The Legacy of Multics in Computer Security

Multics development

tom van vleck

Origins of Multics Security

- CTSS (1961-73)
  - Supervisor and user modes
  - User VM isolation
  - File permission
- Curious MIT students

Multics Security

- Hardware enforced

- Hardware and OS co-designed

- Processes, ACLs, rings, daemons

- Segmented memory

- Assumed trusted hardware, installation, and operation

US Government Influence

- ARPA support for Multics
- USAF Rome Air Development Center sale by GE/Honeywell
- Air Force Data Services Center requirements
  - Security
  - Multilevel
- USAF Electronics System Division penetration

Multics Security Work in the 70s

- USAF ESD modeling
  - MITRE, Case
- Multics changes for multilevel and authentication
  - Honeywell, USAF
- USAF ESD Guardian Project at MIT
  - Minimized Multics kernel: Saltzer and Schroeder
- USAF ESD SCOMP development
  - Honeywell Federal, Gligor, Benzel
- ESD security projects cancelled in 1976 by OSD

Orange Book

- NCSC established in 1982

- Orange Book published Aug 1983

- Multics evaluation process

- B2 rating awarded Jun 1986
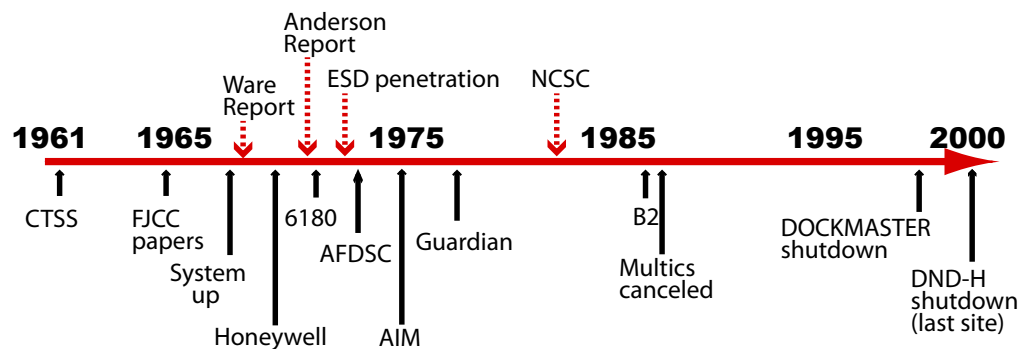
Multics Evaluation

- NCSC
  - Senior staff
    - Dan Edwards, Roger Schell, Marv Schaefer, Ted Lee, David Bell, …
  - Evaluators (NSA & contractors)
    - Deborah Downs, Grant Wagner, Olin Sibert, Virgil Gligor, …
- Honeywell
  - Federal Systems
  - Development (about 25 people)
    - Cambridge MA and Phoenix AZ
  - Canceled Multics product in 1986

More Information

- Multics history
  http://multicians.org/history.html

- Multics Security
  http://multicians.org/b2.html