

White paper on Open Source Novell iFolder 3.7

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1 iFolder 3.7 introduction

In this mobile world, it can become difficult to manage all of the files you have stored on various computers. For example, when you are working on a document you might end up with different versions saved on your office computer, laptop, home computer and perhaps even on a removable disk. At best, keeping track of the most current version can be confusing and, all too often, you find that you don't have access to the latest version of the file you need, when you need it. On top of that, chances are you're not backing up the local data on your hard drives. If you experience a system failure or your hard drive should crash, all your files may be lost or you may have to revert to a very old version of your important files.

Novell iFolder is the solution for mobile professionals which allows your files to automatically follow you everywhere either online or offline, all the time - across multiple systems and the Networks. iFolder also provides worry-free security, ensuring that your files are encrypted and protected from unauthorized access. In addition, any change you make to a iFolder file is automatically and intelligently updated to iFolder server and your other computers through the internet connection. As a result, iFolder enables your files to be as mobile as you are, you can even access them through any standard Web browser.

1.1 What is iFolder 3.7

iFolder is a simple and secure storage solution that enables you to access and manage your personal files—from anywhere, at anytime. Using Novell iFolder, you can designate any network server as an iFolder server and publish information to a personal iFolder created on that server. Once your folder is established, you can install iFolder on the computers you regularly use and download information from your personal iFolder to any of those computers. Novell iFolder also provides remote access to your personal files, meaning that if you are away from the computers you normally use, you can still access your personal iFolder via virtually any computer with any Internet-enabled device.

To maintain data integrity, Novell iFolder seamlessly synchronizes the contents of all of your iFolders, no matter where you work on them. This is possible because the subscribing computers communicate regularly with the server—ensuring that the most current information is distributed to all of the subscribing computers. If a discrepancy is detected in your personal folder information, Novell iFolder locates the change that was made and only communicates the changed data to the server or subscribing computer that does not already reflect the change.

2 Cool use cases

Having multiple computer configuration is more and more common every day. One desktop at work, one desktop at home, personal laptop and the list goes on. Keeping track of a given file or synchronization is often a difficult task. Also, there's no easy way to share a file across the Internet if you don't have webserver and the knowledge of ftp/sftp or mail it to yourself or copy it in a pen-drive/flash-disk. The following are some of the use cases for iFolder.

2.1 Follow the data rather the data follows you

To reduce the countless trips between office and home - with no iFolder, the person was unable to easily work on the network documentation, when at home or when wasn't at PC. Now with iFolder it is easy to update and view the documentation no matter where you are. This will save countless trips back to the office, and saved your valuable time by allowing you to work from home and have your work updated when you return to the office. Sync, share and access your information, no matter where ever you happen to be.

2.2 iFolder brings the digital world together

Your work computer, home laptop, Mac or SLED desktop or at internet kiosk, your data is available everywhere. Devices live in multiple places but the files you need—and the programs that open them—often don't. iFolder changes all that, with iFolder you can synchronize files with all of your devices, so you always have latest versions handy. Access your files from any device from anywhere or from the web, easily share them with others and get notified whenever someone changes a file. Working on one computer, but need a program from another? No problem. Use iFolder to connect to your other computer and access its desktop as if you were sitting right in front of it.

2.3 Syncing Internet Browser Favourites

The favourite folder of the internet browser can be made an iFolder on the home and work computer or the other computers, the newly added URL's are synced to the other computers. This helps to access the already accessed information with no hurdle and annoyance.

2.4 iFolder for Businesses

Using iFolder as a service for the telecom or ISP users, data can be stored in the internet securely. Many small businesses, typically independent one-person businesses, don't have the budget to invest in good backup technology. Not to mention the discipline to switch tapes, or take backups every day. Now, they can put their data on our iFolder server, we have the backup on tape and they can access it from anywhere, anytime, even if they have a hardware problem and use a replacement PC. And no worries about security of their data, it's encrypted all the way by use of their secret pass phrase, so nobody can read it. Not even our Administrators!

