Course Code: 500-202E

AppShape++
e-Learning Course Outline

Version 2.1
Contents

1 PURPOSE ........................................................................................................................................3

2 E-LEARNING MODULE OUTLINE .................................................................................................4

   2.1.1 DAY 1 ....................................................................................................................................4
      Overview of AppShape++ ..............................................................................................................4

   2.1.2 ...............................................................................................................................................4
      Basics of Tcl ..............................................................................................................................4

   2.1.3 ...............................................................................................................................................5
      Tcl Code & Scriptwriting .............................................................................................................5

   2.2.1 DAY 2 ....................................................................................................................................7
      Intro to AppShape++ ....................................................................................................................7

   2.2.2 ...............................................................................................................................................8
      AppShape++ Commands – TCP UDP IP LB SSL ........................................................................8

   2.3.1 DAY 3 ....................................................................................................................................9
      AppShape++ Commands – HTTP & Log .....................................................................................9

   2.3.2 ...............................................................................................................................................9
      AppShape++ Script Management (Draft) ................................................................................9

3 E-LEARNING SELF ASSESSMENT .................................................................................................10

   Basics of Tcl ..................................................................................................................................10

   Tcl Code & Scriptwriting ..............................................................................................................10

   Intro to AppShape++ ....................................................................................................................10

   AppShape++ Commands – TCP UDP IP LB SSL ..........................................................................10

   AppShape++ Commands – HTTP & Log ......................................................................................10

4 SUGGESTED SELF-PACED SCHEDULE .......................................................................................11
1 Purpose

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This course syllabus introduces topics covered in the Radware # 500-202E AppShape++ non-certification curriculum, which includes the following self assessments:

- 7 Tcl Self Assessments
- 10 AppShape++ Self Assessments

Training materials for this course include hands-on training, a lab manual, and an accompanying PowerPoint presentation to be used in tandem.
2    e-Learning Module Outline

2.1.1 Day 1

Overview of AppShape++

- Overview of AppShape++
  - AppShape++ and Tcl
  - AppShape++ Structure
  - AppShape++ Script
- EVENTS
  - AppShape++ EVENTS
  - Enable EVENTS
- Commands
  - AppShape++ Commands
  - AppShape++ Library
- Script Implementation
  - Steps for Implementation

2.1.2

Basics of Tcl

- Basics of Tcl
  - Tcl
    - What is Tcl?
    - Why Tcl?
  - Learning Tcl
    - Running Tcl
    - Tcl Tools and files
- Tcl Syntax
  - Tcl Basic Components
  - Tcl Syntax
- Tcl Commands
  - Basic Tcl Commands
    - Tcl Commands
  - Commands Arguments
    - Group Arguments
  - Document Code
- Tcl Evaluation
  - Rules of Substitution
    - Variable Substitution
    - Command Substitution
    - Backslash Substitution
Basics of Tcl (cont.)

- Review
- Tcl Variables
  - Tcl Variables
    - Simple variables
    - String variables
    - Scope of Tcl variables
    - Variable Names
    - Naming Guidelines
- Tcl Expressions
  - Tcl Expressions
    - Evaluating Expressions
    - Tcl Operators
      - Rational Operators
      - Logical Operators
    - String Operations
- Self-Assessment
  - Tcl Tools and files
    - Self-Assessment 1-6

2.1.3

Tcl Code & Scriptwriting

- Tcl Code
  - Writing Tcl Code
  - Tcl Script
    - Tcl Syntax
- Conditional Control
  - If Command
  - Operators
    - Boolean Operators
    - Logical Operators
  - Nested If Command
  - Switch Command
- Loop Control
  - While Command
  - For Command
  - Foreach Command
  - Break Command
  - Continue Command
- Tcl Strings
  - String Evaluation
    - String Operators
Tcl Code & Scriptwriting (cont.)

- String Commands
  - String Commands
  - Append Command
- Tcl Lists
  - Tcl Lists
  - List Commands
  - Concat Command
- Regular Expressions
  - Pattern Matching
    - Use regular expressions
    - Find metacharacters
- Scriptwriting
  - Scriptwriting
    - Coding Conventions
    - Best Practices
      - Use braces correctly
      - Control execution
      - Injection-attack protection
- Self-Assessment
  - Tcl Tools and files
    - Self Assessment 7
2.2.1 Day 2

Intro to AppShape++

- What is AppShape++?
  - Why use AppShape++?
- AppShape++ Boundaries
  - Relationship
    - Limits
    - Overrides
    - Restrictions
  - Tcl Framework
    - Collection
    - Effect on Tunnel
    - Pilot Text
      - Performance
- AppShape++ Scripts
  - Components
    - Event Driven Programming
  - Steps for Implementation
- AppShape++ Variables
  - Review of Tcl Variables
  - AppShape++ variables
    - Local Dynamic Variables
    - Global Static Variables
- Global Functionality
  - Attach Command
  - Global Group
    - Port Selection
- AppShape++ EVENTS
  - Preview EVENTS
    - Enable EVENTS
    - INIT EVENT
  - EVENT Declaration
    - CLIENT EVENTS
    - SERVER EVENTS
    - HTTP EVENTS
- Self-Assessment
  - AppShape++ Assessment
    - AppShape++ Assessment 1
    - AppShape++ Assessment 2
    - AppShape++ Assessment 3
    - AppShape++ Assessment 4
2.2.2

