The Informix / Universal File Interface (UFI) VMware Appliance

Introduction

Many "technologists" (scientists, engineers, other researchers, etc.) avoid using databases; a principal reason given is that they often have very large data files which are too cumbersome/difficult/slow/costly to load into a database. These files come in a variety of formats: HDF5, NetCDF, NITFS, FITS, etc. At BCS we have developed a solution to this problem: the Universal File Interface (UFI), a database extension based on the IBM Informix Virtual Table Interface (VTI).

VTI is a technology that supports making external datasets appear as tables to SQL queries and statements[1]. UFI is a BCS database extension for delivering the contents of external data files as though they were rows in a database table. UFI makes a file look like a set of database tables, so "UFI-managed tables" are actually *virtual* database tables. Consequently, at no point do users of UFI need to load their files into a database!

In order to demonstrate how UFI works we have produced a time-limited, full-feature UFI Package that can be downloaded from the BCS website and installed into the (free) IBM Informix 11.70 Developer Edition SLES 11 virtual appliance demo (Developer Edition 32 bit) , which can be run using the (free) VMware Player.

Installation Instructions

Note: in following this PDF you may need to increase the magnification in order to read the text in some of the pictures. In addition, the version of Linux that underlies the Informix appliance may change with new versions of the appliance, so the appearance of some Linux screens will change from what is shown here in this manual.

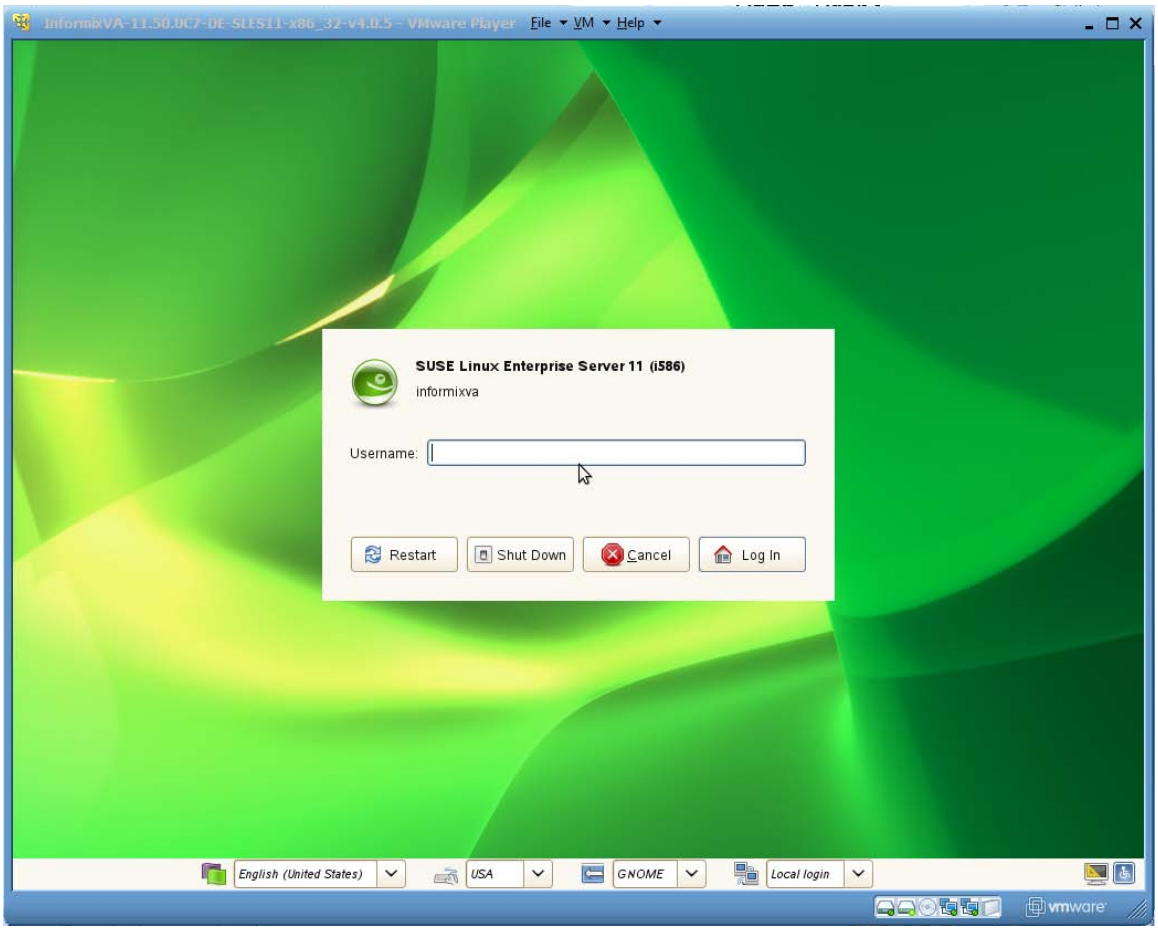
If you haven't done so already, download and install the VMware Player (**VMware Player for Windows 32-bit and 64-bit)** from http://downloads.vmware.com/d/info/desktop_downloads/vmware_player/3_0. (Note: registration is required, but free.)

Download the "**Informix 11.70 Developer Edition SLES 11 virtual appliance demo (Developer Edition 32 bit) VMware Workstation, self extracting executable"** from https://www14.software.ibm.com/webapp/iwm/web/reg/download.do?source=swg-informixfpd&S_PKG=dl. Make sure that you select a 32 bit version, not a 64 bit version. (Note: registration is required, but free.)

[1] It addresses the same needs as the SQL/MED, or Management of External Data, extension to the SQL standard as defined by ISO/IEC 9075-9:2003. SQL/Med is already implemented for DB2.

See the Appendix for helpful hints on downloading and installing the Informix 11.70 Developer Edition SLES 11 virtual appliance demo.

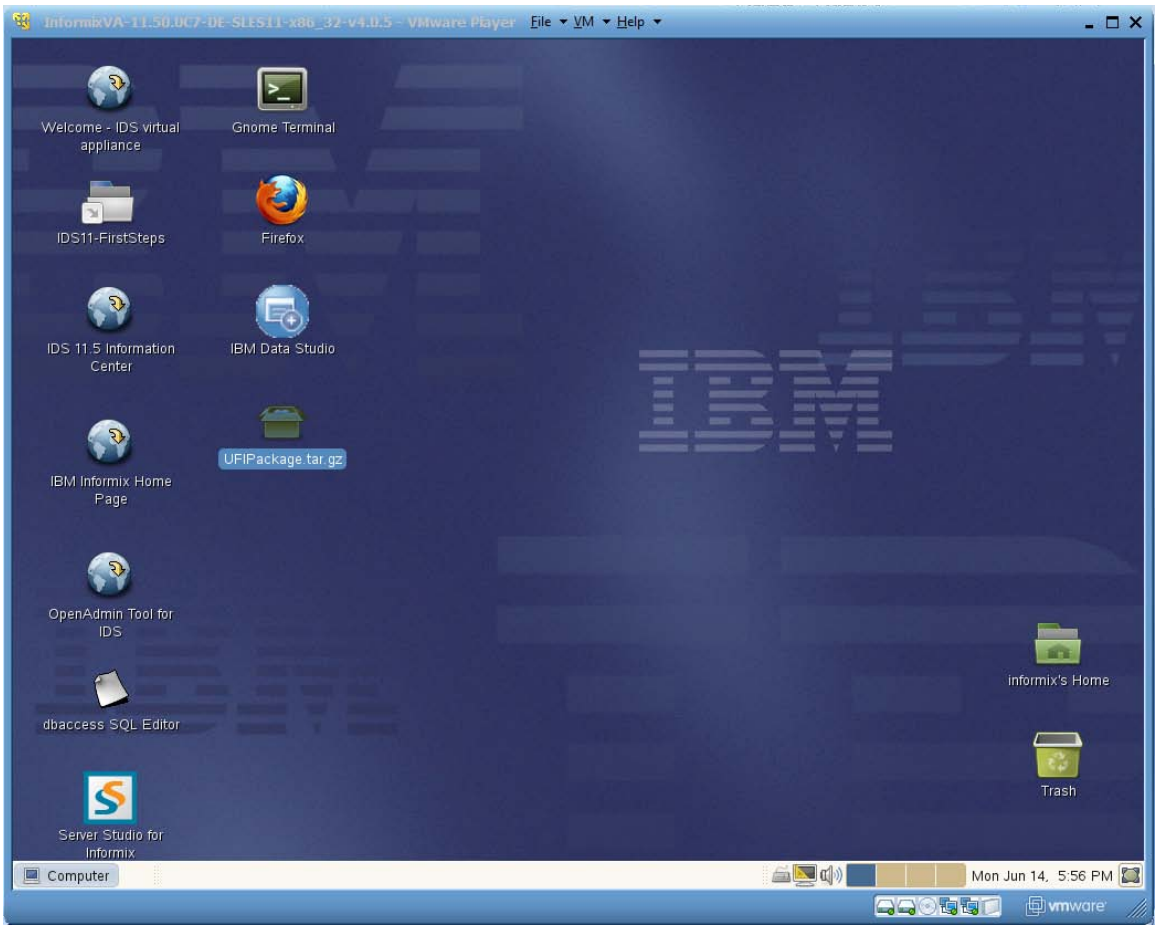
Once you have downloaded and installed the Informix 11.70 Developer Edition SLES 11 virtual appliance demo, you can start it up simply by double-clicking on its "`.vmx`" file (at the time of writing, the file was called `InformixVA-11.70.UC2-DE-SLES11-x86_32-v4.0.5.vmx`).



