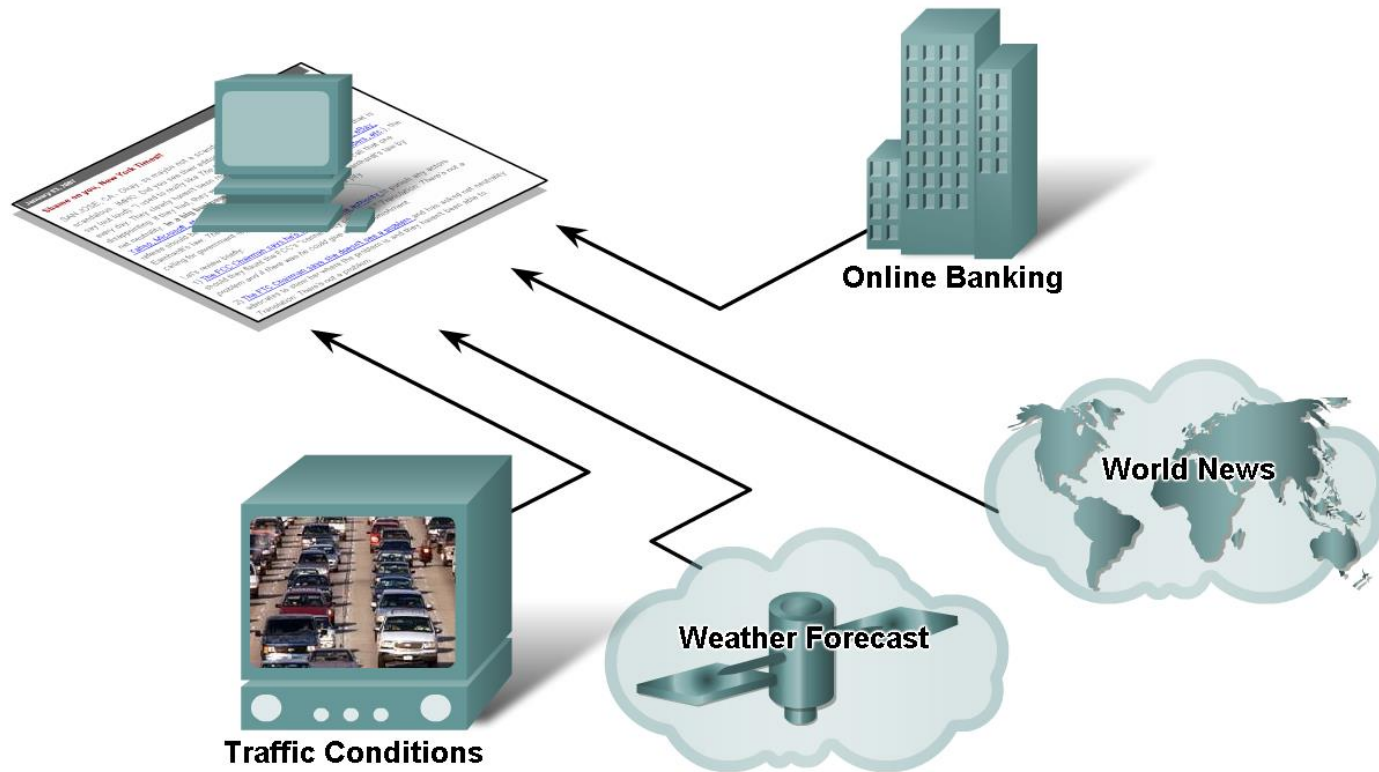


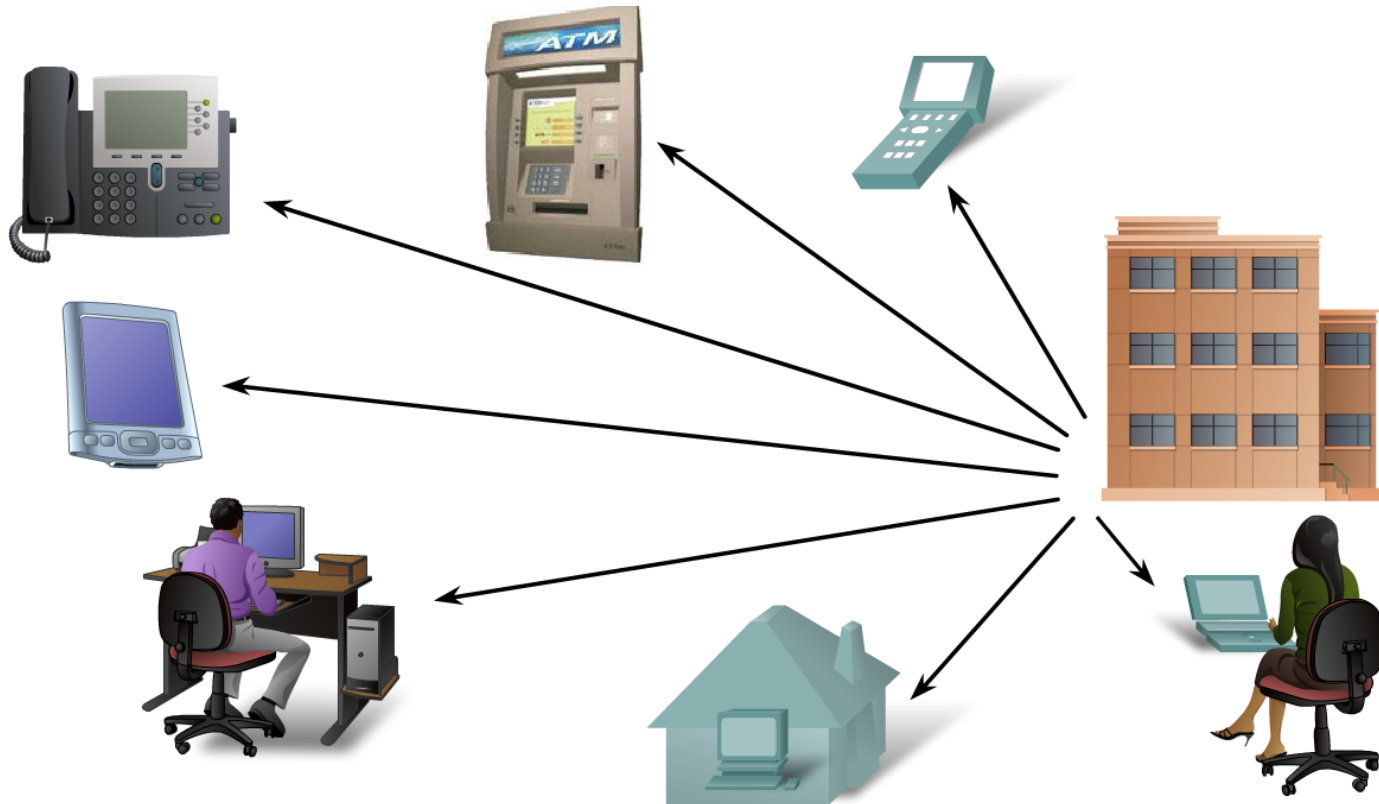
Living in a Network Centric World

Network Fundamentals – Chapter 1

How Networks Impact Daily Life

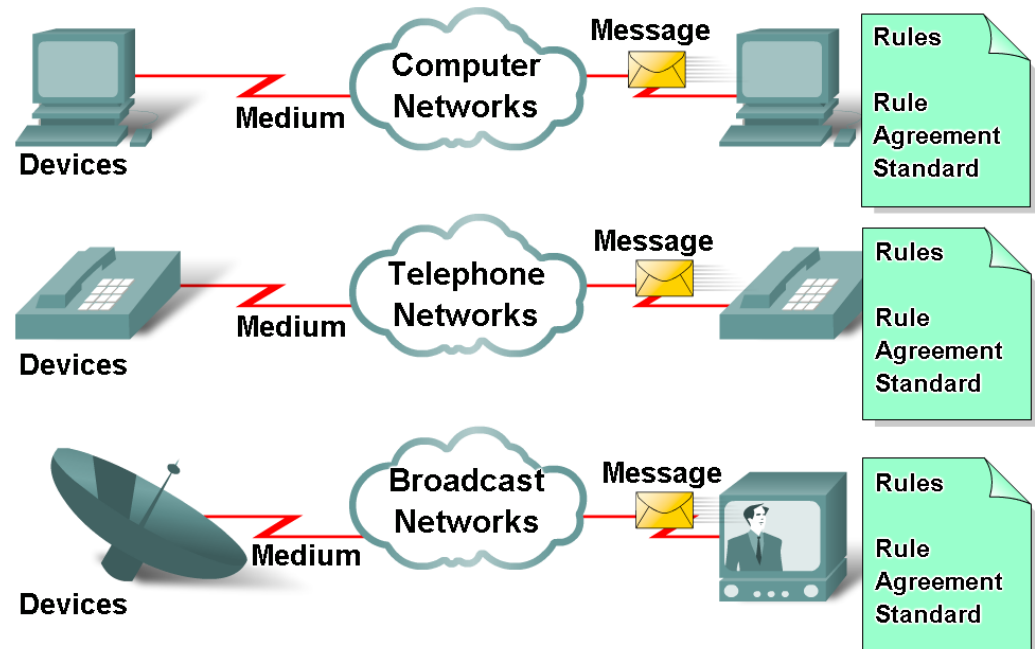


How Networks Impact Daily Life



Data Networking: Components and Challenges

- Devices
 - These are used to communicate with one another
- Medium
 - This is how the devices are connected together
- Messages
 - Information that travels over the medium
- Rules
 - Governs how messages flow across network



Data Networking Role: Components and Challenges

- **Converged network**
 - A type of network that can carry voice, video & data over the same network



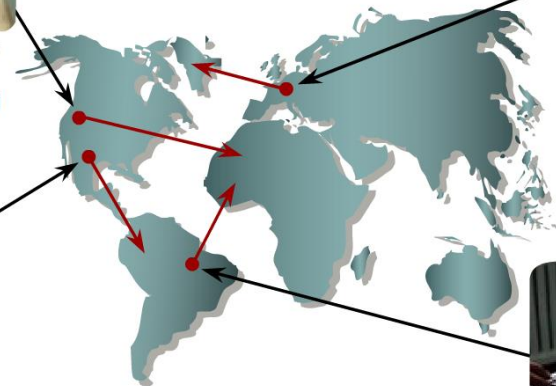
Intelligent Networks allow handheld devices to receive news, Emails, and to send text.



Video conferencing around the globe is in the palm of your hand.



Phones connect globally to share voice, text and images.



