Grapevine - distributed, replicated system with message delivery, naming, authentication, resource location, access control services

## structural overview

the services a server provides: **message service and the registration service.**

message services - deliver and buffer

registration services

has registration database - group & individual entry (RName) - partitioned naming scheme, the registration database is distributed and replicated

registry - administrators(registrars)->creating, updating and deleting individuals and groups in the registry

store the names and address of all message and registration servers

names of registries and the name of servers who contain certain registries.

client: GrapevineUser

implement the internal protocol for communicating with particular Grapevine server

resource location function - to decide on which server to turn to(nearest algorithm)

\tip: message service consult the registration service about the query(inbox information etc)

registration services connect to each other, using message service to communicate.

\tip: transportation: server <-> client: local Ethernet; server <-> server: low-bandwidth network

## scale problem

a way to solve the scale problems: the sub registries/ add an indirection in the interpretation, like a layer. (add layers, like a tree, log(n) complexity)

another problem with the user size; the internet delay.

## transparency of distribution and replication

problem1 - the inconsistency with the message propagation delay among servers

problem2 - the high load for remailing messages after removing or demoting the mail inboxes(some actions may take long time, the client should know)

problem3 - duplicate message because the users can be in two different distributions.

## adjusting to the load

problem1 - the high load for propagating the name entry change -> include only the change in the update message rather than the entire contents of the changed lists.

problem2 - the authentication cost -> cached authentication results.

problem3 - diskless workstation user -> terminal, while the Grapevine inboxes are served as the buffer. -> the number of such users are limited.

viticulturist’s entrance: remote monitoring and controlling of the servers.

# reliability

disk fulfillment problem: move the old messages to another server.