Port_21 Inte	erfaces (FTP S	Session Sequ	uence Diagrar	n)	FTP Clier				
	Internet				EventHelix.com/EventStudio 2.5				
DNS	FTP S		1000	T	Client	1 -	000	Console	02-May-05 21:07 (Page 1)
Port 53	Port 20	Port 21	1030	1175	5001	1 50	002	User	62 May 65 21.67 (Fuge 1)
This seque	ence diagra	ım was gen	erated wit	h EventSt	udio 2.	5 (http:,	//www.	EventHelix	com/EventStudio).
example he multip 21) to con the FT	ere illustr le TCP conn ntrol the c	ates the lections b overall fl Then we	use of by FTP. We ow of examine th	will cove	r how F	TP estabi	lishes	s a telnet	Protocol) session. The TCP connection (TCP Port CP connections for
- DN: - FT: - Ob - Cha - Dov	mplete sequ S Query to P Telnet co taining a c anging dire wnloading a ight © 2005	obtain th onnection lirectory ectory (CW a file usi	e IP addre setup and listing (P ID command) .ng FTP get	ss for th login. (U ORT and I . (PORT an	le FTP S SER and IST com d RETR	erver PASS com mand) command)			
		the TD ed	lducar for						
DNS Query	to obtain	the IP ad	aress for	the FTP S	erver.				
FTP Telne	t connectio	on setup a	nd login.	(USER and	PASS C	ommands)			
		-	TCP SYN srcport = 1175, dstport = 21, syn = 1					1	FTP client initiates establishment on the telnet session TCP connection by sending a SYN to TCP port 21
			TCP SYN+ACI srcport = 21, dstport = 1175, syn = 1, ack = 1						The FTP server responds with SYN+ACK
			TCP ACK srcport = 1175, dstport = 21, ack = 1						The client machine responds with an ACK, this completes the TCP three way handshake.
		ftp. ftp.response	FTP 220 response.code = e.arg = ANY-DOM. Service	220, AIN.COM FTP				1	The FTP server then sends a 220 response to indicate that the FTP server is ready to accept a login.
			TCP ACK srcport = 1175, dstport = 21, ack = 1					1	The client machine acknowledges the FTP 220 TCP packet.
			USER ftp TCP ACK srcport = 21,						User's login name is transported in a TCP segment. In this example ar anonymous FTP is being initiated with the user name "ftp"
		arg = Anonym (e-m	dstport = 1175, ack = 1 FTP 331 code = 331, ous access allowe all name) as pass TCP ACK srcport = 1175, dstport = 21, ack = 1	ed, send identity word.	,				FTP server indicates that anonymous FTP is allowed.

Port_21 Inte		Session Sequ	ence Diagram)					
DNC	Internet FTP Client PC							EventHelix.com/EventStudio 2.5
DNS Port 53	FTP S Port 20	Server Port 21	FTP Client 1030 1175 500			5002	Console User	02-May-05 21:07 (Page 2)
		-	TCP ACK srcport = 21, dstport = 1175, ack = 1					User enters his or her e-mail address as the password. This password is being transported by this TCP segment.
		arg = Welc	FTP 230 code = 230, come to ftp.any-doma	∎in.com				Welcome message after login.
		arg = Ar	FTP 230 code = 230, nonymous user logge TCP ACK srcport = 1175, dstport = 21, ack = 1	► In.				User login notification.
) btaining	a director	ry listing	(PORT and L	IST comman	nd).			
		arg = PC	92.168 .0.2 Port TCP ACK srcport = 21, dstport = 1175, ack = 1 FTP 200 code = 200, PRT command succes LIST seq-251 srcport = 21, dstport = 1175, ack = 1 FTP 150 response code = 150 arg = Opening ASCII nnection for /bin/Is. FTP 226 response code = 226 se.arg = Transfer cor TCP ACK srcport = 1175, dstport = 1175, dstport = 21, ack = 1	ssful.				<ul> <li>FTP client provides port number information.</li> <li>FTP server positively acknowledge the PORT command.</li> <li>User requests a directory listing.</li> <li>FTP server notifies the client that it is about to transfer the requested listing.</li> <li>The directory listing completion is signaled by this TCP segment.</li> </ul>
Thanging of	directory		nd). <directory-name TCP ACK tcp.srcport = 21, cp.dstport = 1175, tcp.flags.ack = 1</directory-name 	e>				User issues the change working directory command.

Internet FTP Client PC							EventHelix.com/EventStudio 2.5	
DNS	FTP Server		FTP Client			Console		
Port 53	Port 20	Port 21	1030	1175	5001	5002	User	02-May-05 21:07 (Page 3)
			0 CWD Succes code = 250, CWD command su					FTP server positively acknowledg the Change Working Directory command.
		-	TCP ACK tcp.srcport = 1179 tcp.dstpbrt = 21, ack = 1					
wnloadir	ng a file	using FTP	get (PORT	and RETR co	mmand).			
		PORT	192.168.0.2 Po	ort 5002				FTP client provides port number information.
			TCP ACK tcp.srcport = 21 tcp.dstport = 117 ack = 1	, 5,				
			192.168.0.2 Pc					FTP client provides port number information.
		-	RETR readme.t	xt				The user issues an FTP get for readme.txt.
			TCP ACK tcp.srcpbrt = 21, tcp.dstport = 117! ack = 1	, 5,				
		arg = Openin	FTP 150 code = 150, g ASCII mode data adme.txt(1715 byt	connection for				FTP server acknowledges the RE command from the client.
			TCP ACK tcp.srcport = 117					
			tcp.dstport = 21, ack = 1	,				
		ar	FTP 226 code = 226, g = Transfer comp	lete.				Signal to the client that the FTP transfer has been completed.
		-	TCP ACK tcp.srcport = 1179 tcp.dstport = 21, ack = 1	5,				
		ftp.r	QUIT equest.command =					User initiates a "bye" on the FTP client console. This is translated
			TCP ACK	<b></b>				the quit command.
			tcp.dstport = 117 ack = 1 FTP 221	5,				
		arg = Thank yo	code = 221, ou for visiting ftp.a	► ny-domain.com.				
		-	TCP ACK tcp.srcport = 1179 tcp.dstport = 21 ack = 1	5,				

Port_21 Interfaces (FTP Session Sequer	nce Diagram)			
Internet	EventHelix.com/EventStudio 2.5			
DNS FTP Server		P Client	Console	
Port 53 Port 20 Port 21		5001 5002	User	
Port 53 Port 20 Port 21	1030 1175 TCP FIN p.srcport = 21, .dstport = 1175, ack = 1, fin = 1		User	02-May-05 21:07 (Page 4) TCP connection release initiated.