

Managing Multiple Test Environments on the UNIX Platform

Session 520

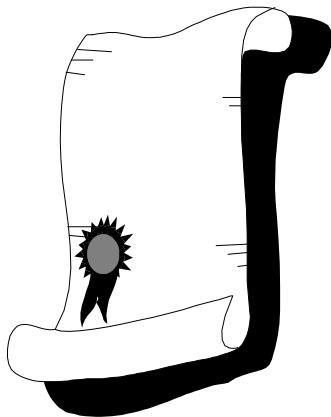
Michelle De Hertogh
Texas Instruments

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Agenda



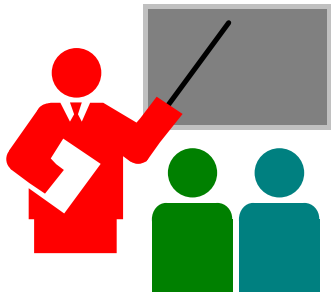
- Test Environments
- What pieces do I need?
- Implementation toolset
- Target configurations
- Environment variables
- Runtime
- Single database
- Multiple databases

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Discussion of Test Environments



- Unit – testing individual procedures
- Integration – testing individual load modules
- System – completed pieces of application
- User Acceptance – same as system, but with the users



What do I Need?

C/S Build Environment

- Implementation toolset
- Target configuration(s)
- Builds inqload directory(s)
- Builds aeenv file(s)
- Builds load module exe(s)
- Uses environment variables
 - AEHOME/AEPATH
 - DBMS-specific
 - IEFH
- Log files (aef)

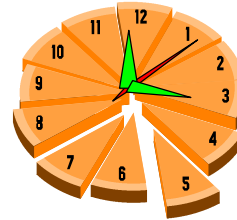
C/S Runtime Environment (Transaction Enabler)

- TE uses inqload directory(s)
- TE uses aeenv file(s)
- TE Executes load modules
- Uses environment variables
 - AEHOME/AEPATH
 - DBMS-specific
- Log files (AD,UF,AEFC)
- User exits, AEFC, Shell Scripts

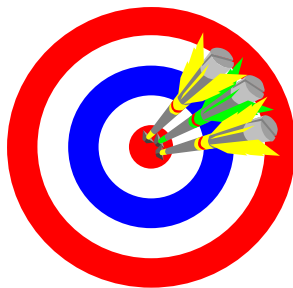


What is an Implementation Toolset?

- Target Configuration – define the directory structure for:
 - inqload directory
 - aeenv file
- Builds executable per load module
- Places executables in inqload directory
- Places tran codes for load modules in aeenv file
- Builds the database
- Builds the referential integrity triggers



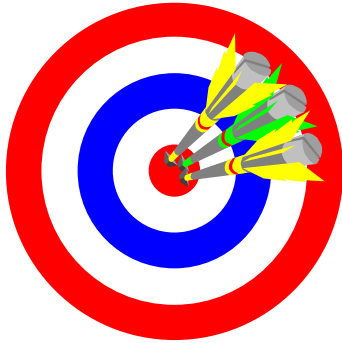
Why a Target Configuration?



- A directory structure
- Parent for inqload directory
- Parent for aeenv file
- Parent for source code, list code, object code, etc.
- Directory and library structure for external action libraries



How Many Target Configurations?



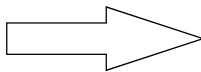
- One for each test environment
- One for each unit tester



Target Configuration Example

Default Structure

```
Parent Directory
inqload
  load module 1
  load module 2
  load module 3
...
aeenv
codesrc
risrc
database
codeexe
...
some eab libraries
```



Recommended

```
Parent Directory
inqload
  load module 1
  load module 2
  load module 3
...
aeenv
loadmodule
ri
db
executable
some eab libraries
```

