

ReDocumenting Historic CIFS

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Introductions



Who am I?

Why am I here?

Where are we
going?



Introductions



...and what am I
doing in this
handbasket?



Introductions

Who am I?



↑ This geek here.



Introductions

Who am I?



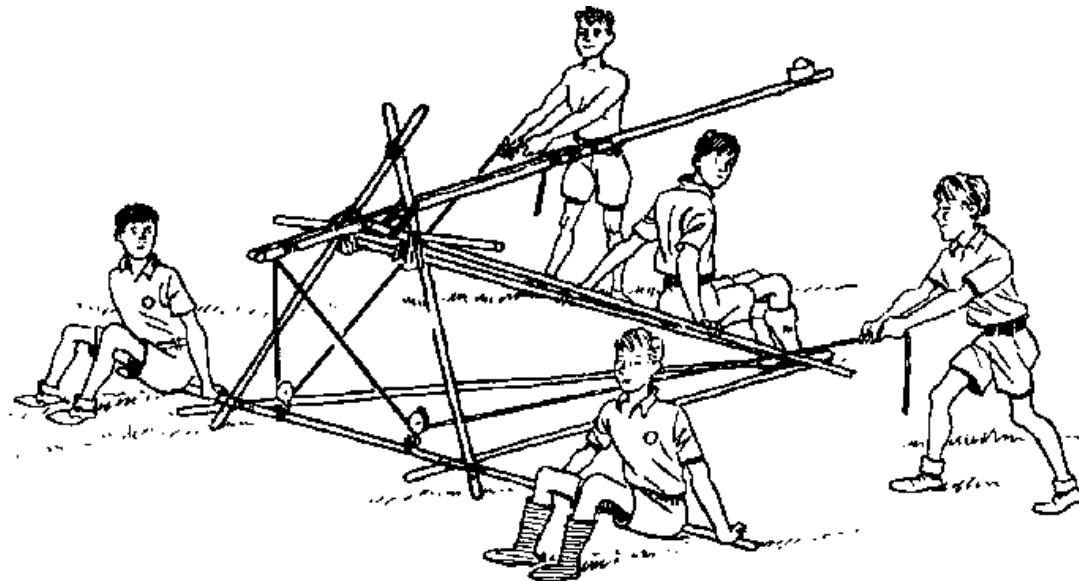
- 🌐 Samba Team (12± years)
- 🌐 jCIFS Co-Founder
- 🌐 Started with SMB/CIFS circa 1990 (DEC Pathworks)



Introductions

Who am I?

- ▶ I have founded a new company
- ▶ We do SAN and NAS consulting
- ▶ We are a *team* of geeks





Introductions

Why am I Here?

- To tell you about the exciting new documentation...



Introductions

Why am I Here?

- To tell you about the exciting new documentation...
- ...that covers CIFS circa 1996.





Introductions

Why am I Here?

- To tell you about the exciting new documentation...
- ...that covers CIFS circa 1996.

Yes, really.

Hang on... I'll explain why this is a good thing.





Introductions

Why am I Here?

- To tell you about the exciting new Microsoft documentation...
- ...that covers CIFS circa 1996.

Part of the MCPP/WSPP
documentation set.

On-line, downloadable, and
available to the public.





Introductions

Why am I Here?

Microsoft asked a member of the
Samba Team to document SMB/CIFS.





Introductions

Why am I Here?

Microsoft asked a member of the
Samba Team to document SMB/CIFS !



