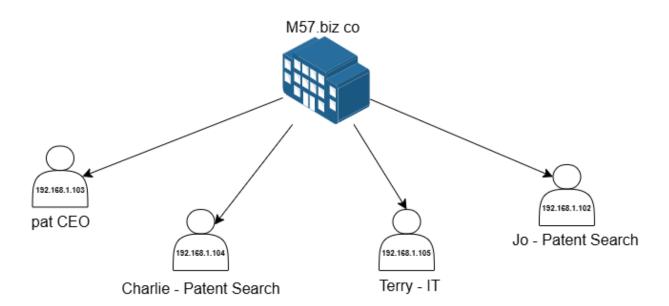
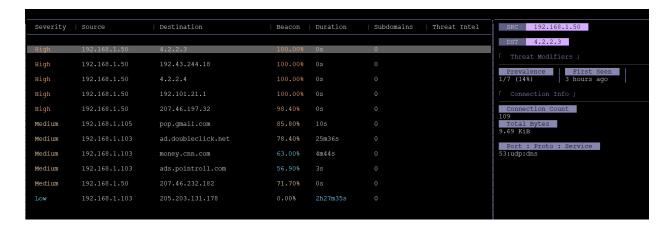
**Results of the Investigation into the M57 Patents Breach** Between November 13, 2009, and December 12, 2009, **M57 Patents**, a fast-growing startup specializing in outsourced patent research, experienced rapid expansion. However, within less than a month of operations, the company faced internal threats, suspicious network activities, and potential data exfiltration attempts, ultimately leading to its downfall.

During my investigation of Week 1 only (Nov 16–20, 2009), I uncovered substantial evidence indicating unauthorized access, data exfiltration, malicious insider activity

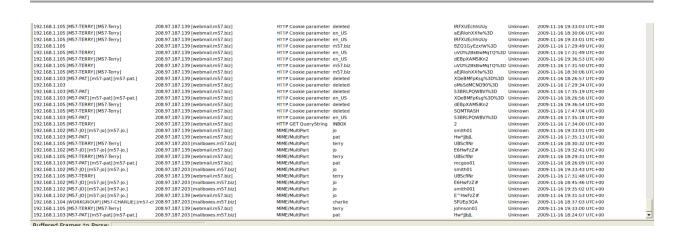


## net-2009-11-16-09-24.pcap



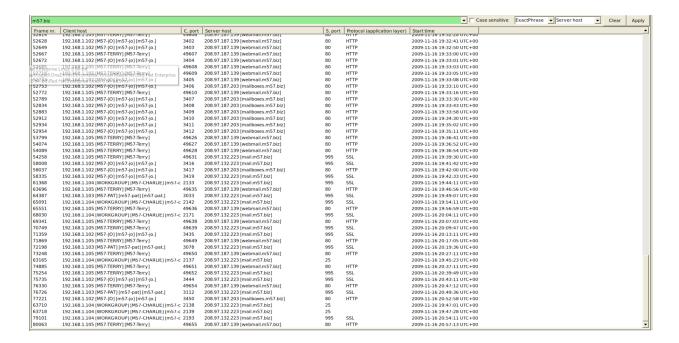
High-risk connections were identified between the internal device 192.168.1.50 and several suspicious servers, including 4.2.2.3 and 207.46.197.32, via the DNS protocol.

These connections represent unauthorized data transfer, which may be linked to **data exfiltration** or an attempt to **infiltrate the network**.



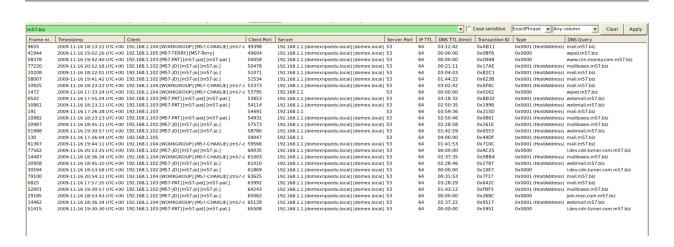
Exposed passwords for several employees, such as **terry**, **jo**, and **pat**, were discovered.

This data was leaked through **HTTP** and **MIME/Multipart** traffic, indicating a potential **internal breach** or an **attack on employee accounts**.



