~~Moving~~ to the Web: How to Prepare for the Switch

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Topic Overview

Architecture:

- **Scaleable, Reliable, Recoverable**

- **Hardware Component Overview**

Maintaining a 24x7 Database:

- **Three Backup Methods**

- **Automated Standby with Advanced Replication**

- **Parallel Server**

- **ALTER SYSTEM**

- **Additional Oracle8i Features for the Internet**

Topic Overview

Technology Options:

- WebDB (Oracle Portal) / NCA / PL/SQL + HTML

- Ecommerce

- Internet Terminology

- Oracle Terminology

Management:

- Personnel Issues

- How to Send E-mail and Pages Automatically in UNIX

- Other Issues

Scaleable, Reliable, Recoverable

- Scalability:
    - Hardware
    - Software
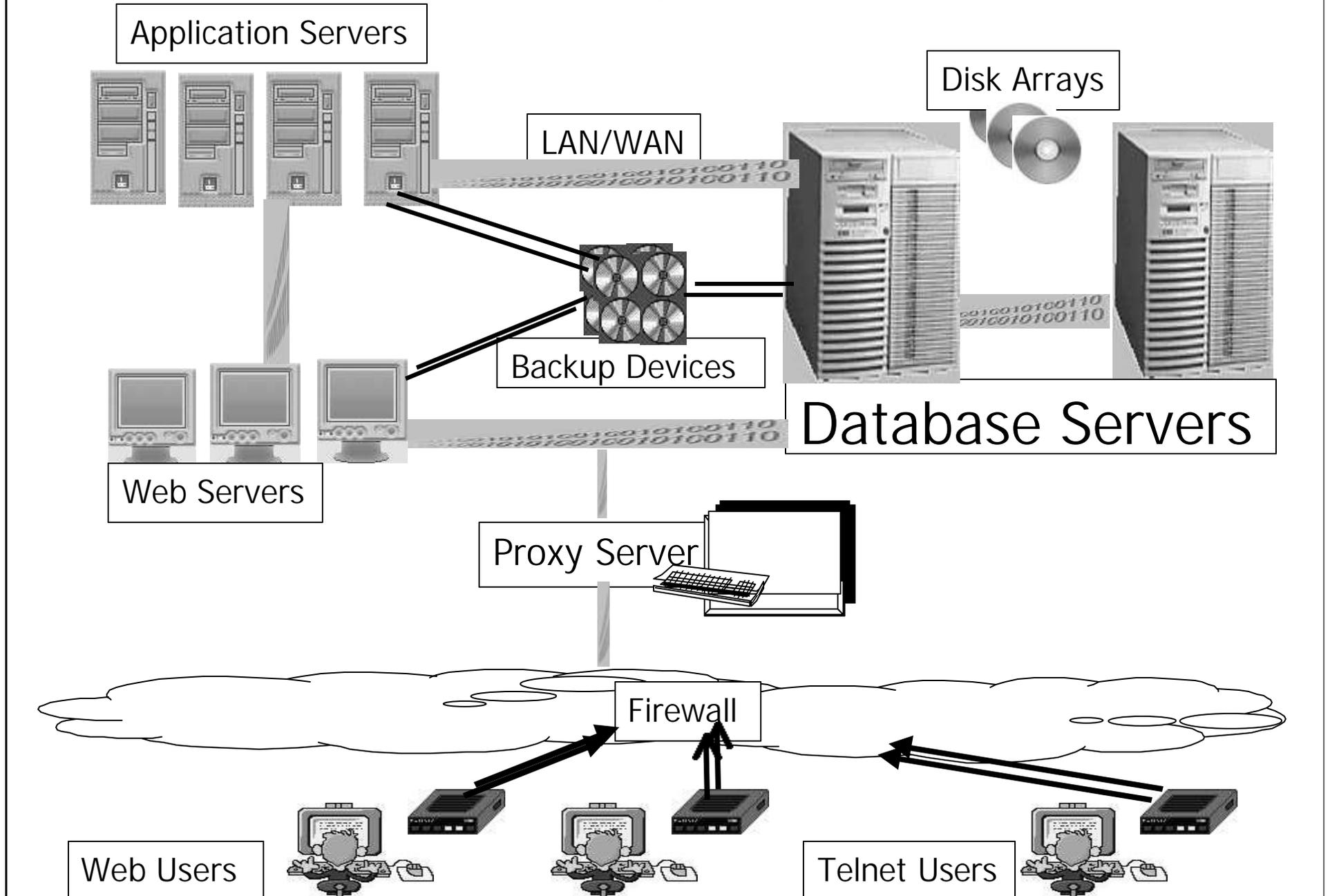   - Modular Design
- Reliability:
    - Minimize Downtime
    - Performance Goals
- Recoverability:
    - Test Database Backups
    - Code and Content Recoverability

