

TABLE OF CONTENTS

1	INTRODUCTION.....	9
1.1	WHO IS THIS BOOK FOR ?.....	9
1.2	THE EULA LICENSE CONDITIONS FOR PACKET TRACER	9
1.3	THE MAIN CHANGES IN PACKET TRACER 8.2	10
1.4	DETAILED COMMENTS APPLYING TO THE PROGRAM VERSION.....	10
1.5	“KEEP ME LOGGED IN” OPTION	10
1.6	THE MINIMUM SYSTEM REQUIREMENTS AND INSTALLING.	11
1.7	THE FIRST RUN OF THE PACKET TRACER PROGRAM	13
1.8	FILES NECESSARY TO ANALYZE THE CONTENT	16
2	USING MULTIUSER MODE	19
2.1	MULTIUSER MODE DESCRIPTION.....	19
2.2	SETTING UP A SERVER ROOM (EXERCISE 1)	21
2.3	CREATING EXTERNAL NETWORKS (EXERCISE 2)	30
2.4	CONNECTING THE SERVER ROOM WITH EXTERNAL NETWORKS (EXERCISE 3).....	34
2.5	LIST OF AUXILIARY FILES	56
3	PACKET TRACER IN LINUX.....	59
3.1	CREATING THE VIRTUAL UBUNTU LINUX MACHINE	59
3.2	FIRST LOGON TO THE UBUNTU STUDENT ACCOUNT	81
3.3	UNLOCKING THE UBUNTU ROOT ACCOUNT	85
3.4	DOWNLOADING PACKET TRACER IN THE UBUNTU MACHINE.	89
3.5	INSTALLING PACKET TRACER IN THE VIRTUAL UBUNTU.	91
3.6	CREATING A NETWORK IN PACKET TRACER IN UBUNTU (EXERCISE 4)	96
3.7	NETWORKING IN PACKET TRACER IN WINDOWS (EXERCISE 5)	99
3.8	CONNECTING NETWORKS IN UBUNTU PT AND WINDOWS PT (EXERCISE 6)	102
3.9	LIST OF AUXILIARY FILES	110
4	DEVICE PAIRING TECHNOLOGY AND TETHERING.....	113
4.1	WHAT IS BLUETOOTH DEVICE PAIRING? (EXERCISE 7)	113
4.2	SETTING UP TETHERING (EXERCISE 8)	118
4.3	LIST OF AUXILIARY FILES	121
5	MOBILE GSM TELEPHONY	125
5.1	COMMUNICATION BETWEEN TWO GSM MOBILE NETWORKS (EXERCISE 9)	125
5.2	COMMUNICATION BETWEEN THREE GSM MOBILE NETWORKS (EXERCISE 10)	132
5.3	LIST OF AUXILIARY FILES	137

