# Pwntoken - Digital Security Research

Information Security Sciences with Shritam Bhowmick.

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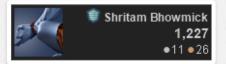
# **Defining an Enterprise Penetration Test**

# Are Enterprises Aware Of A Defined Penetration Test?

It really took me a complete decade to have a meaningful dedicated routine time having few legit set of questions & debunks we'll be looking at frequencies from here onwards. After having experienced a large number of strategic targets spending a decade of nights, an expensive totalitarian disciplined existence into hacker community circles ranging from the Mexican Boards, Russian Boards to few selected ones for intel since ages now & a sincere Executioner of Myth, Fanatics including an Experience in side swiping Best Charlatans who're evolving at a faster pace;

I have with all such detailed experience in total truth concluded the larger scale enterprises lack a defined understanding of what a **Penetration Test** really is. My study show a very poor performance of the Enterprises at a far capital market reach of a Billion Dollar Industry that the Cyber Security Market can upscale to. I will be the surgeon & would logically be concluding:

## **Information Security**



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- 2. Are Even Cyber Security Companies Themselves Aware?
- 3. What about the Indian Enterprise Eco-Space they're looking a complete joke by now.
- 4. Re-Iterating & Re-Focusing, Do Indian Enterprise Eco-System Aware of a Dis-balanced IT Ops Budget & Security Ops Budget?

.. wait - don't be waiting any longer to have a second thought about mistaking the wide information security domain with just a penetration test. The width I'm talking takes grasping this wide domain .. I'll leave you there to the width in an image below ..

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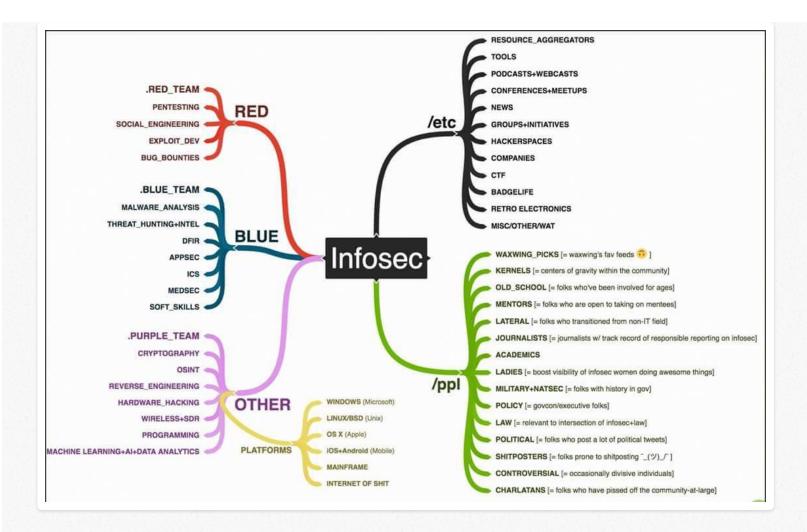
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Introduction



A Penetration Test by any margin among that huge wide Information Security Domain is simply put a task in an organization to settle down on a risk factor which includes live infiltration via the Organization's Asset - the Application Stack or the Network Stack. And no, this doesn't include Social Engineering attack for the people, that's Red Teaming & has a larger strategical construct.

Red Teaming includes several other facets & factors involved - We'd debunk that later for good.

Right now, let's focus around Penetration Test. What would take an Organization, an Enterprise which is highly decorated in it's all reputed glories from decades of business investments to fall apart from the reputation!? This!

### Hackers claim credit for alleged hack at Mandiant, publish dox on ...

www.csoonline.com/.../hackers-claim-credit-for-alleged-hack-at-mandiant-publish-do... ▼
Jul 31, 2017 - Hackers claim credit for alleged hack at Mandiant, publish dox on ... Otherwise, the attacker simply shared screenshots of the items themselves.