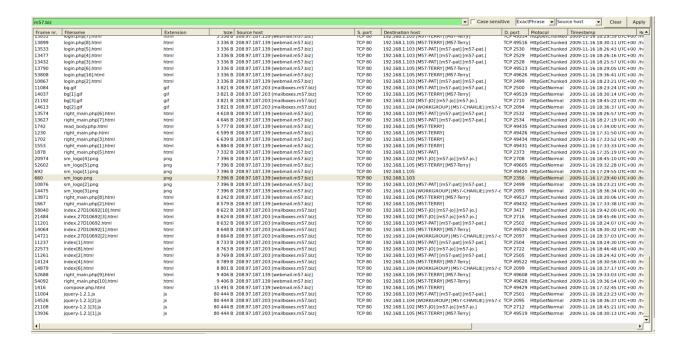
Multiple sessions were recorded between internal devices, such as 192.168.1.103, 192.168.1.102, 192.168.1.104, and 192.168.1.105, and external servers like webmail.m57.biz and mailboxes.m57.biz.

The repeated connection to these servers suggests suspicious activity, potentially related to **data exfiltration attempts** or **persistent infiltration attempts** across the network.



Suspicious **DNS queries** were detected from internal devices to untrusted external servers, such as **webmail.m57.biz** and **mailboxes.m57.biz**.

The repetition of these queries over the **DNS protocol** (port 53) suggests a potential **data leakage** or an **unauthorized attempt to connect** to external monitoring servers.



Suspicious files were downloaded via **HTTP protocols** from **webmail.m57.biz** and **mailboxes.m57.biz**.

These files included **HTML**, **PNG**, and **JS** formats, indicating attempts to implant **malicious code** or exfiltrate **sensitive data** through email attachments.



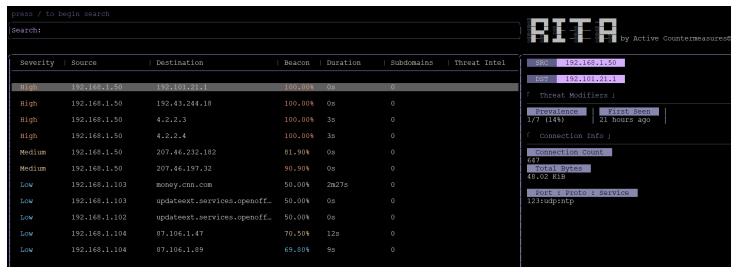
A suspicious message was detected, sent from **terry@m57.biz** to **pat@m57.biz** with the subject "working on setting up mail this is a test do not reply."

This message may contain **malicious files** or **stolen data**, sent in an attempt to **conceal harmful activities**. It was transmitted via an **unknown protocol**.

#### **Recommended Actions:**

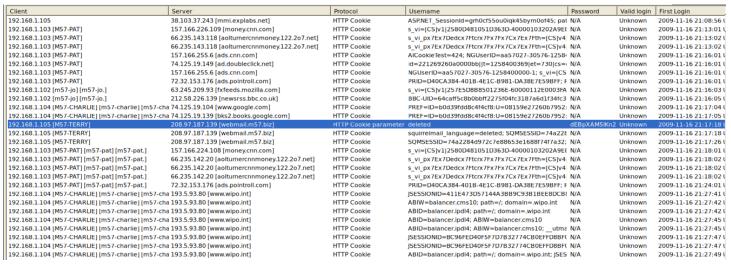
- 1. Review and analyze the attachments in suspicious messages (such as those delivered via HTTP and MIME/Multipart).
- 2. Immediately change passwords for all affected employees, especially those whose passwords have been exposed.
- 3. Isolate affected devices, such as **192.168.1.50**, from the network to investigate suspicious activities.
- 4. Block all **DNS queries** to **webmail.m57.biz** and **mailboxes.m57.biz**, along with other connections to suspicious servers.
- 5. Conduct a security review across internal systems to implement stricter security filters and regularly check logs.
- 6. Monitor accounts at risk of compromise, such as terry, jo, and pat.

## net-2009-11-16-13-08.pcap



#### **Zeek and RITA Analysis:**

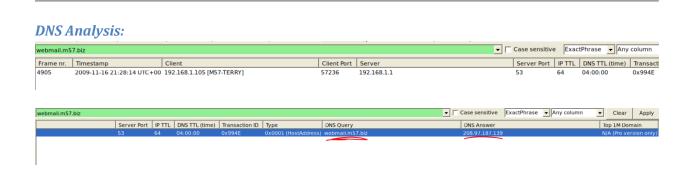
- **High-Risk Connections:** Suspicious high-risk communications were detected between the internal device (**192.168.1.50**) and several **external IP addresses**. These connections suggest abnormal interaction with external servers, which may indicate a potential **data exfiltration attempt** or an **external cyberattack**.
- **Isolation Action:** The device **192.168.1.50** was isolated due to transmitting **a large volume of data** to external servers, raising serious concerns about a potential data breach.