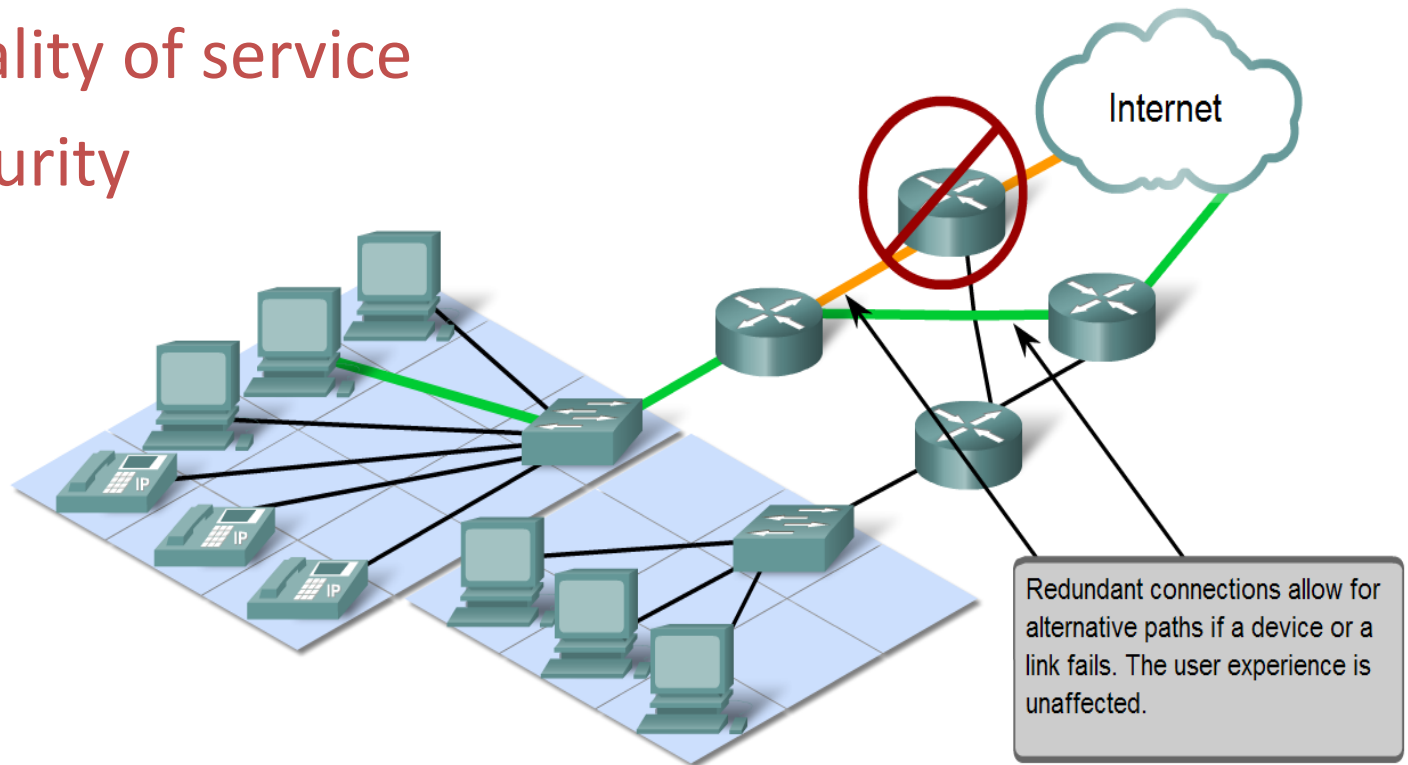
The Human Network is everywhere.



Online gaming connects thousands of people seamlessly.