Log in as user "`informix`", specifying a password of "`informix`".

After your login, a Mozilla Firefox window will fill the screen. Minimize or close this window (it can be restarted by later clicking on the "IDS-11 First Steps" desktop icon).

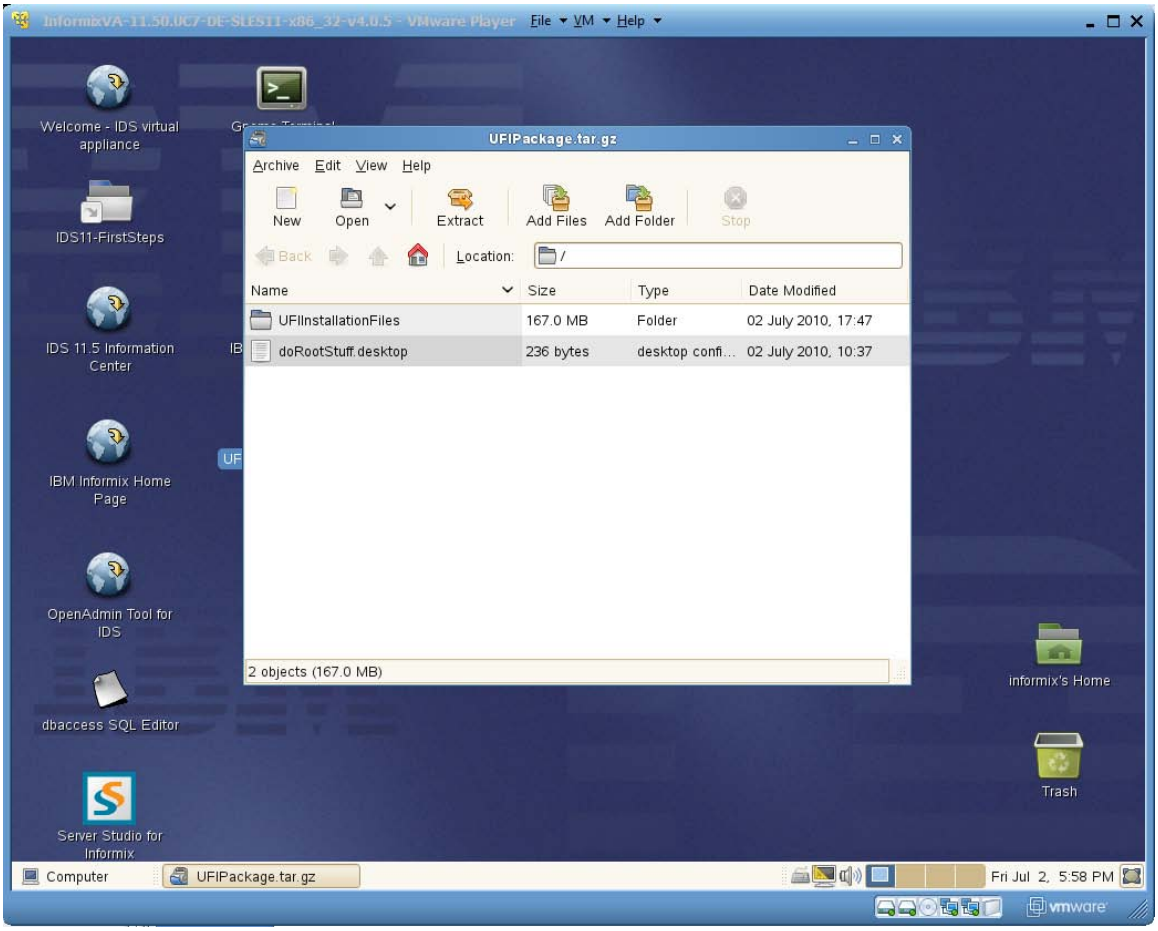
A trial copy of the Universal File Interface can be requested by sending an email to BCSInfo@barrodale.com. Once you've received this file, drag it (UFIPackage.tar.gz) onto the Informix 11.70 Developer Edition SLES 11 virtual appliance desktop:



A pop-up will appear while this file is being copied to the desktop. Once that pop-up vanishes a spinning wheel progress indicator cursor may continue to spin. Click anywhere on the desktop to change the cursor back to an arrow.

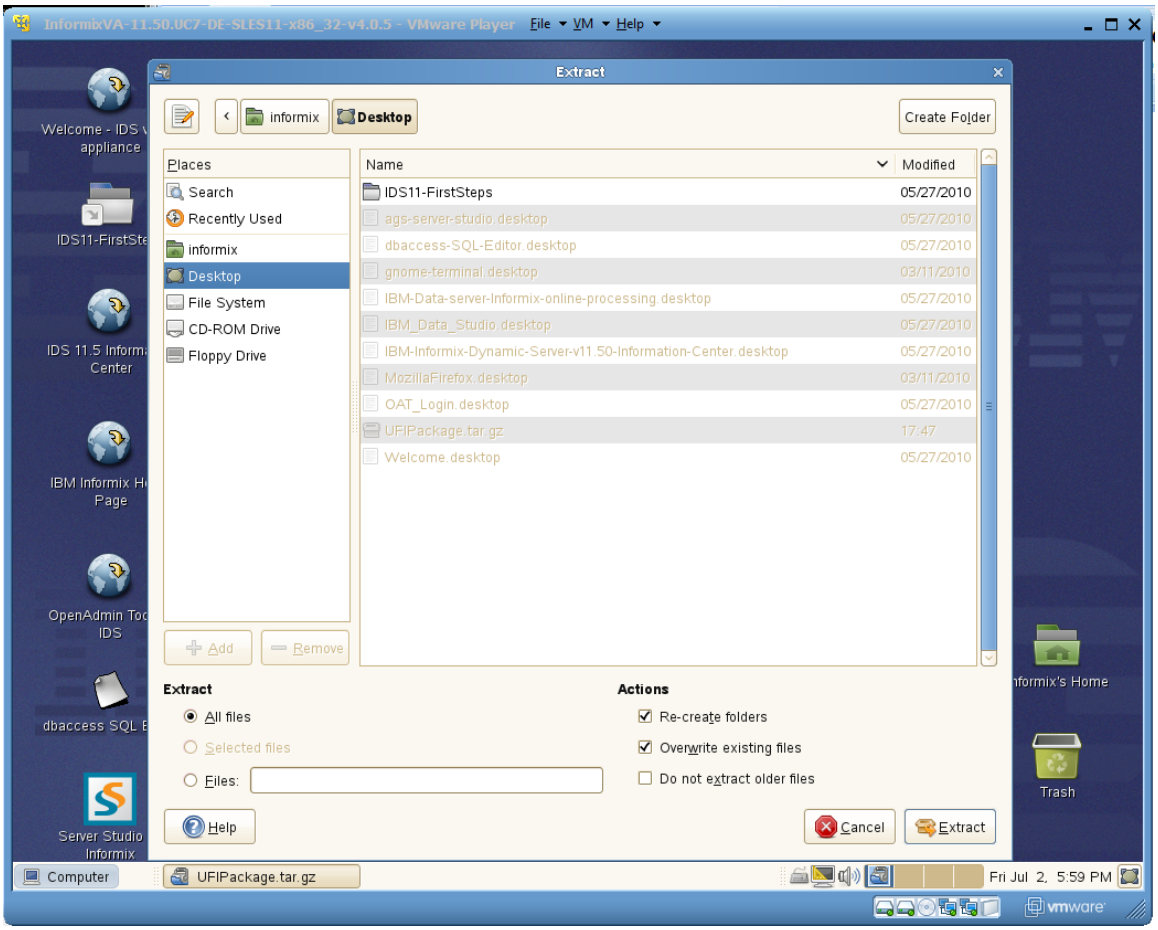
Important note: As you switch between typing information into the virtual machine window (such as the desktop of the Informix 11.70 Developer Edition SLES 11 virtual appliance) and working in other windows on your Windows desktop (such as a window containing this PDF document) you will always need to click on the virtual machine window to ensure that it has the keyboard focus before you start typing.

