

# Morningstar Direct<sup>SM</sup> Technical Specifications and Installation Procedures

## Platform Requirements

### Hardware

- ▶ Pentium III 600MHz+ compatible (minimum)
- ▶ Pentium 4, 2GHz+ (recommended)

### Memory

- ▶ 2GB (minimum)
- ▶ 4GB (recommended)

### Disk Space

- ▶ 2 GB (minimum)

### Operating Systems

- ▶ Windows Vista
- ▶ Windows 7
- ▶ Windows 8
- ▶ Windows 8.1

### Additional Tools/Plug-ins

- ▶ Microsoft Internet Explorer 8.0 or higher
- ▶ Preferred browsers for Asset Allocation & Portfolio Analysis: Mozilla Firefox 3.6,
- ▶ Safari 4.0, Google Chrome 6.0 or higher
- ▶ Microsoft Office 2003 (or higher)
- ▶ Adobe Acrobat Reader 6.0 (or higher)
- ▶ Microsoft Windows Installer 1.2 (minimum)
- ▶ Microsoft Windows Installer 3.0 (recommended)
- ▶ Microsoft .NET Framework 3.5 SP1 (required)

### Internet Connection

- ▶ Dedicated T1 (1.54Mbps) or faster connection

## Morningstar Contacts

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morningstardirect@morningstar.com

### Canada

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morningstardirect@morningstarCA.com

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morningstardirect@morningstareurope.com

### Asia (except mainland China)

+852 2973 4680  
DirectAsia@morningstar.com

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+86 755 8826 3088  
DirectChina@morningstar.com

### Australasia

+61 2 9274 0325  
MorningstarDirect.AU@morningstar.com

Morningstar Direct is an Internet-based research platform that provides timely data on a wide range of investment types, as well as the rigorous research capabilities and customized reporting options.

## Architecture

Morningstar Direct uses distributed 4-tier architecture for high performance, scalability, availability and interoperability. It is architected and developed using object-oriented techniques and is highly modularized and componentized. Each class or component has its own dedicated functionality while communicating with other components through public interfaces and open standards (XML and HTTP). This enhances component reuse and reduces maintenance costs.

## Investment Data

Investment data is included with the application which resides on Morningstar Direct servers and is updated continuously throughout the day. Data updates are delivered via HTTP. Frequent used data are cached on the client side to ensure speedy response times. Microsoft SQL Server 2008 is used to store all the data. Only the database administrator has access to the database for maintenance purposes only.

## Security

Morningstar uses SMS patch management tool to deploy patches to all workstations and servers. Workstations patches are tested then deployed. Server patches are defined by business unit promote to production (i.e. Dev, QA, followed by production). The Web servers are load-balanced for performance,

scalability and availability. It uses SSL throughout the whole site to ensure maximum security. By keeping at least 40% headroom, the application ensures its site is responsive under high traffic and maintains high redundancy and availability.

All information is encrypted and protected using industry standard, such as SSL. Morningstar uses SiteScope, Insight Manager, and MRTG for monitoring systems and automatic alerts are generated when critical systems reach specific thresholds. All workstations and servers have Symantec anti-virus software installed.

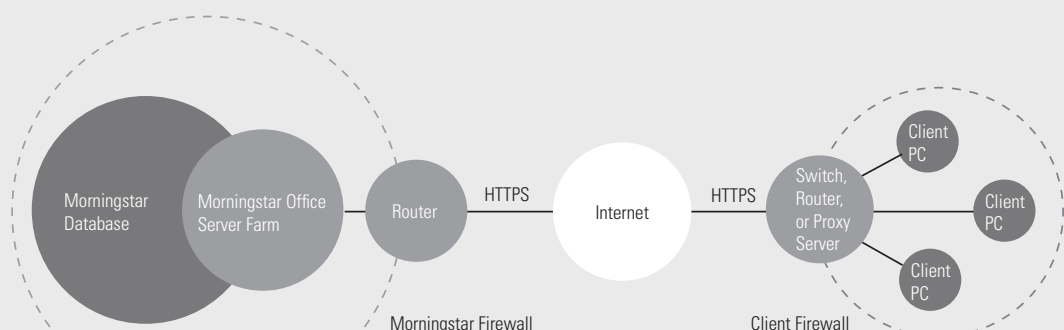
## Back-up and Recovery

All our servers are hosted in a secure and access-restricted area. Database transaction logs are backed up every 30 minutes and an incremental database backup is performed every day with the full database backup done weekly. The backup tapes are stored in a secure, off-site vault. We also keep an inactive database server and other spare servers for quick recovery of service. Web and application servers are fully redundant (two servers or more) with traffic and load determining the number.

A third party nationally recognized vendor picks up tapes twice a week and delivers them to a secure storage facility. While awaiting transport they are stored inside a secure box. These tapes are created daily, weekly and monthly. They are archived in the secure facility to meet SEC requirements (six years). Destruction of data and reporting output is handled by shredding, reformatting or physical destruction. To ensure

## Network Architecture

Investment data resides on Morningstar Direct servers and is updated daily. Frequently used data are cached on the client side to ensure speedy response times.



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quick response, we also perform periodic testing of these disaster contingency plans.

