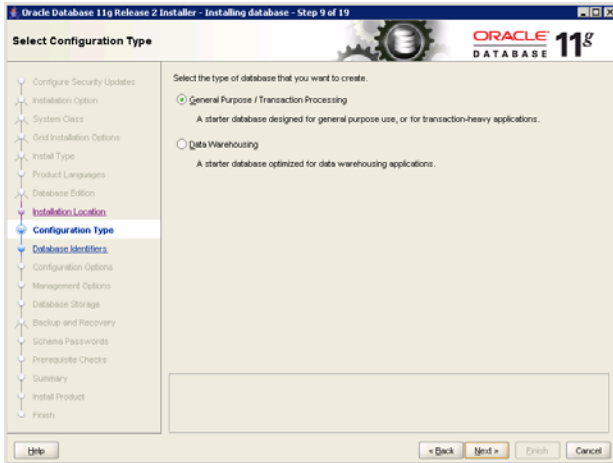
13. Select "Enterprise Edition" and click Next



14. Leave as Default and click Next



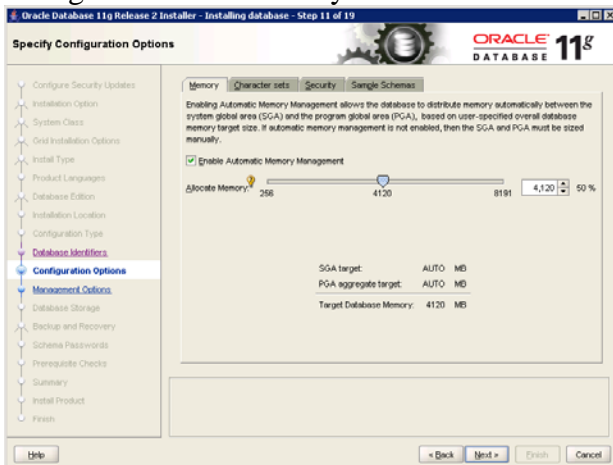
15. Leave as default and click Next



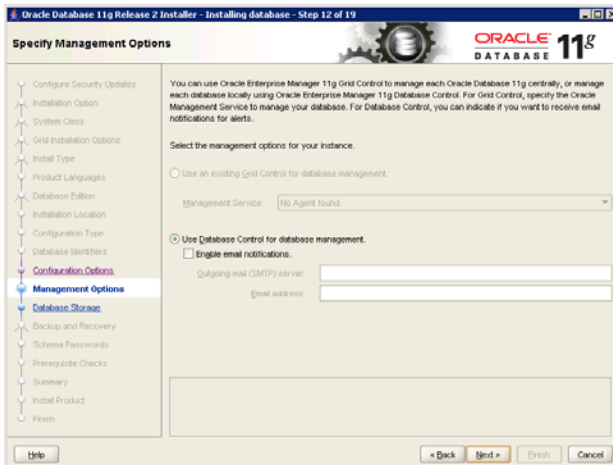
16. Leave as default and click Next



17. Change "Allocate Memory" to 50% and click Next



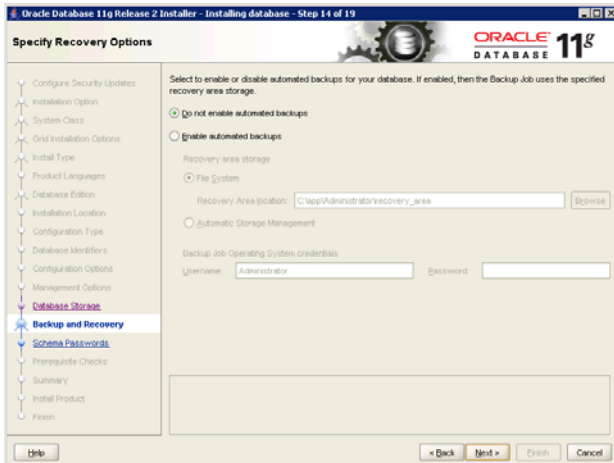
18. Select "Use Database Control for Database Management" and click Next



