

CSE 265: System and Network Administration

- Namespaces – the lists and directories in your environment



CSE 265:

System and Network Administration

- Namespaces – the lists and directories in your environment
 - files in filesystem
 - account names in use
 - printers available
 - names of hosts
 - ethernet addresses
 - service-name/port-number lists
 - home directory location maps



Namespaces

- Some namespaces are flat
 - there are no duplicates
- Some namespaces are hierarchical
 - duplicates within different branches of a tree
- Need policies to govern namespaces
 - Ideally, written policies
 - Can become training for new SAs
 - Needed to enforce adherence to policy

Namespace policies

- Naming policy
 - What names are permitted/not permitted?
 - Technology – specific syntax
 - Organizational – not offensive
 - Standards compliance
 - How are names selected?
 - How are collisions resolved?
 - How do you merge namespaces?
 - Technological and political concerns

Namespace policies (2)

- Naming policy
 - How are names selected?
 - Formulaic
 - e.g., hostname: pc-0418; user-id: xyz210
 - Thematic
 - e.g., using planet names for servers; coffee for printers
 - Functional
 - e.g., specific-purpose accounts: admin, secretary, guest; hostnames dns1, web3; disk partitions /finance, /devel
 - Descriptive
 - e.g., location, object type (pl122-ps)
 - No method
 - Everyone picks their own, first-come first-serve
 - Once you choose one scheme, difficult to change

Namespace policies (3)

- Comments on naming
 - Some schemes are easier to use than others
 - easier to remember/figure out, to type, etc.
 - Some names imply interesting targets
 - secureserver, sourcecodedb, accounting, etc.
 - avoid exceptions to formulaic names
 - Formulaic names suggest problems when incomplete
 - server1, server2, server4, server7
 - Sometimes helpful when desktop matches user's name
 - Assuming user wants to be easily identified

Namespace policies (4)

- Protection policy
 - What kind of protection does the namespace require?
 - password list
 - UIDs
 - login IDs, e-mail addresses
 - Who can add/delete/change an entry?
 - Need backups or change management to roll back a change

Namespace policies (5)

- Longevity policy
 - When are entries removed?
 - after IP address not used for months
 - contractor ID each year
 - student accounts a year after graduation
 - employee accounts the day they leave
 - Functional names might be exceptions
 - sales@company.com
 - president@university.edu

Namespace policies (6)

- Scope policy
 - Where is the namespace to be used?
 - How widely (geographically) shall it be used?
 - Global authentication is possible with RADIUS
 - NIS often provides a different space per cluster
 - How many services will use it? (thickness)
 - ID might serve for login, email, VPN, name on modem pools
 - Across different authentication services
 - ActiveDirectory, NIS, RADIUS (even with different pw)
 - What happens when a user must span namespaces?
 - Different IDs? Confusing, lead to collisions
 - Single flat namespace is appealing; not always needed

Namespace policies (7)

- Consistency policy
 - Where the same name is used in multiple namespaces, which attributes are also retained?
 - E.g., UNIX name, requires same (real) person, same UID, but not same password for email, login
- Reuse policy
 - How soon after deletion can the name be reused?
 - Sometimes want immediate re-use (new printer)
 - Sometimes long periods (prevent confusion and old email from being sent to new user)

Namespace Management

- Namespace change procedures
 - Need procedures for additions, changes, and deletions
 - Likely restricted to subgroup of admins
 - Documentation can provide for enforcement, training and step-by-step instruction
- Namespace management
 - Should be centralized
 - Maintain, backup, and distribute from one source
 - Difficult to enforce uniqueness when distributed
 - Centralization provides consistency