



Introduction to Cybersecurity

COMM 4263 / GCOM 7263
Professor Bryan Lewis
Professor Ryan Wright

Poll Everywhere – <https://pollev.com/bryanrlewis>

Professor Bryan Lewis

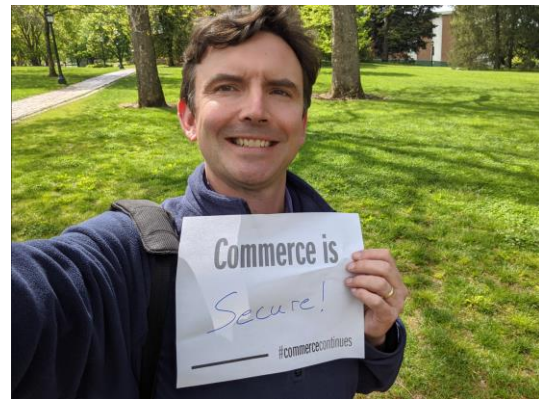
- 25 Years in Technology

- Network & Systems Administrator (CISSP, CCNA)
- Principle and CTO for a IT/AV Design Consulting Firm
- CIO and Dean for Operations

- MS MIT ('04), Doctorate ('13)

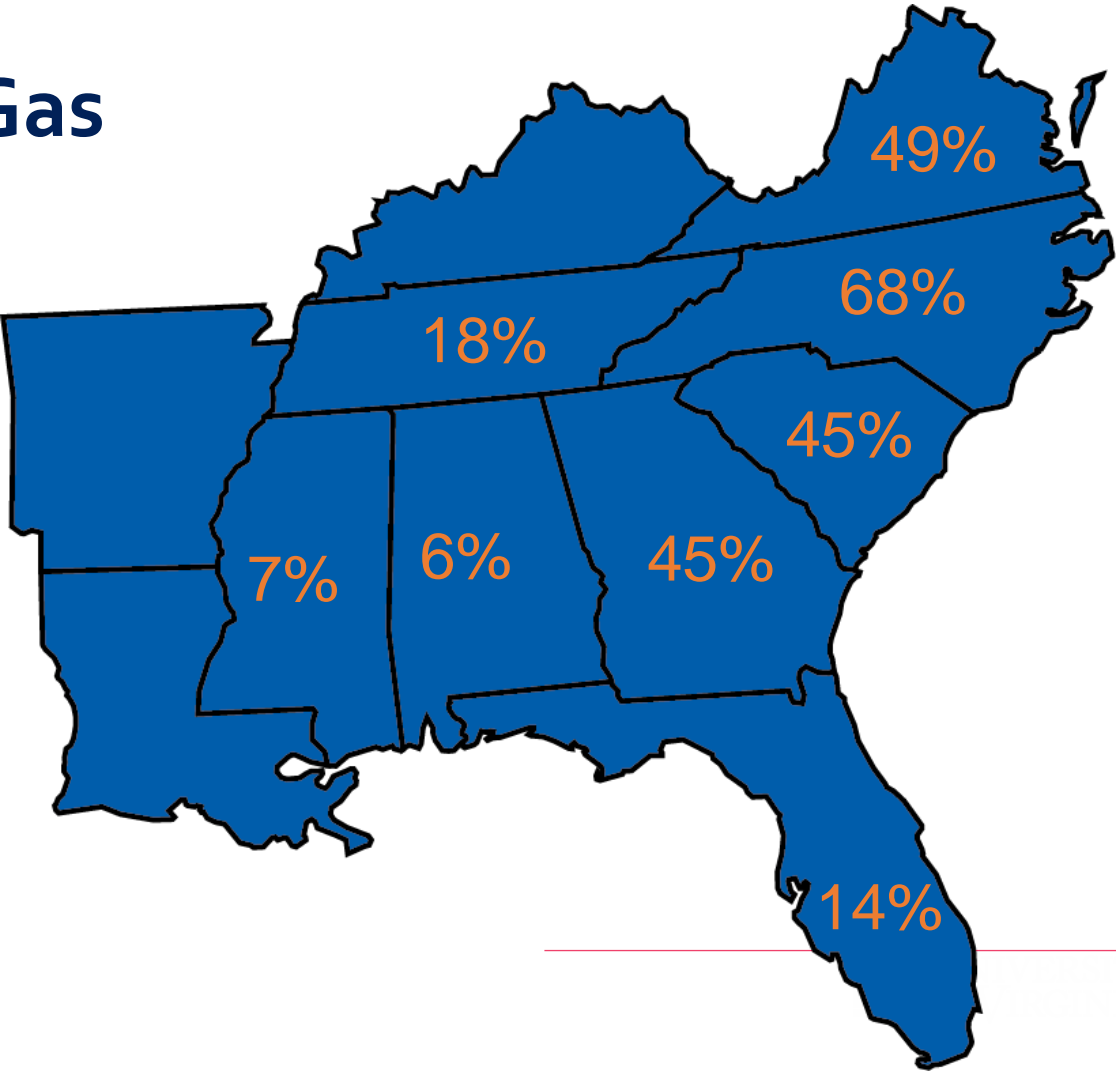
- 10th Year at McIntire