Double-click on the UFIPackage.tar.gz file. The following pop-up will then appear[2]:

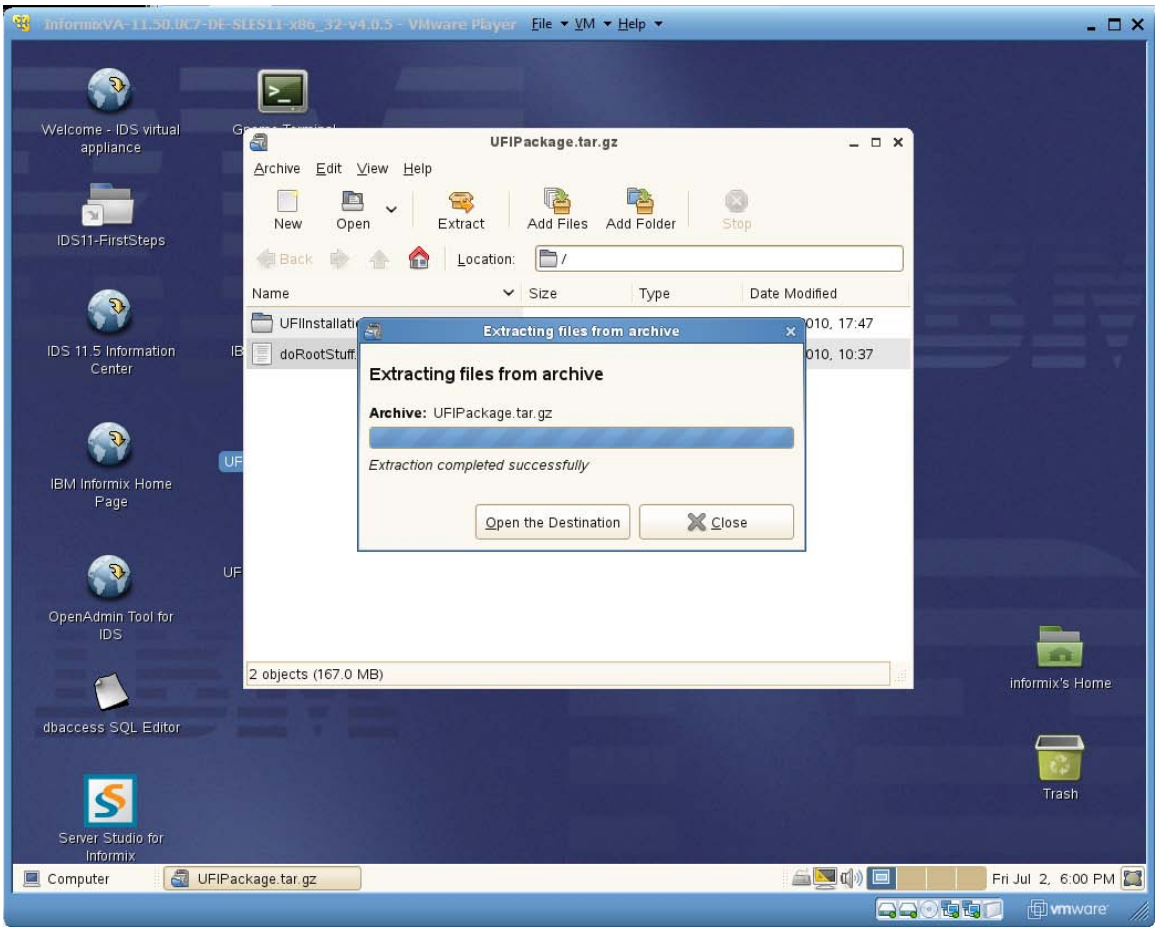


[2] Note that dates and file sizes will differ from what's shown in the screen shot.

Click the Extract button at the top of this window, and then accept the defaults that appear in the following pop-up (by pressing the Extract button on this pop-up).

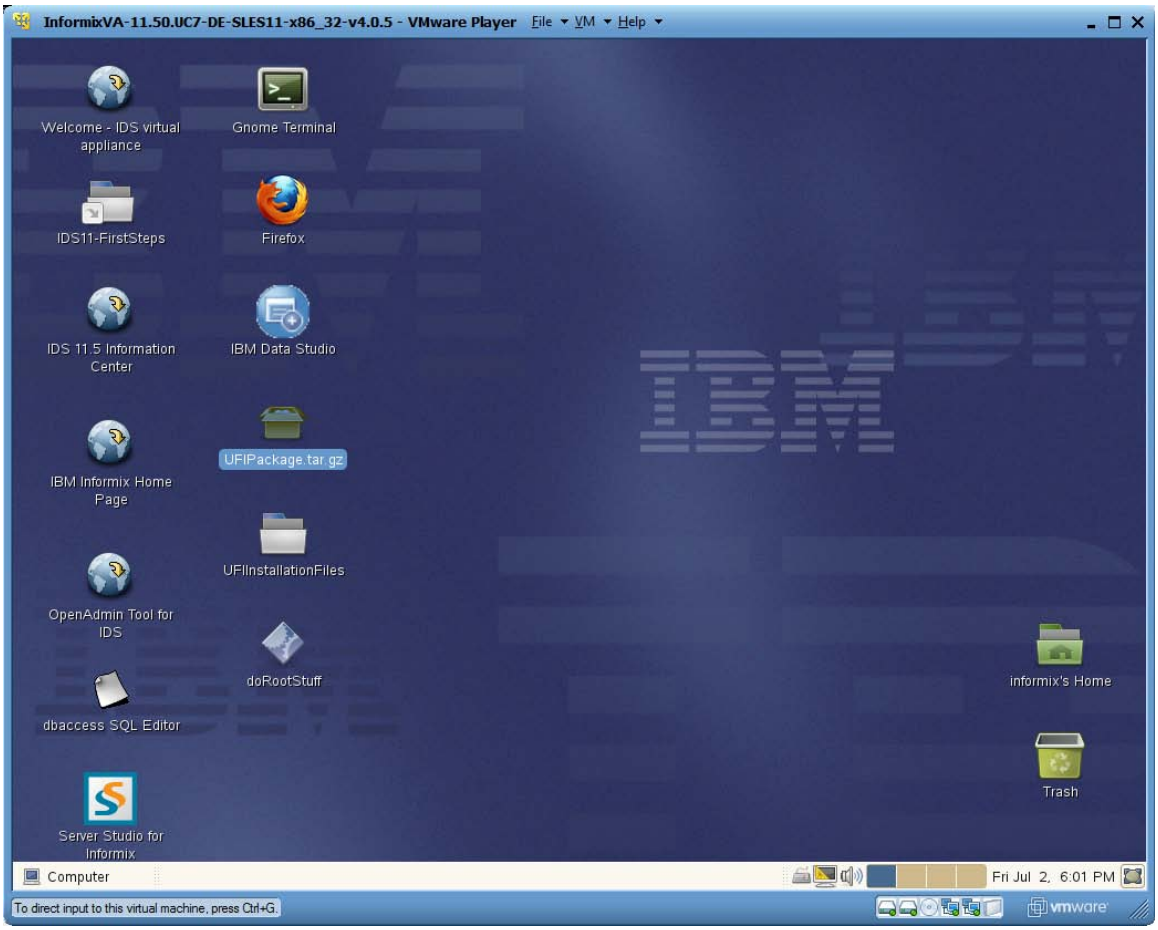


Once the extraction is finished, press the Close button and dismiss the "UFIPackage.tar.gz" window.