"If you're
surprised, you're
not paying
attention."
— Sam Ramji



Introductions

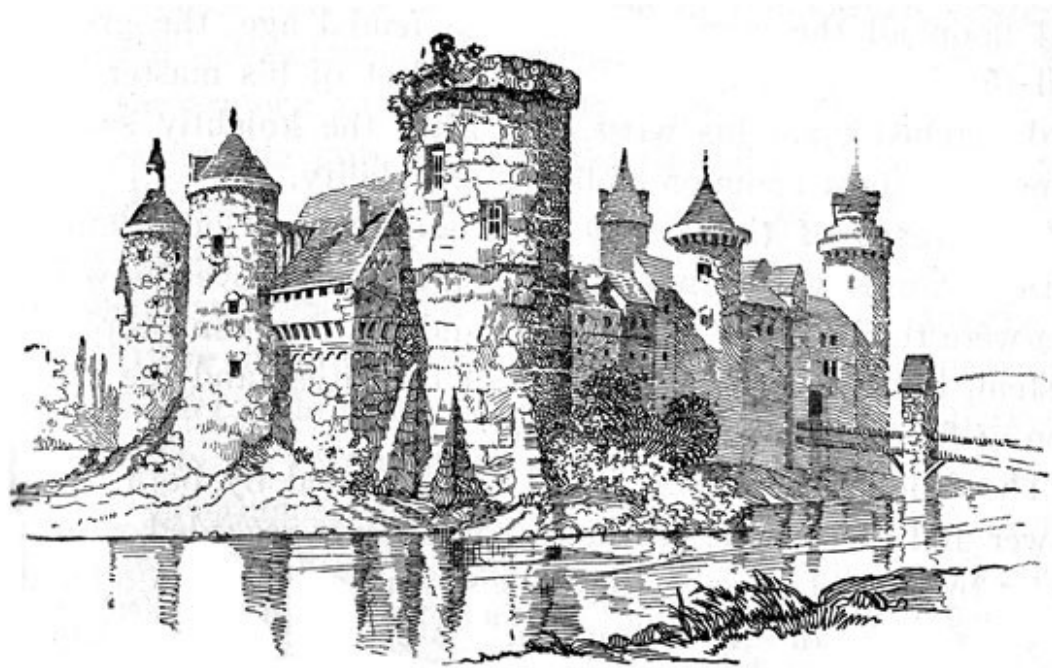
Where are we going?



- 🌐 History:
Why it matters.
- 🌐 Scope:
What is(n't) covered, & why.
- 🌐 Process:
How we are going about it.
- 🌐 Results:
The benefit to you.



History





History

SMB is the COBOL of
Network File Systems.





History

In the early days, *SMB was documented:*

- 🕒 **1984:** IBM Personal Computer Seminar Proceedings, Volume 2, Number 8
- 🕒 **1986:** OpenNET/Microsoft Networks FILE SHARING PROTOCOL EXTENSIONS, Version 1.9, Microsoft and Intel (XENIX extensions)
- 🕒 **1988:** Microsoft Networks/OpenNet, Document Version 2, Microsoft and Intel (Core)
- 🕒 **1988:** Microsoft Networks SMB File Sharing Protocol Extensions Version 2.0, Document Version 3.3, Microsoft Corporation (LAN Manager 1.0)
- 🕒 **1989:** Microsoft Networks SMB File Sharing Protocol Extensions Version 3.0, Document Version 1.09, Microsoft Corporation (LAN Manager 1.2)
- 🕒 **1990:** Microsoft Networks SMB File Sharing Protocol Extensions Version 3.0, Document Version 1.11, Microsoft Corporation (LAN Manager 2.0)
- 🕒 **1992:** Microsoft Networks SMB File Sharing Protocol Extensions, Document Version 3.4, Microsoft Corporation (LAN Manager 2.1)





History

Then things started thinning out.

- 🐼 **1992:** X/Open CAE Specification, Protocols for X/Open PC Interworking: SMB, Version 2, X/Open Company, Ltd. (Core through LAN Manager 2.0)
- 🐼 **1996:** Microsoft Networks SMB File Sharing Protocol, Document Version 6.0p, Microsoft (Unfinished draft of NT LAN Manager 0.12 documentation.)
- 🐼 **1997:** A Common Internet File System (CIFS/1.0) Protocol, IETF INTERNET-DRAFT, Paul J. Leach, Dilip C. Naik (Unfinished draft v2 of NT LAN Manager 0.12 specification.)
- 🐼 **2002:** Common Internet File System (CIFS) Technical Reference, Revision: 1.0, Storage Networking Industry Association (SNIA)
- 🐼 **2003:** Implementing CIFS, yours truly, Prentice Hall PTR





History

During this time...



[MS|PC]-DOS



OS/2



Windows NT



Windows 2000



Windows XP



Windows 2003



Windows Vista



...and we already knew that the documentation we had was, in places,



Incorrect



Incomplete



Incomprehensible

Never ascribe to malice that which is adequately explained by incompetence. — attributed to Napoleon Bonaparte, among others



History

This situation made people unhappy.





History

The Misinterpretation:

🌍 “You guys want our source code!”

The Real Problem:

🌍 No clear, documented standard for interoperability.

The Proposal:

🌍 “Write it!”

