

American english file 2 teachers book pdf free download File PDF

american english file 2 teachers book pdf free download: Your Comprehensive Guide to Accessing and Utilizing the Teacher's Book

In the realm of language learning, especially English as a second language (ESL), having access to high-quality teaching resources is essential for effective instruction. Among the most sought-after materials is the American English File 2 Teachers Book, which provides detailed lesson plans, teaching strategies, and supplementary activities designed to enhance classroom engagement. For educators and institutions seeking to elevate their teaching, a common question arises: **how can I find a *American English File 2 Teachers Book PDF free download*?** This article aims to guide you through legitimate options to access this valuable resource, discuss its features, and explore best practices for using the teachers book to maximize student learning outcomes.

Understanding the American English File Series

What Is the American English File Series?

The American English File series is a popular ESL course developed by Oxford University Press. It is designed to improve students' speaking, listening, reading, and writing skills through engaging content, real-world topics, and interactive activities. The series is organized into multiple levels, with Level 2 catering to intermediate learners.

Importance of the Teachers Book

The Teachers Book is an indispensable resource for educators, offering:

- Detailed lesson plans and teaching notes
- Answer keys for exercises and activities
- Additional teaching strategies and tips
- Supplementary activities and extension ideas
- Assessment tools and evaluation criteria

Having access to this book streamlines lesson planning, ensures consistency, and enriches classroom instruction.

Legitimate Ways to Access the American English File 2 Teachers Book PDF

1. Purchase Through Official Publishers

The most straightforward and legal way to access the Teachers Book is through official channels. Oxford University Press offers physical and digital copies for purchase:

- **Official Website:** Visit the Oxford University Press website and purchase the Teachers Book in PDF or print format.
- **Authorized Distributors:** Authorized educational resource vendors often sell digital versions compatible with various devices.

Purchasing directly supports the authors and publishers, ensuring you receive a legitimate, high-quality copy.

2. Subscription-Based Educational Platforms

Some educational platforms provide access to the Teachers Book as part of their subscription services:

- **OUP's Digital Resources:** Subscribers can access digital copies and supplementary materials.
- **Online Course Platforms:** Platforms like Pearson or Macmillan sometimes include access to teacher resources with their courses.

These options often require institutional or individual subscriptions but guarantee legal access.

3. Educational Institutions and Libraries

Many schools, colleges, and university libraries subscribe to digital educational resources:

- **Library Access:** Check if your institution's library provides access to the Teachers Book via digital lending platforms.
- **Institutional Licenses:** Some schools have licenses for digital teaching materials, allowing teachers to access PDFs legally.

Always verify your institution's subscriptions and policies for accessing such resources.

4. Contacting the Publisher or Author

In some cases, publishers or authors may provide sample chapters or limited access:

- **Official Contact:** Reach out to Oxford University Press for possible sample downloads or discounts.
- **Teacher Communities:** Engage with online educator communities for advice on access and sharing resources legally.

Avoid unauthorized sources to respect copyright laws and support the creation of quality educational content.

Risks and Considerations When Looking for Free PDF Downloads

Legality and Copyright Issues

Downloading copyrighted materials without permission is illegal and unethical. It can lead to legal consequences and deprives authors and publishers of rightful revenue.

Quality and Security Risks

Unofficial or pirated downloads may:

- Be of poor quality or incomplete
- Contain malware or viruses
- Miss important updates or supplementary content

Always prioritize legitimate sources to ensure safety and quality.

Supporting the Development of Educational Resources

By purchasing or accessing materials legally, educators support the ongoing development of innovative and effective teaching resources.

How to Maximize the Use of the American English File 2 Teachers Book

1. Familiarize Yourself with the Content

Thoroughly review the Teachers Book to understand lesson structures, key objectives, and suggested activities.

2. Adapt Materials to Your Classroom

While the Teachers Book provides structured guidance, customize lessons based on your students' needs, interests, and proficiency levels.

3. Incorporate Supplementary Activities

Use the additional exercises and ideas to enrich lessons, encourage critical thinking, and foster student participation.

4. Use Assessment Tools Effectively

Leverage the assessment and evaluation sections to monitor student progress and inform future instruction.

5. Engage with Online Communities

Join educator forums and social media groups focused on ESL teaching for tips, resource sharing, and collaborative ideas.

