

# SuperNova Enterprise Guide



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Copyright ©2016 Dolphin Computer Access Ltd.

Technology House
Blackpole Estate West
Worcester WR3 8TJ
United Kingdom
Tel: +44 (0) 1905 754577
Fax: +44 (0) 1905 754559

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# Introduction

This guide provides information on the installation and configuration of Dolphin's Supernova and ScreenReader Editions version 16 and later software under Citrix and Terminal Server environments.

**(If you are installing Dolphin Software versions 15 and earlier, please refer to the guides that are specific to these versions.)**

Throughout this guide the following terminology is used:

1. "Dolphin Software" refers to SuperNova Magnifier & ScreenReader or SuperNova Magnifier & Speech or Dolphin Screen Reader or SuperNova Magnifier.
2. “SAM” refers to “Synthesizer Access Manager”. This is a Dolphin software component that provides communication between SuperNova/Screen Reader and Speech Synthesizers/Braille displays.
3. "TTS" refers to “Text To Speech engine”. This is the software/hardware synthesizer that generates the speech. Examples of TTS engines are Dolphin Orpheus, Eloquence, Vocalizer, Vocalizer Expressive and SAPI5.

# Server and Client requirements and configurations

This section details the Dolphin Software requirements for the server and clients.

## Configurations supported by Dolphin Software

The server configurations supported by Dolphin Software:

* Microsoft Windows 2008 R2 64bit Server.
* Microsoft Windows 2012 R2 64bit Server.

Servers with Citrix installed can use both ICA and RDP protocols, however the ICA protocol is recommended.

## Client specifications supported by Dolphin Software

Dolphin Software can be configured to work with both thick and thin clients. The recommended system requirements are as follows:

**For a thick client:**

* Processor – Multi-Core Intel Pentium, Xeon, or i-series processor or AMD. Recommended dual core 2.4 Gigahertz (GHz) or faster 32-bit (x86) or 64-bit (x64) processor. Note: Operating System and other running applications should be considered.
* Memory - 2 GB or higher.
* Video/Graphics display – ideally a dedicated AGP/PCI-E compatible GPU with 256 MB memory or higher.
* Audio - "add in" card or on board - this is only required if a SAM supported software synthesizer/TTS is to be used on the client.
* Hard disk – 5 GB of free space - this depends upon which (if any) software synthesizer/TTS is being used.
* Serial ports - if serial hardware synthesizer/TTS and Braille displays are to be used then 1 serial port for each device will be required.
* USB ports - if USB hardware synthesizer/TTS and Braille displays are to be used then 1 USB port for each device will be required.
* Operating system - Windows 7, Windows 8.1 or Windows 10.

**For a thin client such as a Dell Wyse C90LE7:**

* USB ports - if USB hardware synthesizer/TTS and Braille displays are to be used then 1 USB port for each device will be required.
* Operating system – Embedded Windows 7, Windows 8.1 or Windows 10.

## Client software versions supported by Dolphin Software

The following client software versions are supported:

* Citrix Receiver 4
* Citrix Receiver 3
* ICA Client 12
* ICA Client 11
* ICA Client 10
* Citrix Quick Launch
* Remote Desktop Services in Windows Server 2012 R2 and Windows Server 2008 R2
* Remote Desktop support for Windows 10 and Windows 8.1

Note: Many Thin clients may have an older version of the Citrix ICA Client installed, if possible this should be updated to version 11.x or later, however if this is not possible then earlier client versions should work if run in "full screen" mode.

Certain versions of the ICA protocol claim to support audio redirection. Therefore, it is possible to run a Text To Speech (TTS) engine on the server and pipe the audio to the client. However, in our opinion the excessive audio latency introduced by the network means that this is not a practical solution for a screen reader and therefore is not recommended.

The colour settings for the client need to be “24 bit” or higher.

Note: All of the client terminals connected to a particular server do NOT have to be the same.

### ICA protocol supported configurations

|  |  |  |  |
| --- | --- | --- | --- |
| Supported Client Terminals | Software on the Client. | Supported Options | Requirements |
| Windows Desktop PC (Window 7, 8.1,10),ICA client version 10 to Citrix Receiver 4. | SAM 2.x (required for Speech or Braille);Dolphin Orpheus TTS (optional).Eoquence (optional).Vocalizer Expressive (optional).SAPI (optional). | Software Speech(All SAM devices) | SAM and Text To Speech (TTS) engines (Dolphin Orpheus, Eloquence, Vocalizer, Vocalizer Expressive, SAPI) to be installed on the clients.Sound card. |
|  |  | Hardware Speech(All SAM devices) | USB/Serial port. |
|  |  | Braille(All SAM devices) | USB/Serial port. |
|  |  | Basic Magnification. | Quality graphics card. |
| Windows Desktop PC (Window 7, 8.1, 10),ICA connection client version 10 to Citrix Receiver 4. | None. | Hardware Speech(All SAM serial devices) | USB/Serial port.ICA port mapping. |
|  |  | Braille(All SAM serial devices) | USB/Serial port.ICA port mapping. |
|  |  | Basic Magnification. | Quality graphics card. |
| Thin Client (e.g. Dell Wyse C90LE7),ICA connection client version 11 | None. | Hardware Speech(All SAM serial devices) | USB/Serial port.ICA port mapping. |
|   |  | Braille(All SAM serial devices) | USB/Serial port.ICA port mapping. |