### Hacker Leaks Data From Mandiant (FireEye) Senior Security Analyst

thehackernews.com/2017/07/data-breach-mandiant-fireeye.html ▼
Jul 31, 2017 - Mandiant hacked. The hackers have leaked nearly 32 megabytes of data—both personal and professional—belonging to Peretz on Pastebin ...

### Cybersecurity firm Mandiant has been targeted by hackers - Jul. 31 ...

money.cnn.com/2017/07/31/technology/mandiant-fireeye-hack.../index.html ▼
Jul 31, 2017 - U.S. cybersecurity firm Mandiant confirmed Monday that one of its analyst's social media accounts had been compromised in an attack.

Little to no surprise, The Enterprises are slowly evolving & have introduced <code>DevOps</code> which has a more simpler way of an efficient IT Operation but a complex variant of necessary subset & routine security check which's often missed. By this factor, very fewer Organizations have really known the difference between a <code>Vulnerability Assessment</code> & a <code>Penetration Test</code> given that they understand necessary scopes to be involved.

Given the experiences I had - in my opinion, they DO NOT YET UNDERSTAND PENETRATION TEST.

# Are Cyber Security Companies Across India Aware?

Whilst being on a standard operation, I had to focus around getting away with analyzing if Claimed Cyber Security Companies are themselves aware. To my amazement - they're completely off that street & have already went boasting their permits without really having any In-Depth measures often to take.

We'll rewind my experience in short & debunk this out since a company called <u>Lucideus Tech</u> was recently roasted at Reddit India for the very same reasons. Please don't judge already, I was involved with the operations AVP @ Penetration Testing & resigned due to particularly this nature. Let's take a look at the history how that unfolded ..



### How BHIM App developers spent sleepless nights to make it invincible

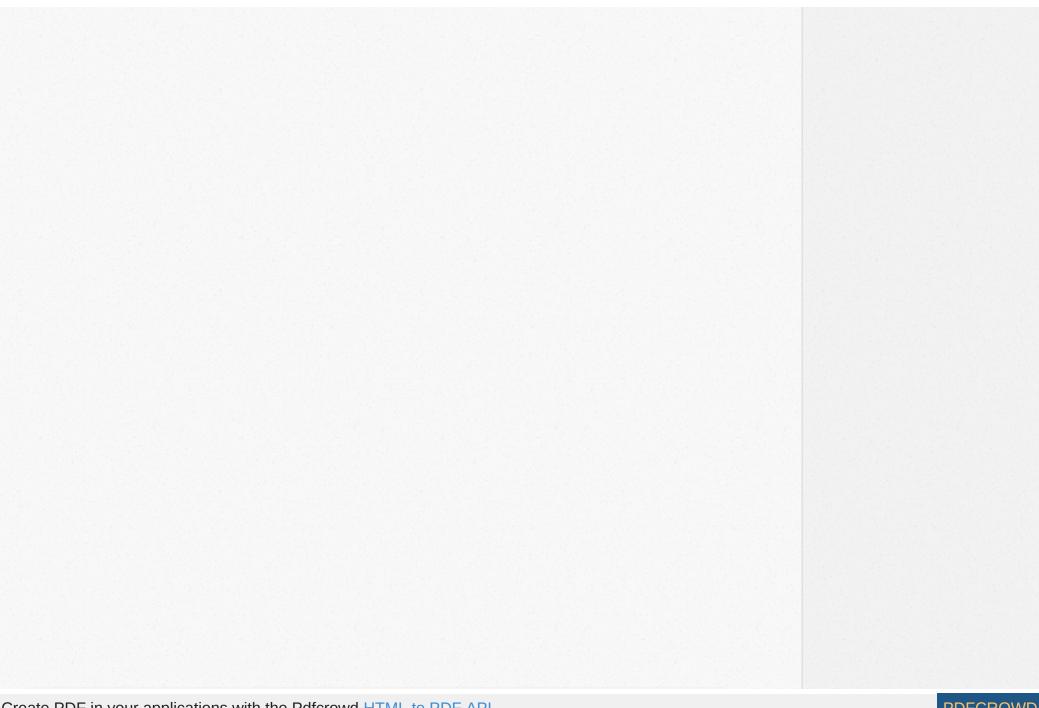
www.wikikeeda.com/bhim-app-developers-sleepless-nights/ ▼
Jan 3, 2017 - BHIM app is developed by Lucideus Tech, a New Delhi based Risk Assessment
Company & Digital Security Service Provider. Lucideus has in ...