Additional Resources and Support for ESL Teachers

Online Platforms and Communities

There are numerous online forums and groups dedicated to ESL educators:

- Facebook groups for language teachers
- Reddit communities such as r/TEFL and r/ESL
- Educational resource websites offering free templates and activities

Training and Professional Development

Attending workshops, webinars, and courses can enhance your teaching skills:

- Websites like Coursera and edX offer courses in TESOL and language instruction
- Local or international TESOL conferences

Open Educational Resources (OER)

Explore OER repositories for supplementary activities and teaching aids compatible with the American English File series.

Conclusion

Accessing the *American English File 2 Teachers Book PDF free download* can be tempting, but it is crucial to prioritize legal and ethical methods. By purchasing through official channels, utilizing library resources, or subscribing to educational platforms, teachers can obtain legitimate copies that support quality education. Once acquired, maximizing the Teachers Book's potential involves familiarization, customization, and active engagement with its content. Supporting the development of such resources ensures that ESL educators continue to have access to innovative and effective teaching tools, ultimately benefiting students worldwide. Remember, respecting copyright laws not only upholds ethical standards but also sustains the creation of valuable educational content.

Disclaimer: Always ensure you are downloading materials legally and ethically. Unauthorized downloading of copyrighted materials is illegal and can have serious consequences.

American English File 2 Teachers Book PDF Free Download: An In-Depth Review

In the world of English language teaching, resources that combine comprehensive content with ease of access are highly valued. Among these, the American English File series stands out as a popular choice for both educators and learners. Specifically, the American English File 2 Teachers Book is a vital component that offers teachers structured guidance, detailed lesson plans, and supplementary materials to facilitate effective classroom instruction. For educators seeking to enhance their teaching toolkit, understanding the features, benefits, and considerations surrounding the PDF free download of this resource is essential.

This article provides an in-depth review of the American English File 2 Teachers Book PDF free download, exploring its features, benefits, potential pitfalls, and best practices for obtaining and using the resource responsibly and effectively.

Understanding the American English File Series

Before delving into the specifics of the Teachers Book PDF, it's important to understand the context and design of the American English File series.

Overview of the Series

The American English File series is a well-established language learning curriculum developed by

Oxford University Press. It is designed to help adult and young adult learners develop their speaking, listening, reading, and writing skills through engaging and communicative activities. The series is structured across multiple levels, from beginner to advanced, with Level 2 positioned as an elementary to pre-intermediate stage.

Components of the Series

Each level typically includes:

- Student Books
- Teachers Books
- Workbooks
- Audio and Video Resources
- Online Practice Platforms

The Teachers Book serves as the backbone, providing lesson plans, teaching tips, answer keys, and extra activities that enable educators to deliver lessons effectively.

The Role and Features of the Teachers Book

The Teachers Book is a comprehensive resource that enhances the teaching experience by providing detailed guidance, pedagogical notes, and supplementary materials.

Key Features of the Teachers Book

- Lesson Plans and Sequence: Detailed outlines for each lesson, including objectives, procedures, and timing.
- Answer Keys: Solutions to exercises, enabling teachers to quickly assess student work.
- Additional Activities: Extra exercises or alternative activities to cater to diverse learning needs.
- Teaching Tips: Strategies for classroom management, pronunciation, grammar explanations, and student engagement.
- Assessment Tools: Quizzes, review sections, and progress checks to monitor student development.
- Cultural Notes: Contextual information that enriches understanding of language use and cultural nuances.

Benefits of Using the Teachers Book

- **Structured Guidance:** Helps teachers plan lessons efficiently, ensuring coverage of all necessary content.
- **Time-Saving:** Ready-made activities and clear instructions reduce preparation time.
- **Enhanced Student Engagement:** Extra activities and cultural insights create a more engaging learning environment.
- **Consistency and Quality:** Ensures a standardized approach aligned with curriculum goals.

Accessing the Teachers Book PDF: Legal and Ethical Considerations

A significant point of discussion is the availability of the Teachers Book PDF for free download. While digital resources are increasingly popular, it's vital to approach this topic responsibly.

Legitimate Sources

- **Official Publishers:** The most reliable and legal method to access the Teachers Book is through purchase or authorized download from Oxford University Press or their official distributors.
- **Educational Institutions:** Teachers affiliated with schools or institutions that have purchased the resource may have access through institutional subscriptions or shared accounts.
- **Authorized Digital Platforms:** Some platforms offer licensed digital copies as part of a package or subscription.