### RDP protocol supported configurations

|  |  |  |  |
| --- | --- | --- | --- |
| Windows desktop PC (Windows 7 8.1 and 10), | Dolphin SAM version 2.x (required for speech or Braille output).Dolphin Orpheus TTS (optional).Eoquence (optional).Vocalizer (optional).SAPI (optional). | Software Speech(All SAM devices) | SAM and and SAM directly driven Text To Speech (TTS) engines (Dolphin Orpheus, Eloquence, Vocalizer, Vocalizer Expressive, SAPI) to be installed on the clients.Sound card. |
|  |  | Hardware Speech(All SAM devices) | Serial/USB port. |
|  |  | Braille(All SAM devices) | Serial/USB port. |

Basic Magnification consists of all standard magnification features, however it is not as smooth or responsive as on a stand alone machine.

## Technical Guidelines and Resource Metrics

The following are guidelines outlining Dolphin Software network bandwidth requirements. These requirements are per Dolphin Software user and must be considered in addition to any other requirements for the remote session and any other applications.

* CPU Usage: Maximum of 4 Dolphin Software users per CPU-core (approx 700Mhz per user), ideally 1 Dolphin Software user per CPU-core.
* Network Bandwidth: For magnification/Colour Scheme/visual effects: 5Mbit/sec
* Network Bandwidth: Sam Remote extensions: 50Kbits/sec
* Network audio (optional) 500Kbit/sec
* Network latency: < 10ms.
* Memory: 250MB per user – the memory requirements of third party applications that are used should also be taken into account.

In summary, the network bandwidth between the server and client ideally needs to be at minimum of 10Mbit/sec. Trying to run Dolphin Software over a client connected via a typical 2Mbit WAN is unlikely to be very successful due to the network latency and bandwidth sharing.

If you have a fast enough network, you should turn off data compression in the ICA/RDP protocol to increase performance.

# Installation Instructions for Dolphin Software

This section describes the steps to install Dolphin Software onto a Server and client workstation. When performing the installation you may find it useful to use the installation check lists found in Appendix A of this document.

## Software installation on the Server

This section details the installation and configuration of the Dolphin Software on the server part of the Citrix system.

### Install Dolphin Software

Perform an installation of your Dolphin Software and SAM - note you do not need to install Dolphin Orpheus TTS or the Vocalizer Expressive voices. To perform the installation follow the instructions below:

1. Logon as the Administrator or someone who has security equivalence.

2. Run the Dolphin installation program (DVD or Demo download).

### Installation of the Dolphin Interceptor on Windows Server 2008

Once the Dolphin Software and SAM have been installed, you need to configure the Dolphin Interceptor. For full details of the Dolphin Software version 16 Interceptor please refer to Appendix B in this document.

To configure the Dolphin Interceptor on Windows Server 2008 R2 you need to:

* + Launch the Registry Editor.
	+ Navigate to “HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Services\dolboot”.
	+ Create the registry key DWORD named “Configure”. Then set the “Configure” value data to 10 hexadecimal (16 decimal) for Citrix XenApp support or 8 for Terminal Server support.
	+ Once installed and configured restart the server.

The table below details all the various values that the “Configure” bit field can be set to. Calculate the bit field (based on the values below) to enable support for whichever drivers are required to be chained.

|  |  |  |
| --- | --- | --- |
| **Value (Hexadecimal)** | **Value (decimal)** | **Description** |
| 1 | 1 | Windows XP graphics card drivers |
| 2 | 2 | Windows Vista, Windows 7, Windows 8.1 Canonical Display Driver (CDD.dll) |
| 4 | 4 | Windows XP Driver Model drivers in Windows Vista and Windows 7 |
| 8 | 8 | RDP Driver – Terminal Server and Remote Desktop |
| 10 | 16 | ICA Driver – Citrix |

Note: If you have a Citrix XenApp 7.6 or later environment ensure that you enable the “Legacy Graphics Mode” policy (Citrix Studio > Policies > ICA > Graphics)

### Installation of the Dolphin Interceptor on Windows Server 2012 R2

There are no additional configurations required other than to restart the server following the installation of SuperNova.

#### To remove the Dolphin Interceptor:

Launch the dolcompinst.exe with the following switch command

–remove

This will remove all the above listed files - as long as there are not entries in the registry key HKEY\_LOCAL\_MACHINE\SOFTWARE\Dolphin\.

#### To check the status of the Dolphin Interceptor

From a command prompt navigate to directory for the 32 bit or 64 bit Dolcompinst application and type the command:

Dolcompinst.exe /?

## Installing Dolphin Software to a Windows 7 Virtual Machine for Citrix XenDesktop

This section details the installation and configuration of the Dolphin Software on the server part of the Citrix system.