Networkminor

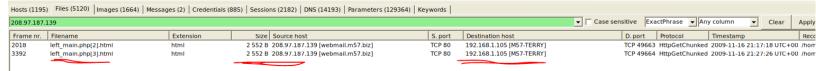
#### **NetworkMiner Analysis:**

- HTTP Cookie Parameter Protocol:
  - An HTTP Cookie protocol communication was identified between the device 192.168.1.105 (assigned to an employee identified as m57-terry) and the server 208.97.187.139 (webmail.m57.biz).
  - The **transmitted data** included a **deleted username** and the exposed password: debpxam51kn2.
  - Credential Exposure: The leaked password linked to m57-terry indicates a likely internal security breach or unauthorized access to the employee's account.
- Recommended Response: All employees must be required to immediately change their passwords, as this incident suggests that other credentials in the system may also be compromised.



Following the investigation, a **DNS lookup** was performed for the domain **webmail.m57.biz**. The result revealed that **webmail.m57.biz** is not associated with the company's official infrastructure, but rather resolves to an **external IP address** (208.97.187.139).

• This strongly suggests a malicious attack involving an unauthorized external server.



A suspicious connection was detected between the internal device (192.168.1.105, assigned to employee m57-terry) and an external server (208.97.187.139) over the HTTP protocol. During this connection, several HTML files with suspicious names such as left\_main.php[2].html and left\_main.php[3].html (each with a size of 2,552 bytes) were downloaded.

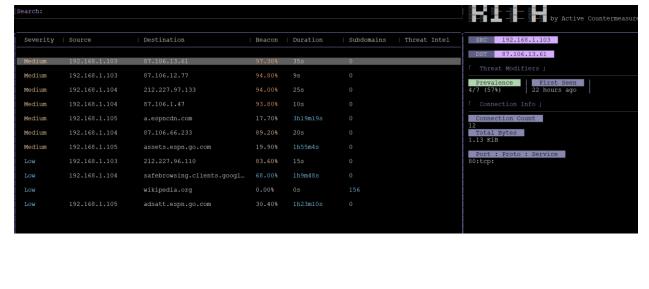
These files may potentially contain **malicious code** or be part of an attempt to **compromise the internal device**.

The files were downloaded from **webmail.m57.biz**, an **external server**, to the employee's machine. Since the HTML files were transmitted over **TCP port 80**, this suggests a possible **internal attack** or **exploitation of existing vulnerabilities**.

#### **Recommendations and Actions:**

- 1. **Isolate device 192.168.1.50** from the network to allow deeper investigation of suspicious activities.
- 2. **Force a system-wide password reset** for all users to prevent further compromise of sensitive information.
- 3. **Monitor network activity closely** to detect any additional suspicious behaviors or data leaks.
- 4. **Conduct further analysis** of the suspicious connections and involved external servers to determine the full scope of the attack.