- Cybersecurity and Networks – Undergraduate, MSA, MS MIT
- Research interests - Privacy / Higher Ed Cybersecurity





Out of Gas



Percentage of gas stations
reporting 0 supply



July 19th , 2024

CrowdStrike misses the Mark



Crowdstrike Update

Affected 8.5 Million windows devices worldwide

Led to 10,000 flight cancellations

Took public transportation offline in multiple cities

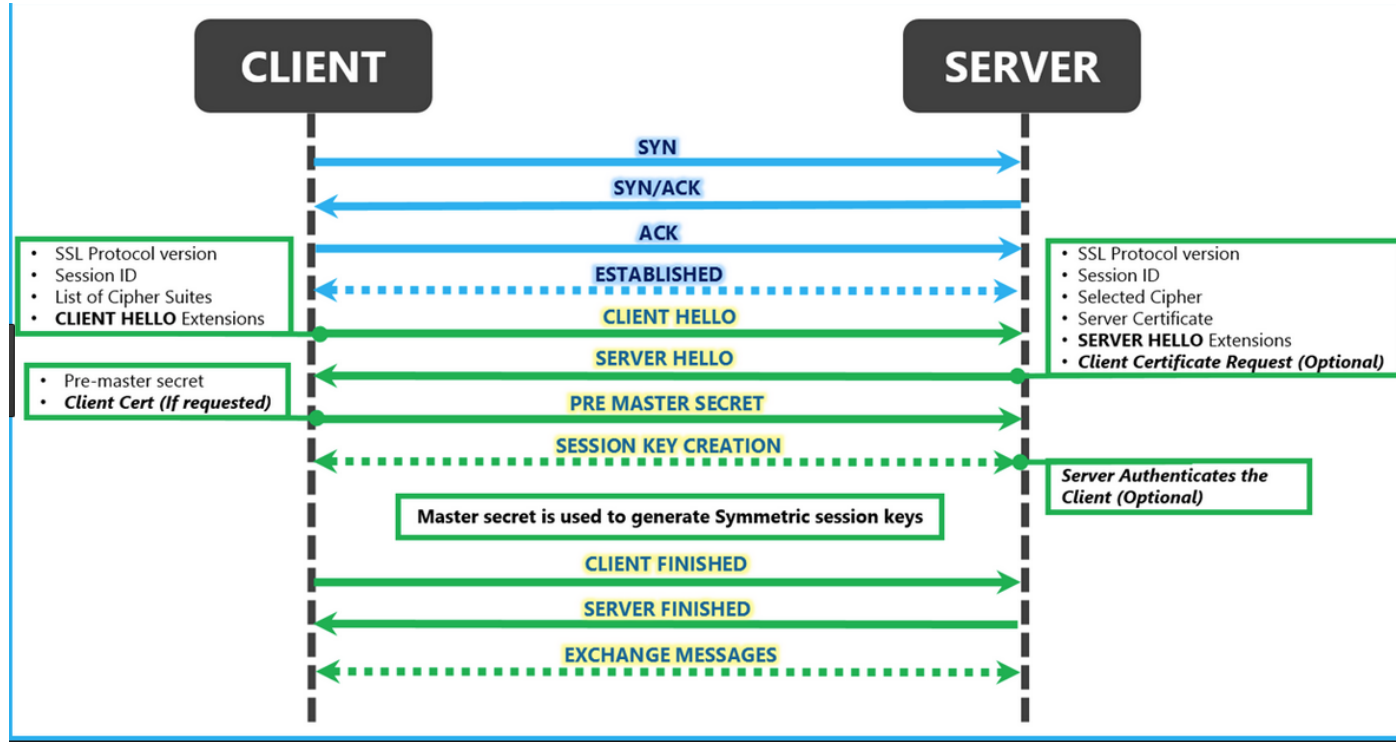
Took healthcare down worldwide, including 911 services