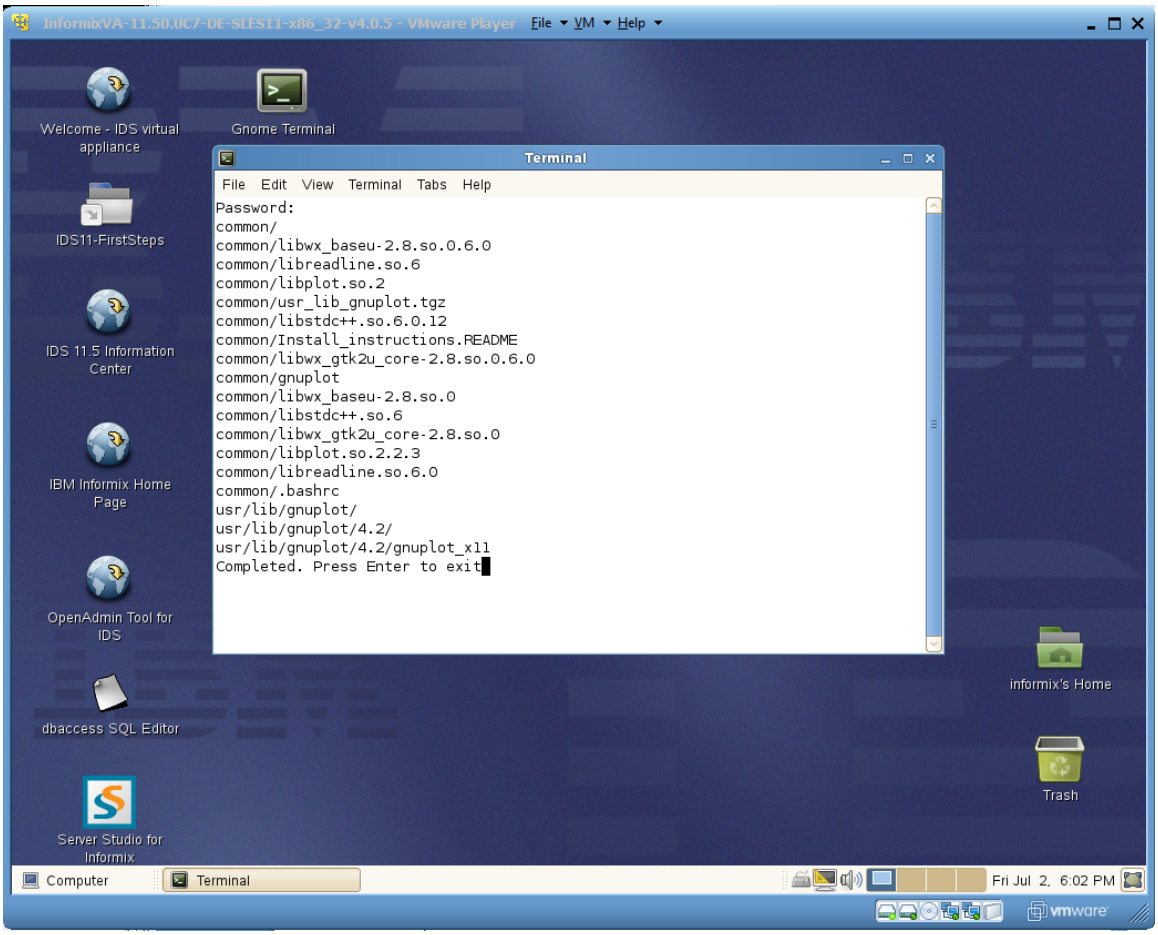
The Informix 11.70 Developer Edition SLES 11 virtual appliance desktop will then appear as follows:

Important note: the exact and relative positions of some icons may differ, but the icons and their labels will be the same.



One of the icons on the desktop is labeled "`doRootStuff`." Again, the position on the screen may differ from the image above, but the icon and label will be the same.

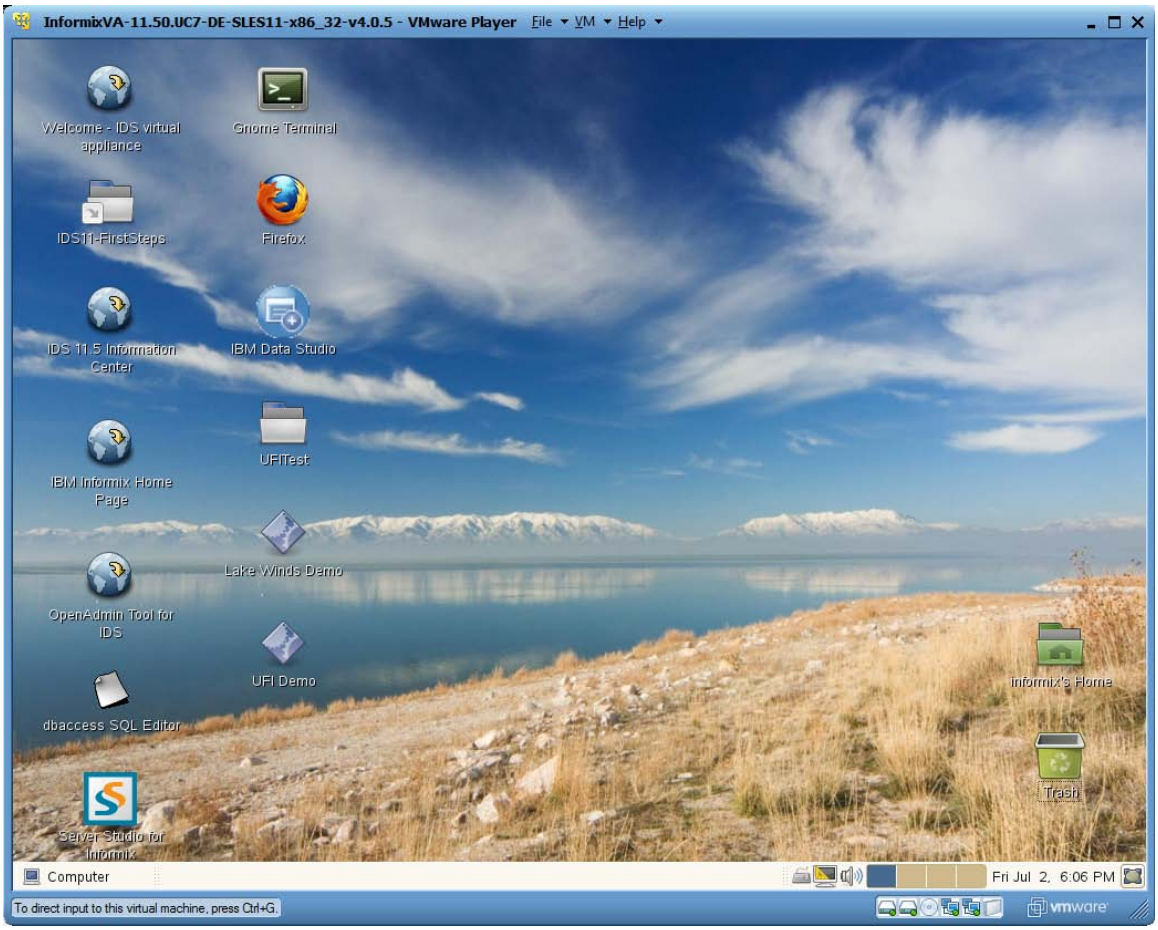
First, double-click on the icon labeled "`doRootStuff`". On the window that pops up, type "`root`" in response to the password prompt. The pop-up window should then appear as follows:



If you don't see the "`Press Enter to exit`" message then you may have mistyped "`root`". If this is the case, then run "`doRootStuff`" again until the "Press Enter to exit" message appears. Once you see this message, press Enter to dismiss the "`Terminal`" window.

