


Improve Fight Against Computer Crime

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Computer Crime Is Everywhere!

- **SONY** movie & email theft
- Target  Credit Card Information theft
- US security clearance information theft
 - 18 million affected individuals
- Petya & WannaCry Ransomware

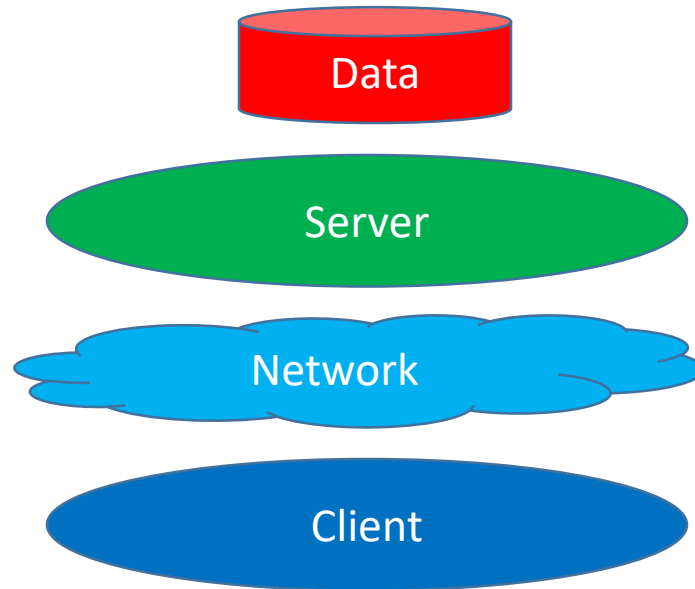


What Do Computer Criminals Do?

- **Modify** Stored Information Without Permission
- **Steal** Stored Information
- Encrypt & **Ransom** Stored Information
- **Disrupt** or **Destroy** System Operation

Client & Server with Stored Data

- Basic Distributed Architecture

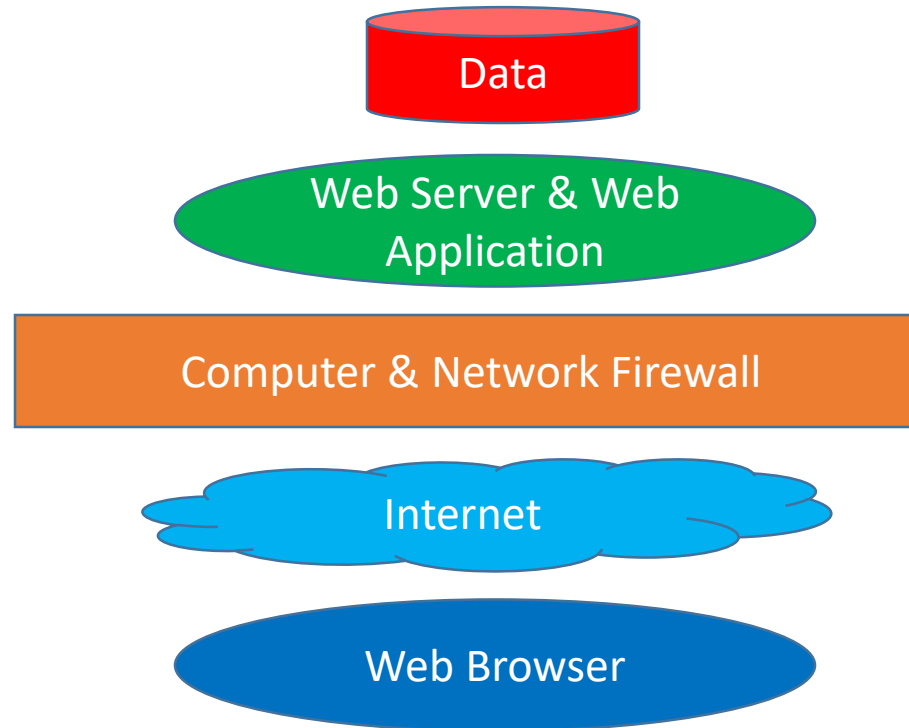


First Steps to Fight Against Computer Crime

- Install Operating System & Processor To Isolate a Program
 - Has Private Address Space with Access via Kernel
- Install Web Application with Entry Point Security
 - Detect Corruption Attempts:
 - Buffer Overrun, Text Insertion, Out of Range
 - Authenticate User
- Enable Computer Firewall
- Install Network Firewall
- Perform Threat Analysis & Penetration Testing

Web Server with Stored Data

- Web Architecture



Why Does Crime Still Happen?

- Identity Theft Attack
 - Stolen Credentials Identify Attacker as Valid User
- Phishing Attack
 - Link within Email Includes Hidden Virus Attack
- Zero Day Attack
 - Exploit of Newly Discovered Vulnerability
- ... Attack