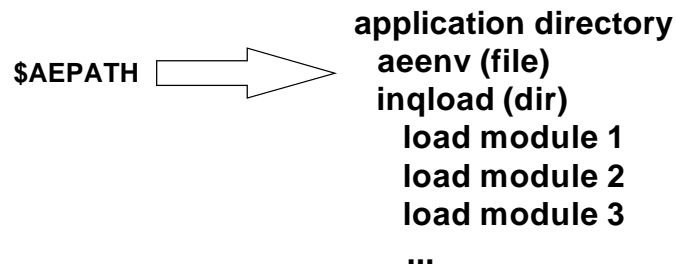


Multiple Target Configurations

integration inqload load module 1 load module 2 load module 3 ... aeenv loadmodule ri db executable eab libraries	system inqload load module 1 load module 2 load module 3 ... aeenv loadmodule ri db executable eab libraries	acceptance inqload load module 1 load module 2 load module 3 ... aeenv loadmodule ri db executable eab libraries
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Required Directory/File Structure



- Must have a directory named inqload that contains the load modules (executables)
- Must have a file at the inqload directory level named aeenv that contains the transaction codes in the executables
- \$AEPATH must point to the inqload directory



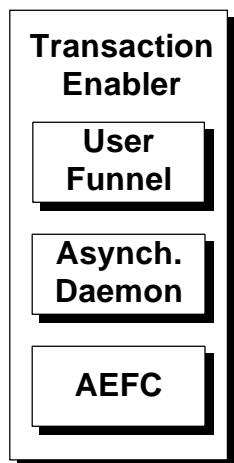
Required Environment Variables



- AEPATH – for runtime
- DBMS-specific – for DBMS communication at runtime
- IEFH – identify runtime and implementation toolset
- PATH – need location of runtime in path (\$IEFH/bin)
- PTOPT – profile file for implementation toolset
- PTHOME – location for profile file



Required Runtime: Transaction Enabler



- Transaction Enabler acts as the teleprocessing monitor for the UNIX platform
- Consists of three UNIX processes
 - Asynchronous Daemon (aefad)
 - User Funnel (aefuf)
 - Application Execution Facility Client (aefc)
- Need all three for testing



Transaction Enabler

- Need asynchronous daemon(s) for executables to be:
 - Loaded in memory
 - Kept resident in memory
 - Kept connected to the DBMS
 - Kept shareable

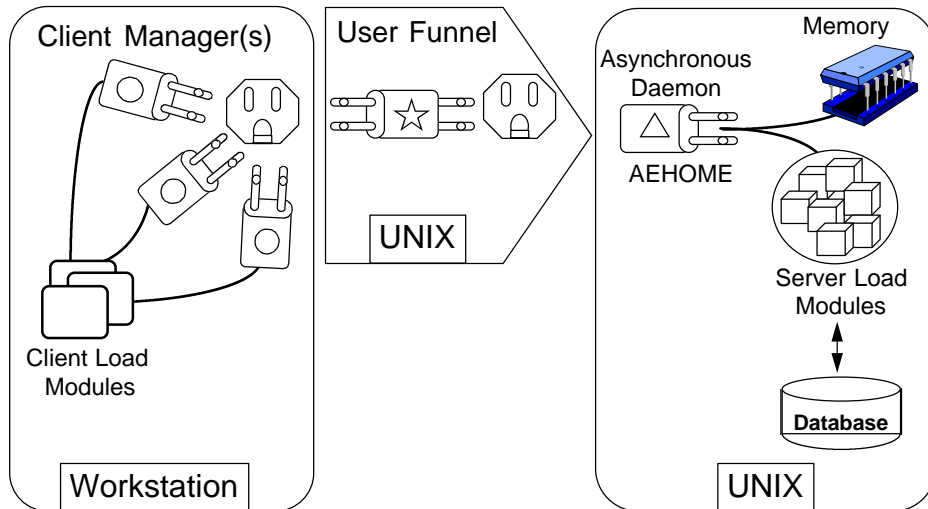


Transaction Enabler (cont.)

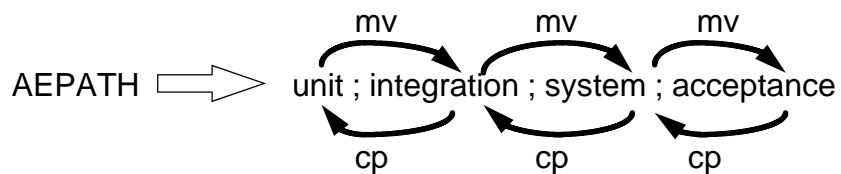
- Need user funnels to:
 - Allow multiple users to share a single aefad environment
 - Connect GUI client managers to a UNIX server
- Need an aefc to monitor and dynamically change (if necessary) aefad