On the desktop there should now be an icon labeled "UFI Install". Double-click this icon.

After the installation script runs, the desktop should appear as follows. (Note again that the exact position of icons may differ.)



The changed background indicates that you have now successfully integrated UFI into the Informix 11.70 Developer Edition SLES 11 virtual appliance. In future when you execute the appliance and log in as user `informix` you will be sent directly to this desktop.

Using the Universal File Interface

Double-click on the "`UFI Demo`" button to see a demo of using UFI with netCDF files. (See the companion document "Running the Universal File Interface (UFI) NetCDF Demo on VMware", downloadable from http://www.barrodale.com/bcs/downloads/ufi_ids_appliance/UFI_Demo.pdf.)

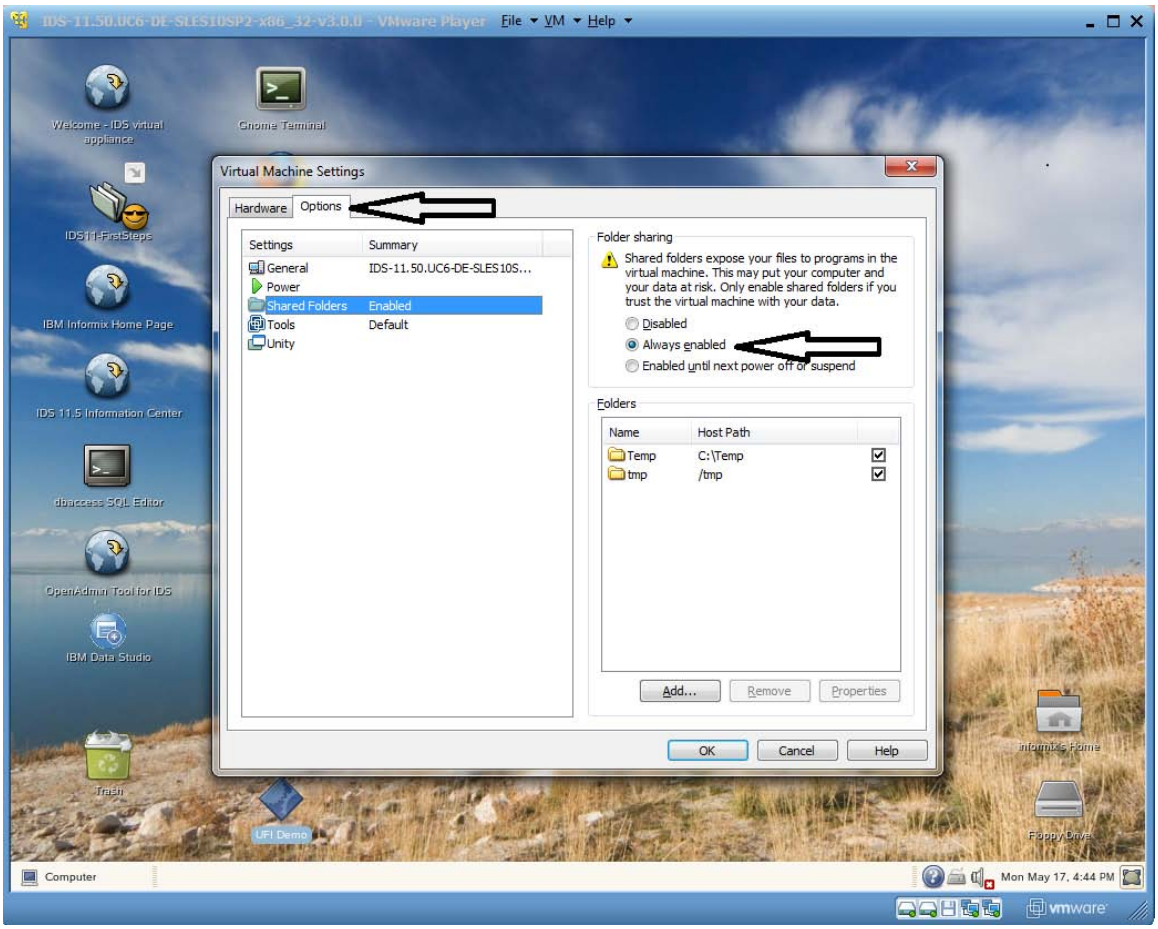
Double-click on the "Lake Winds Demo" button to see another demo – this one uses UFI with netCDF files in conjunction with the Spatial DataBlade to illustrate how UFI allows SQL to access files along with other database objects (tables and DataBlades) in a single SQL statement. (See the companion document "Running the Universal File Interface (UFI) Spatial DataBlade Demo on VMware", downloadable from http://www.barrodale.com/bcs/downloads/ufi_ids_appliance/UFI_Spatial_Demo.pdf.)

To try writing your own UFI / SQL command scripts:

1) Start up a terminal session using the "`Gnome Terminal`" icon.
2) cd to `Desktop/UFITest/netCDF` or `Desktop/UFITest/hdf5`
3) copy / modify / run the various `demo_*.sh` scripts.

Detailed information on using the UFI API can be found in "The BCS Universal File Interface (UFI)", downloadable from http://www.barrodale.com/bcs/downloads/ufi_ids_appliance/BCS_Universal_File_Interface.pdf.

The `Desktop/UFITest/hdf5/demo_local_drive.sh` script provides an example of accessing files that are on your local machine as if they were in the virtual machine. This feature will allow you to operate on files of your own. Before doing this, though, you will need to make sure that shared drives are configured. To do this, click anywhere on the blue outside frame of the virtual machine desktop and press `<ctrl> d`. A pop-up like the following will appear:



Select the "`Options`" tab (see the arrow above), press the radio button beside "`Always enabled`" (see the other arrow above), and then press the `OK` button to dismiss the window.

Before running `Desktop/UFITest/hdf5/demo_local_drive.sh`, ensure that `C:\Temp` is a directory on your local machine (create it if necessary) and that the file `hapmap.h5` has been copied to that directory.

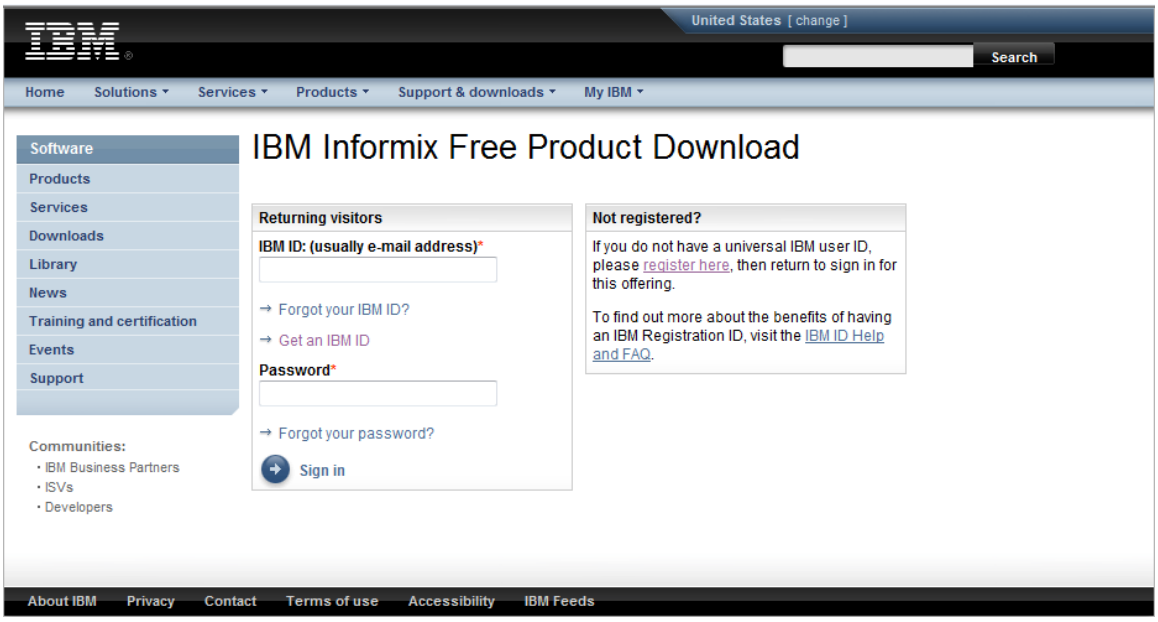
We hope you enjoy using the Universal File Interface during the trial period. For information on purchasing the Universal File Interface (which can run in native Linux as well as in a virtual machine) or any of our other products, please contact us at bcsSales@barrodale.com