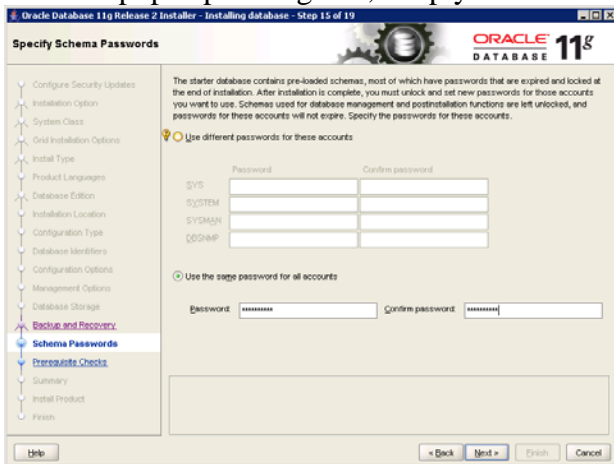
19. Leave as default and click Next



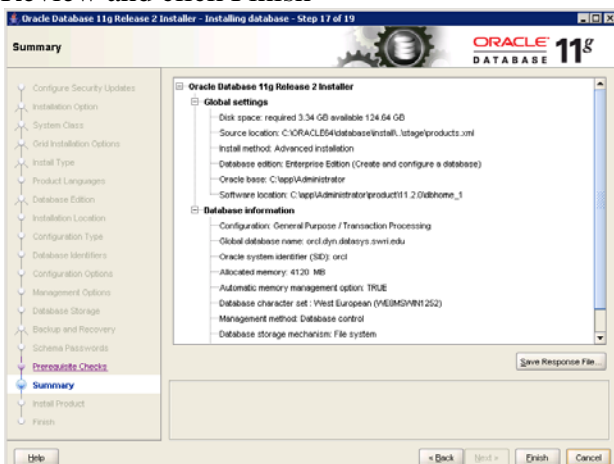
20. Leave as default and click Next



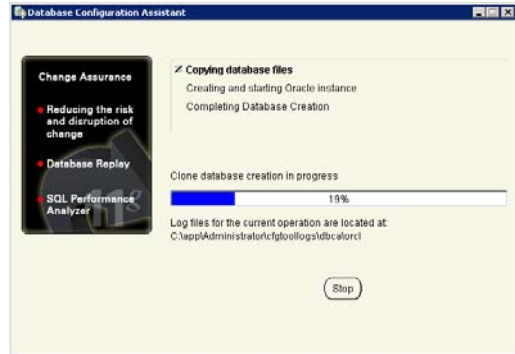
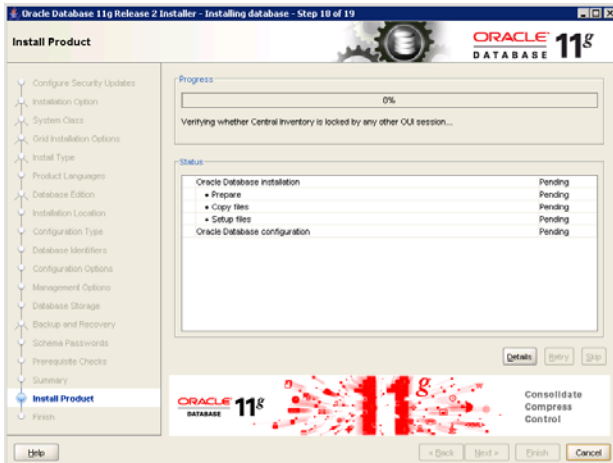
21. Select "Use the same password for all accounts", give it a password and click Next. Note: "floridad0t" does not conform to Oracle's recommended standards, but "Floridad0t" does. Window pops up stating this, simply hit "Yes".



