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- Service testing

A keyword-driven service testing framework based on TTCN-3 on TTCN-3

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Security Level:
Many protocols are involved.

The protocol details are quite complex.

Testers care little about the protocol details.

Special language designed for testing, especially on protocol conformance testing.

Simulation of network elements by the parallel components.

Service testing – Why TTCN-3
Service testing – Difficulties

• Too many APIs, which is difficult to use.
• Without a test API specification, it is easy to bring high cost of script-based test case maintenance.
• Require more programming skill.
Action word (AW) is a methodology of keyword-driven test execution. A 3rd generation of automatic testing from Huawei separates test design from test execution. Graphical format of test case. Easy to create and maintain.

TTCN-3 & AW solution

- TTCN-3 & AW solution
- Requirement and test case management
- GT3000 GTR
- Presentation Layer
- Script Generator
- Test case
- Test execution
- Executable System
- Test reporting

TTCN-3 & AW solution – Framework

- Execution Layer
- Socket
- SUT

TTCN-3 & AW solution – Overview

- GT3000
- Test execution
- Executable System
- SUT
- TE
- TDE
- TAE
- AW list
- Script Generator
- Execution Layer
- Presentation Layer
- Coding Infrastructure
1. Testcase & AW

Test steps

parameters of the "number assign" AW

AW Tree
TTCN-3 & AW solution – Script Generator

- Generate PTCs to simulate different network elements surrounds the SUT
- Each TTCN-3 AW has only one parameter, containing all the AW parameters in a string, it also supports optional parameters:
  - paramA(valueA) paramB(valueB) paramC(valueC) paramD(valueD)...
- Convert tabular test case into TTCN-3 script

2. User interface
1. Convert Tabular AW to TTCN-3 function

2. PTCs simulate different network elements
3. Convert tabular test case to TTCN-3 test case

TTCN-3 & AW solution – Execution Layer

AW
Action Word Implementation
implements AW function with TTCN-3

SA
SIP
Telnet
RTP
MSRP
SIP
Telnet
RTP
MSRP

PA
Protocol library
implements protocol stacks like SIP stack, with TTCN-3

SA
SA

SA
SA

PA
PA

SA
PA

TCL
on databases, the telnet, ftp, etc.

Common library
implements common operations

Protocol library
\n
Common library
implements common operations

Action Word Implementation
implements AW function with TTCN-3

/\rhombus6

Protocol library
implements protocol stacks like SIP stack, with TTCN-3

Common library
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SA
PA
SIP
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Future work

Benefits

Typical application

TTCN-3 & AW solution

Service Testing

Contents

Content summary:

1. Service Testing
2. TTCN-3 & AW solution
3. Typical application
4. Benefits
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Service Testing

Adapt to service testing
Not recommended for protocol testing/ API testing

Typical application

- Good to test service that is:
  - driven by many protocols
  - stable, less than 10% changing would be perfect

- Good to test service that is:

(therefore the AW test cases can be inherited)

- Not recommended for protocol testing/ API testing

TTCN-3 & AW solution

Application Area
actions
called (callee) and MRS
Softswitch (caller);
that simulate the
TTCN-3 functions
Service are
etc.
transaction, dialog,
message and SIP
stack handles SIP
TTCN-3 SIP Protocol

Typical application – Test system details

Service AW are

The home telephone is picked
at the same time
and the home telephone at the
AS called the office phone
A user dialed a virtual number

Typical application – Test scenario
Contents

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- Typical application
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Benefits

Total test cases

Total users
Future work

- AW design with layers
- Object oriented AW design
- High level AW can be implemented by lower level
- With object oriented design, it is similar to real entity
- Integrate AW implemented in C++, TCL, java
- Share AW pool largely

Thank you!