2.5 Keeping Teaching Materials at your Fingertips

You teach a course at the university, you have presentations, notes, handouts, a class roster and tests that you need to keep track of and update. You keep them in your iFolder as a central repository. You can work on your presentations at home or the office, connect your laptop to the network, and the

updates are there, ready and waiting for the next class. No more file transfers, sneaker net or e-mailing files back and forth between all my computers.

2.6 Keeping Track of Projects

There are so many nifty things you can do with iFolder; we know we can't think of them all. You can make weekly reports on how the LAN projects went for the week and store them in the iFolder. With iFolder you should be able to work at home, or if you leave the office, you can use your laptop in a real time mode of operation. No more trying to remember what you did last week. Your iFolder is always current and up-to-date with accurate information.

2.7 Quick Changes to Close the Deal

Having iFolder can be better than carrying a notebook. I submitted a business proposal prepared by boss and myself in another town. My clients weren't happy with few details. I logged on, downloaded the proposal, made the change and reprinted, just in minutes the new proposal is available to the customer and my boss, such an easy collaboration tool.

2.8 Sharing Files with Consultants

If your company works with outside consultants a lot, you know that sharing secure documents and keeping them synced up is a serious issue. See how iFolder has helped these guys create a good place to collaborate with outsiders

I have a customer who would like to provide access to some external consultants working for them. They are working on various Word/Excel documents that should be sent to the office. Previously the external consultants e-mailed these documents to a secretary who would place them in the right folders on the internal server. With iFolder we solved the problem by creating a shared account for all the consultants to use. They login through the browser and upload the documents.

2.9 Stash your Travel Papers in iFolder

Whenever you travel, you always wonder where to stash copies of my passport, plane tickets, PIN numbers, itineraries, insurance documents, and important telephone numbers and so on. Now you can scan them in and store the scans in iFolder. Should you get waylaid or lose all your possessions, you can access and print my documents from any internet kiosk.

2.10 Stashing Student's Files in iFolder

Our students often complain of losing their work due to a floppy disk that went bad. Now we are using iFolder so they can travel around with all their files. Each student has a network drive where iFolder points. They save files there from any computer around campus and once they sync they can access their files at home or upload new files, say goodbye to old fashioned removable disks. In addition use iFolder to save the students Favorites folder so they can be accessed anywhere around campus and at home.

2.11 Store Exchange PST Files

Use iFolder to store your Exchange PST files so they are on your laptop and they then automatically get backed up to your iFolder. This saves your time and money since you don't have to back the file up manually and also avoids the risk of forgetting to back them up.

iFolder3 provides data synchronization technology that enables users to access updated information for any device from any location. In effect, Novell iFolder provides a virtual, centralized file

repository through the Internet. The Novell iFolder client works transparently to ensure that files are always up to date. Files at both the client and server are automatically checked for updates and any new changes are synchronized. Novell iFolder tracks all changes and keeps all subscribed clients and the server in sync with the latest modifications over standard HTTP Internet connections. Files from the virtual file server are securely updated at every client where a user connects.

2.12 Provide roaming access and backup for files

As your enterprise begins to grow, you must answer some difficult questions. For instance, how many of your corporate digital assets are saved to the local hard drives of laptops that leave your office each day? If your one-person accounting department smashes the hard disk in his or her computer before resigning, do you have a backup of those files?

The answers to these questions revolve around your organization's ability to manage its data. However, with PDAs able to carry entire customer lists and engineering plans these days, data management is increasingly complex. So how do you lasso in all that data that's walking around without a leash? Use Novell [iFolder](#), this tool has great promise, and it might even help you become a better data cowboy.

2.13 Other use cases

Amy will soon fly to a conference in America with her whole new laptop. She wants to be sure that she can access all the necessary files that are on her home computer.

Dave wants to share a 6 MB file with Jack. Unfortunately, his SMTP service will only allow mail messages that are less than 5 MB.

William can never remember if a given file is on his laptop or desktop. Sometimes the file is on the desktop AND on the laptop, but he only wants the newest version.

Sally has three computers, and wants a common home directory, including her Firefox extensions, and mail setup.