### Login Information

All access to Morningstar Direct servers by an individual user is granted using a Unique Identification Code (UID) and password. UID is end-users' email address. Requests to terminate ID's may be made to the appropriate Morningstar personnel for employees who are transferred or terminate their employment. The Morningstar Direct system allows for immediate ID deactivation. All unsuccessful attempts to access application resources or transactions are logged.

When a user ID is first created, the Morningstar Direct system will generate a password randomly. The application does require that passwords be different than the User ID. Passwords are encrypted and protected via SSL. Minimum length of password is six characters, which can be recycled or reused, but is not recommended. Passwords do not expire and users can change their passwords at any time, if they are verified. Password characters are hidden, when logging in and when changing passwords within the application. The Morningstar Direct system will time out an inactive user session after two hours of inactivity. Concurrent logons to the same sessions are prohibited.

## Morningstar Installation Procedures

### Desktop (Client) Install

By default, the setup program creates a Morningstar folder under the C:\Program Files directory. The program files include:

- ▶ Prerequisite files
  - ▶ Morningstar Direct related font files
  - ▶ Microsoft Visual C++ Redistributable files for 2005, 2008, 2010, and 2012
  - ▶ Adobe Flash Player version 10.0
  - ▶ Silverlight version 5.1
- ▶ Main executable modules
- ▶ Auto-update module
- ▶ System files
- ▶ Presentation Studio
  - ▶ Microsoft .NET Framework 3.5 SP1

### Desktop Installation Methods

Morningstar Direct uses Windows Installer to install necessary files and sets up environment. We recommend that Windows Installer 3.0 be installed before Morningstar Direct is installed. There are two methods via which a user can install Morningstar Direct.

1. Install with Morningstar Direct's installation driver.  
This is the recommended installation method.  
Go to <https://gladmainnew.morningstar.com/dwsv2/direct/morningstardirectsetup.exe> and follow the instructions. The InstallShield Wizard will examine the user's machine, warn the user if Morningstar Direct cannot be installed on the target machine, and install necessary files accordingly. The InstallShield Wizard will also download additional installation files from Morningstar to complete the installation.

2. Directly install prerequisites and MSI packages.

*First-time Users*

Go to <http://gladmainnew.morningstar.com/dwsv2/direct/prerequisite.msi> to download prerequisites.

Then install full installation package through link:  
<http://gladmainnew.morningstar.com/dwsv2/direct/05/direct.msi>

### Returning Users

Go to <http://gladmainnew.morningstar.com/dwsv2/direct/05/direct.msi> and follow the instructions.

If you choose to install the MSI package directly, please make sure you have InstallShield Script Engine 8 installed in your machine. InstallShield Script Engine 8 can be downloaded from <http://www.installengine.com/cert03/isengine/isscript8.msi> or from <http://admainnew.morningstar.com/dwsv2/tools/isscript8.msi>.

### System Files Updated

Morningstar Direct will update the following system files if they are missing or the ones on the target system have lower version numbers.

File	Version Note	Operating System
MFC110U.DLL	7.10.3077.0	All OS
MFC42U.DLL	7.10.3077.0	All OS
MFC80U.DLL	7.10.3077.0	All OS
MSVCP100.DLL	7.10.3077.0	All OS
MSVCP110.DLL	7.10.3052.4	All OS
MSVCP71.DLL		
MSVCP80.DLL		
MSVCR100.DLL	8.00.50727.42	Only Win2000
MSVCR110.DLL	8.00.50727.42	Only Win2000
MSVCR71.DLL	8.00.50727.42	Only Win2000
MSVCR80.DLL	8.00.50727.42	Only Win2000
FinDerLibv21.dll		All OS
gdipplus.dll		All OS
install_flash_player_active_x.exe		All OS
Silverlight.5.1.exe		All OS
COMDLG32.OCX		All OS
Morningstar-1-U-LightItalic.ttf		All OS
Morningstar-1-U-Light.ttf		All OS
Morningstar-1-U-BoldItalic.ttf		All OS
Morningstar-1-U-Bold.ttf		All OS
Ti0300m_.ttf		All OS
Ti0296m_.ttf		All OS
MstarSym.ttf		All OS
Morningstar1Lightm.ttf		WinXP & Above
verdanaz.ttf		All OS
verdanai.ttf		All OS
verdanab.ttf		All OS
verdana.ttf		All OS

### Firewall/Proxy Server Configuration (exceptions)

gladmainnew.morningstar.com  
gladtoolnew.morningstar.com  
gladcrm.morningstar.com  
gladpas.morningstar.com  
qt.morningstar.com  
insiders.morningstar.com  
etfs.morningstar.com  
fundflows.morningstar.com  
tools.morningstar.com  
quote.morningstar.com  
portfolios.morningstar.com  
performance.morningstar.com  
financials.morningstar.com  
institution.morningstar.com  
investors.morningstar.com  
cef.morningstar.com  
529.morningstar.com  
morningstardirect.morningstar.com  
awrd.morningstar.com  
awrdreport.morningstar.com  
reportportal.morningstar.com  
portfolioanalysis.morningstar.com  
excelapi.morningstar.com  
assetallocation.morningstar.com  
adcm.morningstar.com  
Select.morningstar.com  
Ar.morningstar.com  
Doc.morningstar.com

### Network/Citrix Install

Contact Morningstar for Server/Client configurations.

### Citrix Environment

Although we do not foresee any difficulties having Morningstar Direct installed in a Citrix environment, it has not yet been fully tested under this environment.