C/S Application Execution



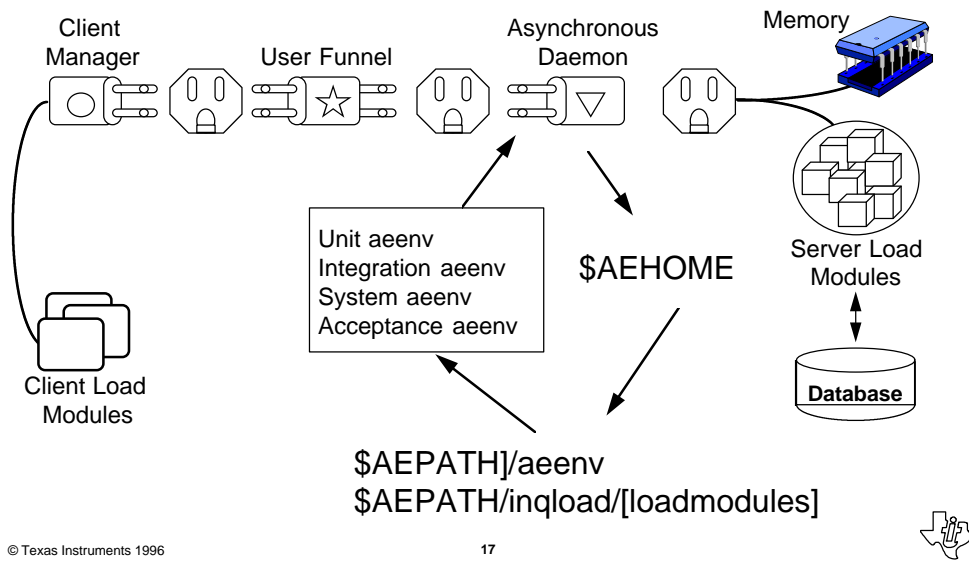
Environment for Single DB



- Single aefad
- As many aefuf's as needed
- aefc to monitor

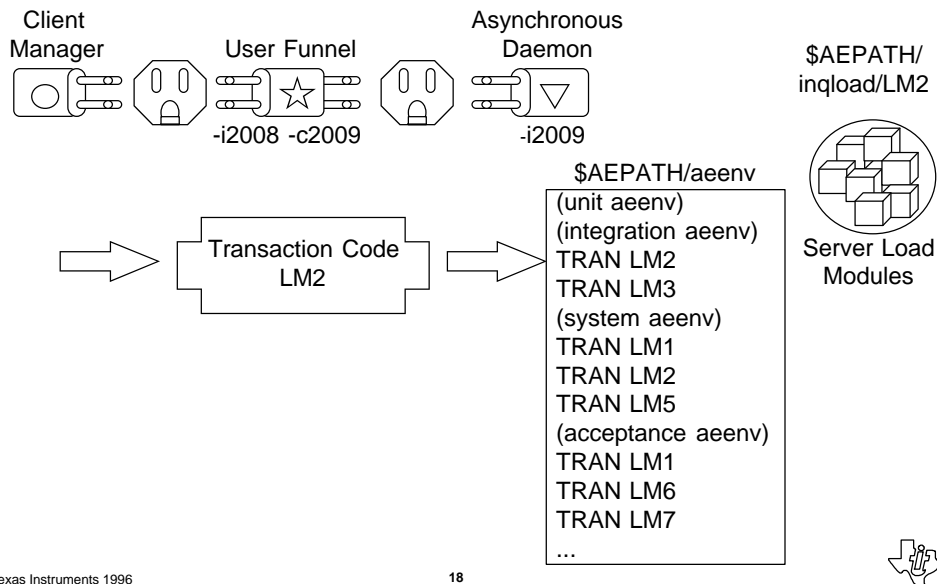


Asynchronous Daemon-Load Time



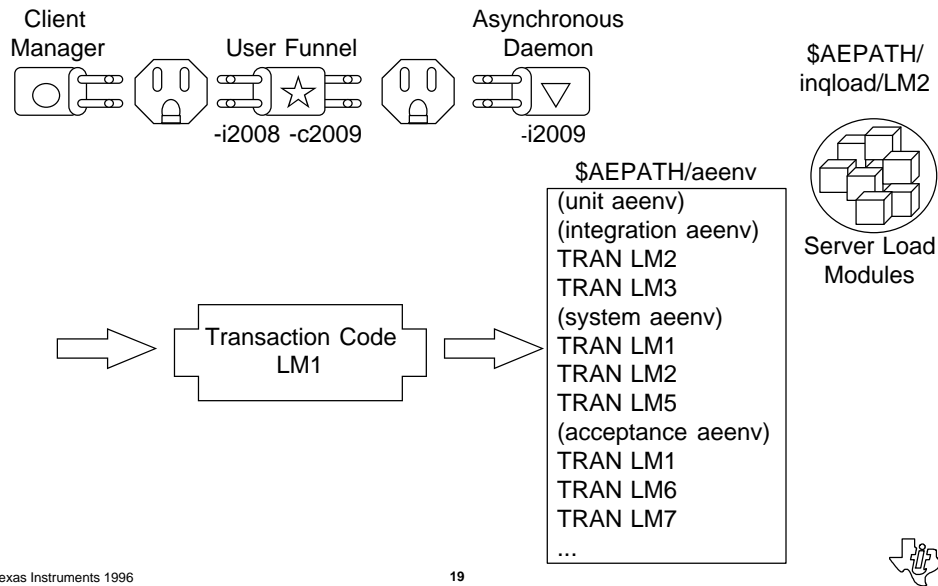
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Single DB Transaction Execution



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Single DB Transaction Execution



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Should I Use a Single Database?

- One set of databases to manage
- One runtime environment
- All testers will be using the load modules in lowest level test
- Must manage non-working transactions
- Must manage deletion of load modules in target configuration

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Environment for Multiple DB

AEPATH
aefad 1 ➡ unit ; integration