AppShape++ Commands – TCP UDP IP LB SSL

- AppShape++ Commands
  - Why use AppShape++?
- IP Commands
  - Overview IP
    - Example IP Code
- TCP Commands
  - Overview TCP
    - Example TCP Code
- UDP Commands
  - Overview UDP
    - Example UDP Code
- LB Commands
  - Overview LB
    - Example LD Code
- SSL Commands
  - Overview SSL
    - Example SSL Code
- STARTTLS for SMTP

- Self Assessment
  - AppShape++ Assessment
    - AppShape++ Assessment 5-6
2.3.1 Day 3

AppShape++ Commands – HTTP & Log

- **AppShape++ Commands**
  - Overview HTTP
  - HTTP Commands
- **Content Functionality**
  - HTTP Content
  - Collect Behavior
  - Transfer Coding
- **Using HTTP Commands**
  - 1. Header/Cookie Exam
  - 2. Redirect
  - 3. Respond
  - 4. Content Rules
  - 5. Close
- **Content Modification**
  - Transparent Header Modification
    - Using Switch Command
    - Using If Command
    - Using Header Replace
    - HTTP Page Issues
- **Log Command**
  - Use Log Command
    - Example Log Command
- **Self-Assessment**
  - AppShape++ Assessment
    - AppShape++ Assessment 7-10

2.3.2

AppShape++ Script Management (Draft)

- Under Construction
- AppShape++ Library
- Script Implementation
  - Steps for Implementation
  - Virtual Service
  - Validation and Initialization
- CLI Management
- BBI Management
- Error Handling
  - Port Selection
  - Recovery from Execution Errors
3  e-Learning Self Assessment

Basics of Tcl
- Tcl Self Assessment 1 – Create Tcl variable
- Tcl Self Assessment 2 – Manipulate Tcl variable
- Tcl Self Assessment 3 – Output Tcl variable
- Tcl Self Assessment 4 – Create Tcl string variable
- Tcl Self Assessment 5 – Display Tcl string variable
- Tcl Self Assessment 6 – Create multi-word string variable(s)

Tcl Code & Scriptwriting
- Tcl Self Assessment 7 – Create iterative Tcl script

Intro to AppShape++
- AppShape++ Assessment 1 – Create global static variable
- AppShape++ Assessment 2 – Create script to trigger event
- AppShape++ Assessment 3 – Create script to trigger client side event
- AppShape++ Assessment 4 – Create script to trigger HTTP event

AppShape++ Commands – TCP UDP IP LB SSL
- AppShape++ Assessment 5 – Create script to implement back-end SSL
- AppShape++ Assessment 6 – Create script to insert/rename/remove cookie

AppShape++ Commands – HTTP & Log
- AppShape++ Assessment 7 – Explain a script
- AppShape++ Assessment 8 – Create script to insert header
- AppShape++ Assessment 9 – Create script to remove header
- AppShape++ Assessment 10 – Create script to insert value of the header
## 4 Suggested Self-Paced Schedule

<table>
<thead>
<tr>
<th></th>
<th>First Day</th>
<th>Second Day</th>
<th>Third Day</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>About 1 hour</strong></td>
<td>Module 1 Overview of AppShape++ (&lt;10 min)</td>
<td>Module 4 Intro to AppShape++ (&lt;25-30 min)</td>
<td>Module 6 AppShape++ Commands [HTTP &amp; log] (&lt;25-30 min)</td>
</tr>
<tr>
<td></td>
<td>Module 2 Basics of Tcl (&lt;35-40 min)</td>
<td>Module 4 AppShape++ Self Assessment 1-4 (&lt;20-25 min)</td>
<td>Module 6 AppShape++ Self Assessment 7-10 (&lt;30-35 min)</td>
</tr>
<tr>
<td></td>
<td>Module 2 Tcl Self Assessment 1-4 (&lt;10-15 min)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>About 1 hour</strong></td>
<td>Module 3 Tcl Code &amp; Scriptwriting (&lt;35-40 min)</td>
<td>Module 5 AppShape++ Commands [TCP UDP IP LB SSL] (&lt;15-20 min)</td>
<td>Module 7 AppShape++ Script Management (Draft) (&lt;30 min )</td>
</tr>
<tr>
<td></td>
<td>Module 3 Tcl Self Assessment 7-10 (&lt;15-20 min)</td>
<td>Module 5 AppShape++ Self Assessment 5-6 (&lt;35-40 min)</td>
<td>Hands-on exploration with Alteon v29 (30+ min)</td>
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