Appendix: Hints on Downloading the Informix 11.70 Developer Edition SLES 11 virtual appliance demo

The following are some answers to questions you may have about downloading **Informix 11.70 Developer Edition SLES 11 virtual appliance demo**.

I Don't Have an IBM ID – How do I get one?

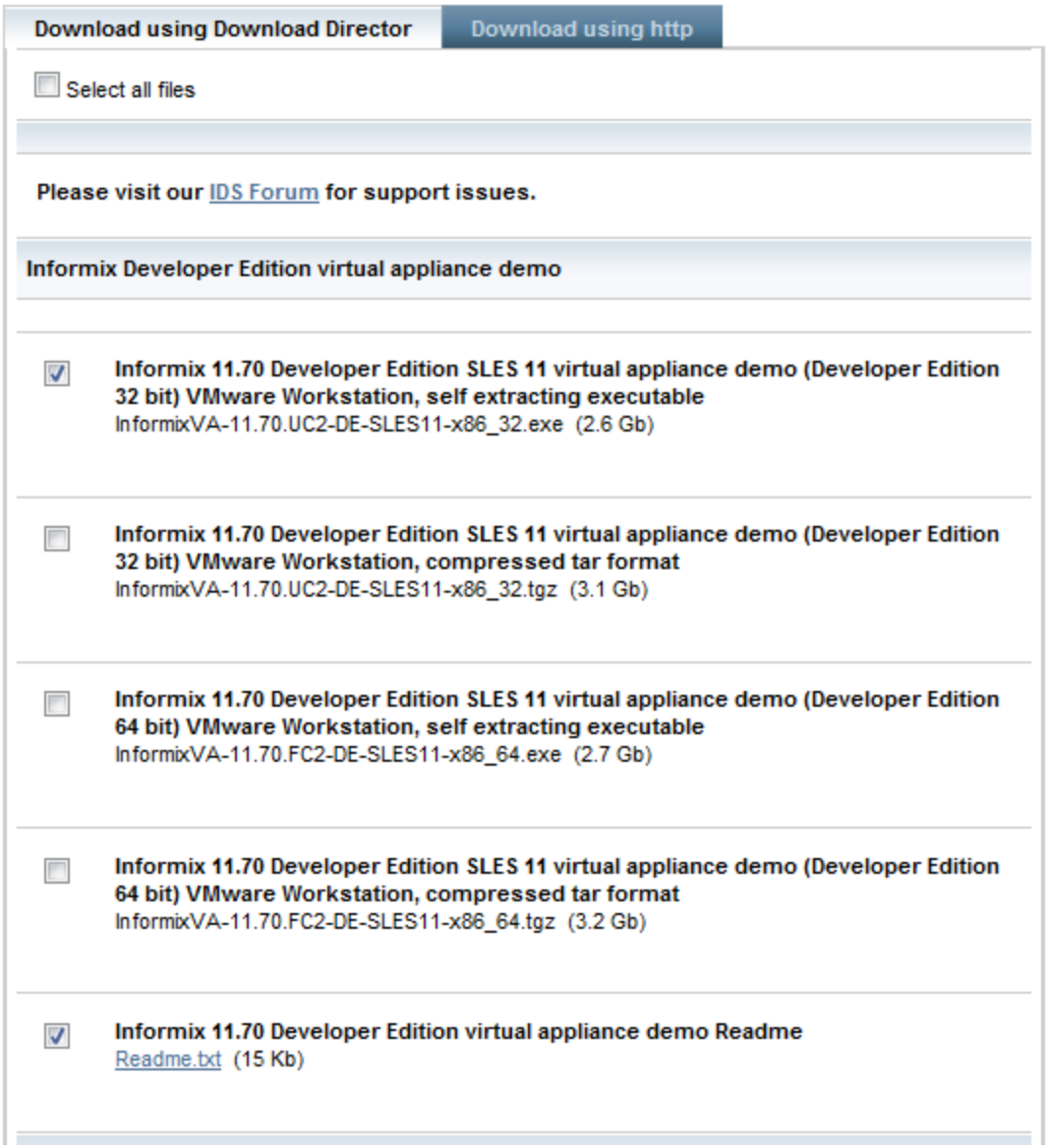
IBM requires that you sign up for a free "universal IBM user ID" before downloading any of their free products. If your Informix 11.70 Developer Edition SLES 11 virtual appliance demo link takes you to a page that looks like this,



then click on either the "`register here`" or "`Get an IBM ID`" link to continue. After completing a short registration process you will be redirected to the page where you can select the product to download.

I'm at the IBM Download page, which product do I pick?

If you are using Windows XP, Vista, or Windows 7, then the first choice (as shown below) is appropriate. Note that the versions up on the website will change over time; **the main thing is that you pick a 32 bit version**. You should also download the `Readme.txt` file (also checked in the following picture). This Readme.txt file includes instructions on installing the appliance and other information that describes what to do if you want to use the appliance on VMware that is running on a Mac or Linux platform.

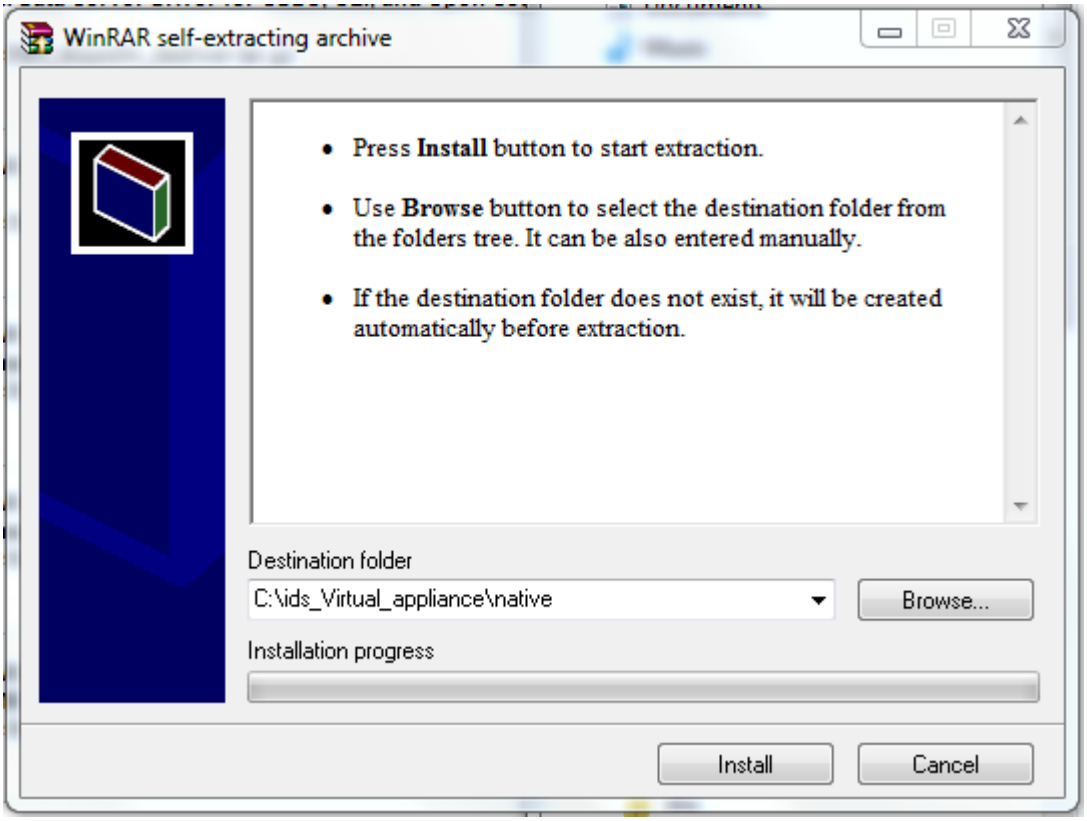


How do I use Download Director?