### net-2009-11-17-10-32

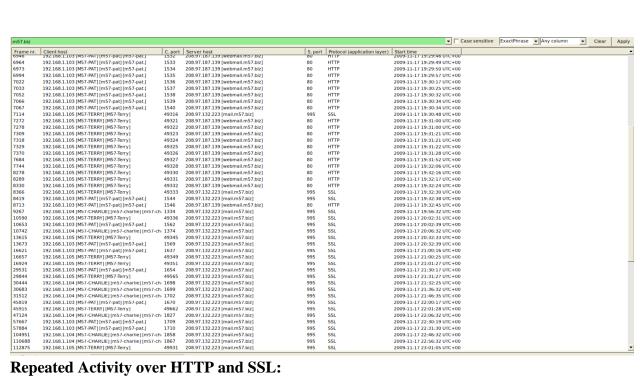


192.168.1.103 [M57-PAT] [m57-pat] [m57-pat.]	208.97.187.139 [webmail.m57.biz]	HTTP Cookie parameter	en_US	DhzI7IUFPA%3D%3D	Unknown	2009-11-17 19:30
192.168.1.105 [M57-TERRY] [M57-Terry]	208.97.187.139 [webmail.m57.biz]	HTTP Cookie parameter	m57.biz	SgOlf47R8%2Fww	Unknown :	2009-11-17 19:31
192.168.1.103 [M57-PAT] [m57-pat] [m57-pat.]	208.97.187.139 [webmail.m57.biz]	HTTP Cookie parameter	deleted	DhzI7IUFPA%3D%3D	Unknown :	2009-11-17 19:30
192.168.1.105 [M57-TERRY] [M57-Terry]	208.97.187.139 [webmail.m57.biz]	HTTP Cookie parameter	en_US	SgOlf47R8%2Fww	Unknown :	2009-11-17 19:31
192.168.1.105 [M57-TERRY] [M57-Terry]	208.97.187.139 [webmail.m57.biz]	HTTP GET QueryString	INBOX	10	Unknown :	2009-11-17 19:31
192.168.1.103 [M57-PAT] [m57-pat] [m57-pat.]	208.97.187.139 [webmail.m57.biz]	MIME/MultiPart	pat	mcgoo1	Unknown :	2009-11-17 19:30
		MIME/MultiPart	terry@m57.biz	10	Unknown	2009-11-17 19:32
192.168.1.103 [M57-PAT] [r 192.168.1.105 [M57-TERRY]	[M57-Terry] 19 [webmail.m57.biz]	MIME/MultiPart	pat	Hw*JJbJL	Unknown	2009-11-17 19:29
192.168.1.103 [M57-PAT] [m57-pat] [m57-pat.]	208.97.187.139 [webmail.m57.biz]	MIME/MultiPart	pat	mcgoo01	Unknown	2009-11-17 19:30
192.168.1.105 [M57-TERRY] [M57-Terry]	208.97.187.139 [webmail.m57.biz]	MIME/MultiPart	terry	johnson01	Unknown	2009-11-17 19:31
						▼
4						N.

Usernames such as **terry**, **pat**, and **johnson01** were exposed, and their associated passwords were discovered.

Some of the exposed passwords include:

- **terry@m57.biz**: Password is **Hw\*JjBL**.
- pat@m57.biz: Password is mcgoo01.
- **johnson01**: Password is **Hw\*JjBL**.

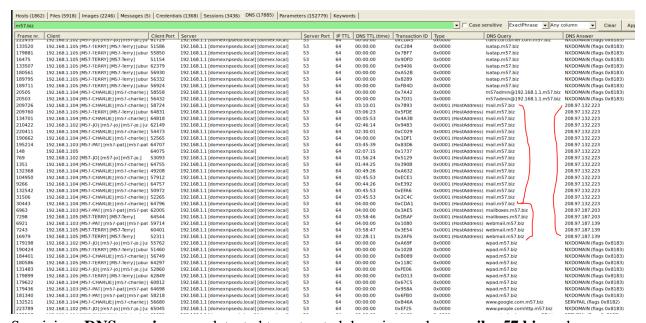


#### **Repeated Activity over HTTP and SSL:**

Multiple sessions were observed between internal devices like 192.168.1.103 and 192.168.1.105, and external servers such as webmail.m57.biz and mailboxes.m57.biz over HTTP (Port 80) and SSL (Port 995).

- **Session Timing:** 
  - **HTTP sessions** occur frequently with very short durations (just a few seconds).
  - **SSL** sessions last longer, indicating the exchange of encrypted data or more complex operations.
- **Involved Devices:** 
  - 192.168.1.103 (employee m57-pat) and 192.168.1.105 (employee m57-terry) are actively involved, with continuous interaction between internal devices and suspicious servers.

Conclusion: The ongoing interactions with external servers via SSL and HTTP suggest a potential persistent attack or data exfiltration. The use of SSL makes it harder to monitor the transmitted data, increasing the likelihood that **sensitive information** is being sent to untrusted servers.



Suspicious **DNS queries** were detected to untrusted domains such as **mail.m57.biz** and **webmail.m57.biz**.

The presence of **NXDOMAIN** responses suggests attempts to access non-existent servers, which could indicate an **attack** or **data leakage**.

#### **Recommended Actions:**

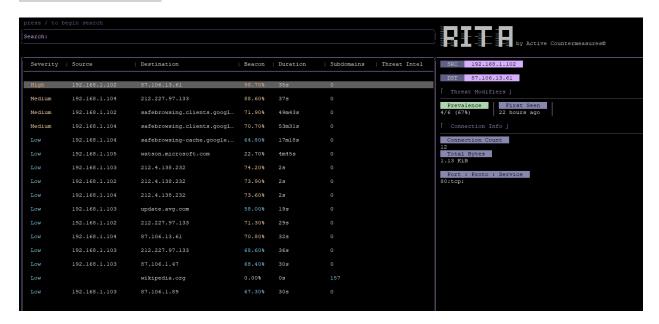
- 1. Monitor **DNS queries** to suspicious domains.
- 2. Isolate suspicious domains (e.g., **m57.biz**) from the network.
- 3. Review affected devices and verify they have not been compromised.