Those who cannot learn from history are doomed to repeat it. — Santayana



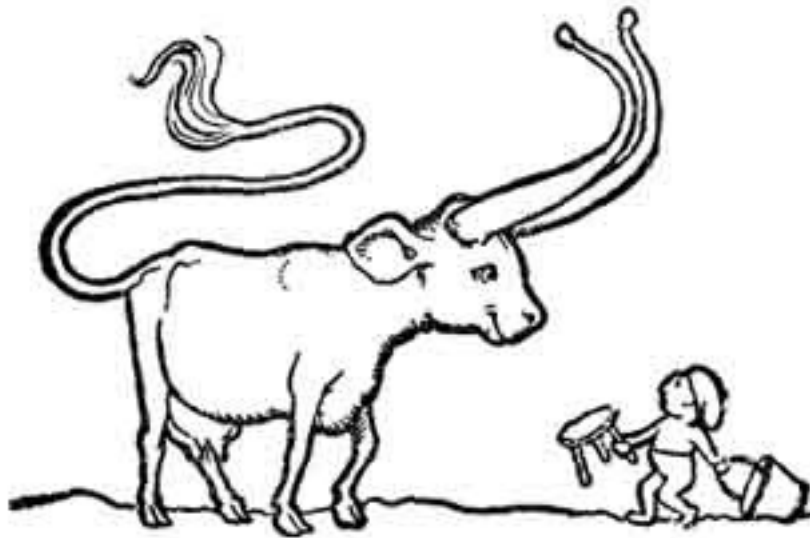
History

Terms and Conditions






Scope





Scope

CIFS: A Common Internet File System

- ^ the heck*
- ✦ What does the term “CIFS” mean this week?
 - Only the NT LM 0.12 dialect
 - Not DOS or OS/2 LAN Manager
 - Certainly not the Xenix or Core dialects
 - The NT LM 0.12 dialect as of:
 - Windows NT3.51 & NT4 Server
 - Windows NT4 & 98 client
- 