Hardware Component Overview

Application Servers

Disk Arrays

LAN/WAN

Backup Devices

Web Servers

Database Servers

Proxy Server

Firewall

Web Users

Telnet Users

Maintaining a 24x7 Database: Three Backup Methods

Method 1: Cold Backup

■Definition

■Archivelog Mode / Point-in-Time

■Shutting Down the Database Issues

Maintaining a 24x7 Database: Three Backup Methods

Method 2: Hot Backup

■ Definition

■ Commands

ALTER TABLESPACE INDEX_TS BEGIN BACKUP;

ALTER TABLESPACE INDEX_TS END BACKUP;

ALTER DATABASE SWITCH LOGFILE;

■ Redo Activity / Performance

Maintaining a 24x7 Database: Three Backup Methods

Method 3: Export (logical backup)

+ Recover individual tables

Example: if a user accidentally drops the CUSTOMER table in the database:

Without Export:

Recover the database to the point-in-time before the CUSTOMER table was dropped.

1) Determine when the table was dropped.

2) Recover the entire database or tablespace from your hot/cold backup and apply redo logs until just before the time of the DROP command.

3) If you dependent data in other tables, bring those tables to the same point-in-time consistency.

With Export:

Use the import facility to recreate the table. It would contain data up to the point that the export was made. This is an easy method that is straightforward and would not bring the entire tablespace (or database) to the same point-in-time.

Maintaining a 24x7 Database: Three Backup Methods

Method 3: Export (logical backup)

+ Recover individual tables

+ Can generate DDL commands

+ Can recreate just indexes, triggers, grants, etc. (no data)

+ Can copy tables among schemas, and users

+ Can be used to migrate database among operating systems

- Cannot recover the database or tablespace to a point-in-time

- "Incremental" exports inefficient (the full 100 million record table is exported if just 1 record has changed.)

