Difference Between

X.25, Frame relay, ATM and TCP/IP

		Packet Switching	Circuit Switching
Performance	X.25	It use the Error recovery procedures at the packet layer which is responsible for retransmitting data received in error. The performance is effected by the long and variable delays	The x.25 uses the packet switching.
	Frame relay	It uses switching packets immediately instead of store-and-forward mechanism.	Frame relay use uses packet switching.
	ATM 2	Fixed sized cells are that it can be switched more efficiently and this results in very high data rates of ATM.	It creates a fixed connection suitable for the bulk of data send at time.
	TCP/IP	IP takes care of the communication with other computers.	TCP takes care of the communication between your application software and your network software
speed and throughput potential	X.25	It uses the store-and-forward mechanism so the speed is not so good. X.25 is supported up to 2 MB	x.25 uses packet switching.
	Frame relay	The frame relay uses the switching packet immediately so the speed is more than x.25.It is about 4Mbps.	Frame relay uses packet switching.

	ATM 2	In the packet switching the router has to look to each packet address so its speed is less than the circuit switching.	The speed of the ATM circuit switch is more than the packet switch because ATM switch need not look up each cell's address in the software
	TCP/IP	The speed of the TCP/IP is 100 megabits per second	The throughput of TCP/IP is increase in circuit switching when there is bulk data to send.
end-to-end transmission reliability and predictability	X.25	The X.25 Data Link Layer provides the reliable link between the DTE and the DCE	X.25 uses packet switching
	Frame relay	Frame Relay typically operates over WAN facilities that offer more reliable connection services	Frame relay uses packet switching.
	ATM 2	A VC exists only while data is being transmitted on it, and all cells in a given ATM transmission follow the same VC to ensure reliable data transmission	The reliability of data is more in the circuit switching then the packet switch because it use dedicated link.
	TCP/IP	TCP keeps track of data that has been sent and received to ensure it all gets to its destination.	it can guarantee that all data sent will be checked for reception

Bibliography

/Asynchronous_Transfer_Mode_Switching. (n.d.). Retrieved 10 19, 2012, from docwiki.cisco.com: http://docwiki.cisco.com/wiki/Asynchronous_Transfer_Mode_Switching

N.sharma (2012, 10 16). Reterieved 10 19,2012, from http://wan-protocols.blogspot.in/

Frame_Relay. (2012, 10 16). Retrieved 10 19, 2012, from docwiki.cisco.com: http://docwiki.cisco.com/wiki/Frame_Relay

Kozierok, M. (2005, 9 20). *t_PerformanceMeasurementsSpeedBandwidthThroughputand*. Retrieved 10 19, 2012, from www.tcpipguide.com: http://www.tcpipguide.com/free/t_PerformanceMeasurementsSpeedBandwidthThroughputand.htm

udelson, T. (n.d.). Retrieved 10 19, 2012, from www.integritycomputing.com: http://www.integritycomputing.com/ppt7/sld004.htm