Risks of Unauthorized Downloads

- **Copyright Violation:** Downloading PDFs from unofficial sources infringes on intellectual property rights.
- **Quality and Authenticity:** Unofficial files may be incomplete, corrupted, or contain malware.
- **Lack of Updates:** Unauthorized copies may be outdated or lack recent revisions.
- **Ethical Concerns:** Using pirated materials undermines the effort and investment of publishers and authors.

Conclusion on Legality and Ethics

To uphold ethical standards and ensure access to quality, up-to-date materials, educators should seek legitimate sources for their teaching resources.

Methods to Obtain the Teachers Book PDF Responsibly

For educators eager to access the American English File 2 Teachers Book PDF legally and efficiently, several options are available:

1. Purchase from Official Distributors

- Visit the Oxford University Press website or authorized bookshops.
- Purchase digital or print versions directly.
- Many publishers now offer e-books compatible with various devices.

2. Institutional Access

- Schools or language centers often have subscriptions or licenses.
- Teachers can request access through their administration.
- Digital platforms like Oxford's online teacher resources often include downloadable PDFs.

3. Online Learning Platforms

- Some platforms may provide authorized access as part of a broader course package.
- Ensure the platform is legitimate and licensed.

4. Digital Libraries and Educational Resources

- Explore repositories like JSTOR, ResearchGate, or university libraries that might host authorized copies.
- Always verify the source's legitimacy.

Using the Teachers Book PDF Effectively in the Classroom

Once access is secured, maximizing the utility of the Teachers Book PDF is crucial.

Strategies for Effective Use

- Pre-lesson Planning: Review the lesson plans thoroughly to familiarize yourself with the objectives and activities.
- Customize Content: Adapt activities to suit your students' interests and proficiency levels.
- Integrate Multimedia: Use accompanying audio and video resources for a richer experience.
- Supplement with Personal Experience: Incorporate your own insights or cultural knowledge.
- Assess and Reflect: Use assessment tools to monitor progress and adjust future lessons accordingly.

Tips for Digital Use

- Use a tablet or e-reader for portability.
- Print relevant pages if needed for classroom activities.
- Keep backup copies to avoid data loss.

Pros and Cons of Using PDF Files for Teaching Resources

Understanding the advantages and limitations of PDF resources helps in making informed decisions.

Advantages

- Portability: Easy to store and access across devices.
- Searchability: Quick navigation to specific sections or activities.
- Cost-Effective: Free or low-cost access if obtained legitimately.
- Environmental: Reduces paper usage.

Limitations

- Interactivity: PDFs are static; they lack the interactive features of online platforms.
- Annotations: Limited options for note-taking or highlighting unless using specialized software.
- Compatibility: Some PDFs may not display correctly across all devices or software.
- Version Control: Risk of using outdated or unofficial versions.

Final Considerations and Recommendations

While the allure of free, downloadable PDFs is understandable, especially for resource-strapped educators, it is essential to prioritize legality, quality, and ethical use. The American English File 2 Teachers Book is a professional tool designed to support effective teaching, and accessing it through legitimate channels ensures you receive the most accurate and updated content.

Recommendations:

- Invest in official copies to ensure long-term access and support.
- Explore institutional or library resources for potential access.
- Use digital resources responsibly, respecting copyright laws.

- Supplement official materials with your own expertise and creativity to tailor lessons to your students' needs.

Conclusion

The American English File 2 Teachers Book PDF free download presents an attractive option for educators seeking accessible teaching materials. However, the importance of obtaining these resources through legal and ethical avenues cannot be overstated. Proper access not only respects intellectual property rights but also guarantees quality, updates, and support that are crucial for effective language instruction. When used responsibly, this resource can significantly enhance teaching practice, leading to more engaging, organized, and successful classroom experiences.

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Windows nt file system internals en anglais

windows nt file system internals en anglais

Understanding the internal architecture of the Windows NT file system is essential for IT professionals, cybersecurity experts, and developers working with Windows-based environments. The Windows NT operating system, introduced in the early 1990s, revolutionized Windows architecture by providing a robust, secure, and scalable platform. Its file system internals are complex but crucial for ensuring data integrity, security, and performance. This article provides a comprehensive overview of Windows NT file system internals, exploring key components, data structures, and operational mechanisms.