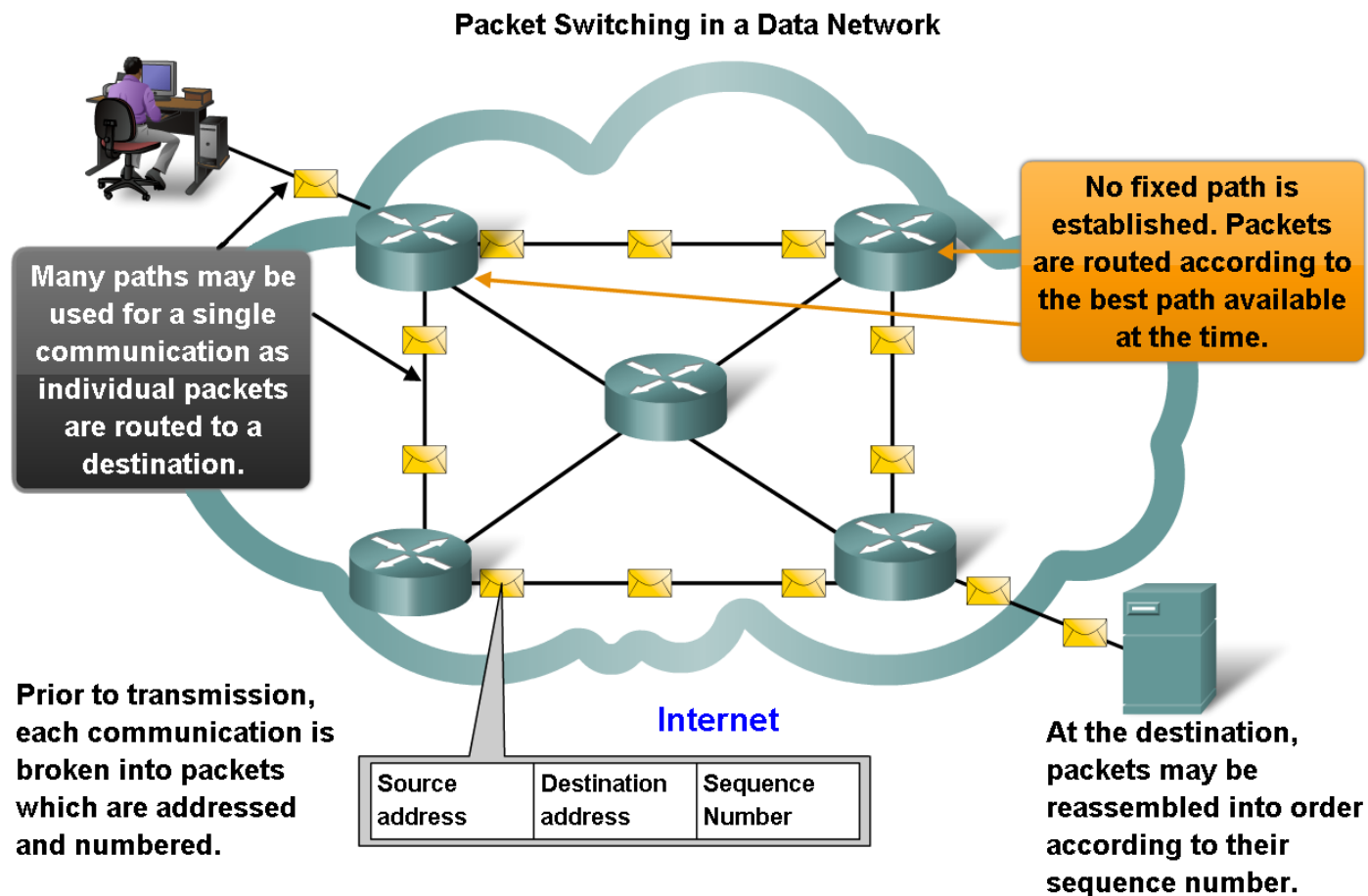
Network Architecture Characteristics

- Fault tolerance
- Scalability
- Quality of service
- Security



Network Architecture Characteristics

- Fault tolerance






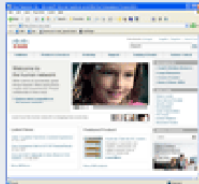
Network Architecture Characteristics