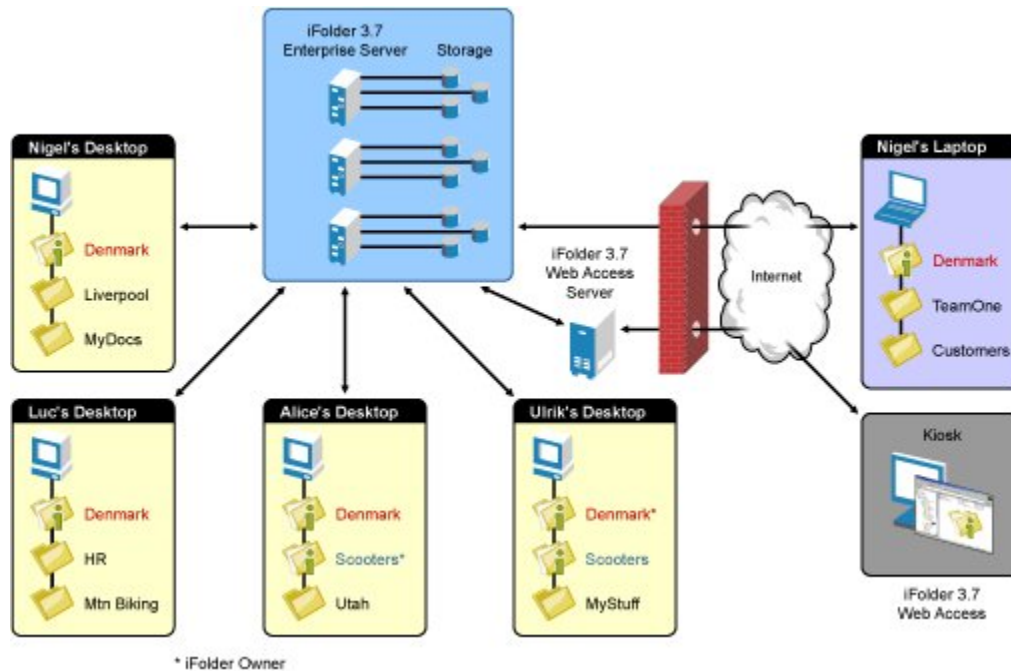
3 iFolder Major Features

3.1 iFolder Share

Typically, when you work in multiple locations or in collaboration with others, you must conscientiously manage file versions. With iFolder Share, the most recent version of your files can follow you to any computer where you have installed the iFolder client and set up the shared iFolder. iFolder Share also allows you to share multiple iFolders and their separate content with other authorized users. You decide who participates in each iFolder and the level of access for each member. Similarly, you can participate in shared iFolders that are owned by others in your collaboration environment.

In the following example, Ulrik owns an iFolder named Denmark and shares it via his iFolder Share enterprise account with Nigel, Luc, and Alice. Nigel travels frequently, so he also set up the iFolder on his laptop. iFolder Share members can upload and download files from the Denmark iFolder from

anywhere, using the iFolder Share Web Access server. In addition, Alice shares a non-work iFolder with her friend Ulrick.



The iFolder Share client synchronizes the most recent version of documents to all authorized users of your shared iFolder. All that you and other iFolder members need is an active network connection and the iFolder client. With an enterprise server, your iFolders are stored centrally for all iFolder Share members.

iFolder Share provides the following benefits

Integrates with your native desktop environment, making it easy to create and manage multiple iFolders.

- Is highly scalable and flexible, with no practical limit on the number of iFolders per user or on the number of members per iFolder.
- Allows you to create iFolders and store files on a central enterprise server for anytime, anywhere access.
- Allows you to easily and selectively share personal and business files with anyone.
- Allows you to control the access level of users who share your iFolders.
- Transparently updates your files to the iFolder Share server and member iFolders on multiple workstations.
- Tracks and logs changes made while you work offline, and synchronizes those changes when you go online.
- Provides secure authentication of member iFolders to synchronize data.