#supersecure, hashtag on Twitter

# https://twitter.com/hashtag/supersecure%2C

On Jan 2 @stpiindia tweeted: "#Bhim: how team @lucideustech spent slee. ... Always told me I'm insecure but I don't need to jump from person to person to feel ...

Looks great, in all format a very better PR team that there is .. In pure amazement, I had to hook up my instruments of mass destructions & concluded it wasn't really that *secure* as claimed. A complete exchange of the email transcript to me fellow reputed security professionals were as below:



Failure 1: BHIM lacks functionality tests which means this leverages to a security failure. Technically, the
application should not credit & debit to it's own account which it does. This in turn means attackers can
cause a service deniable to the server using automated scripts doing this specific operation in
a continuous loop.

Countermeasure: functionality controls to be checked & should be considered one of the unit test gone through in primary development stages

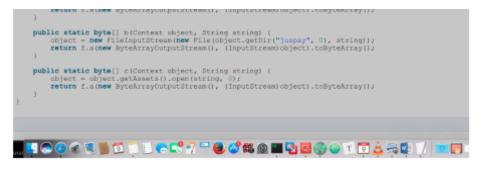
 Failure 2: Code in itself is debuggable which means either the developers or the attackers themselves have access to the source code, which in turn means, from attacker perspective, it's possible to reverse engineer, proof of concept is as below:

```
private void e() (
     if (this.c -- null) return;
     String string = this.c.getPackageName();
     int n2 = this.c.getResources().getIdentifier('is dui debuggable', "string", string);
     if (n2 != 0 && (string = this.c.getString(n2)) != null && string.equalsIgnoreCase("true")) {
         if (Build. VERSION. SDK INT >= 19) {
             WebView.setWebContentsDebuggingEnabled((boolean)true);
         this.a.setWebChromeClient(new WebChromeClient());
         string = new WebViewClient():
         this.a.setWebViewClient((WebViewClient)string);
     if (Build, VERSION, SDK INT >= 16) {
         this.a.getSettings().setAllowFileAccessFromFileURLs(true);
         this.a.getSettings().setAllowUniversalAccessFronFileURLs(true);
     Log.e((String) "DUI", (String) "Will throw cors error if less than version < 16");
  public void a() {
     this.a.loadDataWithBaseURL("http://juspay.in", "<html></html>", "text/html", "utf-8", null);
     this.f.removeView((View)this.a);
     this.a.removeAllViews();
     this.a.destroy();
     this.c = null;
```

Countermeasure: Use code obfuscation.

- The BHIM Application allows files to be written in external storage which means, allocation of data on an
  unsecure external device which could be manipulated later. Proof of concept as below after having revered
  engineered the code in itself:
- The BHIM Application allows files to be written in external storage which means, allocation of data on an
  unsecure external device which could be manipulated later. Proof of concept as below after having revered
  engineered the code in itself:

public static byte() a(String object, String string) (
 object = new FileInputStream(new File(Environment.getExternalStorageDirectory().getAbsolutePath()



We were able to complete decode messages from NCPI using weak crypto and basically never having
used crypto or otherwise technically called as 'encoders', having said so, we also were able to look through
the source code & see implementation details of it:

Here's proof of concept that the NPCI JS module uses Base64 encoders which's not a real crypto at all for credential sharing:

```
public String populateHNAC(String string, String arrby, String string2, String string3) (
    this.b();

try {
    new a();
    string = string + "|" + (String)arrby + "|" + string3;
    in.org.npci.upiapp.a.a.b("NPCIJSInterface", "PSP Hnac Msg - " + string);
    arrby = Base64.decode((String)string2, (int)2);
    string = [Base64.encodeToString](byte([])a.a(a.a(string), arrby), (int)0);
    return string;
)
catch (Exception var1 2) {
    in.org.npci.upiapp.a.a.a("NPCIJSInterface", "populateHMAC", var1 2);
```

Here's proof of concept that the NPCI JS module uses Base64 encoders which's not a real crypto at all for credential sharing:

```
public String populateHNAC(String string, String arrby, String string2, String string3) {
    this.b();
    try {
        new a();
        string = string + "|" + (String)arrby + "|" + string3;
        in.org.npci.upiapp.a.a.b("NPCIJSInterface", "PSP Hmac Msg - " + string);
        arrby = Base64.decode((String)string2, (int)2);
        string = Base64.encodeToString)(byte[])a.a(a.a(string), arrby), (int)0);
    return string;
    )
    catch (Exception var1_2) {
        in.org.npci.upiapp.a.a.a("NPCIJSInterface", "populateHMAC", var1_2);
        return null;
    )
}
```

Countermeasures: use crypto and not 'encoders'. Encoding & Encryption are both very different concepts.

 Next, the database handler in BHIM uses insecure database handling which can often be the cause of unhandled exception; In laymen term - it means exfiltration of user saved data int a database by an attacker; proof of concept is as below:

```
public void c() {
    g.b("DB Handler", "Deleting all");
    SQLiteDatabase sQLiteDatabase = this.getNritableDatabase();
    sQLiteDatabase.execSQL("delete from contacts");
    sQLiteDatabase.close();

public void onCreate(SQLiteDatabase sQLiteDatabase) {
    sQLiteDatabase.execSQL("CREATE TABLE contacts(id INTEGER PRIMARY KEY, k0 TEXT, token TEXT, date
    Log.e((String)"Dynamic OB", (String)"tables created");
}

public void onUpgrade(SQLiteDatabase sQLiteDatabase, int n2, int n3) {
    sQLiteDatabase.execSQL("CROP TABLE IF EXISTS contacts");
    this.onCreate(sQLiteDatabase);
}
```

Countermeasures: use stored procedures for query calls. Any rooted phones can have the access to the database, there's a risk involved in calling queries from databases without any handled exception procedures.

.. Somehow the Self Claimed Security Pioneers were stupid to not recognize & dared not to take action. On behalf of that, let's un-reveal the truth.

About 50,300 results (0.62 seconds)

#### BHIM may expose you to data theft | Business Line

www.thehindubusinessline.com/info-tech/bhim-may-expose.../article9485614.ece ▼ Jan 17, 2017 - Serious security flaws discovered in the government's BHIM app could dent its ... which is largely considered an insecure way of storing data.

The resultant fixes were made & code changes at Android Play Stores were made quickly to compass embarrassment to a direction which were a very generic statement to it's users.

### BHIM App's Response To A User's Concerns Shows That Not Being ...

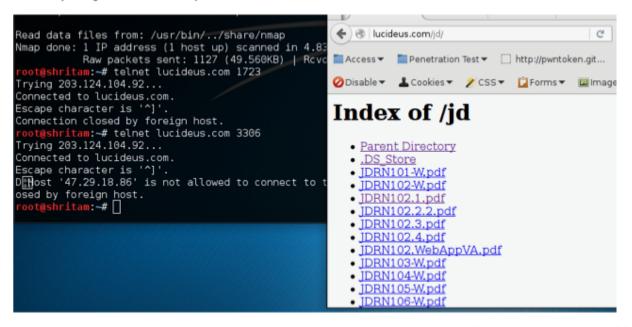
https://officechai.com/.../bhim-apps-response-users-concerns-shows-not-run-like-typic... ▼ Jan 9, 2017 - On 6th January, a week after the app was released, a Facebook user wrote a detailed post about why he felt the BHIM app was insecure.