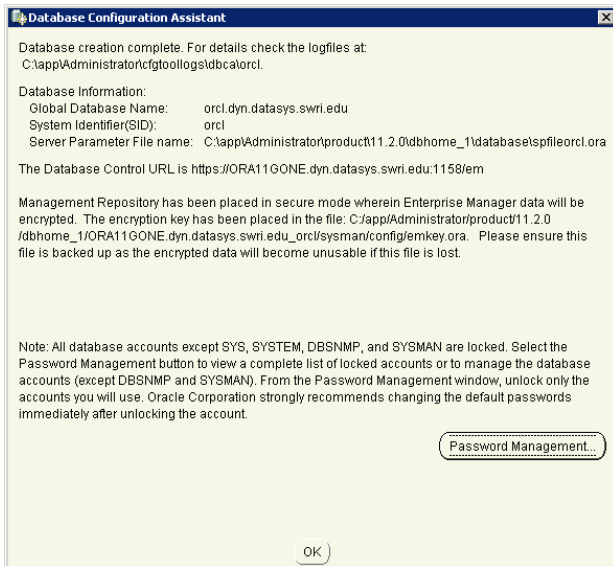
22. Review and click Finish



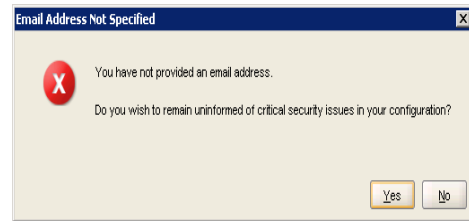
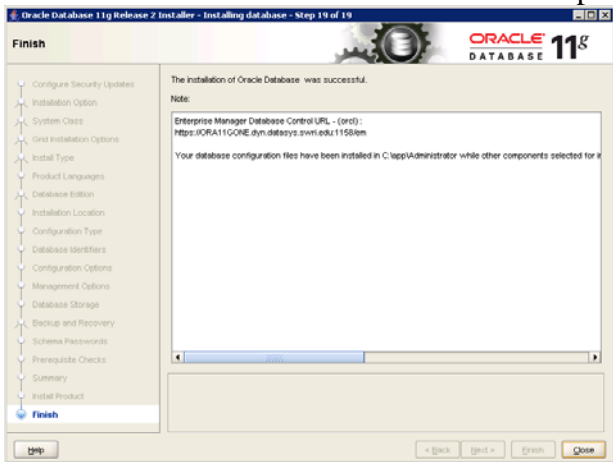
23. Monitor and click Finish



24. Click OK



25. Click Close... The Oracle installation is complete.



Attachment E
Oracle 11G R2 Client Installation

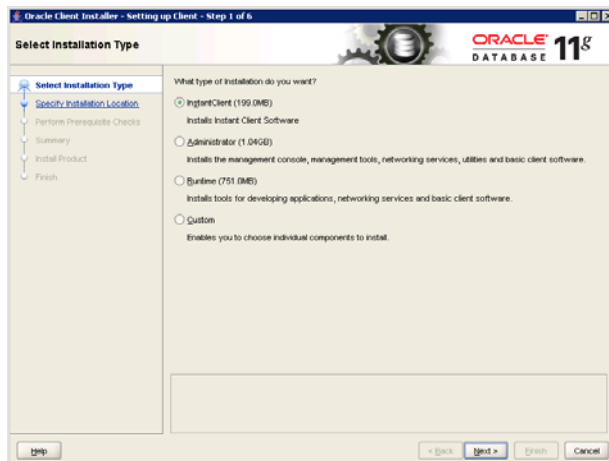
Oracle 11G Release 2 Client Installation

Files Downloaded:

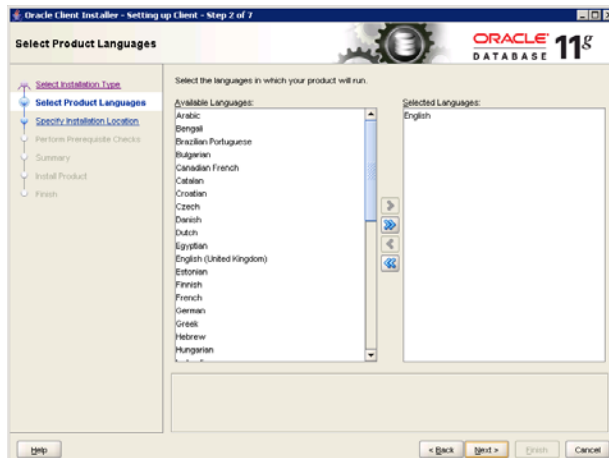
- win64_11gR2_11.2.0.1.0_client
http://www.oracle.com/technology/software/products/database/oracle11g/112010_win64s_of.html

Steps for Installing Oracle 11G Release 2 Client

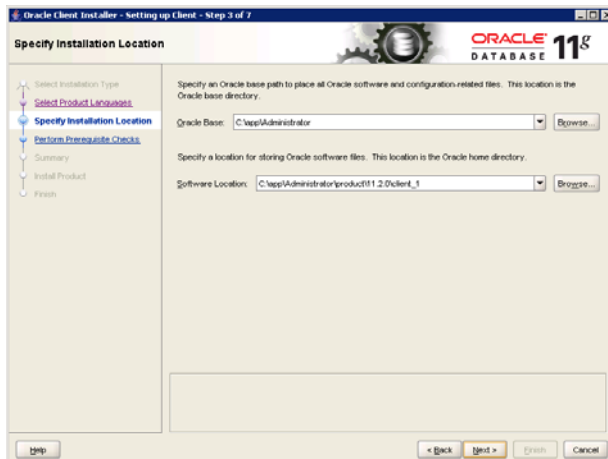
1. Download Oracle 11G R2 Client zip file from Oracle's website to the root directory (c:\)
2. Extract Oracle 11G R2 Client to the root directory
3. Navigate to c:\win64_11gR2_11.2.0.1.0_client\client\ and launch setup.exe
4. Launch the appropriate Oracle installation .exe for each server
5. Select Administrator