Table of Contents

6	NETWORK CONTROLLER.....	141
6.1	INTRODUCTION TO NETWORK CONTROLLERS	141
6.2	CREATE AN ADMINISTRATOR ACCOUNT (EXERCISE 11)	142
6.3	CONFIGURATION OF AUTHORIZATION (EXERCISE 12)	149
6.4	IDENTIFICATION OF DEVICES (EXERCISE 13).....	152
6.5	DISPLAYING THE NETWORK TOPOLOGY (EXERCISE 14)	160
6.6	ACCESSING THE NET CONTROLLER FROM THE REAL NETWORK (EXERCISE 15).....	165
6.7	REMOTE RECONFIGURATION OF DEVICES (EXERCISE 16).....	168
6.8	LIST OF AUXILIARY FILES	174
7	WIRELESS NETWORK CONTROLLERS	177
7.1	DESCRIPTION OF WLAN AND CAPWAP NETWORK CONTROLLERS.....	177
7.2	CONFIGURING ACCESS POINTS USING WLC-PT (EXERCISE 17)	179
7.3	MANAGING LOCAL NETWORKS WITH WLC-PT (EXERCISE 18).....	189
7.4	INITIALIZING THE WLC-2504 USING THE GUI (EXERCISE 19)	202
7.5	MANAGING WLANS IN WLC-2504 (EXERCISE 20)	217
7.6	LIST OF AUXILIARY FILES	223
8	INTEGRATED INDUSTRIAL ROUTERS	227
8.1	DESCRIPTION OF INTEGRATED ROUTERS	227
8.2	BASIC CONFIGURATION FOR 819HG-4G-IOX (EXERCISE 21)	232
8.3	RUNNING A VIRTUAL MACHINE IN 819HG-4G-IOX (EXERCISE 22)	236
8.4	LIST OF AUXILIARY FILES	241
9	HOT SWAPPING DEVICES.....	245
9.1	WHAT IS HOT SWAPPING ?	245
9.2	ADDING POWER MODULES (EXERCISE 23)	245
9.3	ADDING PoE DEVICES (EXERCISE 24)	249
9.4	LIST OF AUXILIARY FILES	250
10	CLOCK SYNCHRONIZATION	253
10.1	NTP AND PTP PROTOCOL.....	253
10.2	MASTER-SLAVE SYNCHRONIZATION BETWEEN ROUTERS (EXERCISE 26)	255
10.3	CHAIN SYNCHRONIZATION BETWEEN ROUTERS (EXERCISE 26)	258
10.4	SLAVE-MASTER-NEW MASTER SYNCHRONIZATION (EXERCISE 27).....	260
10.5	SYNCHRONIZATION IN BOUNDARY, E2EFORWARD, TRANSPARENT MODES (EXERCISE 28)..	267
10.6	LIST OF AUXILIARY FILES	272
11	SERVER SERVICES	275
11.1	HTTP SERVICE (EXERCISE 29)	275

11.2	FTP SERVICE (EXERCISE 30).....	285
11.3	EMAIL SERVICE (EXERCISE 31).....	292
11.4	LIST OF AUXILIARY FILES	298
12	IPV6 PROTOCOL	301
12.1	INTRODUCTION TO IPV6	301
12.2	TUNNELING IN IPV6 PROTOCOL (EXERCISE 32)	306
12.3	CONFIGURING DHCP FOR IPV6 ON THE SERVER (EXERCISE 33)	309
12.4	CONFIGURING DHCP FOR IPV6 ON A ROUTER (EXERCISE 34)	312
12.5	LIST OF AUXILIARY FILES	314
13	HOT STANDBY ROUTER PROTOCOL	317
13.1	FHRP – TYPE PROTOCOLS	317
13.2	HSRP CONFIGURATION (EXERCISE 35).	317
13.3	HSRP CONFIGURATION (EXERCISE 36)	325
13.4	LIST OF AUXILIARY FILES	329
14	ADVANCED PHYSICAL TOPOLOGY	333
14.1	CREATING THE INTERCITY PHYSICAL TOPOLOGY (EXERCISE 37).....	333
14.2	CREATING THE ONE CITY PHYSICAL TOPOLOGY (EXERCISE 38)	340
14.3	PHYSICAL TOPOLOGY OF THE LOCAL NETWORK (EXERCISE 39)	346
14.4	PHYSICAL TOPOLOGY FOR WAN (EXERCISE 40)	366
14.5	LIST OF AUXILIARY FILES	392
15	COMMAND PROMPT COMMANDS	395
15.1	TABULAR SUMMARY OF COMMANDS	395
15.2	IPV6CONFIG AND PING	395
15.3	IPCONFIG AND NSLOOKUP	398
15.4	NETSH INTERFACE IPV6 SHOW NEIGHBORS	401
15.5	DIRECTORY COMMANDS.....	403
15.6	LIST OF AUXILIARY FILES	405
16	INDEX OF TABLES	409
17	INVENTORY OF EXERCISES AND LIST OF SUPPORT FILES	415
18	BIBLIOGRAPHY.....	419