Cost Fortune 500 companies an estimated \$5.4 billion

Class Day 1

- Cybersecurity and Society
 - Syllabus and Course Expectations
 - Course Space
 - Course Materials
 - Grading
 - Ice Breakers
-

What is pictured in this image?

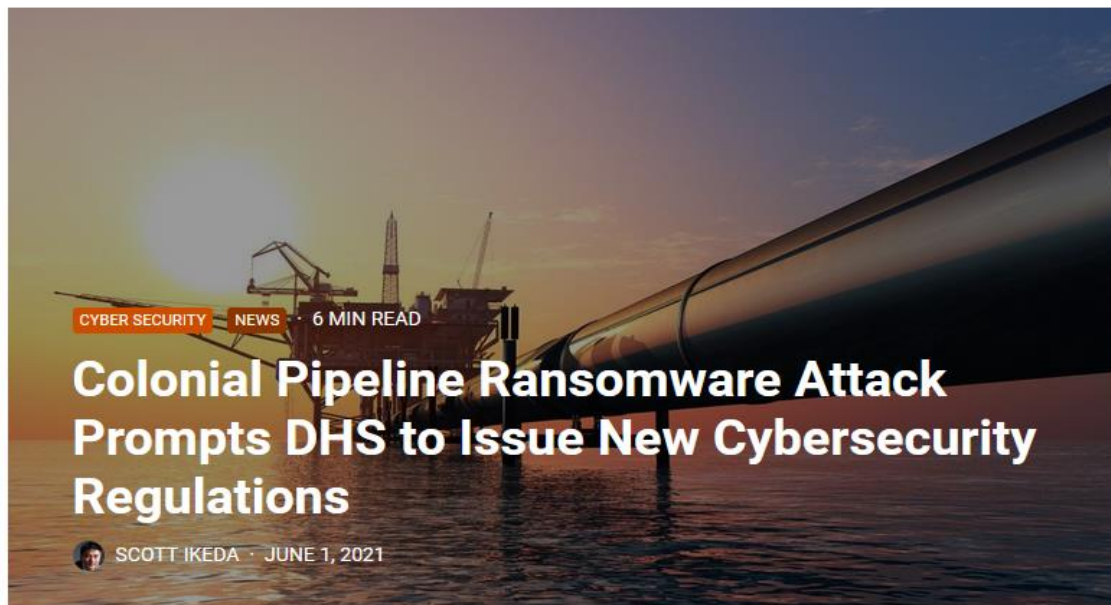


SSL Handshaking





Cybersecurity is a Societal Problem



Hot on the heels of an executive order aimed at standardizing federal response to cyber attacks and creating new reporting requirements for government vendors, the Department of Homeland Security (DHS) is establishing its own requirements specifically for companies in the oil pipeline industry. Some of these new cybersecurity regulations have been in the works for some time, but the rapid rollout of changes comes in response to the [Colonial Pipeline ransomware attack](#) that created temporary gas shortages in states along the eastern and southern