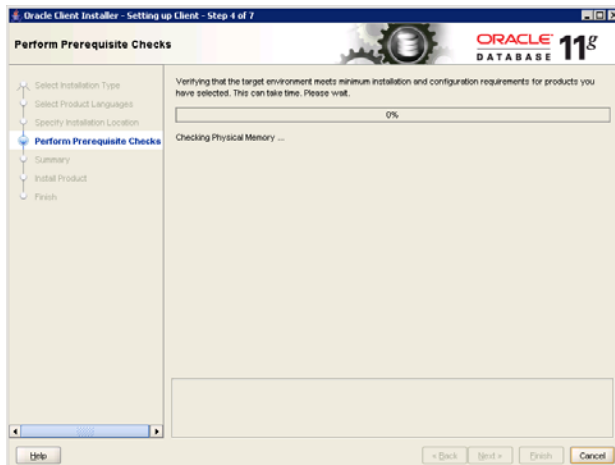
6. Leave as Default and select Next



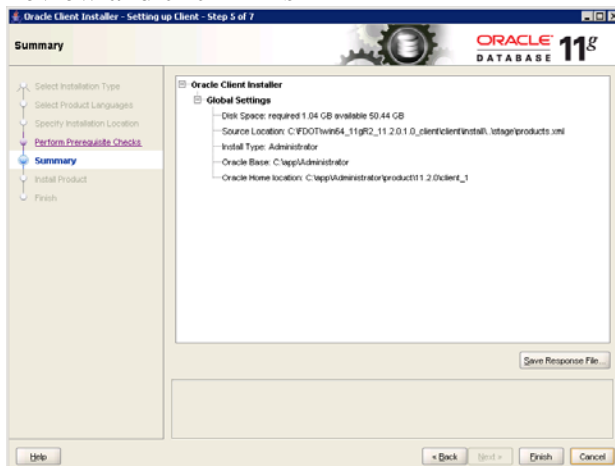
7. Leave as Default and select Next



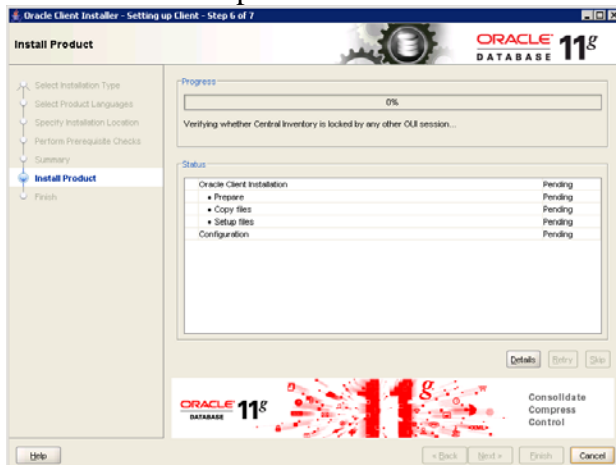
8. Monitor



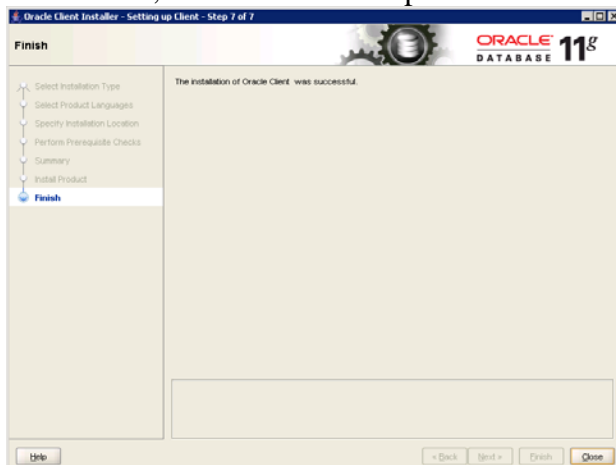
9. Review and click Finish



10. Monitor until complete



11. Click Close, Installation is complete



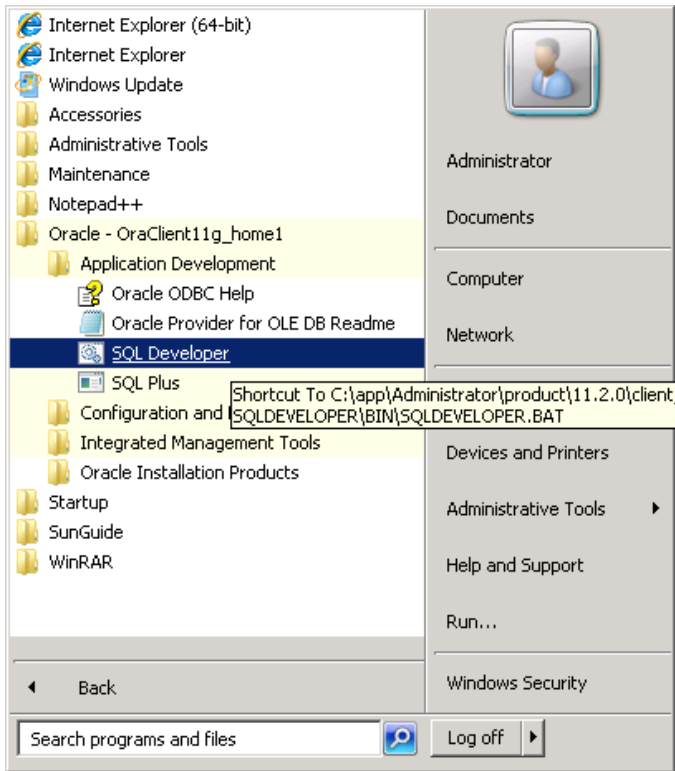
Establishing a connection to Database with Oracle Client

Files Downloaded:

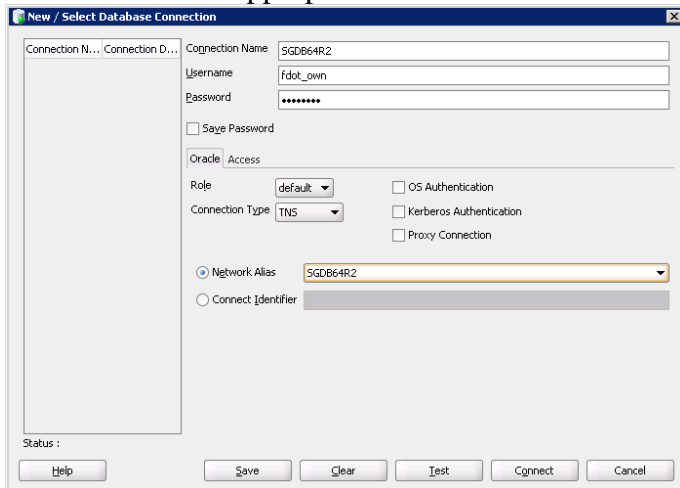
- Jdk-6u20-windows-i586.exe
<http://java.sun.com/javase/downloads/index.jsp>

1. Copy the "TNSNAMES" file from the Database server hosting the Database
2. Since SQL Developer currently only supports 32-bit version of Java an error is encountered while attempting to launch SQL Developer. Download Java 6 SDK 32-bit and point SQL Developer to the 32-bit version of Java.exe file:
 - a. Download jdk-6u20-windows-i586 from Java's website provided above
 - b. Install jdk-6u20-windows-i586, selecting all defaults
 - c. Navigate to
c:\app\Administrator\product\11.2.0\client_1\sqldeveloper\sqldeveloper\bin\sqldevelo
per.conf
 - d. Edit file by deleting last line and saving it.

- e. Launch SQLDeveloper.exe and browse to the c:\Program Files (x86)\Java\jdk1.6.0_20\bin\java.exe
- f. SQLDeveloper will start up properly



- 3. After SQLDeveloper starts add a connection, by right clicking "Connections" and clicking on "New Connections"
- 4. Fill in window as appropriate and click "Test". If test is successful click "Connect"



Attachment F
Creating New Database on Oracle 11G R2

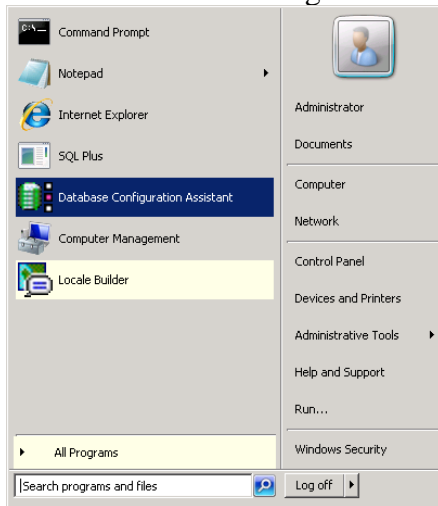
Creating New Database on Oracle 11G Release 2

Prerequisite:

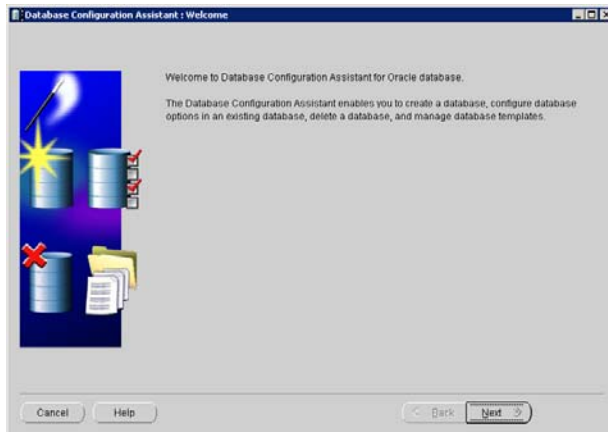
- Oracle 11G Release 2 Client and Database must be installed and configure properly

Steps for Creating new Database

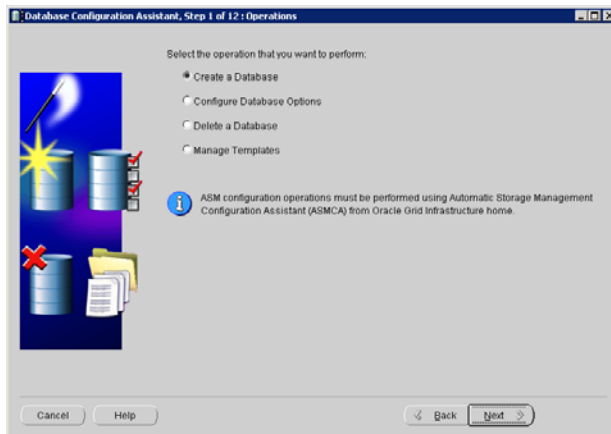
1. Launch Database Configuration Assistant



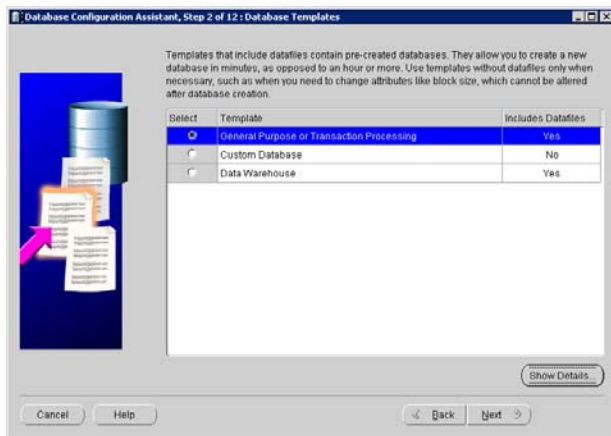
2. Click Next



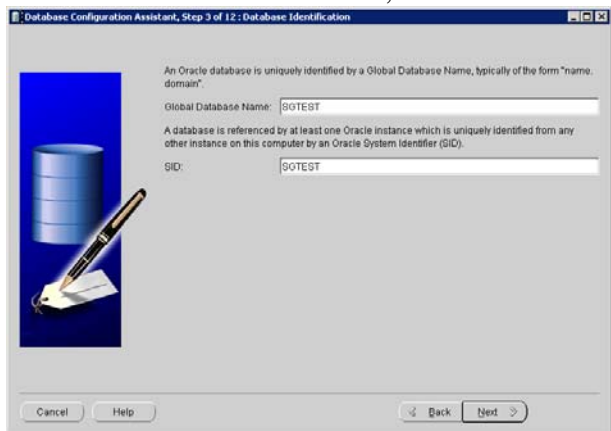
3. Select "Create a Database" click Next



