There and back again

A history of access control systems

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Master of Computing, topic:
→ Access control in semantic information systems
Access Control?
A history of access control
What's a MULTICS?
A history of access control
Hardware protection
AND
Software protection
A history of access control
A history of access control

MULTICS Hardware Protection
Mandatory access control
A history of access control
- DoD Orange Book was the standard for system security
- Written by NCSC which was directed by a former MULTICS developer
- Orange Book had a distinct MULTICS feel to its design
- Classified computer security from D (minimal protection), C (discretionary protection), B (mandatory protection) and A (verified protection)
• MULTICS was rated at B2
• Windows NT achieved C1
• Introduced discretionary access control to Windows:
  - The ability to grant access to files
  - Inheritance for permissions
  - Windows 2000 adds the ability to explicitly deny access
• Windows defined three classes of permissions:
  - General permissions
    • Read, Write, Execute
  - Standard Permissions
    • Synchronise, Write DAC, Write Owner, Read Control, Delete
  - Specific Permissions
    • Dependent on the individual type (e.g. file/folder)
A history of access control
File system security family tree

A history of access control
Windows' security model has heavily influenced:
- POSIX ACL
- NFSv4 ACL's
- ZFS
- HFS
A history of access control
Questions and Answers
• These slides available on conf.oss.my
• Also available on USQ ePrints:
• My other papers/presentations:
  - http://eprints.usq.edu.au/profile/404