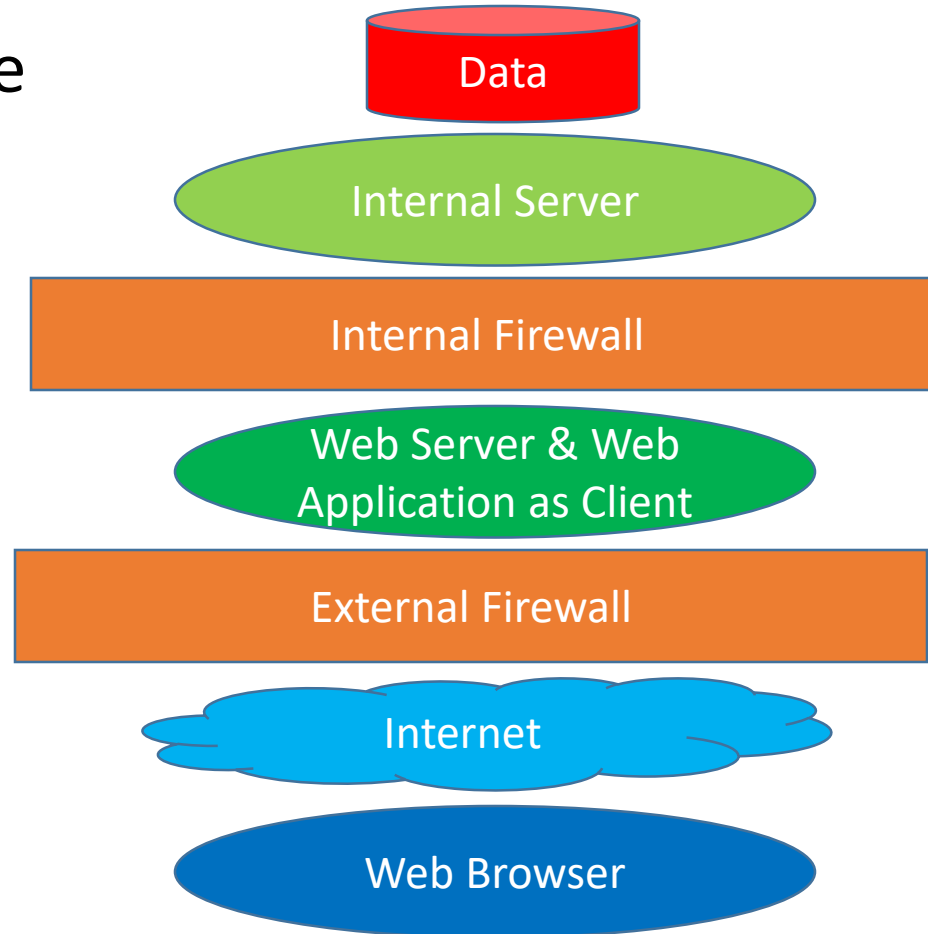
What More Can Be Done?

- Multi-factor Authentication
- Education
- Find & Fix Bugs
- **Multiple Computers & People**



Isolate Functions & Data

- N-tier Architecture



Multiple Computer & People System

- Distribute Work Among Computers
- Configure Allowed Computer Interaction
- Install Firewall to Reject Unallowed Message
- Program Server to Reject Unallowed Client Request
- Record & Audit Computer Interactions
- Test to Prove Unallowed Interaction Rejected
- No Theft or Ransom of Internal Server Data
 - When Web Server Becomes Compromised

Limited Client Request

- Examples of Allowed Client Request
 - Get Order name=xxx
 - Add Item To Order id=xxx
- Each System Client Computer Can Have Different Allowed Requests
 - Web Server Computer
 - One Identified Application Can Access Data About One User
 - Web Server Computer with Multi-Factor Authentication
 - One Identified Application Can Request Significant Action Affecting One User
 - Customer Support Computer Can Read Some Data about One Customer
- **No Client Request Exists to Read or Write an Entire Server Data File**

Why Is Multiple Computers & People System Not a Common Solution?

- High Performance Computer Was Expensive
 - High Performance Computer Now Commodity Product
- Military Applications Are Only Historical Example
 - Standard Solutions Use Costly Special Purpose Hardware
- Cost to Distribute Work
- Difficult to Handle Failure Conditions
- Need Support Software to Lower Cost & Handle Failures

Requirements of Support Software

- Help Application to Distribute Work Among Computers
- Control & Monitor Computer Interaction
 - Configure, Test & Audit by Person or Independent Computer
 - Help Server to Detect & Prevent Unallowed Client Request
- No slowdown when congestion or failure of one communication path
- Automatic Recovery of in-progress work after computer failure
- Help Reformat Data between Class, Serial & Text formats

Features of Support Software

- Computer Communication via Two Paths
 - Point to Point Connection
 - Event Publisher to Subscriber(s)
 - Encrypt Message Data & Identify Each Computer
 - No Slowdown when Single Path Congestion or Failure
- Client to Server
 - Inform Server of Allowed Client Requests
 - Recoverable Session upon Computer or Connection Failure
- Reformat Data Between Class, Serial & Text Formats
- Automatic Reconfiguration, Multiple Versions, Online Upgrade, and 24/7 Operation

Desired Future

- Support Software Evolution
 - Join Research & Evaluation
 - Define Standard API
 - Define Standard Pattern for Client, Reusable Service & Robust Server
 - Create Commodity Implementation
- Software Developer Evolution
 - Learn How to Use Support Software
 - Create Client, Service & Server with Less Effort

Desired Future Continued

- Service & Server Evolution
 - Organization Specific Library
 - Industry Specific Library
 - General Purpose Library
- Create Web Application as Robust Client
- Stop Alteration, Theft, Ransom, or Destruction of Data Files

Summary – What's Next to Prevent Computer Crime

SoftEcoSDK

- Join Effort to Create Support Software i.e. SoftEcoSDK
- Design & Build a Digital Fortress Based on SoftEcoSDK
 - Distribute Work Among Computers & People
 - **Stop Crime e.g. data file theft & ransomware attack**
- Visit SoftEcoSDK.com or email SoftEcoSDK@gmail.com for information