### Install Dolphin Software

Perform an installation of your Dolphin Software and SAM - note you do not need to install Dolphin Orpheus TTS or the Vocalizer Expressive voices. To perform the installation follow the instructions below:

1. Logon as the Administrator or someone who has security equivalence.

2. Run the Dolphin installation program (DVD, MSI package or Demo download).

### Installation of the Dolphin Interceptor on Windows 7 Virtual Machine

Once the Dolphin Software and SAM have been installed, you need to configure the Dolphin Interceptor. For full details of the Dolphin Software version 16 Interceptor please refer to Appendix B in this document.

To configure the Dolphin Interceptor on Windows Server 2008 R2 you need to:

* + Launch the Registry Editor.
	+ Navigate to “HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Services\dolboot”.
	+ Create a new registry key called ‘Add’, in the ‘Add’ key create a new registry key called ‘Citrix Mirror Driver’.
	+ In the newly created ‘Citrix Mirror Driver’ key create a String Value called ‘name’ with the value data of this string set to ‘vdtw30’, and also a DWORD (32 bit) Value called ‘type’ with the value data set to ‘4’.
	+ If you are using a XenDesktop with XP Display Driver Model (XPDM) display adapter drivers rather than Windows Display Driver Model (WDDM) drivers you will also need to create the registry key DWORD named ‘Configure’. Then set the ‘Configure’ value data to 10 hexadecimal (16 decimal) in the following key: HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Services\dolboot.
	+ Once installed and configured restart the Virtual Machine.

Note: If you have a Citrix XenDesktop 7.6 or later environment ensure that you disable the “Legacy Graphics Mode” policy (Citrix Studio > Policies > ICA > Graphics)

## Product activation for network version

Once the Dolphin Software is installed on the server, product activation is required in order to obtain a software licence for SuperNova. Without a software licence Dolphin Software will run for only 30 days.

WARNING - please ensure you review the End User Licence Agreement before activating SuperNova. Once the Dolphin Software has been activated a refund is not available.

1. To the installation you must also add the setup.msi file. This file is in the root of the product DVD. This file contains the product serial number. Without this file the product will run as a 30-day demonstration version.

Copy setup.msi to the SuperNova installation folder. The path is c:\Program files\Dolphin\SnovaSuite150x\. Note that the folder name will change depending on the version number of SuperNova you are installing.
2. To the installation you must also prepare and add the authorise.ini file. The authorise.ini file is available in the MSI folder on the product DVD. You can use Notepad or similar text editor to modify this file.

Authorise.ini file content:

[multiusercode]
000000=111-2222-3333

Replace "000000" with your customer six digit license key. This is the last six digits of the product serial number shown on the DVD, for example, 044US4E01012345 would make your code "012345".

Replace "111-2222-3333" with your multi-user license code. Your license code will be displayed on your multi-user license certificate.

Once prepared and after installation of SnovaSuite.MSI, copy authorise.ini to the SuperNova installation folder. The path is c:\Program files\Dolphin\SnovaSuite150x\. Note that the folder name will change depending on the version number of SuperNova you are installing.

## Finalise SAM Server installation

Note: This step is not required from the installation of SuperNova Magnifier.

In order to make the network version of SAM visible to all users, you need to get SAM to create its registry keys. To do this locate the SAM installation folder as specified during the installation of SAM, e.g. M:\Apps\Dolphin\SAM, then run the SAM.exe program.

Once SAM has been run for the first time on the server you need to give full access control for all terminal server users to the SAM registry keys in order to ensure that SAM is able to save the settings for each machine. This is performed using regedit. Set the permissions for HKEY\_LOCAL\_MACHINE\Software\Dolphin\SAM and all sub keys for all users to read/write/update.

Note: For 64-bit server versions the location would be HKEY\_LOCAL\_MACHINE\Software\WOW6432Node\Dolphin\SAM

## Configuration of the client workstations

Note: No client configuration is required if you are installing SuperNova Magnifier, unless you would also like to install the software locally to work with locally installed applications.

There are various options depending on the client machine and what sort of synthesizer/Braille display you have.

### SAM client solution (all SAM supported devices)

Access to all SAM supported devices including software synthesizers (e.g. Orpheus) requires a Windows Desktop client.

* Install SAM and Voice Synthesisers on the client (you may also want to install SuperNova if the client requires an access solution for local applications)
* Install the SAM Terminal Server Extensions on the client (see the section below "3.4.1.1 SAM Terminal Server Extensions")
* Use the Citrix or Remote Desktop Client to connect to the terminal as a specific user.
* Run SAM.exe locally to detect all devices and to use the locally installed SAM device (e.g. Vocalizer Expressive synthesizer).

#### SAM Terminal Server Extensions

SAM includes Terminal Server extensions which will allow the output devices such as speech synthesizers and Braille displays attached to a local computer, to be used by the Dolphin Software running within a Citrix or Terminal Server session.

#### Configuring SAM client installation for Citrix XenApp (ICA)

* Copy "SamRemote.dll" from the \TerminalServer folder on the Dolphin product DVD or from <http://downloads.yourdolphin.com/downloads/citrix/SamRemote/> to the Citrix client installation folder on the workstation which will usually be:

On a 32bit system C:\Program Files\Citrix\ICA Client.