IBM has provided a useful FAQ for Download Director at http://www6.software.ibm.com/dldirector/doc/DDfaq_en.html.

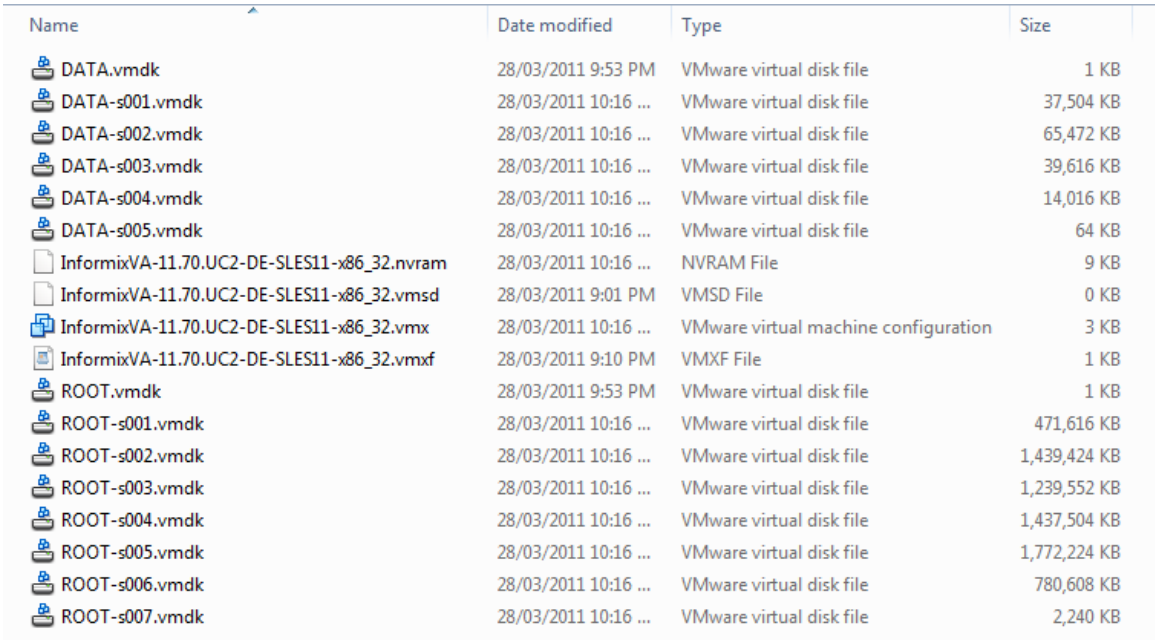
I've downloaded the installation executable using Download Director – Now what do I do?

When you run the executable that you downloaded from IBM it will ask you where to place a subdirectory that contains a set of virtual appliance files (see the following picture). Accept the default location or specify an alternative (as in the picture below). Note that the process will create a subdirectory inside the directory that you specify.



There are several virtual appliance files produced by the downloaded executable – Which one do I use to start up the Informix 11.70 Developer Edition SLES 11 virtual appliance demo?

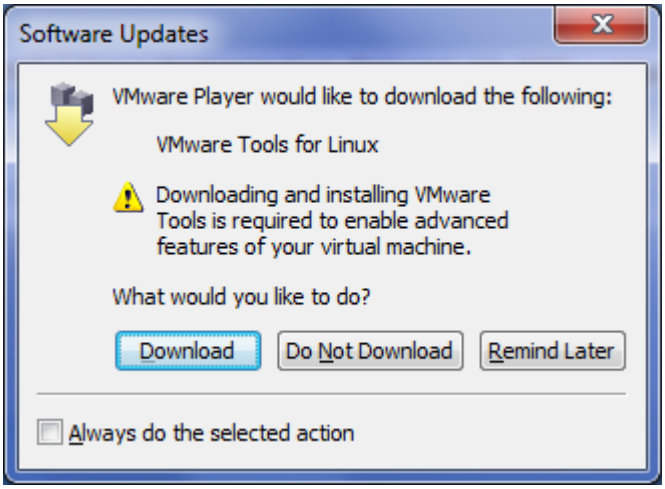
When you executed the program you downloaded from IBM, it created a set of files in a subdirectory of the parent directory that you specified. Change into that subdirectory and then double-click on the "`.vmx`" (VMware virtual machine configuration) file in that subdirectory.



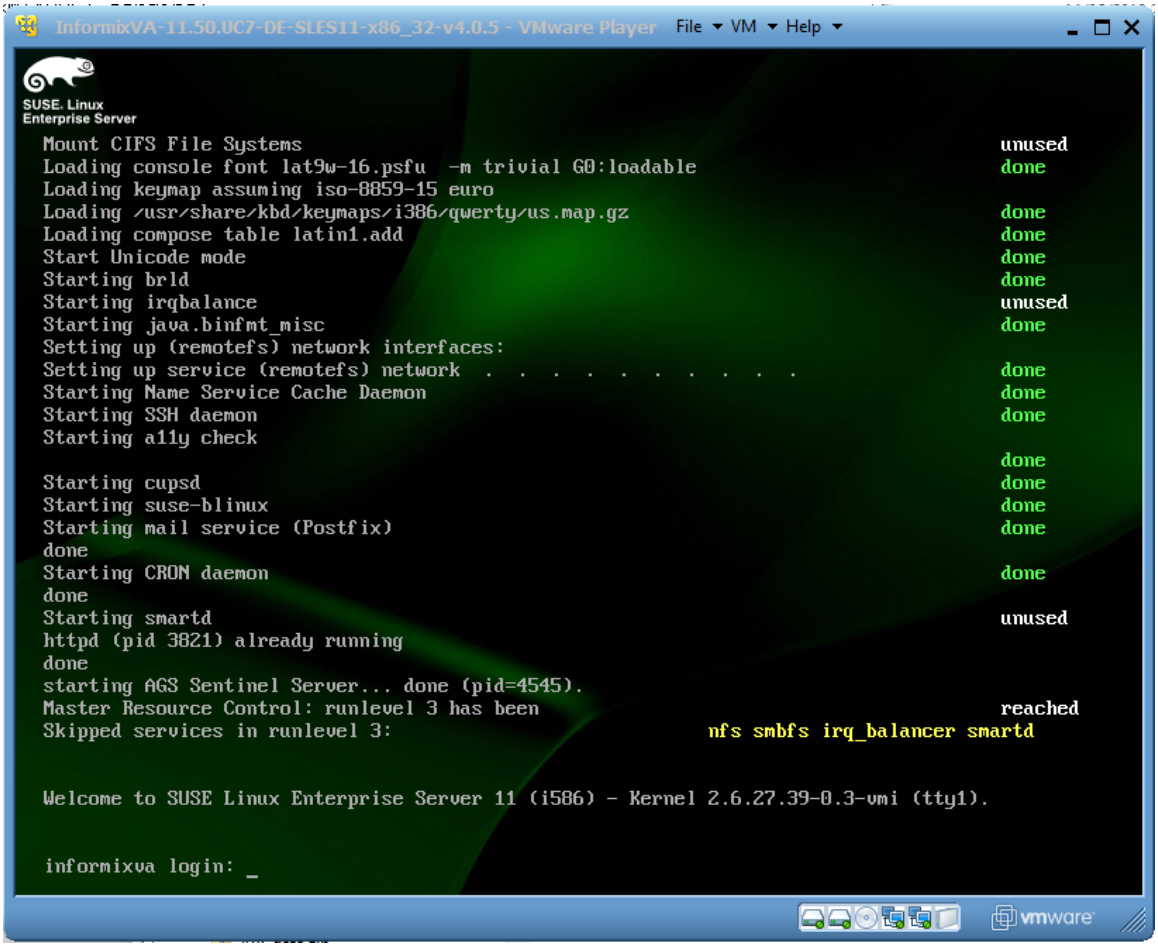
Name	Date modified	Type	Size
DATA.vmdk	28/03/2011 9:53 PM	VMware virtual disk file	1 KB
DATA-s001.vmdk	28/03/2011 10:16 ...	VMware virtual disk file	37,504 KB
DATA-s002.vmdk	28/03/2011 10:16 ...	VMware virtual disk file	65,472 KB
DATA-s003.vmdk	28/03/2011 10:16 ...	VMware virtual disk file	39,616 KB
DATA-s004.vmdk	28/03/2011 10:16 ...	VMware virtual disk file	14,016 KB
DATA-s005.vmdk	28/03/2011 10:16 ...	VMware virtual disk file	64 KB
InformixVA-11.70.UC2-DE-SLES11-x86_32.nvram	28/03/2011 10:16 ...	NVRAM File	9 KB
InformixVA-11.70.UC2-DE-SLES11-x86_32.vmsd	28/03/2011 9:01 PM	VMSD File	0 KB
InformixVA-11.70.UC2-DE-SLES11-x86_32.vmx	28/03/2011 10:16 ...	VMware virtual machine configuration	3 KB
InformixVA-11.70.UC2-DE-SLES11-x86_32.vmxf	28/03/2011 9:10 PM	VMXF File	1 KB
ROOT.vmdk	28/03/2011 9:53 PM	VMware virtual disk file	1 KB
ROOT-s001.vmdk	28/03/2011 10:16 ...	VMware virtual disk file	471,616 KB
ROOT-s002.vmdk	28/03/2011 10:16 ...	VMware virtual disk file	1,439,424 KB
ROOT-s003.vmdk	28/03/2011 10:16 ...	VMware virtual disk file	1,239,552 KB
ROOT-s004.vmdk	28/03/2011 10:16 ...	VMware virtual disk file	1,437,504 KB
ROOT-s005.vmdk	28/03/2011 10:16 ...	VMware virtual disk file	1,772,224 KB
ROOT-s006.vmdk	28/03/2011 10:16 ...	VMware virtual disk file	780,608 KB
ROOT-s007.vmdk	28/03/2011 10:16 ...	VMware virtual disk file	2,240 KB