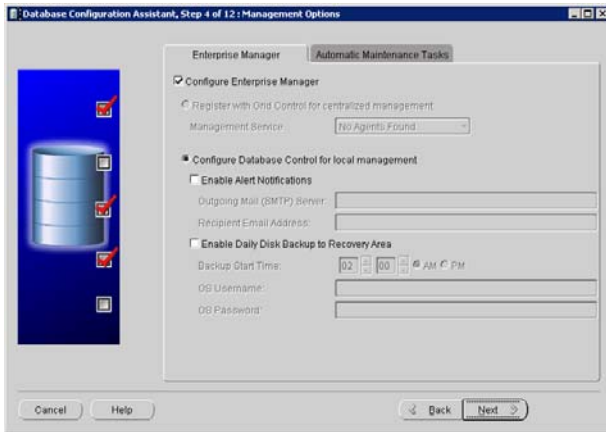
4. Leave as Default and click Next



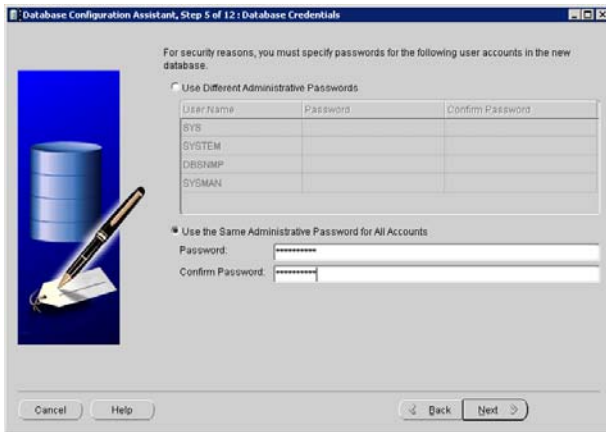
5. Fill in Global Database Name, SID and click Next



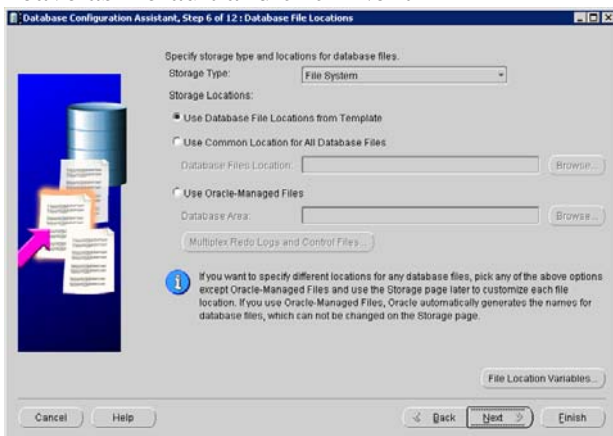
6. Leave as Default and click "Next"



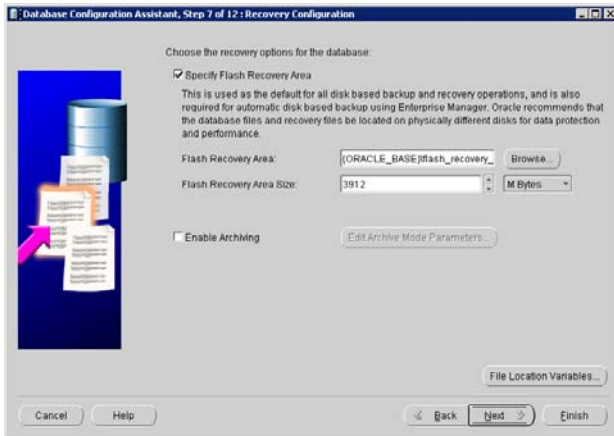
7. Select "Use the Same Administrative Password for All Accounts", assign a password and click Next. If Oracle's complexity policy is not met a window will pop up, simply click "Yes"