- Scalability: characteristics of the network that help it scale to meet user demand
 - Hierarchical
 - Common standards
 - Common protocols

Network Architecture Characteristics

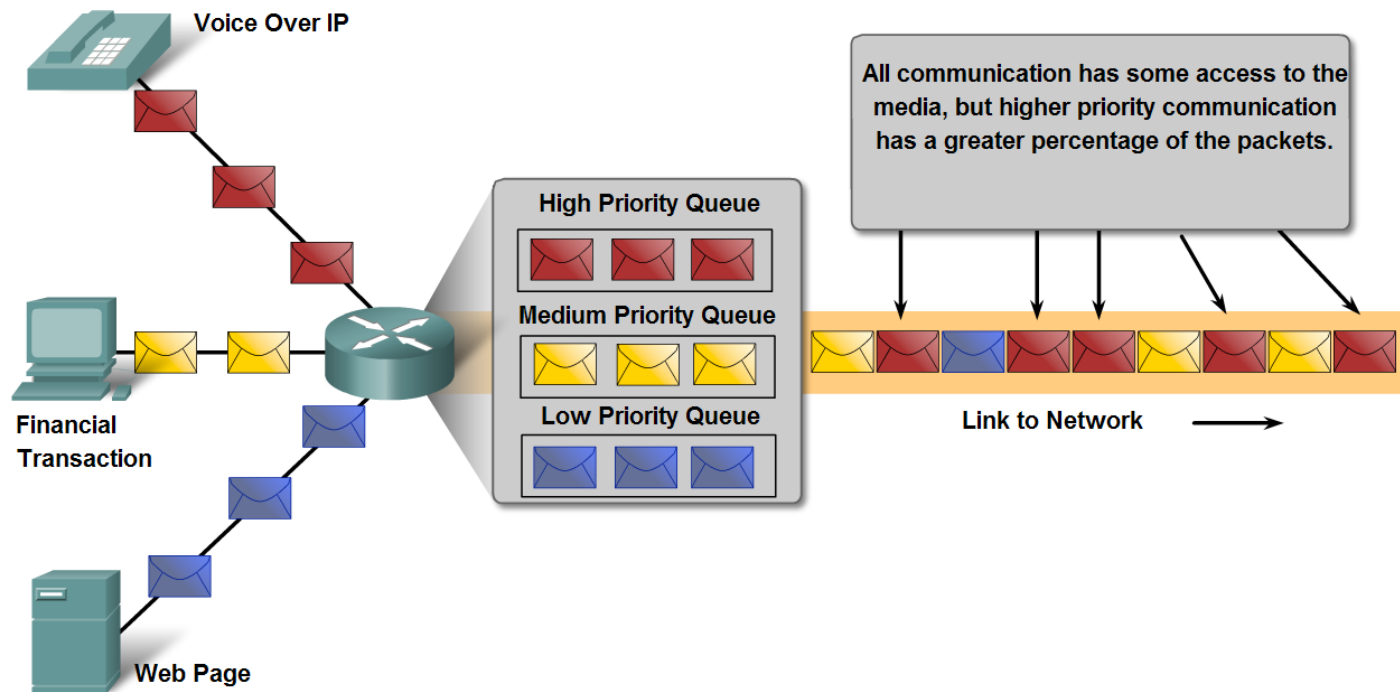
- QoS: how to select the appropriate QoS strategy for a given type of traffic