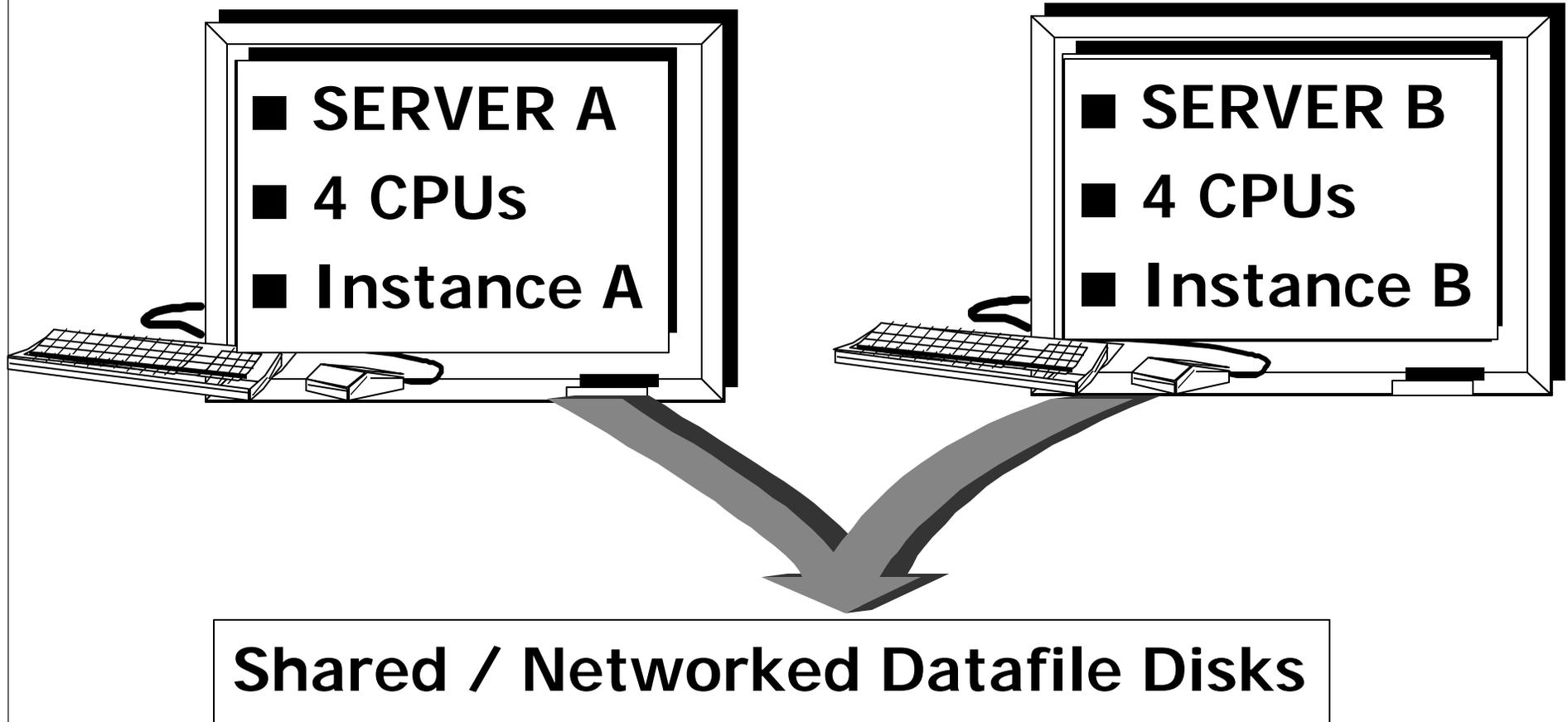# Automated Standby Databases with Advanced Replication

- Automated Standby - why?

- How does it work?
  - "ALTER DATABASE MOUNT STANDBY" to get the standby database into Standby mode.
  - Sending of redo logs

- When does it not work?

Automated Standby Databases with Advanced Replication

- Advanced Replication: what is it?
  - Normal Replication: snapshots
  - Multimaster Replication
- Downsides to Advanced Replication:
  - Scalability
  - Primary Key definitions
  - "LONG" not replicated
  - SYSTEM passwords must be identical

Oracle Parallel Server

■ OPS (Oracle Parallel Server):

SERVER A

■ **SERVER A**
■ **4 CPUs**
■ **Instance A**

■ **SERVER B**
■ **4 CPUs**
■ **Instance B**

Shared / Networked Datafile Disks

Oracle Parallel Server

- Downsides:

  – Hardware costs

  – Update Overhead: IDLM

  – INIT.ORA setup

  – Rollback Segments

  – Backups

- Oracle8i improvements:

  – Cache Fusion

ALTER SYSTEM

- The ALTER SYSTEM command can improve uptime

SELECT NAME, VALUE

FROM v$parameter

WHERE issys_modifiable IN ('DEFERRED', 'IMMEDIATE');

- ALTER SYSTEM SET max_dump_file_size = 100000;

- Oracle8i updates for this command

- Change the initSID.ora file

ALTER SYSTEM

SELECT NAME, VALUE

FROM v$parameter

WHERE issys_modifiable IN ('DEFERRED', 'IMMEDIATE');