On a 64bit system C:\Program Files(x86)\Citrix\ICA Client.

**a) For ICA client version 9 or earlier:**

Edit the file C:\Program Files\Citrix\ICA Client\module.ini

a) In the [ICA 3.0] section add "SamRemote" to the end of the "VirtualDriver" line.

Ensure it is comma separated and remains a single line

b) In the [VirtualDriver] section add a line at the end containing:-

SamRemote =

c) At the end of the file add a new section containing:

[SamRemote]
DriverName = SamRemote.DLL
DriverNameWin16 =
DriverNameWin32 = SamRemote.DLL

**b) For ICA clients and Citrix Receivers, make the following registry changes on the client:**

* Using REGEDIT and make the following changes to the Windows registry:
* For 32bit versions of Windows

 Add "SAMRemote" to the "VirtualDriver" string (ensuring that it is comma separated) contained in: HKEY\_LOCAL\_MACHINE\Software\Citrix\ICA Client\Engine\Configuration\Advanced\Modules\ICA 3.0

 Add a string value called “SAMRemote” to the “VirtualDriver” key located at: HKEY\_LOCAL\_MACHINE\SOFTWARE\Citrix\ICA Client\Engine\Configuration\Advanced\Modules\VirtualDriver

Create a new Key in: HKEY\_LOCAL\_MACHINE\Software\Citrix\ICA Client\Engine\Configuration\Advanced\Modules\SAMRemote

Create three new String values in the above key, namely:

a) "DriverName" with the Value data of "SamRemote.DLL"

b) "DriverNameWin16" with the Value data of "Unsupported" (or leave blank)

 c) "DriverNameWin32" with the Value data "SamRemote.DLL"

* For 64bit versions of Windows

 Add "SAMRemote" to the "VirtualDriver" string (ensuring that it is comma separated) contained in: HKEY\_LOCAL\_MACHINE\Software\Wow6432Node\Citrix\ICA Client\Engine\Configuration\Advanced\Modules\ICA 3.0

 Add a string value called “SAMRemote” to the “VirtualDriver” key located at: HKEY\_LOCAL\_MACHINE\SOFTWARE\WOW6432Node\Citrix\ICA Client\Engine\Configuration\Advanced\Modules\VirtualDriver

Create a new Key in: HKEY\_LOCAL\_MACHINE\Software\Wow6432Node \Citrix\ICA Client\Engine\Configuration\Advanced\Modules\SAMRemote

Create three new String values in the above key, namely:

a) "DriverName" with the Value data of "SamRemote.DLL"

b) "DriverNameWin16" with the Value data of "Unsupported" (or leave blank)

 c) "DriverNameWin32" with the Value data "SamRemote.DLL"

#### Configuring SAM client installation for Citrix XenDesktop and Windows 7 VM

Carry out all steps in section above (3.5.1.2 Configuring SAM client installation for Citrix (ICA)) after these are complete you need to force SAM to use the Remote driver on the VM, to force the Remote Driver to be used you need to:

* Using REGEDIT and make the following changes to the Windows registry:

Navigate to HKEY\_LOCAL\_MACHINE\SOFTWARE\Dolphin\SAM\RemoteDriver

Create a DWORD value called ‘protocol’

Set the value data to ‘1’.

Note: Ensure that you have SAM 2.87 or later to enable support for the SAM remote driver in XenDesktop environments.

#### Configuring SAM client installation for Terminal Server (RDP)

For 32bit versions of Windows client –

* Copy SamRemote.dll from the \TerminalServer\Win32 folder on the DVD (also available here <http://downloads.yourdolphin.com/downloads/citrix/SamRemote/>) to the local Sam installation folder which will usually be:

C:\Program Files\Dolphin\Sam

For 64bit versions of Windows client –

* Copy SamRemote64.dll and Sam64.dll from the \TerminalServer\X64 folder on the DVD (also available here <http://downloads.yourdolphin.com/downloads/citrix/SamRemote/>) to the local Sam installation folder which will usually be:

C:\Program Files (x86)\Dolphin\Sam

Next, start an RDP connection then create the following registry key:

For 32bit versions of Windows

* HKEY\_CURRENT\_USER\Software\Microsoft\Terminal Server Client\Default\AddIns\SamRemote

Create a string value in the above key called "name" containing the path to where the SamRemote.dll was copied to above, e.g. C:\Program Files\Dolphin\Sam\SamRemote.dll

For 64bit versions of Windows

* HKEY\_CURRENT\_USER\Software\Microsoft\Terminal Server Client\Default\AddIns\SamRemote

Create a string value in the above key called "name" containing the path to where the SamRemote.dll was copied to above, e.g. C:\Program Files\Dolphin (x86)\Sam\SamRemote64.dll

## Configure Dolphin Software for user logins

For users to be able to run the Dolphin Software when they login to a Citrix session there are a couple of settings that need to be made.

#### Create shortcuts to the Dolphin Software in the users Windows Start menu

For each user shortcuts will be needed to be made to the network installed Dolphin Software. These shortcuts should point to the executable (exe) file of the Dolphin Software in the product installation folder, the exe's are as follows:

* SuperNova Magnifier & Screen Reader – Snova.exe.
* Dolphin ScreenReader – Hal.exe.
* SuperNova Magnifier – Lunar.exe.
* SuperNova Magnifier & Speech – Lunpls.exe.