• Source Host: 192.168.1.105 (device m57-pat) communicated with external server 208.97.187.139, which resolves to webmail.m57.biz.

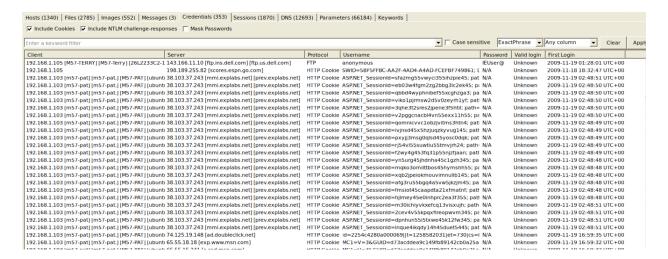
- **Protocols Involved:** The communication used **unknown** protocols, indicating suspicious activity.
- Email Content: The email from m57-pat to Pat McGoo includes an informal message about loading files onto computers as requested, with a plan to meet later in the day. It also mentions a suspicious company logo, which may be part of a malware distribution or phishing attempt.

#### net-2009-11-18-10-32



A high-risk connection was detected between **192.168.1.102** and **87.106.13.61**, with a **98.70%** repetition rate over a **35-second duration**.

This activity suggests ongoing communication with an external server, potentially indicating a **persistent attack** or **data exfiltration**.



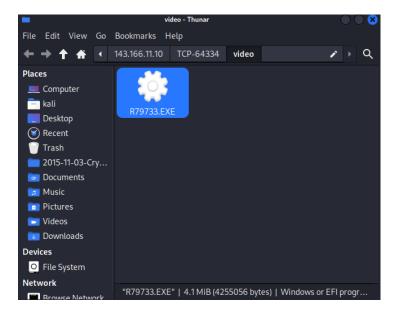
# An **FTP connection** was detected using the **anonymous** username, which exposes the system to potential risks.



Large files were detected being sent via **HTTP** and **FTP** to suspicious servers such as **ftp.ins.dell.com** and **mscom-wu.io.msce.dns**.

The transferred files include **EXE** and **BIN** formats, which may contain **malicious code**.

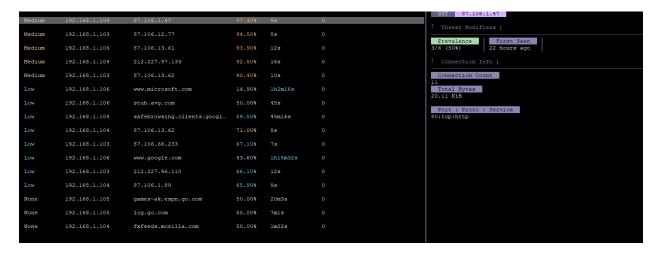
## The attached files



#### **Recommended Actions:**

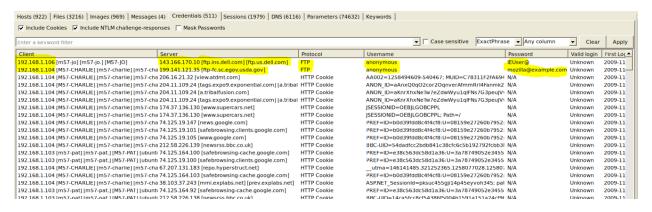
- 1. Review and examine the sent files to ensure they are safe.
- 2. Conduct a comprehensive security scan on all affected devices.
- 3. Immediately change passwords for all compromised accounts.
- 4. Isolate affected devices from the network if they contain malicious files.
- 5. Disable **FTP** protocols and switch to secure protocols like **SFTP**.

#### net-2009-11-20-10-30.pcap

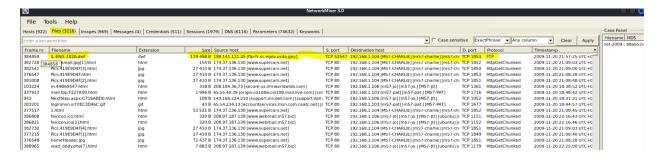


Medium-risk connections were detected between internal devices and suspicious servers.

The data transmitted was moderate in volume, using the **HTTP protocol**.



An **FTP connection** was detected using the **anonymous** username, which exposes the system to potential risks.



Large files were detected being sent via FTP, including the file IL-ENG-182.A.dwf.

# The attached files