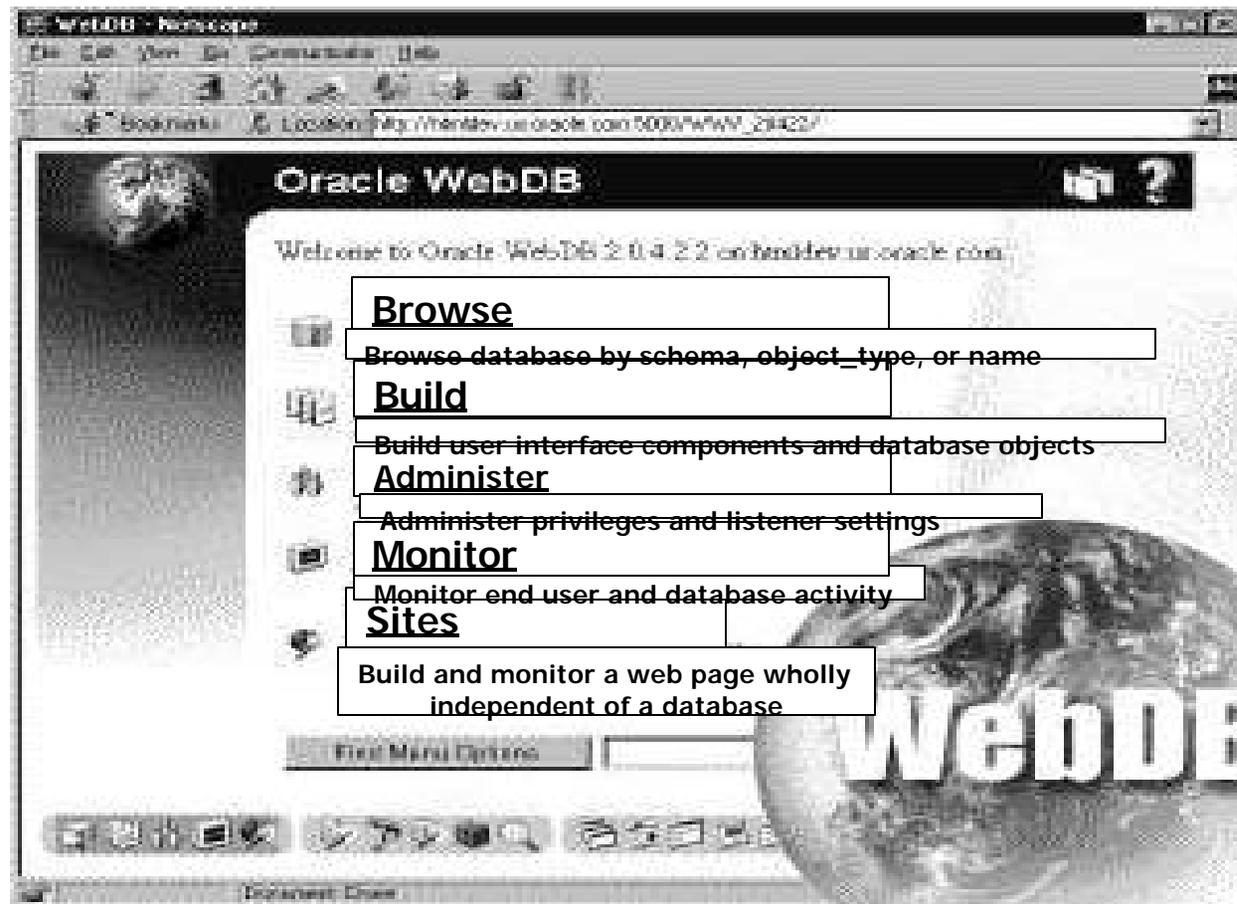| NAME	VALUE	ISSYS_MOD
timed_statistics	FALSE	IMMEDIATE
log_checkpoint_interval	5000000	IMMEDIATE
log_checkpoint_timeout	21600	IMMEDIATE
object_cache_optimal_size	102400	DEFERRED
background_dump_dest	/u02/oracle/PHIS/bdump	IMMEDIATE
sort_area_size	5096000	DEFERRED

Additional Oracle8i Features for the Internet

Oracle8i brings many new features that greatly improve the performance and uptime of an Internet-based database.

- The export and import facilities now can remember cost-based optimizer statistics so that you do not need to regenerate them after an import.

- Online Index Rebuild (improves the 24x7 uptime)

- ALTER TABLE DROP column_name;

- Fast Start Recovery

- Log Miner tool

- Statistics: ANALYZE TABLE in parallel

- Mentioned elsewhere:

  - Multiple Archivelog Destinations

  - Expanded "ALTER SYSTEM" Initialization Parameter Changes

  - Automated Standby Database

  - Advanced Replication

  - Cache Fusion for Oracle Parallel Server

Technology Options: Oracle Portal / WebDB

■ Administration Screen

Browse
Browse database by schema, object_type, or name

Build
Build user interface components and database objects

Administer
Administer privileges and listener settings

Monitor
Monitor end user and database activity

Sites
Build and monitor a web page wholly independent of a database

Technology Options: Oracle Portal / WebDB

■ Sample Query Screen (from Oracle Demo)

Technology Options: PL/SQL Interfacing with HTML

- UTL_HTTP package retrieves data from Web servers through HTTP.