Moving on. I insisted & exchanged couple of mails to Lucideus handler then stating how much such PR doesn't really help the userbase & insisted on making patches to Lucideus own systems.

Hi Saket.

Hope you're doing well & this mail finds you in great health, It's a pleasure to e-meet you after a long time. We were revising a quick analysis throughout the web presence for Lucideus & found very few information level controls which could be an add to tighten security & could be of value add to Lucideus Integrity (Below are few security controls for the gist of a quick manual security review):

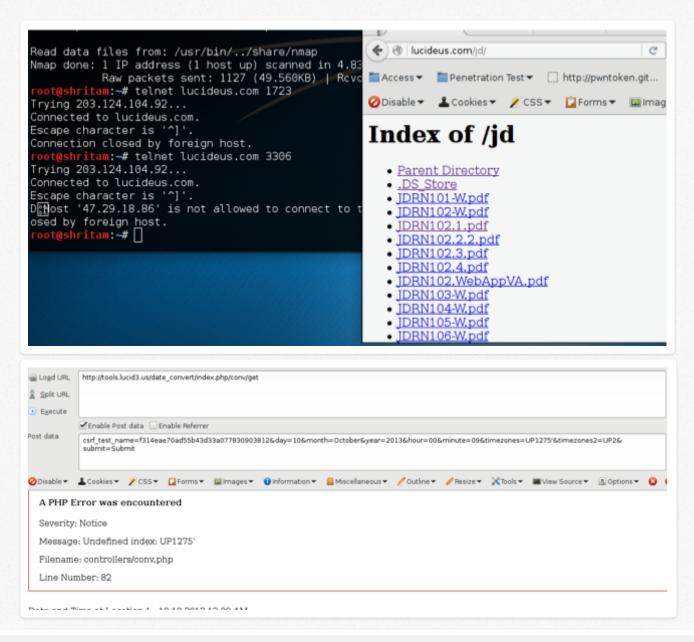
1. A directory listing were found at the /jd/ section:

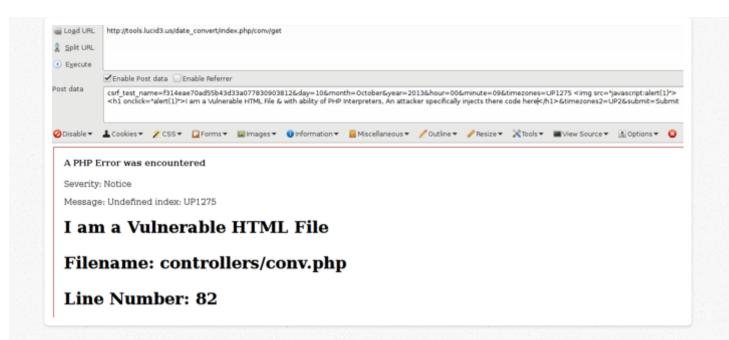


An abandoned toolset directory from: <a href="http://tools.lucid3.us">http://tools.lucid3.us</a> We noticed a toolset called Time Converter & tried to check if CSRF values were random; They weren't & we tried to manipulate parameters to trigger an error ..



I'd cut this short & re-frame to pointer wise security weaknesses now that the threats are completely patched.





In short, we're able to trigger JD's & enough PHP mechanisms which could lead to a Code Injection variant of an attack. Given that these were patched. We recently now bumped into this below:

#### [TECH] What is the risk that White hat hackers like Lucideus ... - Reddit

https://www.reddit.com/r/india/.../tech\_what\_is\_the\_risk\_that\_white\_hat\_hackers\_like... ▼ Jan 3, 2017 - 6 posts - 5 authors

india. subscribeunsubscribe81,730 readers. 1,775 users here now ... http://economictimes.indiatimes.com/tech/ites/how-team-lucideus-spent- ...