#### Set the user's Dolphin Software settings folder

The changes users make to SuperNova settings are saved in the user’s Settings folder. The default location for this folder is:

%userprofile%\ AppData\Local\dolphin\[prod][ver] \Settings

Where [prod] represents the product name and [ver] represents the product version. For example, SuperNova Magnifier & Screen Reader version 16.01 settings are saved in the \..\SnovaSuite1601\Settings folder.

If user permissions means the above location is inaccessible then you can change the folder location by adding an entry to the system registry.

To do this:

1. Create the following key:

HKEY\_CURRENT\_USER\Software\Dolphin\Supernova1601

You must modify the version number to match the version installed, for example, the key must be Supernova1602 if you have SuperNova Magnifier & Screen Reader version 16.02 installed.
2. Create a string value called “Settings”.
3. Set the value data to be the folder location, for example, H:\Settings.

### Using a client installation of SAM

1. Create a Citrix session and SAM will automatically start on the local machine.

2. Once logged in, start the Dolphin Software. "Sam installed" will be spoken by any local synthesizers.

3. The Dolphin Software will probably default to using the first synthesizer available which will usually be the version of Vocalizer Expressive installed on the terminal server. This will be sluggish as audio is being sent across the network.

4. From the Dolphin Software control panel select an alternative voice post-fixed with "(terminal)". This will use the device installed locally, which will be more responsive.

## Operation Instructions

Basic operation of Dolphin Software within the Citrix session is the same as on a desktop machine, with the following exceptions:

Interceptor Status Errors

If the Interceptor is not properly installed, you will get a message telling you so. However, despite what the message says, it will NOT automatically install the Interceptor. The System administrator needs to do this on the server.

Audio Problems

If you attempt to run a TTS engine on the server and use the audio redirection facility of RDP or ICA to send the sound to the client terminal, you will get unsatisfactory results. This is not a supported installation scenario.

# Enterprise Configuration Utility

The enterprise configuration utility is a tool for Administrators to restrict access to features of SuperNova, adjust advanced settings for performance and allow logging to be enabled when troubleshooting issues.

The enterprise configuration utility can be found in the SuperNova installation directory on the server (by default C:\Program Files (x86)\Dolphin\SnovaSuite1601).

### Support

The settings in this dialog should only be used when advised by Dolphin Support. Incorrect use could result in reduced accessibility in some applications.



### Features

This dialog allows administrators to disable features of SuperNova that they may consider a security risk and therefore do not want their users to access.



Select the checkboxes of any features that you do not want your users to access and then click on the OK button before starting SuperNova.

### Magnification

This dialog contains settings that can be adjusted to improve magnification performance.



On Windows Server 2012 R2 and later only use the Alternative Magnification system. In Windows Server 2008 R2 and earlier it is possible to switch between the modes to optimise performance. If you are using the “Hook Desktop Window Manager” or “Use DolVideo kernel components” modes then you need to ensure that you refer to [section 3.1](#_Installation_of_the) of this documentation to configure the Interceptor.

The Alternative magnification system has two methods of output, if you experience issues with the default “Output to DirectX SwapChain” we would recommend switching to the “Output to GDI Window”.

If there is no physical GPU available to the Citrix or Remote Desktop sessions then we would recommend that you enable the “Disable hardware acceleration for magnification” check box.

After making changes to the Enterprise Configuration it is important to restart SuperNova for the changes to take effect.

### Diagnostic

This dialog enables an administrator to collect log files to aid in diagnosing the cause of any issues experienced.



# Troubleshooting

This section provides solutions to common problems and offers answers to some frequently asked questions. The information provided is not in any order of priority.

**Q. What accessibility limitations should be expected?**

Dolphin Software will offer speech, Braille and basic magnification support in a thick client's Citrix server environment. Basic Magnification consists of all standard magnification features; however magnification may not be as smooth or responsive as on a standalone computer. Magnification is not supported on a thin client.

**Q. How to configure SAM to use a client device?**

* Create a session on the Citrix server. Sam should automatically start on the local machine.
* Once logged in, start the Dolphin Software. "Sam installed" will be spoken by any local synthesizers.
* The Dolphin Software will probably default to using the first synthesizer on the Citrix server. This will be sluggish as audio is being sent across the network.
* From the Dolphin Software control panel select an alternative voice post-fixed with "(terminal)". This will use the device installed locally, which will be more responsive.

**Q. When I start SuperNova on the server a “Magnification Starting Warning” message is displayed stating –**

**“Your Windows Colour settings are not set to 32-bit colour. Please change to 32-bit true colour mode in order to see perfectly smooth text using TrueFonts”**

****

This message always pops up when connecting to a Terminal server via RDP even though 32 bit colour is set on both client and server.