“CIFS” is now a Snapshot in Time

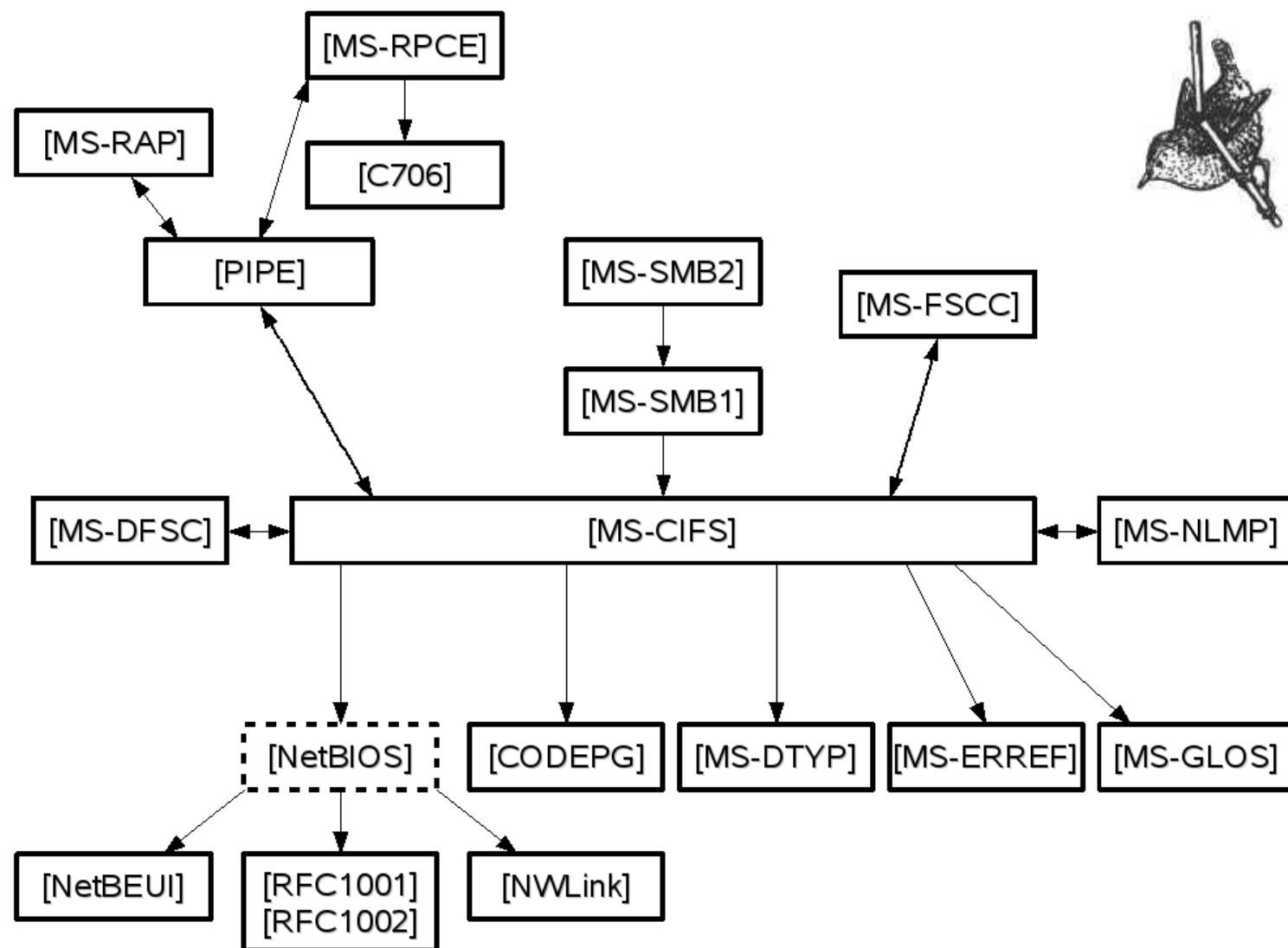


Scope



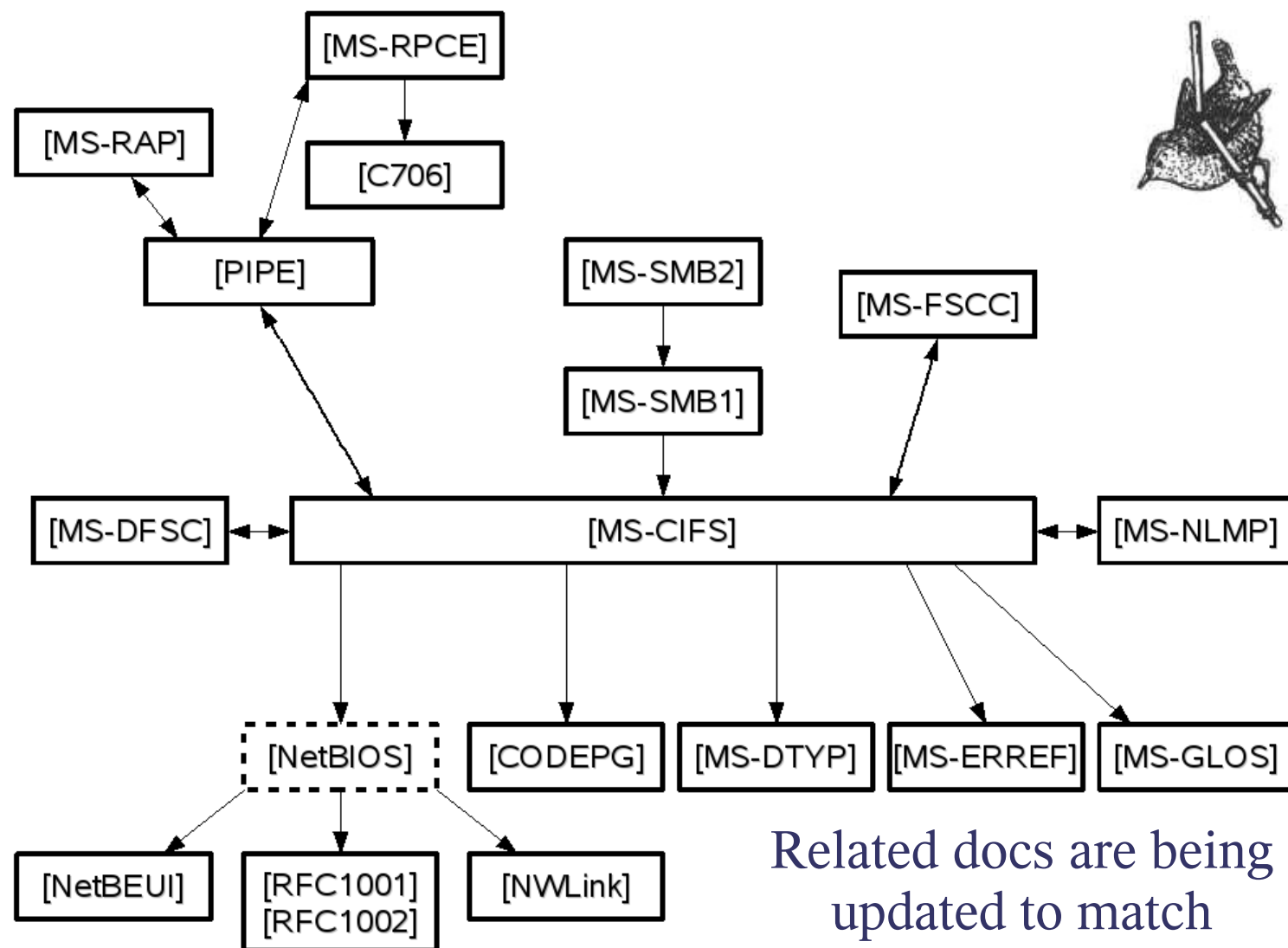


Scope





Scope

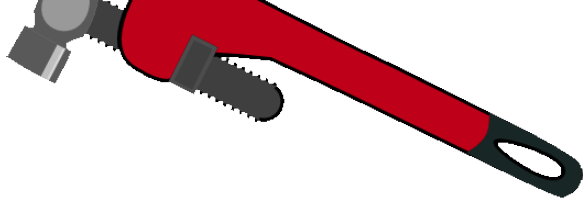


Related docs are being updated to match [MS-CIFS] content.