I'm executing the .vmx file – Now what?

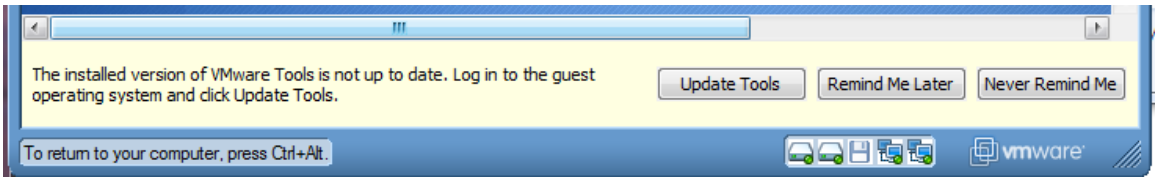
Double-clicking on the file will load the **Informix 11.70 Developer Edition SLES 11 virtual appliance demo** into the VMware Player. As this is happening you may see some warning messages about shared folders being disabled and not being able to connect to floppy "A:\". These messages can be ignored. You may also see a message about VMware Tools not being up to date, but click "`Do Not Download`".



Eventually you will be presented with the following screen:



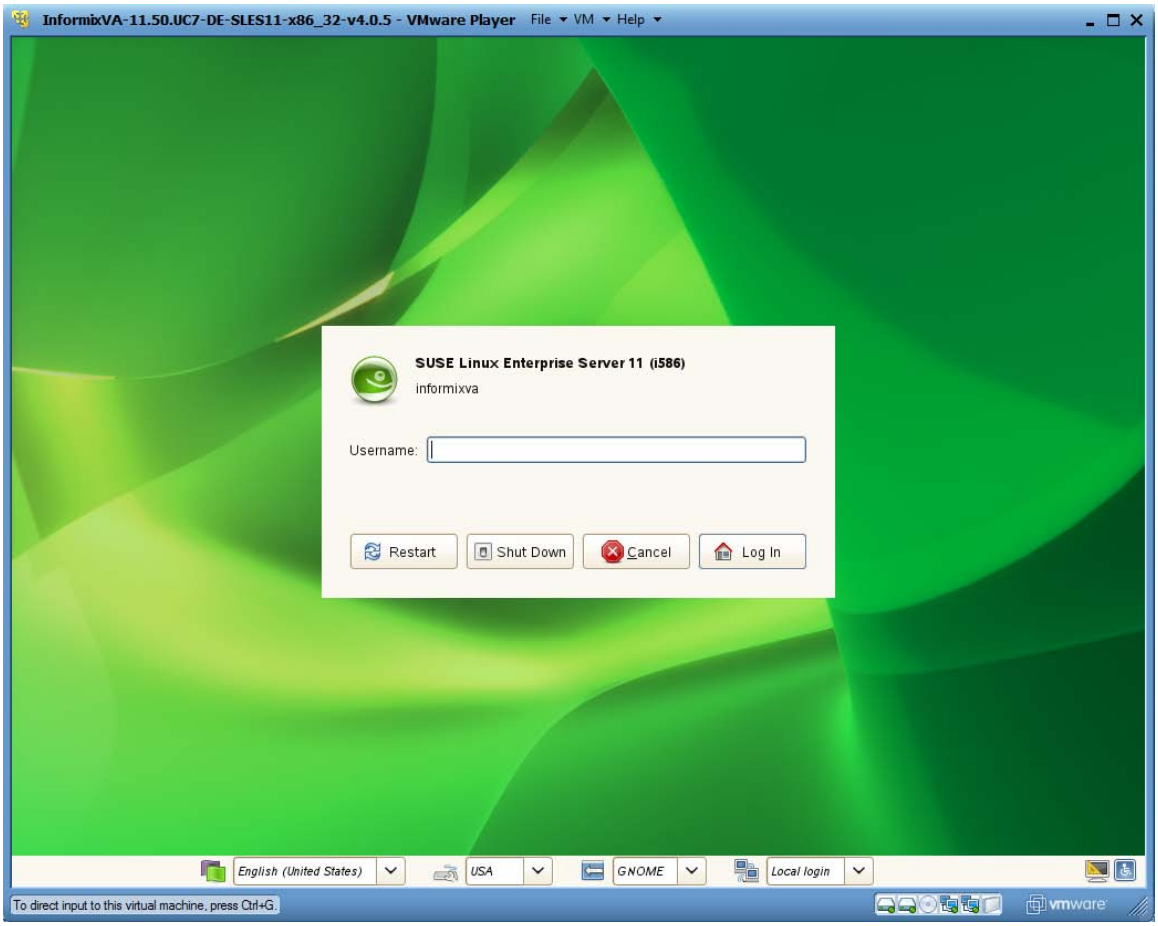
Click anywhere on this screen to ensure that it has the keyboard focus. You may see a message similar to the following at the bottom of the screen:



You should ignore it for now, although "`Never Remind Me`" can be clicked if you see the message again in the future.

Important note: As you switch between typing information into the appliance window and working in other windows on your Windows desktop (such as a window containing this PDF document) you will always need to click on the appliance window to ensure that it has the keyboard focus before you start typing.

Login as "`root`", specifying a password of "`root`". After this point you will be asked to acknowledge a series of license agreements. Eventually you will be presented with the following screen:



Congratulations! You have now successfully installed the **Informix 11.70 Developer Edition SLES 11 virtual appliance demo**.