Overview of Windows NT File System Architecture

The Windows NT file system architecture is designed to abstract hardware details and provide a consistent interface for applications and users. It comprises several layers, including hardware abstraction, the I/O manager, file system drivers, and the user-mode interface.

Key Components of the File System

- NTFS (New Technology File System): The primary file system used in Windows NT and later versions, known for its advanced features like journaling, security descriptors, and support for large files.
- File System Drivers: Kernel mode drivers responsible for managing specific file systems such as NTFS, FAT32, or exFAT.
- Object Manager: Manages kernel objects, including files, directories, and symbolic links.
- Cache Manager: Handles caching of data to improve performance.
- I/O Manager: Coordinates all input/output operations between user applications and hardware devices.

Core Data Structures in NTFS

The effectiveness of the NTFS file system relies heavily on several core data structures that organize and manage data on disk.

Master File Table (MFT)

- Central to NTFS, the MFT contains a record for every file and directory.

- Each record is a fixed-size data structure (typically 1 KB).
- Stores metadata such as filename, timestamps, permissions, and pointers to data extents.
- Enables quick file access and efficient management of files.

File Record

- Represents individual files or directories.
- Contains attributes like standard information, filename, security descriptors, data runs, and more.
- Uses a structured format with attribute headers and data.

Attributes

- Basic units of information stored about files.
- Types include Standard Information, File Name, Data, Security Descriptor, and others.
- Can be resident (stored within the MFT record) or non-resident (pointing to external clusters).

Data Runs

- Describe how file data is laid out on disk.
- Use a run-length encoding scheme to specify sequences of clusters.
- Enable efficient mapping of logical file offsets to physical disk locations.

NTFS File System Internals and Operations

Understanding how NTFS reads, writes, and manages files is key to grasping its internal mechanisms.

File Creation and Opening

- When a file is created or opened, the system searches the MFT for a matching record.
- If creating a new file, a new record is allocated, initialized, and linked into directory structures.
- Opening a file involves locating its record and establishing a handle.

Reading and Writing Data

- Data is accessed through data runs in the file's attributes.
- For resident data, the data resides within the MFT record.
- For non-resident data, the data runs provide a mapping to disk clusters.
- The Cache Manager optimizes repeated access by caching data in memory.

File Deletion and Truncation

- Mark the file as deleted by updating its MFT record.
- The actual data remains on disk until overwritten or the space is reclaimed through defragmentation.

Security and Permissions in NTFS

Security is integral to NTFS, with features enabling fine-grained access control.

Security Descriptors

- Store permissions, ownership, and audit settings.
- Associated with files and directories via attributes.
- Use Access Control Lists (ACLs) to specify permissions for users and groups.

Access Control Lists (ACLs)

- Contain Access Control Entries (ACEs) that define permissions.
- Enable complex security policies.
- Are checked during file access operations to enforce security.

Journaling and Data Integrity

NTFS employs journaling to maintain data integrity, especially in case of system crashes or power failures.

Log File and Transactional Operations

- NTFS maintains a log (USN journal) recording changes.
- Uses transactions to ensure consistency; either all changes are committed or none.
- Reduces the risk of file system corruption.

Recovery Mechanisms

- On startup, NTFS replay logs to recover incomplete transactions.
- Ensures filesystem integrity and consistent state.

Advanced Features of Windows NT File System

NTFS supports numerous advanced features that enhance performance, security, and usability.

File Compression

- Allows compression of files and directories to save space.
- Transparent to users and applications.

Encryption

- Supports Encrypting File System (EFS) for data security.
- Uses public-key cryptography to encrypt file contents.

Disk Quotas

- Enable administrators to limit disk space usage per user.
- Helps manage storage resources effectively.

Sparse Files and Reparse Points

- Sparse files optimize storage by not allocating space for empty regions.
- Reparse points facilitate symbolic links, mount points, and volume management.

Performance Optimization and Caching

Windows NT optimizes disk and memory usage through caching and scheduling.

Cache Manager

- Caches frequently accessed data in RAM.
- Reduces disk I/O latency.

Prefetching and Read-Ahead

- Anticipates data needs based on access patterns.
- Improves performance during sequential reads.