- Offers an alternative to exchanging files via e-mail, which avoids the file-size limits on e-mail attachments and reduces your e-mail storage requirements

3.2 Encryption

Novell iFolder also provides enhanced security options for iFolder users. By encrypting the information located in your personal folder, Novell iFolder eliminates the need to deploy a virtual private network to access your information. In fact, the iFolder directory structure is so secure that even administrators with rights and access to the iFolder server cannot view the contents of your personal iFolder. iFolder provides higher security for your confidential iFolder files, to protect them from intentional or unintentional access by unauthorized people. The data security is ensured on the server side, the data cannot be accessible to the administrator or to anyone who gained unauthorized access to the server. In addition, when you access iFolder files via an ISP provider, there is a chance that an unauthorized individual can inadvertently stumble across your confidential files. Now, you can encrypt and save your files on the server, and retrieve them through a passphrase known only to you.

If passphrase is lost/forgot, iFolder client has cool data recovery for encrypted iFolders. Here the administrator has no role to play. The communication takes place between the user to the recovery agent (eg: person in CTO Office).

3.3 Intelligent background file synchronization

iFolder files are synchronized in the background with no intervention from the user. As and when new files are added to the iFolder, the files are transferred to and from the server. Incremental files changes are detected intelligently, only the modified file portions are transferred to and from the server which save lot of network bandwidth and server disk access. You can synchronize the files at any time through a central server, with improved availability, reliability, and performance over other sharing methods.

3.4 Cold Merge (merge iFolder to folder)

Server iFolder and client folder can be consolidated using the merge feature. This is very cool feature where you can merge an iFolder and a normal folder with the same name. For example, you can merge the content of an iFolder named corporate with that of a normal folder named corporate. Assume that the corporate iFolder has three sub folders: hr, finance and marketing. You want to download the content of corporate iFolder to the folder named corporate, which contains only the hr and finance folders. In this case, you don't need to download all the three folders to the corporate folder and increase the transfer rate. Instead, you can merge the corporate iFolder to the corporate folder so that the Merge to folder feature intelligently avoids downloading the sub folders hr and finance, and downloads only marketing sub folder.

Also this feature can be used when the client is reinstalled and new data base is created. And times the data is transferred from one desktop to another desktop through pluggable storage media's like DVD or USB drives.

4 iFolder Elegant Features

4.1 Number of iFolders

A user can have unlimited numbers of iFolders. Any desktop folder can be converted to and iFolder except folders network connected drives.

4.2 Secure communication

Client to server communication and data transfer is secured. This is configurable in iFolder level, the user can choose to enable/disable this feature of their choice. Server to server communication can also be secured, will be helpful if the servers are connected across firewall.

4.3 Server scalability

More number of server for load balancing, to tackle the load, many number of servers are supported, which is called as multi server to balance the server load and storage needs. Users can be added/enabled as and when needed.

4.4 User provisioning

User provisioning support to provision the user based on the predefined configuration. Based on the geography and storage need, the user provisioning can be pre-programmed in the iFolder server. It could be a manual, LDAP attribute based or LDAP group based provisioning. For example the administrator can configure for particular LDAP group users to get provisioned in a particular iFolder server.

Pluggable identity services, like eDirectory, LDAP, AD can be configured, no restriction for identity services, at configuration time, the administrator can choose to have the identity services of their choice. Migration from one identity service to another identity is possible with little caveats. Ldap based provisioning and ldap groups are only certified for eDirectory.

4.5 Sync policy

Sync policy (sync once in 5 minutes etc), minimum sync interval is enforced by the server, on top of this user can choose to add number of minutes or hours for the background file synchronization.

4.6 Storage consolidation

Storage consolidation through user move feature, once the server storage limitations are reached or the user migrates from one geography to another geography, the user can also be migrated across iFolder server.

4.7 File Conflicts

Conflicts are quite natural when the file resides on multiple work stations through iFolder. Usually conflict arrives when you work on a iFolder file and the iFolder is not connected to the server. These type of conflicts are detected intelligently and presented to the user for further action.

4.8 Manageability

Anywhere iFolder server maintenance through browser based admin console. iFolder doesn't impose any software dependency for server management, servers can be managed from anywhere any time. And the reports can be generated automatically.

4.9 Other features

Silent client installation and account creation through zenworks or any other desktop management tool. Client Interoperability between windows, Linux and Mac file systems. Clientless access through web browser with feature parity with thick clients. Shell extension for windows and Linux platforms, which allows easy access to iFolder features. Fine grained policy enforcement to restrict the server usage like disk usage, number of iFolders, file size, sharing, file exclude, encryption etc.

