LINKTEK™

ZIFF DAVIS enterprise™

By Salvatore Salamone,
Executive Editor,
Ziff Davis Enterprise

Addressing the Growing Problem of **Broken File Links During Data Migration**

Dealing with budget pressures, staffing issues, user demands for new services and doing more with less is the norm for IT departments these days. And just when it seems no more can be added to the pot, a new potential problem is emerging in most organizations.

Many efforts to rein in costs and improve services require data migration, which if not handled properly can create major headaches for users, managers and IT departments.

Specifically, the problem comes from unintentionally breaking the associations (links) between primary files and the files they link to.

BROKEN LINKS DISRUPT EMPLOYEES' WORK AND LOWER PRODUCTIVITY AS THEY SEEK OUT THE INACCESSIBLE DATA.

To put the scope of the problem into perspective, consider that it has been a common business practice for years to embed links (pointing to other files) in documents, spreadsheets, presentations and other application file types. And for just as long as this practice has existed, companies have had to deal with broken file links when files and folders were moved or renamed.

Unfortunately, IT business and data usage trends such as OS migrations, server and storage equipment consolidation, data retention laws and the growing necessity for businesses to migrate large volumes of data are making matters worse.

Companies that do not address this growing problem now will face frustrated users, lost productivity and lost confidence in business information that relies on data culled from embedded links. What companies need is a solution that helps them automatically identify embedded links, and retain the connection between the original file and the associated linked files and data.

INTRODUCTION

The way that today's organizations manage and use data is undergoing radical change. One consequence of this change is that the associations (links) between primary files and the secondary files and data embedded therein can very easily be broken.

To put the issue into perspective, consider how common linking is today.

It is quite normal today for end-users to create 1) spreadsheets with cells that link to a database to supply real-time data, 2) word processing documents with embedded tables, 3) presentations with embedded videos, 4) desktop publishing files that incorporate photos and graphic files and 5) CAD files that reference files containing components of the total design.

In any of these scenarios, the simple moving or renaming of a file or data source breaks the "linked" association and can create incorrect data or calculations when the primary file is opened or used.

Further exacerbating the situation is that over the next few years, companies are likely to move and migrate files and data even more than they do now. There are five primary reasons for this:

First, **application changes are on the rise**. For instance, in the next two years, many organizations are expected to move to newer versions of Windows server operating systems. This year alone, 62 percent of the 220 companies surveyed by *CIO Insight* in its annual IT spending research study indicated that they budgeted for operating systems upgrades. Such large-scale migrations typically involve changing server hardware, which leads to the moving of many files and folders.

Second, **virtualization and equipment consolidations are being widely embraced**. In today's tight economy, most organizations consider server and storage equipment consolidation and virtualization to be their primary means of cutting IT costs. A 2008 Ziff Davis Enterprise survey of 167 organizations found that one-third of the respondents had already carried out some consolidation/virtualization initiatives and planned to do more, while another third were formulating their consolidation strategies, evaluating solutions or developing pilot programs. In such consolidation and virtualization efforts, applications, files and databases are frequently moved onto fewer devices.

Third, **more data is being kept online for longer periods of time**. Here, a combination of factors comes into play. The cost of a gigabyte of disk storage fell more than 27 percent from

2007 to 2008, according to Interactive Data Corporation (IDC). This makes it less necessary to move older data off disk drives and onto tape simply to free up space. Further, the increasing adoption of Web 2.0 applications (internal blogs and wikis and shared bookmarking and rating services like deli.icio.us and Digg) means more data needs to be available for indefinite periods of time. And the longer data is saved, the more likely it will eventually be moved or renamed.

Fourth, **data retention regulations and laws are changing storage patterns**. Regulations such as the Sarbanes-Oxley Act and Health Insurance Portability and Accountability Act (HIPAA) require companies to save certain kinds of data for a prescribed period. Further, companies frequently must produce some of this data for regulatory auditors.

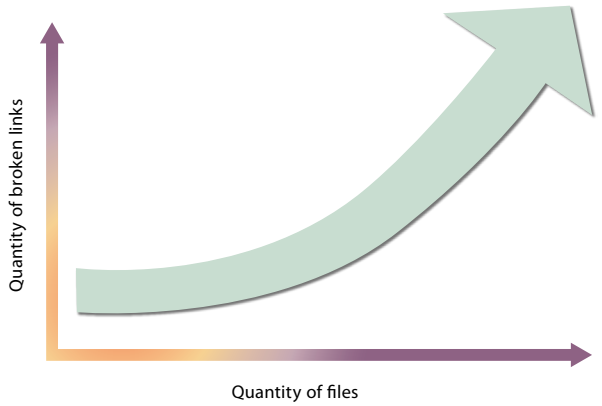
Additionally, changes to the Federal Rules of Civil Procedure have produced what are commonly referred to as new eDiscovery laws, which mandate that companies involved in litigation produce e-mail, documents, instant messages and other electronic information. A company that cannot produce subpoenaed information in the specified time (normally about 30 days) risks losing the case or faces fines imposed by the court. As a result of these pressures, many companies are keeping files and data online that would have otherwise been archived to tape a few years ago. Again, retaining this data increases the likelihood of a file, folder or disk volume being moved or renamed.