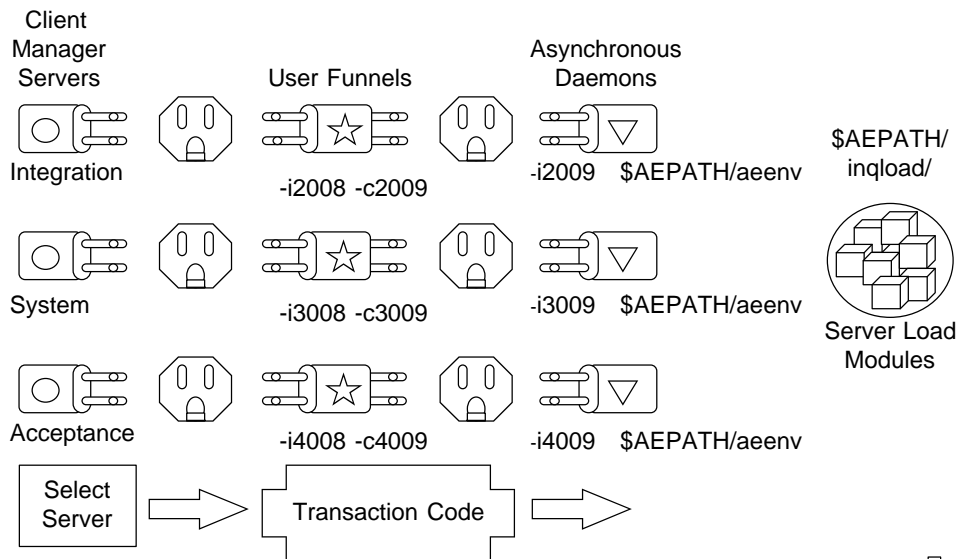
AEPATH
aefad 2 ➡ system

AEPATH
aefad 3 ➡ acceptance

- One aefad per DB
- As many aefuf's as needed
- aefc to monitor each aefad



Multiple DB Transaction Execution



Should I Use Multiple Databases?

- Testers will be using load modules at specific testing level
- No managing deletion of load modules in target configuration
- Multiple databases to manage
- Multiple runtime environments
- All testers will be using the load modules in lowest level test
- Must manage non-working transactions



Summary

- What test environments are needed
- How many databases do you need
- How will the load module changes be managed
- What directory structure do you plan to use
 - inqload directory locations
 - aeenv file locations
- Where will the runtime be loaded



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