I/O Scheduling

- Manages disk access requests to optimize throughput and reduce latency.
- Uses algorithms like FIFO, C-SCAN, and others.

Conclusion

The Windows NT file system internals are a sophisticated amalgamation of data structures, mechanisms, and features designed to provide efficient, secure, and reliable data management. From the core Master File Table to advanced security features and journaling, every component plays a vital role in ensuring the robustness of Windows operating systems. A thorough understanding of these internals is invaluable for system administrators, developers, and cybersecurity professionals aiming to optimize, troubleshoot, or secure Windows environments.

Keywords for SEO optimization: Windows NT file system internals, NTFS architecture, Master File Table, Data runs, Security descriptors, Journaling, File system security, Windows NT file management, NTFS features, Windows file system structure.

Windows NT File System Internals: An In-Depth Examination

The Windows NT file system internals form a complex yet highly optimized architecture that underpins one of the most widely used operating systems globally. As the backbone of Windows NT-based platforms—including Windows 10, Windows Server, and even earlier versions—understanding how the file system operates at a low level is essential for system administrators, security professionals, developers, and researchers alike. This article aims to explore the detailed internal mechanisms of the Windows NT file system, including its architecture, data structures, and operational procedures, providing a comprehensive understanding of how Windows manages files, directories, and storage.

Introduction to Windows NT File System Architecture

The Windows NT architecture introduced a robust, modular, and scalable approach to file management, contrasting sharply with older DOS-based systems. At its core, the Windows NT file system is designed to abstract hardware details, provide security, and ensure data integrity across various storage devices. The architecture can be broadly divided into several components:

- File System Drivers (FSDs): Responsible for interfacing with specific storage media (e.g., NTFS, FAT).
- Object Manager: Manages kernel objects, including files and directories.
- Cache Manager: Implements caching strategies to optimize I/O operations.
- Memory Management: Handles buffers, caches, and buffer pools associated with file I/O.

Among the various file systems supported, NTFS (New Technology File System) is the most prevalent and sophisticated, offering features like journaling, encryption, compression, and security descriptors.

NTFS: The Heart of Windows NT File System Internals

NTFS has been the primary file system for Windows NT since its inception, designed with a focus on reliability, scalability, and advanced features.

Key Features of NTFS

- Journaling: Maintains a transaction log to recover from crashes.
- Security: Implements Access Control Lists (ACLs) and security descriptors.
- Metadata: Uses Master File Table (MFT) to track all files and directories.
- Sparse Files & Compression: Supports efficient storage.
- Encryption: Integrates with Encrypting File System (EFS).
- Disk Quotas & Sparse Files: Manage storage allocations effectively.

Master File Table (MFT): The Core Data Structure

At the heart of NTFS lies the Master File Table (MFT), a relational database that contains a record for every file and directory. Each MFT record is a fixed-size 1 KB structure, which includes:

- File Record Header: Identifies the record and its status.
- File Attributes: Metadata such as timestamps, security, and data content.
- Resident and Non-Resident Data: Data stored directly within the MFT (resident) or elsewhere on disk (non-resident).

The MFT allows for rapid access to file metadata and supports features like defragmentation, security, and recovery.

Deep Dive into NTFS Data Structures

Understanding NTFS internals necessitates a detailed look at its core data structures.

1. FILE_RECORD_HEADER

Every record in the MFT begins with this header, which contains:

- File reference number
- Sequence number
- Flags indicating the record's status (e.g., in use, deleted)
- Pointers to attribute lists

2. ATTRIBUTES

Attributes describe various aspects of files and directories, such as:

- Standard Information: Timestamps, link counts
- File Name: Unicode name, parent directory reference
- Data: Actual file contents or pointers to data
- Security Descriptor: Security information
- Object IDs: Unique identifiers for tracking

Attributes can be resident or non-resident:

- Resident: Data stored directly within the MFT record.
- Non-resident: Data stored elsewhere; the attribute contains extents pointing to data clusters.

3. Attribute List

For large files or files with multiple attributes, an attribute list attribute references additional attributes spread across the disk.

4. Indexing Structures

Directories are implemented as B+ trees, enabling efficient lookups:

- Index Root: Contains the initial part of the directory index.
- Index Allocation: Stores additional index blocks when directories grow large.
- Index Headers: Manage the structure and integrity of index nodes.