FACTORS DRIVING FILE AND DATA MOVES AND MIGRATIONS:

- Application changes are on the rise
- Virtualization and equipment consolidations are being widely embraced
- More data is being kept online for longer periods of time
- Data retention regulations and laws are changing storage patterns
- Explosive growth in the use of video

And fifth, the **explosive growth in the use of video** by businesses means many documents, spreadsheets, presentations, blogs and web assets now have embedded links to external video files. Thus, there are simply more links to maintain than ever before.

In all of the aforementioned cases, files and data are being saved longer and are constantly being moved or renamed. All of this increases the likelihood of broken links, from which the consequences are many. Decision-makers will be stymied by the lack of access to needed data, users will become frustrated, clients can become disenchanted and help desks will be overwhelmed with complaints.



Large data migrations come with a price, as many CIOs and Network Administrators are finding out. As the number of files on your network increases, the number of broken links that occur during a data migration grows non-linearly, resulting in ever-increasing lost productivity, time and money.

SAVVY IT DEPARTMENTS ARE REALIZING THE IMMEDIATE NEED FOR AN ACTION PLAN

Recognizing the magnitude of problems that can arise from broken links, companies must develop a strategy to prevent them from occurring in the first place.

The reason for the growing interest in this area is the increased importance of data use in corporations. In particular, executives surveyed in a 2008 *CIO Insight* study said they expected data mining, collaboration and workflow, data and systems integration, business process management (BPM) and visualization of data to make the biggest contribution to their companies' business strategies next year. Broken links can derail the productive use of any of these applications.

At a less strategic level, broken links disrupt employees' work and lower productivity as they seek out the inaccessible data. Business partners, clients and customers who experience problems with broken links thus may lose confidence in a company's ability to meet their needs.

Companies therefore are looking for solutions to this problem.

Some IT organizations try to fix links manually, file by file. This approach is labor-intensive and eats up valuable IT resources that could be used more productively elsewhere. Worse, these efforts are rarely successful. Most IT professionals quickly realize that correcting links manually, if possible, would be cost-prohibitive, and there would be no guarantee of preserving all the data. Therefore, the idea of manually fixing broken links is now considered obsolete.

Another approach that is sometimes employed is for programmers to attempt to write scripts or macros that are intended to automatically rename files or redirect links to data that has been moved to new folders or migrated to new systems. Such efforts, of necessity, rely on the underlying applications' APIs, which were designed to process limited numbers of files and which do not provide adequate error handling to process thousands of files which, in real life, contain dozens of types of undocumented corruption. Complexities further develop as the number of file types grows and as the number of types of links within each file type grows. Developers can become the scapegoat for dozens of types of preexisting file corruption and API bugs that even the most experienced developers could not have anticipated.

RECOGNIZING THE MAGNITUDE OF PROBLEMS THAT CAN ARISE FROM BROKEN LINKS, COMPANIES MUST DEVELOP A STRATEGY TO PREVENT THEM FROM OCCURRING IN THE FIRST PLACE.

The bottom line in the management of broken embedded file links is that one needs to have a proven and comprehensive solution to find, report, manage and automatically repair links in many different types of files, whether you are working with hundreds of files on a desktop computer or millions of files during a data migration or folder reorganization.

Specifically, what's needed is a solution that can quickly and easily find existing links within the wide variety of file types used in businesses today. And then, once these links are identified, the solution would need to be able to automatically make appropriate changes and corrections to retain healthy links when the files or data are moved or renamed.

LINKTEK™ AS YOUR TECHNOLOGY PARTNER

For organizations planning data migrations, LinkTek Corporation offers *LinkFixerPlus*™, a software application that can automatically find and repair broken links in the most common file formats used today.

Using patented technology, *LinkFixerPlus* enables companies to move or rename Microsoft Word, Excel, PowerPoint, Access, Windows shortcuts, Autodesk AutoCAD, Bentley MicroStation, Adobe Acrobat, InDesign, PageMaker, HTML, Flash and CSS files in batch, including the files they point to. The links in those files are then automatically maintained as files and folders are moved, renamed or reorganized.

Patented *LinkFixerPlus* is the world's only software program that fixes broken links automatically. What's more, it fixes them in batches of tens of thousands or more at a time. The main dialog box allows the user to select from the software's four main features. *LinkFixerPlus* lets you easily produce a variety of reports prior to inoculating, curing, moving or renaming files.

To that end, the software provides four distinct services that help maintain link integrity.

First, *LinkFixerPlus* allows companies to quickly catalog all embedded links within files using a variety of detailed reporting features. The software works using what LinkTek calls "parent-child" file relationships. The "parent" files are those that contain the links; the "child" files are the files that those links point to.