Solution: The depth in the client and the display properties may say 32-bit, but it’s not actually set to this. The server properties or group policy can override this. To resolve this, please refer to the article <http://technet.microsoft.com/en-gb/library/cc772048.aspx>

**Q. When I start SuperNova in a Citrix session “Magnification Starting Warning” message is displayed stating –**

**“We’ve detected that you’re using the Microsoft Basic Display Adaptor. Your Assistive technology will work best if you install a display driver for your video card. Try running Windows Update to find one, or download one from your device manufacturer’s website.”**



This message will be displayed in certain Citrix Environments due to issues detecting the display device. To prevent this message from being displayed open the Enterprise Configuration Utility from the SuperNova directory (enterpriseconfig.exe) and in the ‘Features’ tab select ‘Disable startup warnings’.

**Q. When I start a Citrix or Remote Desktop session with Windows Server 2012 R2 and my client machine is using Multiple Monitors the session freezes?**

As a temporary workaround for this issue either configure Citrix or the Remote session to use a single monitor or ensure that the session is not running in full screen and instead extend the Window to cover the multiple monitors.

**Q. SAM is installed locally but it does not run when I start the Dolphin Software. Why?**

Make sure that you have permissions on the client to install the registry entries for SAM, e.g. HKEY\_LOCAL\_MACHINE/SOFTWARE/DOLPHIN/SAM with the PIIK and PIIK2 values and ensure this key is present. If it is not present then log on as administrator and install SAM.

**Q. Magnification Error Code 7 on start up?**

Open the Enterprise Configuration Tool and switch to the Alternate Magnification Mode and then restart SuperNova.

**Q. Intermittent hanging on Windows Server 2012 when running SuperNova in a remote session?**

An intermittent hang can occur in the “d3d10warp.dll” (software emulated GPU) if you have not disabled the hardware acceleration for Magnification when there is no physical GPU available to the session. To resolve this issue open the SuperNova Enterprise Configuration Utility “Magnification” tab sheet then enable the “Disable hardware acceleration for magnification” checkbox before clicking OK and launching SuperNova.

**Q. When I use the Dolphin Software in a Citrix session there is no speech/braille, and I am unable to select any devices"?**

1. This may be caused by the SAM Terminal Server Extensions not being correctly configured on the client.

To check this, when you start the Citrix session look in the local Windows System tray to see if SAM loads. If SAM is not loading, then check through the installation instructions in the sections of this guide for “SAM Terminal Server Extensions”, specifically check the changes that have been made to the module.ini file or the Citrix Client registry keys created/updated and ensure that the Samremote.dll file has been copied to the Citrix Client/Receiver program directory.

1. This issue could be due to the user/group not having the required permissions to use Virtual Channels. To resolve this you need to:
	* Log on to the Citrix Server as an administrator.
	* Open the ‘Remote Desktop Session Host Configuration’ (or Terminal Services Configuration).
	* Open Properties for the ‘ICA-TCP’ connection.
	* Select the ‘Security’ Tab sheet.
	* Click on the ‘Advanced’ button.
	* Select or add the group or individual users.
	* Click on the ‘Edit’ button.
	* Ensure that ‘Virtual Channels’ is set to ‘Allow’.
	* Apply any changes and then terminate any Citrix Sessions before testing.
2. The SAMRemote may be configured correctly but may not load if there are too many Virtual drivers being loaded by the client. Adjust the order in which the Virtual Drivers on the client machine load so that the SAMRemote driver is called earlier in the loading process, to do this you need to:
* On the client open the registry editor.
* Navigate to ‘HKEY\_LOCAL\_MACHINE\SOFTWARE\Wow6432Node\Citrix\ICA Client\Engine\Configuration\Advanced\Modules\ICA 3.0’.
* Open the VirtualDriver string value.
* Move SamRemote so that it loads after the initial ‘ThinWire’ virtual driver.
* Save the changes and ensure that any local Citrix sessions are restarted.

**Q. I want to use the Dolphin Software from a Citrix Server session within another Citrix Server session but I get no speech or Braille.**

To have speech and Braille running from a session within a session you first need to copy the samremote.dll (which you copied to the local SAM folder) to the SAM folder on the Citrix server.

Then from within the Citrix session you need to add the additional registry key, this is done in the same way as when the local SAM registry entry was added but this time point the path for SAM to SAM on the Citrix server. This registry entry would need to be done for each additional Terminal Server session that you wanted to use the Dolphin Software in but you could just do one registry entry export it and then import it on each additional terminal server session.

When you are within the session within the session the synthesizer or Braille display will list as (Terminal) (Terminal) so if you went to the Dolphin Software control panel and then Configuration and then Braille or synthesizer it would list it as (Terminal) (Terminal).

**Q. After installing the Dolphin Interceptor, I can no longer start a new Citrix session to the server?**

Please reboot the server if this occurs.

If the fault persists refer to Appendix B to disable or remove the Dolboot driver and consult with your Dolphin Technical Support provider.

**Q. Magnification error code 2 when launching SuperNova on a Windows 7 VDI?**

Ensure that you have the latest Windows updates installed, this error can result if Windows does not have support for SHA-2 code signing.