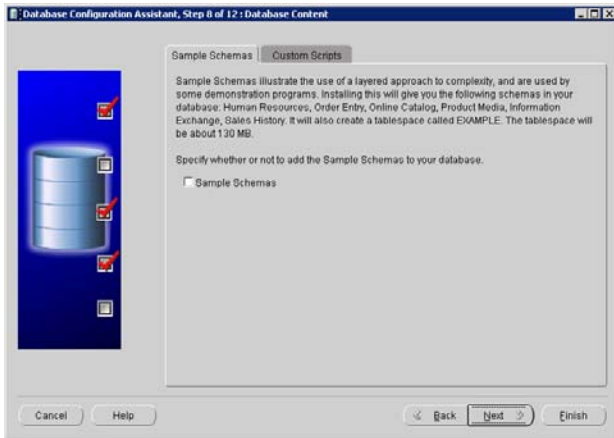
8. Leave as Default and click Next



9. Leave as Default and click Next



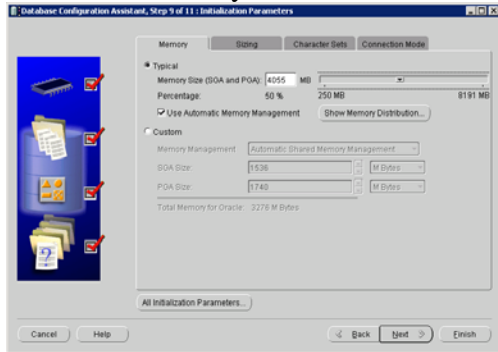
10. Leave as Default and click Next



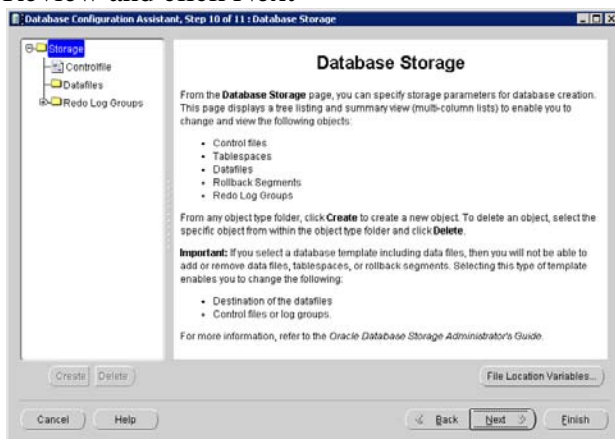
11. Select "Typical", Set Memory Size to 50% and click on "All Initialization Parameters" button. Once window pops up click on "Show Advanced Parameters" and fill in the following, afterward click close and then Next:

processes	300
open_cursors	1000
sga_max_size	851443712
shared_pool_size	356515840

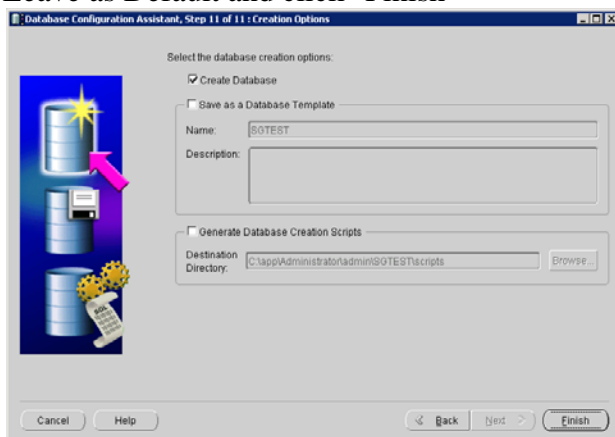
*Since "shared_pool_size" and "sga_max_size" default values are higher than what is recommended they were left alone



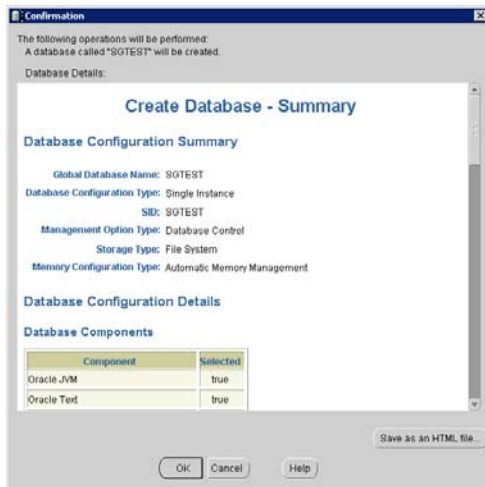
11. Review and click Next



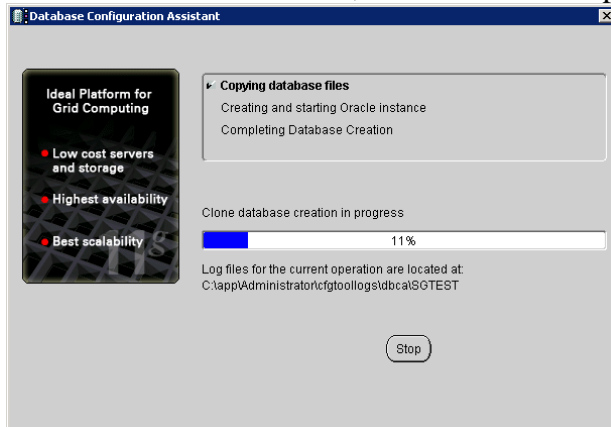
12. Leave as Default and click "Finish"



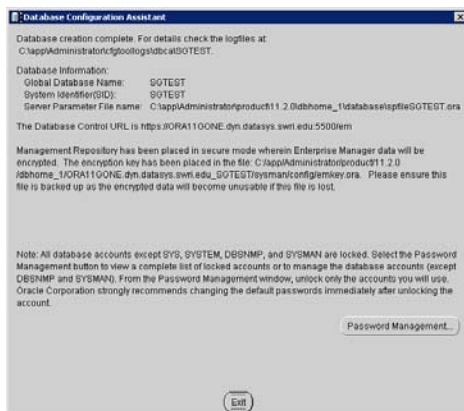
13. Review and save as HTML or click "OK"



14. Database creation will start, Monitor until complete



15. Click "Exit"



17. Database creation is complete

18. Connect to database using SQL Developer