Scope

Must fit within the **TEMPLATE**

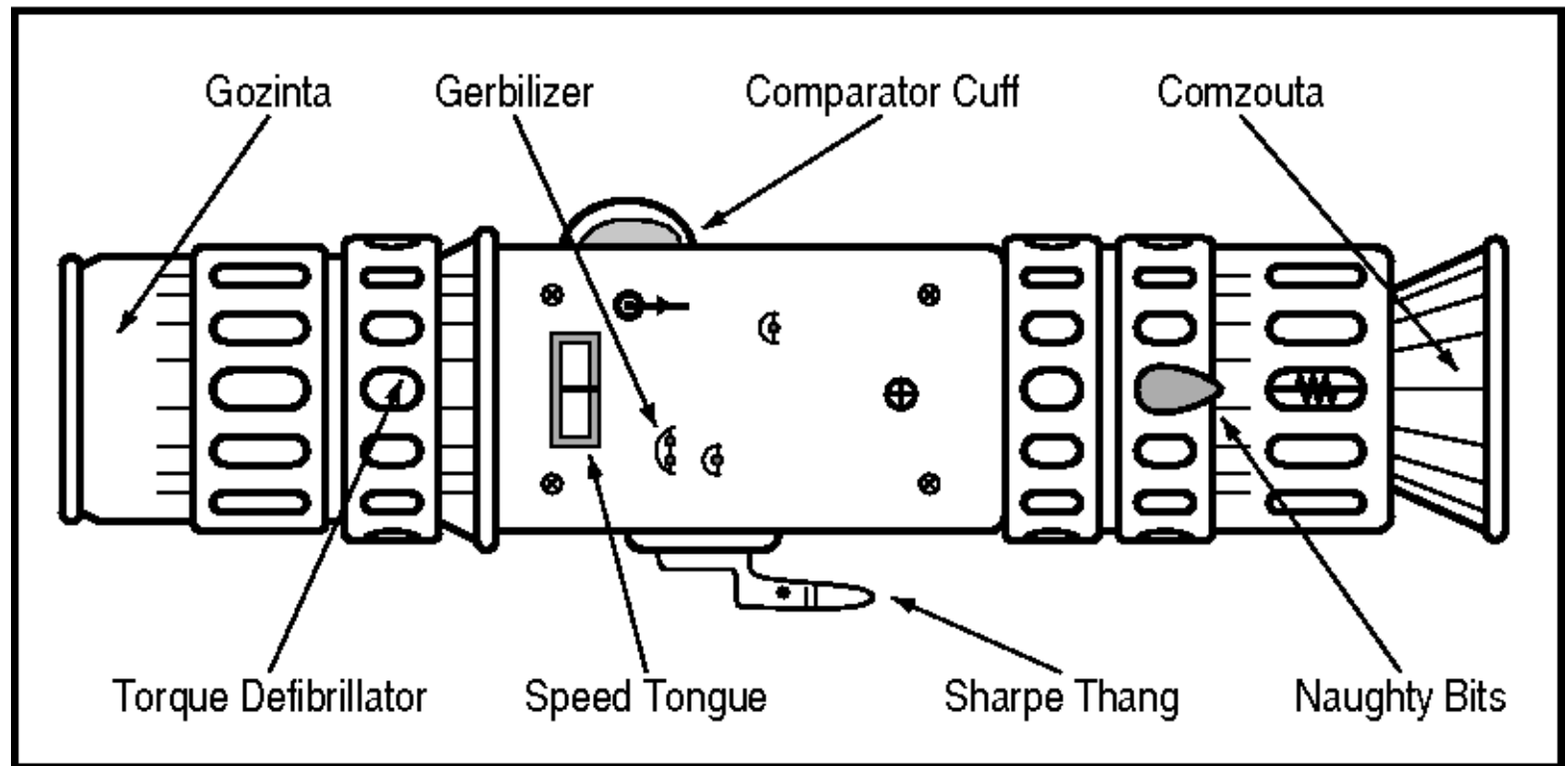
- 🔧 Not a developer's dream 
 - 🥚 There are unusual rules
 - 🥚 The format is a mix of ISO and IETF Standards styles
 - 🥚 It was put together by non-techies

🔧 We are committed to making the best of it.