- UTL_HTTP.REQUEST: receives the first 4000 bytes of data from a URL

- UTL_HTTP.REQUEST_PIECES: receives a table of 4000-byte pieces of data from a URL.

- The UTL_HTTP package is created by $ORACLE_HOME/rdbms/admin/utlhttp.sql

Technology Options: ECommerce

- B-to-C
- B-to-B
- EDI
- Some Web Sites:
  - **–www.ecash.com**
  - **–www.microsoft.com**
  - **–www.cybercharge.com**
  - **–www.cybercheck.com**
  - **–www.ecommerce.com**

Technology Options: Internet Terminology

- XML: eXtensible Markup Language

- JAVA: Cross-Platform / JDBC / SQLJ

- CORBA: Common Object Request Broker Architecture

- ASP: Active Server Page

  Can be written in VBScript, Jscript, and ActiveX Data Objects (ADO)

Technology Options: Oracle Terminology

■NC: Network Computer

■NCA: Network Computing Architecture

■iFS: internet File System

Management: Personnel Issues

- Staff Skills Issues
- Full-time vs. Consultants
- Staff Support Issues

Management: How to Send E-mail and Pages Automatically in UNIX

```
echo "Subject: Database $ORACLE_SID is down on $HOSTNAME at `date`" > $EMAIL_FILE
echo "== db_main.sh: Sending an e-mail that database is down!" >> $EMAIL_FILE
cat $EMAIL_FILE | mail akaplan@interaccess.com jeff@host.com fred@host.com
rm $EMAIL_FILE
echo "== db_mail.sh: E-mail sent"
```
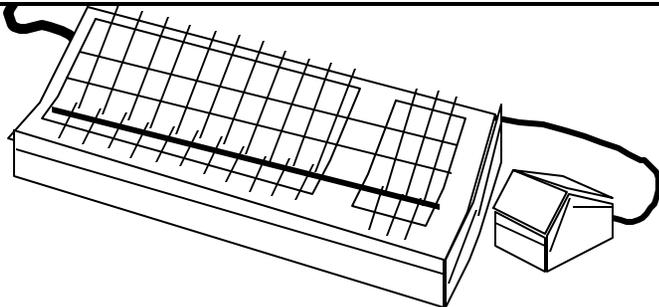
You should be sure that a mail messaging system is installed. ("Sendmail")

Management: How to Send E-mail and Pages Automatically in UNIX

✴ You can also send an email using Oracle Applications, by using "Alert Manager"

✴ Use a third-party company:

- ■ **http://www.notepager.net/webgate.htm**

- ■ **http://www.sharpcom.com/pageme/index.htm**

- ■ **http://www.beepit.com**

✴ Send pages to groups

✴ Automated scripts / alert_log check

Management: Register the Name

■ What's a domain / URL?

Steps:

1) Check if the name exists

2) Purchase the name:

www.qwho.com

www.networksolutions.com

www.mydomain.com

Cost: roughly $75 for purchase, $35 for annual upkeep.

3) Check ".com", ".net", and ".edu" domains

4) Add "*sucks" and register those domains as well. For example, www.microsoftsucks.com

Management: Vendor Support

Vendor Support

- Ensure supply chain and responsiveness

24 X 7 Support

- Keep CSI numbers

- Have DBAs share TARs

- Wireless options for off-hours support

Where to Now?

✳ **There are many discussion Newsgroups on the internet for you to give questions and get answers:**

   comp.databases.oracle.server

   comp.databases.oracle.tools

   comp.databases.oracle.misc

✳ **These can be accessed through a newsgroup program or "www.deja.com"**

✳ **Ari's free Oracle Tips web page at:**

www.arikaplan.com

There are over 360 tips and answers to questions that have been posed to me over the years. This paper will be downloadable from the web page as well.

✳ **Other good sites with links: www.orafaq.org, www.orafans.com, www.ioug.org, www.orasearch.com, www.revealnet.com, www.lazydba.com, www.dbdomain.com**