LATEST



Hackers Accessed 91% Of Compromised Accounts Within a Week and Used Them To Send Bulk Credential Phishing Messages



Biden Administration Signals Dramatic Shift in Focus To Confront Cyber Concerns in Government Contracting



Hackers Behind EA Data Breach Are Selling FIFA 21 Source Code on an Underground Hacking Forum



Biden's Right: Why We Need a New Security Infrastructure

Cybersecurity and Business



- **It's the Law (March 1st, 2017)**
 - New York State Department of Financial Services Cybersecurity regulations (23 NYCRR Part 500)
 - Risk Assessment
 - Cybersecurity Policy
 - Cybersecurity Program
 - 3rd Party Securities policies
 - Penetration Testing
 - Annual recertification
 - 1900 companies effected
-



California Consumer Privacy Act

- **It's the Law (June 28th, 2018) – AB-375**
 - Provides California residents with the right to:
 - Know what personal data is being collected about them.
 - Know whether their personal data is sold or disclosed and to whom.
 - Say no to the sale of personal data and Access their data
 - Request a business delete any personal information about a consumer collected from that consumer
 - Applies to any business with gross revenues over \$25 M or possessing personal info on more than 50K people or devices
-

Virginia CDPA

- **It's the Law (July 1st, 2021)**
- Applies to businesses that conduct business in Virginia and
 - Control or process the personal data of at least 100,000 consumers during a calendar year
 - Control or process the personal data of at least 25,000 consumers and derive at least 50% of its gross revenue from the sale of personal data.

3,205

3,205

Number of Publicly disclosed data breaches in 2023 (UP 78% over 2022)

Source – 2023 Annual Data Breach Year-End Review (Identity Theft Resource Center)

19,264,983,966

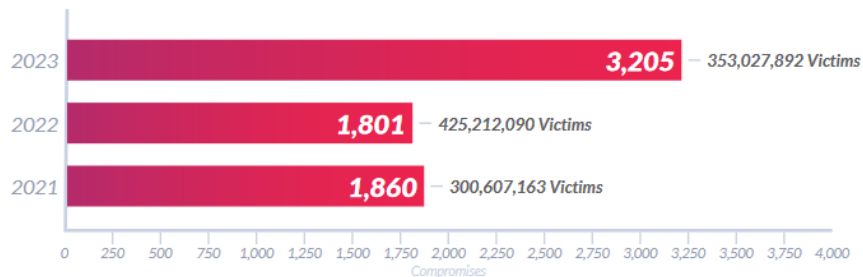
Over 19 Billion!!!

19,264,983,966

Number of records containing personal data compromised since 2005

Source - Chronology of Data Breaches (Privacy Rights Clearinghouse)

Figure 1 | Total Compromises, Year over Year



TOTAL COMPROMISES
72 Percentage Point Increase
from All-Time-High in 2021

Total Attack Vectors



CYBERATTACKS

2,365 Breaches | 343,338,964 Victims



SYSTEM AND HUMAN ERRORS

729 Breaches/Exposures | 6,715,385 Victims



PHYSICAL ATTACKS

53 Breaches/Exposures | 127,832 Victims



SUPPLY CHAIN ATTACKS

242 Breaches/Exposures | 2,769 Entities Affected
54,432,431 Victims

72%



72%

Percent of US enterprises in a survey of 1,314 companies that reported suffering at least one data breach

Source - 2023 Global Threat Report (451 Group for Thales)

1 or 2

1 or 2

Course Evaluation Ranking of Cybersecurity as a Business Risk against all other courses at the McIntire School of Commerce for the past 5 years



Ryan Wright

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Senior Associate Dean for Faculty and Research

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Education

- Ph.D., Information Systems, Washington State University
- M.B.A., Strategy, University of Montana
- B.S., Information Systems, University of Montana



New Threats

OpenAI's ChatGPT, which exposed the payment-related and other sensitive information of [ChatGPT Plus subscribers](#) due to a bug in an open-source library it used.