(Just as we are all committed to making the best of SMB/CIFS, eh?)



Process



Process

Information Gathering

The ancient texts:



A phenomenal source of...
questions.

- Oddities in the old IBM docs
- Hold-overs from the Xenix docs
- A lot to learn from the LANMAN docs
- There are forgotten docs too
- Who here has noticed the references to a SID field in the SMB header in Leach/Naik?



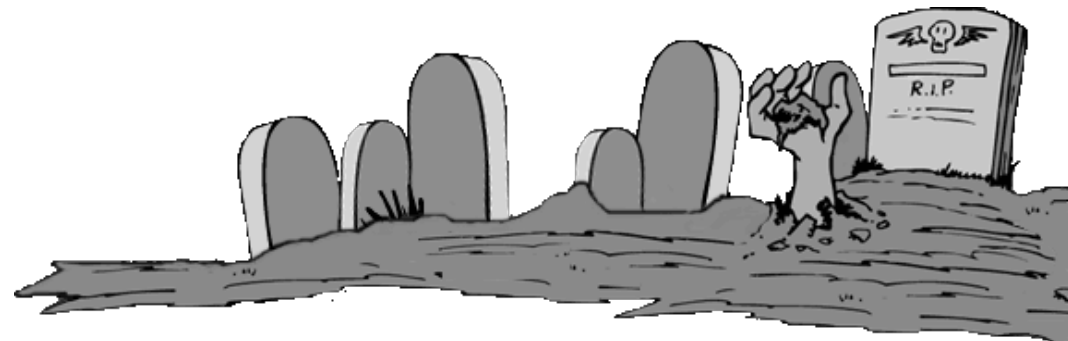


Process

Where the bodies are buried

What I can say about the NT code is that it is pretty much what we expected:

- Relatively thin
- Exposes Windows OS behaviors
- **UNDEAD** commands (Move/Copy)
- It is very old code now










Process



Writing

All writing is done in a Wiki, maintained within Microsoft.

-  It's a scratch pad
-  A communication medium
-  Provides opportunities to review/rewrite
-  Available for MS to monitor
-  We add questions and comments to the command write-ups as we proceed.

(Implementing CIFS was written in public.)



Process

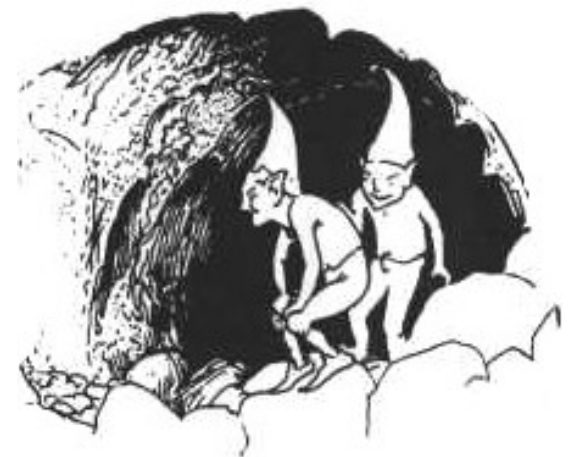
Testing and Code Spelunking

Testing

- ★ SMB Torture and jCIFS
 - Kludgy modifications to the above
- ★ Plus a little code of our own