Quality of Service Matters

Communication Type	Without QoS	With QoS
Streaming video or audio	 Choppy picture starts and stops.	 Clear, continuous service.
Vital Transactions	Time : Price 02:14:05 \$1.54 Just one second earlier...	Time : Price 02:14:04 \$1.52 The price may be better.
Downloading web pages (often lower priority)	 Web pages arrive a bit later...	 But the end result is identical.

Network Architecture Characteristics

Using Queues to Prioritize Communication



Queuing according to data type enables voice data to have priority over transaction data, which has priority over web data.

Network Architecture Characteristics

- Networks must be secure

Unauthorized Transactions

1 Your First Bank

CREDIT CARD STATEMENT

SEND PAYMENT TO
Box 1234
Anytown, USA

ACCOUNT NUMBER 4125-239-412 NAME John Doe STATEMENT DATE 2/13/01 PAYMENT DUE DATE 3/09/01

CREDIT LINE \$1200.00 CREDIT AVAILABLE \$1074.76 NEW BALANCE \$125.24 MINIMUM PAYMENT DUE \$20.00

REFERENCE	SOLD	POSTED	ACTIVITY SINCE LAST STATEMENT	AMOUNT
403GB7302		1/25	PAYMENT THANK YOU	-168.80
32F349ER3	1/12	1/15	RECORD RECYCLER ANYTOWN USA	14.83
89102DIS2	1/13	1/15	BEEFORAMA REST ANYTOWN USA	30.55
MX34FUD32	1/18	1/18	GREAT EXPECTORATIONS EIG CITY USA	27.50
84RT3293A	1/20	1/21	DINO-GEL PETROLEUM ANYTOWN USA	12.26
873DWS321	2/09	2/09	SHIRTS 'N SUCH TINYVILLEUSA	40.10

Previous Balance	(+)	168.80	Current Amount Due	125.24
Purchases	(+)	125.24	Amount Past Due	
Cash Advances	(+)		Amount Over Credit Line	
Payments	(-)	168.80	Minimum Payment Due	20.00
Credits	(-)			
FINANCE CHARGES	(+)			
Late Charges	(+)			
NEW BALANCE	(=)	125.24		

FINANCE CHARGE SUMMARY	PURCHASES	ADVANCES	For Customer Service Call:
Periodic Rate	1.55%	0.054%	1-800-XXX-XXXX
Annual Percentage Rate	19.80%	19.80%	For Lost or Stolen Card, Call:
			1-800-XXX-XXXX
			24-Hour Telephone Numbers

Please make check or money order payable to Your First Bank. Include account number on front.



Out of Business

Network Architecture Characteristics

- Basic measures to secure data networks
 - Ensure confidentiality through use of
 - User authentication
 - Data encryption
 - Maintain communication integrity through use of
 - Digital signatures
 - Ensure availability through use of
 - Firewalls
 - Redundant network
 - architecture
 - Hardware without a single point of failure