5 Compatibility Matrix

In a broad category iFolder servers are certified and supported in SUSE Linux platforms and clients are certified and supported in Windows, SLED and Mac platforms.

iFolder has three server components

1. iFolder server
2. Admin server
3. Web access server

The following is the server compatibility matrix for iFolder servers

S.No	Operating system	Type	Architecture	Version	Runtime(Mono) Version	Certified	Support
1	Linux	Open Suse 10.3	32 bit	3.7.2	1.2.6	Yes	Yes
2	Linux	Open Suse 10.3	64 bit	3.7.2	1.2.6	Yes	Yes

The following is the work station compatibility matrix for iFolder clients

1. Windows
2. Linux
3. Mac

The following is the client compatibility matrix

S.No	Operating system	Type	Architecture	Version	Runtime	Supported iFolder Servers OpenSuSE 10.3	Certified	Support
1	Linux	Open Suse 10.3	32	3.7.2	Mono (System version)	3.7.2	Yes	Yes
2	Linux	Open Suse 10.3	64	3.7.2	Mono (System version)	3.7.2	Yes	Yes

3	Windows	XP	32	3.7.2	.NET 2.0 and 3.0	3.7.2	Yes	Yes
4	Windows	Vista	32	3.7.2	.NET 2.0 and 3.0	3.7.2	Yes	Yes
5	Windows	Vista	64	3.7.2	.NET 2.0 and 3.0	3.7.2	Yes	Yes
6	Intel Mac	OS X 10.4.11 & 10.5 only	32	3.7.2	Mono 1.2.5 or 1.2.6	3.7.2	Yes	Yes

Shell extension support matrix (iFolder client plugins)

S.No	Operating system	Type	Architecture	Client version	Client dependency	Certified	Support
1	Linux	OpenSuse10.3	32	3.7.2	3.7.2	Yes	Yes
2	Linux	OpenSuse10.3	64	3.7.2	3.7.2	Yes	Yes
3	Windows	XP	32	3.7.2	3.7.2	Yes	Yes
4	Windows	Vista	32	3.7.2	3.7.2	Yes	Yes
5	Windows	Vista	64	3.7.2	3.7.2	No	Yes

iFolder servers are not tested in SLES 10 rather it were tested in SLES 10 SP2 with Novell OES 2 SP1 product. There is no build and run time dependency with OES 2 SP1 product. LDAP plugins are not certified in Open LDAP.

6 Scope of Open Source

S.No	Feature/Module	Included	Remarks
1.	iFolder Enterprise Server	Yes	Entire source of iFolder server is open source. Currently support OpenSuSE10.3
2.	iFolder Enterprise server Plugins	Yes	Entire server plugin code is open source
3.	iFolder Enterprise client	Yes	Entire client is open source including Windows XP/Vista(with Shell Extension) and Mac Intel (10.4 and 10.5).OpenSuSE 10.3 clients for Linux
4.	iFolder Enterprise client plugins	Yes	Entire client plugins code is open source. Includes Nautilus extension

7 Source control, builds and support

Novell maintains the entire source code and publish the builds at every mile store. The source is governed by GPLv2 licence.

The source code is maintained by Novell, can be accessed at <https://forgesvn1.novell.com/>
Refer to the following link for the latest source code

- Simias : <https://forgesvn1.novell.com/svn/simias/trunk/> from which Simias server, admin server, web access server, server plugins and Simias client can be build
- UI Client : <https://forgesvn1.novell.com/svn/ifolder/trunk> from which Windows, Linux, Mac clients and UI plugins can be build.

8 Pointer to documentation

- Product documentation (admin guide, user guide, security admin guide, readme) can be found at <http://www.novell.com/documentation/ifolder3/>
- How to build, latest downloads, design docs, mailing list and product news can be found at www.ifolder.com
- Build issues, configuration issues and patch submission for defects, subscribe to the mailing list http://www.ifolder.com/index.php/Mailing_Lists
- Defect reporting <http://www.ifolder.com/index.php/Bugs>