File and Directory Operations Internally

The internal operations of Windows NT's file system involve complex sequences of steps, often optimized for performance and reliability.

File Creation and Opening

- The system locates the directory's index structure.
- Searches the B+ tree for the filename.
- If not found, creates a new MFT record, allocates disk space, and updates the directory index.
- Returns a handle for further operations.

Reading and Writing Files

- The system examines the file's data attributes.
- For resident data, reads/writes are direct.
- For non-resident data, the system interprets extents and performs sequential or random disk I/O via the cache manager.

Security and Permissions Handling

- Each file/directory has a security descriptor stored as an attribute.
- Access requests are checked against ACLs.
- Security auditing and inheritance are managed through these descriptors.

Advanced Features and Internal Mechanisms

The internal workings extend beyond basic file management to include features that improve robustness and security.

1. Journaling and Crash Recovery

NTFS uses a transaction log (the journal) to record metadata changes before they are committed to disk. This ensures:

- Consistency after crashes
- Atomic updates
- Faster recovery times

2. File Compression and Encryption

- Compression alters how data extents are stored.
- EFS encrypts file data using cryptographic keys, stored securely within the security descriptors.

3. Disk Quotas and Sparse Files

- Quotas limit user storage consumption.
- Sparse files optimize storage by only allocating space for data that is actually written.

Security and Integrity at the File System Level

Security is deeply integrated into Windows NT file system internals:

- Security Descriptors: Store ACLs, owner, and group information.
- Access Tokens & Impersonation: Enforce permissions during I/O operations.
- Integrity Checks: Use checksum and journaling to verify data integrity.

While NTFS remains highly sophisticated, it faces challenges such as:

- Fragmentation affecting performance
- Security vulnerabilities at the driver level
- Compatibility issues with newer storage technologies (e.g., SSDs)

Recent developments focus on:

- Enhancing support for large disks and files
- Integrating with cloud storage solutions

- Improving resilience and recovery mechanisms

Conclusion

The Windows NT file system internals reveal a layered, resilient, and feature-rich architecture designed for high performance, security, and reliability. From its foundational data structures like the MFT and B+ trees to its advanced features such as journaling, encryption, and quotas, NTFS exemplifies a modern file system engineered for robust enterprise and consumer use. As storage technologies evolve, understanding these internals becomes vital for developers, security analysts, and system architects aiming to optimize or secure Windows-based environments.

By dissecting these internal mechanisms, professionals can better diagnose issues, develop low-level tools, and contribute to future advancements in Windows file system technology.

QuestionAnswer What are the main components of the Windows NT file system architecture? The main components include the NTFS driver, the Master File Table (MFT), the File Record, the Log File, the Bitmap, and the Directory Indexing structures, all working together to manage file storage, retrieval, and integrity. How does the NTFS handle file permissions and security? NTFS uses Access Control Lists (ACLs) embedded within file metadata to define permissions for users and groups, supporting detailed security settings, including discretionary access controls and system-level security features. What is the Master File Table (MFT) and how does it function in NTFS? The MFT is a central database that stores metadata about every file and directory on the volume, including attributes, security information, and data location, enabling efficient file management and access. How does NTFS ensure data integrity and recoverability? NTFS uses a transaction-based logging system via the USN Journal and the Log File (transaction log), which helps recover from crashes by replaying logs and maintaining consistency of the file system. What are the differences between the NTFS Master File Table and FAT file systems? Unlike FAT, which uses a simple File Allocation Table to track clusters, NTFS stores extensive metadata in the MFT, supports larger file sizes, improved security, journaling, and better fault tolerance. How does NTFS handle large files and disk space management? NTFS employs features like extents and a dynamic bitmap to efficiently manage large files and disk space, reducing fragmentation and improving performance for large data sets. What is the role of the Master File Table Record and how is it structured? Each MFT record contains attributes such as file name, data, security descriptors, and timestamps; it is structured with a fixed-size record that allows quick access and updates to file metadata. How do NTFS directory structures optimize file searching and access? NTFS uses B+ trees for directory indexing, which enable fast lookup, insertion, and deletion of files within directories, greatly improving search performance especially in directories with many files.

Related keywords: Windows NT, file system, internals, NTFS, kernel mode, file management, disk management, registry, I/O subsystem, file allocation table

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