Code Digging

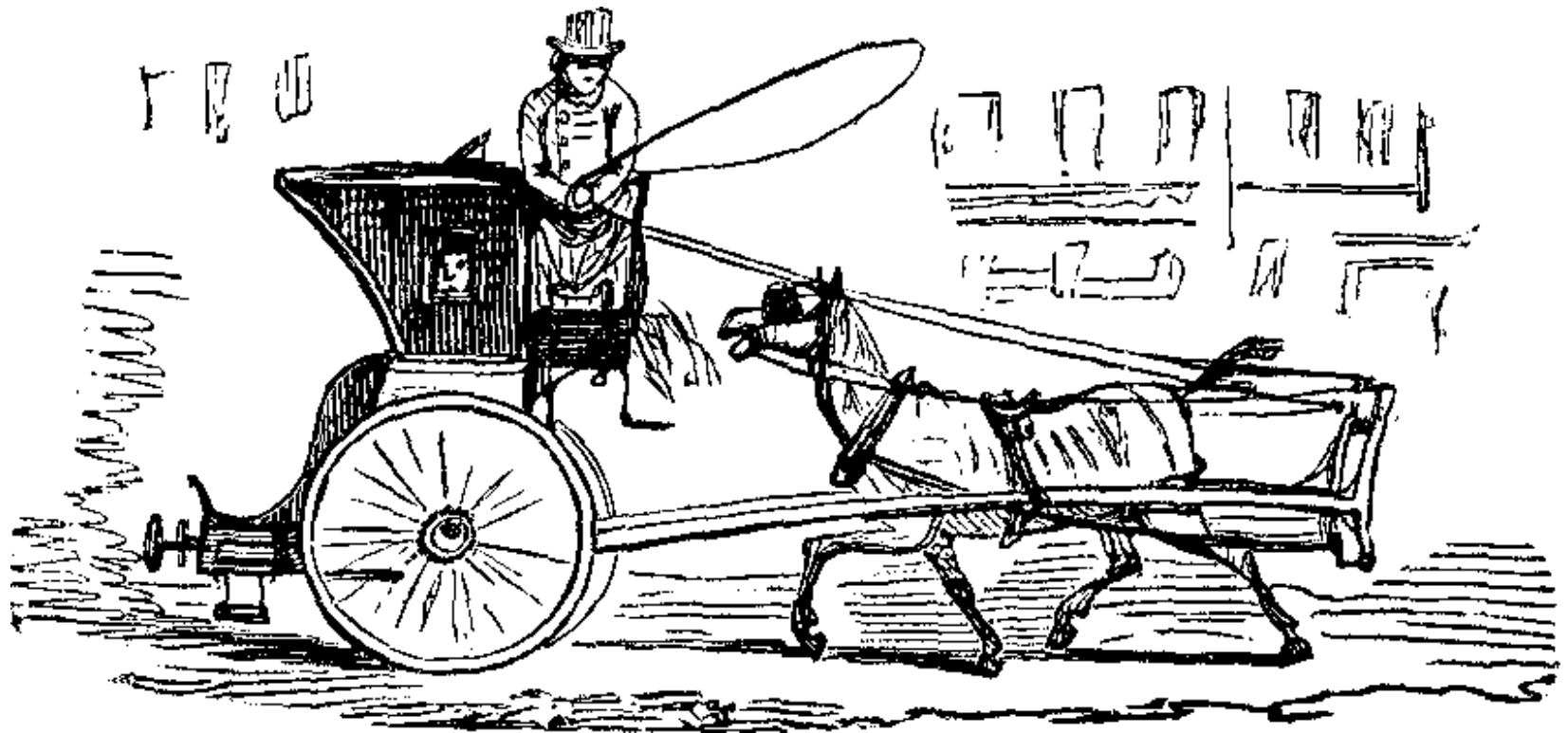
- ★ Resolve questions
- ★ Discover nuances
- ★ Raise new questions





Process

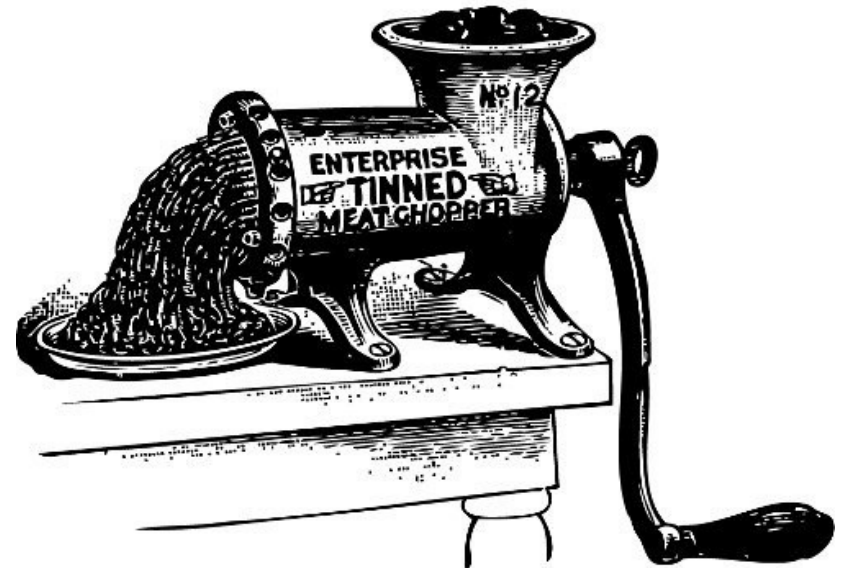
Cart/horse placement issues...





Results

Those that respect the law and love sausage
should watch neither being made. — Mark Twain





Results

Pretty much what we expected

- 🦊 Studying CIFS raises as many questions as it answers
- 🦊 We have to "document out" OS behaviors
- 🦊 The new doc will be
 - ✦ more complete
 - ✦ more correct
 - ✦ more detailed than any previous CIFS doc
- 🦊 It's still a CIFS doc





Results

Advantages this time 'round:

- Two very different perspectives
- "Are you sure that's how that works?"
- [MS-CIFS] handed off to Microsoft

A preview is available!