**Q. “A referral was returned from the server” error when launching SuperNova?**

This error can occur if the GlobalSign Root CA’s have not be installed to the server/VDI and if the ‘Turn off Automatic Root Certificates Update’ Group Policy has been enabled. The certificates are available to download from: <https://support.globalsign.com/customer/portal/articles/1426602-globalsign-root-certificates>

# Hot Key Reference

This section provides a list of the default Windows shortcut key equivalents that are used in the RDP and ICA.

**Citrix ICA Client defaults**

|  |  |
| --- | --- |
| **Windows Function** | **ICA Client Shortcut Key** |
| Task list | Shift + F1 |
| Close Remote Application | Shift + F3 |
| Toggle Title Bar | Shift + F2 |
| Ctrl + Alt + Del (display the Windows security dialog) | Ctrl + F1 |
| Windows Key (Ctrl + Esc) | Ctrl + F2 |
| Alt + Esc | Alt + F2 |
| Alt + Tab | Alt + + |
| Alt + Back tab | Alt + - |
| Ctrl + Shift + Esc | Ctrl + F3 |

# Appendix A – Installation Check Lists

The following installation checklists are intended to be used in conjunction with the installation instructions in this document as a means to ensure that all installation steps on the server and clients are completed. We recommend that for each server and workstation installation you complete the checklists as you install.

There are checklists for:

Server Installation

Client Installation

## Server Installation Checklist

[ ]  Step 1: (Windows Server 2008 R2 and earlier only) The “Configure” key as been created for Dolboot, and the value for this has been set to 16 decimal or 8 decimal depending on whether it’s a Citrix or Terminal Server installation?

[ ]  Step 2: Run SAM for the first time on the server?

[ ]  Step 3: All users have full access to the server registry key for SAM i.e. HKEY\_LOCAL\_MACHINE\Software\Dolphin\SAM?

[ ]  Step 4: The authorise.ini and setup.msi files have been added to the Dolphin Software product folders to unlock and activate?

[ ]  Step 5: The Server has been restarted?

## Client Installation Checklist

[ ]  Step 1: Server installation completed?

Note: If installing SuperNova Magnifier there is no need to configure the client machines so these steps are not required

[ ]  Step 2: SAM has been installed locally (or the complete Dolphin Software)?

[ ]  Step 3: SAM compliant software/hardware synthesizer and/or Braille display installed?

[ ]  Step 4: SAMRemote.dll file copied to the Citrix Receiver/ICA client folder or the SAM folder depending on whether you are configuring the system for Terminal server or Citrix?

[ ]  Step 5: SamRemote Virtual Driver registry keys created/updated?

[ ]  Step 6: If serial port re-direction used – serial port re-direction configured on the client?

# Appendix B – Dolphin Version 16.x Interceptor Details

## General Details of the Dolphin version 16.x Interceptor

1. dolboot.sys –
* This is a kernel driver/service loaded at boot time.

- The Windows registry location is –

 HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Services\dolboot

With “start” value set to 1 - this means load at boot, if set to 0 this means do not load.

* The file dolboot.sys will be located in X:\Windows\system32.
* Registry - HKEY\_LOCAL\_MACHINE\SOFTWARE\Dolphin\Dolboot - contains a list of Dolphin products that are dependent on the Dolboot - this is to make sure the dolboot.sys is not removed during un-install if there are still products installed that depend on it.
* Once installed the dolboot.sys file will be located in X:\Windows\system32.
1. dolvideo.dll - file dolvideo.dll will be located in X:\Windows\system32.
2. How it works - the dolboot.sys determines at start up how and what it is going to hook. If Windows 7 or 8.1 then the Canonical Display Driver (CDD.dll) will be hooked, if Terminal Server (RDP) or Citrix (ICA) then these will be hooked.
3. The dolboot.sys is disabled in Windows Safe mode.

This means that in the unlikely event of a problem being encountered with the Dolphin Interceptor, then Windows can be started in Safe Mode and using REGEDIT the dolboot.sys can be disabled for when Windows starts normally, to do this:

* Start Windows in Safe Mode.
* Run REGEDIT.
* Locate the key –

HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Services\dolboot\Start

* Set the “Start” value to 0.
1. Both dolboot.sys and dolvideo.dll must be the same build number or the Interceptor will not work.
2. Remote control software that patches into the IDD key may not work – for example PCAnywhere. The reason is that code is added in to ignore some remote control software but not all.
3. Not compatible with old pre DCM (2003) competitor software.
4. Installer and uninstaller - dolcompinst.exe - this will install and un-install the dolboot.sys, dolvideo.dll, dolsrvcbar2.exe.

The dolcompinst.exe is located in the Dolphin product installation folder for Supernova Magnifier & ScreenReader for a standard installation by default this will be:

On 32bit Windows – C:\Program Files\Dolphin\SnovaSuite<version number>.

On 64bit Windows – C:\Program Files (x86)\Dolphin\SnovaSuite<version number>.

The dolcompinst.exe can be run from a Windows Explorer or from a command (CMD) prompt. There are couple of command line options –

dolcompinst.exe [-v] [-remove] [-force] [/?]

These command line switches can be used in combination or as single options, details are as follows:

1. dolcompinst.exe

This will install the dolboot.sys, dolvideo.dll, dolsrvcbar2.exe.