Users initially choose all the parent files to be examined by selecting individual files, folders or drives, and optionally, files of a particular type (*.doc, for example) using filename filtering. The program then scans the selected files, identifies the embedded links and validates the integrity of each link. Next, *LinkFixerPlus* generates a detailed report summarizing the total number of files and links it examined, itemizes the files processed and lists the complete set of links within each file, noting which are okay and which are broken.

Second, *LinkFixerPlus* allows companies to "inoculate" the files using the company's patented technology. Similar to an inoculation of a person against a disease, the process protects the integrity of links in case any changes are made which result in the links becoming broken. Specifically, files selected for inoculation are examined, links are validated and both the embedded links and the associated child files are assigned a unique "link ID."

Third, after the inoculation process is complete, the files and folders can be migrated, moved, renamed or reorganized — via Windows Explorer or any other method that causes broken

links — and have their broken links automatically fixed. This is accomplished by running the complementary "cure" process in *LinkFixerPlus*, which uses the information about previously validated parent-child links and their associated link IDs. For broken links, it automatically finds the moved or renamed child files, using the previously assigned unique link IDs and then repairs and re-establishes each link.

Fourth, and separate from the inoculate and cure process, is if files and folders must be moved or renamed, *LinkFixerPlus'* "move and rename" process can be used, in lieu of Windows Explorer or other applications, in a way that ensures links are automatically kept intact as files are moved or renamed. This is done by the software letting the user select which files are to be moved or renamed. The selection process can be as granular (one file, for example) or as universal (all *.pdf files and *.xls files on the C: drive) as desired. And the files chosen can be either parent or child files. Then, once the files are selected, *LinkFixerPlus* carries out the moving or renaming, all while maintaining the links.

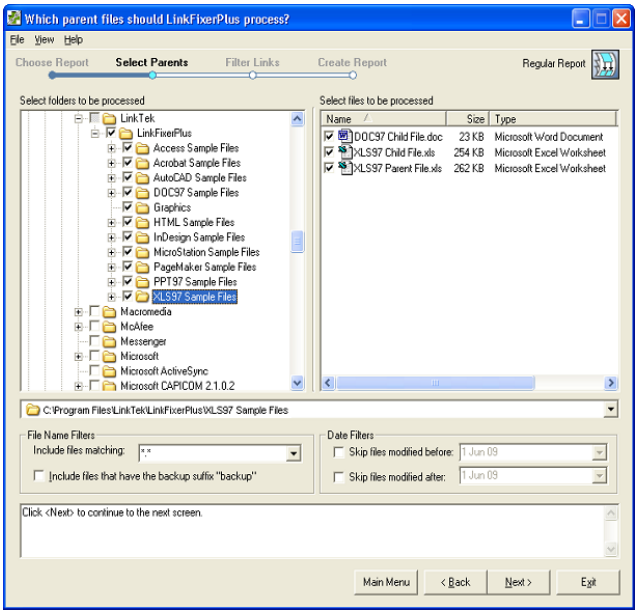
LINKFIXERPLUS™

AUTOMATICALLY FINDS AND REPAIRS BROKEN LINKS IN THE MOST COMMON FILE FORMATS USED TODAY.

The combination of *LinkFixerPlus'* unique features eliminates the otherwise-overwhelming process of manually finding and fixing broken links in an organization's files. Additionally, it helps companies to proactively safeguard links in large sets of files. In this way, broken links can be fixed automatically whenever files are moved or renamed — for example, by end-users who don't understand the consequences of moving and renaming files and folders. *LinkFixerPlus* is a needed solution that can be used by businesses to efficiently and effectively address the problem of fixing broken embedded file links.

ABOUT LINKTEK

Headquartered in Clearwater, Florida, LinkTek Corporation provides software solutions for automating the management and repair of links contained within a wide variety of prevalent file formats.



Using a familiar Windows Explorer-like wizard, you can easily select drives, folders and files to be processed. *LinkFixerPlus* can easily fix broken links in large quantities of files automatically and supports a wide variety of the most popular file types.

LinkTek's patented flagship product, *LinkFixerPlus*, breaks new ground and introduces the new software category of "automatic link repair." It is a leading data migration tool used by some of the world's largest corporations. *LinkFixerPlus* is the first application designed to automatically fix broken links when files are moved or renamed.

LinkTek Corporation offers a free, live, online demonstration for qualified IT professionals, showing exactly how *LinkFixerPlus* has removed the complexity of fixing broken links so that you can experience the process for yourself! ☐

Salvatore Salamone is an executive editor in Ziff Davis Enterprise's Strategic Content Group. He is author of three business technology books and has been writing about science and information technology for 20 years, serving as a senior editor at many major publications including *Network World*, *Byte*, *Data Communications*, *LAN Times*, and *InternetWeek*.

Visit www.LinkTek.com • LinkTek Corporation • 1805 Drew Street, Clearwater, Florida 33765
Telephone: 727-442-1822 extension 9414 • Fax: 727-442-3646 • E-mail: 9414@LinkTek.com