 We do want feedback

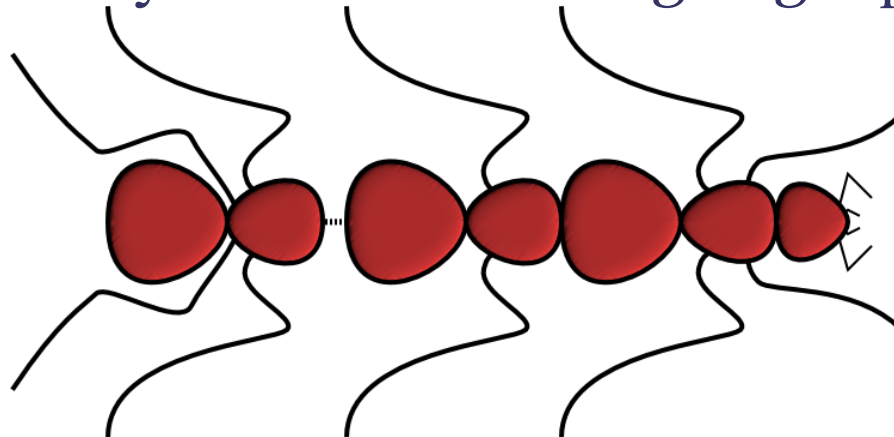
<http://msdn.microsoft.com/en-us/library/ee230215.aspx>



Results

What's next?

- 💡 Rewriting [MS-SMB] to conform to [MS-CIFS].
- 💡 Review of related docs
 - 🔍 We have been working in these docs for months
 - 🔍 Have already started submitting bug reports





Results

[MS-SMB] Update

- 🌳 [MS-SMB] is a “delta”
 - 🌿 Originally a supplement to Leach/Naik ([CIFS])
 - 🌿 Being overhauled to conform to [MS-CIFS]





In Summary

- 🪄 [MS-CIFS] replaces Leach/Naik and the SNIA CIFS TR as the new baseline SMB/CIFS reference.
- 🪄 It fills a void in Microsoft's MCPP/WSPP documentation set.
- 🪄 [MS-CIFS] provides a sturdy foundation for the other MCPP/WSPP documentation.
- 🪄 Protocol extensions since NT are in [MS-SMB].



Additional Information (extras)

Definitions (real world):

SMB: Server Message Block

A stateful network file system protocol originally created by IBM in the early 1980s for use with the PC-DOS operating system.

CIFS: Common Internet File System

A name given to the suite of protocols that include SMB and related supporting protocols. This name was created in the mid 1990's.

SMB2: Server Message Block v2

A network file system protocol created by Microsoft for Windows Vista. SMB2 is a redesign of SMB, focusing on improved network efficiency and wide-area-network (WAN) performance.



Additional Information (extras)

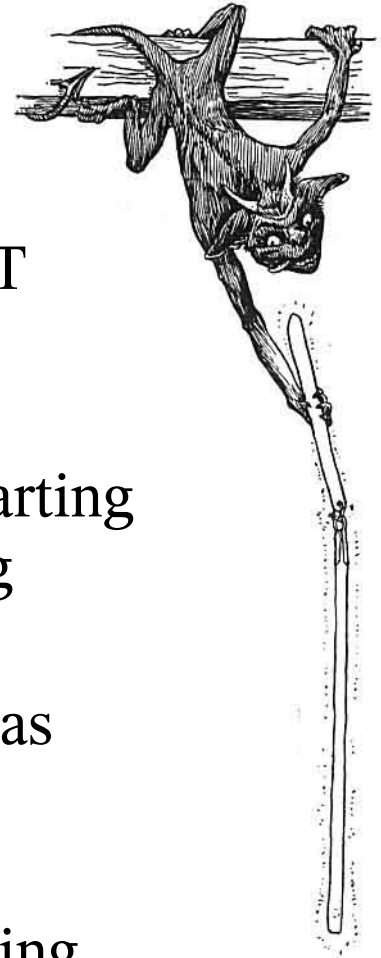
Definitions (legal and regulatory world):

CIFS: The Server Message Block file sharing protocol as implemented in Windows NT 3.51, NT 4, and Windows 9x clients.

SMB: The Server Message Block file sharing protocol as implemented in Windows starting with Windows 2000, up to and including current versions of Windows.

SMB2: The Server Message Block protocol, v2 as defined above.

Unfortunately, the terminology changes depending upon who you talk to, when you talk with them, and the context of the conversation.





The End





Any Questions?