Samsung semiconductor has recorded three incidents where employees accidentally leaked company information when using ChatGPT

Publicly traded companies suffered an average decline of 7.5% in their stock values after a data breach, coupled with a mean market cap loss of \$5.4 billion.

**Long-Term Impacts Are
Emerging and Can Be More
Significant Than Expected**

In 2024, average cost of a
data breach in the US is

\$4.88 million.

Fallout

- Audit fees can be about 13.5% higher
 - Health care sector, with over \$7.8 billion lost due to downtime alone in 2021.
 - 60% of organizations that have experienced data breaches have raised their prices.
-

Fall out

- Significant data breach incident [underperform the NASDAQ by 8.6% after one year](#), and this gap can widen to 11.9% after two years.
 - [Moody's announced in 2018](#) that it would evaluate companies' cybersecurity practices when assigning credit ratings.
 - [Moody's reduced Equifax's credit rating in 2019](#) following Equifax's data breach that occurred in 2017.
-



▼ BARGLEE	1 item	Folder
▼ BARGLEE3100	2 items	Folder
▶ Data	684 items	Folder
▼ Install	1 item	Folder
▼ LP	21 items	Folder
▶ Modules	4 items	Folder
BARPUNCH-3110	1.8 MB	Program
bg_redirect.pl-3110	8.0 kB	Program
bg_redirector-3110	441.6 kB	Program
BICE-3110	2.5 MB	Program
cMiniProg-3110	2.0 MB	Program
ig1000-moduledata-3113.tgz	1.1 MB	Archive
ig2000-moduledata-3113.tgz	1.0 MB	Archive
keygen-3110	394.0 kB	Program
macist	292.0 kB	Text
nslogMiniProg-3110	1.8 MB	Program
pd_create_ruleset-3110	422.9 kB	Program
pd_miniprogram-3110	2.0 MB	Program
pd_start_pat.pl-3110	6.3 kB	Program
profilerIPv4-3100	1.9 MB	Program
SecondDateCommon-miniprogram-3110	1.8 MB	Program
sag300-moduledata-3115.tgz	30.1 MB	Archive
sag500-moduledata-3115.tgz	30.3 MB	Archive
start_redirector.pl-3110	13.7 kB	Program
stop_redirector.sh-3110	42 bytes	Program
tunWin-3110	2.0 MB	Program



Who are the Shadow Brokers?

Why Learn about Cybersecurity?

- A ALWAYS
 - B BE
 - E EMPLOYED
-

White House Pushes to Fill 700,000 Cybersecurity Jobs in U.S.



Dice Staff

July 29, 2022

9 min read



CYBERSECURITY

JOB HUNTING

WHITE HOUSE



Related Jobs

Search jobs in these related categories...

[Cybersecurity Engineer](#)

[Cybersecurity Developer](#)

[Cybersecurity Analyst](#)



**What are the biggest 4
cybersecurity firms in the
world?**

What are the four biggest cybersecurity firms in the world?

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pwc

Deloitte.



EY
Building a better
working world

KPMG

5 PILLARS OF CYBER HYGIENE



Least
Privilege



Micro-
Segmentation



Encryption



Multi-Factor
Authentication



Patching

Systems have a purpose

- Every system must Balance security and usability!



Guest Speakers this Semester*

- Deloitte
 - Fannie Mae, CISO with University of Virginia, CISO
 - Keri Pearlson (MIT)
 - Theresa Payton (Author)
 - U.S. CIRT (Cyber Incident Response Team)
 - Red Team Leaders
 - U.S. Secret Service / FBI
-

Syllabus and Schedule

Let's go to Canvas!

Graded Activities

Activity	Points
Participation / Contribution to Class Learning (See Rubric)	10
Reading Quizzes	10
Labs	10
Cases (6 Cases)	20
Group Tests	25
Final Exam	25
TOTAL	100

IceBreaker

- What is an accomplishment or talent you are most proud of?
-

IceBreaker

- What superpower would you choose and why?
 - If you could change your name, what would it be?
-