1. dolcompinst.exe -remove

This will remove all the above listed files - as long as there are not entries in the registry key HKEY\_LOCAL\_MACHINE\SOFTWARE\Dolphin\.

1. dolcompinst.exe -installer -keySupernova1559

This will install the Interceptor and create a registry data value in the key HKEY\_LOCAL\_MACHINE\SOFTWARE\Dolphin\Dolboot for Supernova build 1559. If the "Supernova1559" part is modified to "Supernova1560" then a registry value will be created for build 1560.

1. dolcompinst.exe -v

Verbose output, this installs the components and displays information about which components are currently installed.

1. dolcompinst.exe /?

This displays usage and status information without installing components.

1. dolcompinst.exe –force

This allows a downgrade or a forced uninstall even if the Interceptor is in use for other Dolphin products.

## Configuring the Dolboot service registry options

1. **Default Behavior - Workstation.**

The Interceptor will automatically chain all detected graphics card drivers, including RDP and ICA drivers if they are present.

For Windows 7 and Windows 8.1 the Canonical Display Driver (CDD.dll) is chained; however no files are replaced in the Windows\System32 folder.

1. **Default Behaviour – Servers**

No graphics drivers are chained when installed on a Server or Domain Controller. If you want RDP, ICA or Console support, these must be configured manually. The dolboot service will not be present on the Server, to install this you must run the dolcompinst.exe installer utility on the Server.

1. **Checking Status**

A command line tool dolcompinst.exe is available to display which drivers have been detected and configured for chaining.

To view the installation status, start a command (CMD) prompt and go to the Dolphin product installation folder, for a standard installation by default this will be:

On 32bit Windows – C:\Program Files\Dolphin\SnovaSuite<version number>.

On 64bit Windows – C:\Program Files (x86)\Dolphin\SnovaSuite<version number>.

Then type –

Dolcompinst.exe /?

1. **Modifying behaviour.**

Behaviour of the Interceptor can be adjusted by modifying registry keys under –

HKEY\_LOCAL\_MACHINE \SYSTEM\CurrentControlSet\Services\Dolboot

1. **General Configuring.**

A configuration DWORD containing a bit field configures what types of drivers Dolboot will automatically configure chaining for.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Value Hexadecimal | Value (decimal) | Description | WorkstationDefault | ServerDefault |
| 1 | 1 | XP graphics card drivers | YES | NO |
| 2 | 2 | Vista/Win7 CDD | YES | NO |
| 3 | 4 | XPDM drivers in Vista/Win7 | YES | NO |
| 8 | 8 | RDP Driver – Terminal Server and Remote Desktop | YES | NO |
| 10 | 16 | ICA Driver – Citrix | NO | NO |

The key is a DWORD “Configure” value stored under the DolBoot registry path.

The default values if this key is not present is as follows:

* Workstation – hex 0x0000000f (15 decimal)
* Servers – 0
1. **Configuring on a Server**

Create the registry key DWORD “Configure” under –

HKEY\_LOCAL\_MACHINE \SYSTEM\CurrentControlSet\Services\Dolboot

Calculate the bit field (based on the values below) to enable support for whichever drivers are required to be chained, if you require multiple drivers to be chained then add the values together. Then set the “Configure” value data to this figure – make sure you set this using the “decimal” option in the registry editor.

|  |  |  |
| --- | --- | --- |
| **Value Hexadecimal** | **Value (decimal)** | **Description** |
| 1 | 1 | Windows XP graphics card drivers |
| 2 | 2 | Windows Vista and Windows 7 Canonical Display Driver (CDD.dll) |
| 4 | 4 | Windows XP Driver Model drivers in Windows Vista and Windows 7 |
| 8 | 8 | RDP Driver – Terminal Server and Remote Desktop |
| 10 | 16 | ICA Driver – Citrix |

To enable support for the console window on the Server, use bits 1, 2 and 4.

1. **Adding a driver to hook.**

If a driver is not automatically detected or you want a driver disabled, you can add this in, to do this -

Create a new registry key “Add” in the key -

HKEY\_LOCAL\_MACHINE \SYSTEM\CurrentControlSet\Services\Dolboot

Within the “Add” key create a new multi-string value called “name”, set this to the DLL name of the driver to be hooked (without the .DLL extension).

Then create a DWORD “type” value which is set to the driver type value as per below –

|  |  |
| --- | --- |
| **Type Value** | **Meaning** |
| 0 | Windows XP display driver or Windows XP Driver Model driver in Windows Vista and Windows 7 |
| 2 | Canonical Display Driver (CDD.dll) in Windows Vista and Windows 7 |
| 3 | RDP Terminal Server Driver (RDPDD) |
| 4 | ICA Citrix Driver |
| 0xffffffff | Disabled |

Note - the “Configure” value has no effect on adding additional drivers. It assumes that if you have created keys, you want the drivers to be chained.

**NOTE** - When adding or modifying a driver one of the above type values **must** be used. A Blue Screen crash (BSOD) may occur if the type is incorrect. If a BSOD crash does occur, then start the Server in Safe Mode and correct the above registry key.