#### When it comes to cyber security, even RBI banks on Lucideus ... - Reddit

https://www.reddit.com/.../india/.../when\_it\_comes\_to\_cyber\_security\_even\_rbi\_bank... ▼
Dec 13, 2016 - 3 posts - 3 authors

While India debates the merits and demerits of moving towards a ... Lucideus Tech hacks into its client's servers with permission in order to spot ...

Meet Saket Modi, the Ankit Fadia 2.0, a sham businessman ... - Reddit https://www.reddit.com/r/india/.../meet\_saket\_modi\_the\_ankit\_fadia\_20\_a\_sham/ ▼ Aug 17, 2017 - Lucideus was responsible for security assessment of the .... read this reply too https://www.reddit.com/r/india/comments/6uc2b6/slug/dls3egd.

comments

other discussions (1)





Non-Political Meet Saket Modi, the Ankit Fadia 2.0, a sham businessman masquerading as a hacker.

(self.india)

submitted 12 days ago \* by NotTheBellever 2 + 2 = 4?

#### https://youtu.be/smt8tuNpToM

That's a recent talk he gave, where he makes all kinds of ridiculous claims. He claims to have hacked a phone with 20-30 seconds of physical access to a phone. Then he goes on to show call logs, sms etc etc. Doesn't explain how he does any of that.

Well, he kinda did explain it 3 years ago though, at TEDx conference where he was discussing privacy concerns, now he is a businessman.

Edit: https://youtu.be/8JED9JDMhzo?t=252

**Turns out he installed an app and granted all permissions.** He admits to that in old TEDx video but doesn't care to mention it now, because fuck technology, I am here for muh monies. (4:20 in TED video.)

To top it all off, he claims that whatsapp encryption is broken and they fix it every two weeks, "it's a cat and mouse game".

Worst takeaway from all this? People believe him, corporates believe him, his business runs well.

If you are find company forwarding such bulleran Will it from roots

If you ever find someone forwarding such buildrap, kill it from roots.

"Effort required to refute bullshit is in order of magnitude higher than required for spreading it."

-Brandolini's bullshit assymetry principle

Edit: added video timestamp.

It concludes two take-away morales:

- PR does make a Cyber Security Company Glitter.
- PR somehow doesn't make their end users secure.

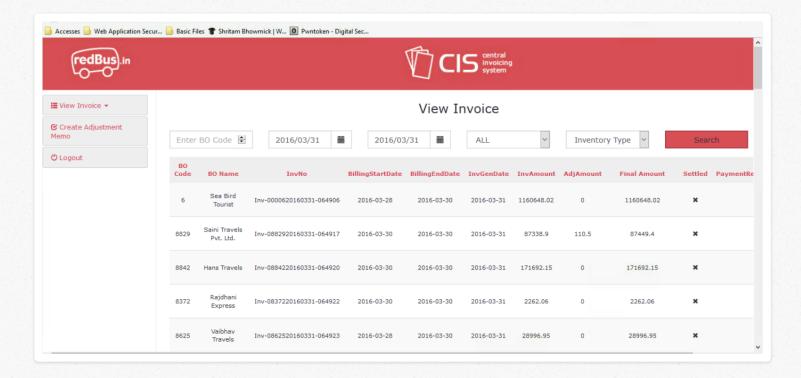
This additionally concludes our question "Are Indian Cyber Security Companies Aware?", Be my guest to be the judge.

# ..Mmmhm And What About the Indian Eco-Space Enterprises?

Now that pretty cosmetics are really well priced. Please know, compliances in Security are easy earned certificates but definitely a hard earned cash equaling to business risks for any investment banks or the investors & cannot already be managed fruitfully if left to BugBounty Programs. I'd debunk that later, but hey!



#### No! Invoices were!

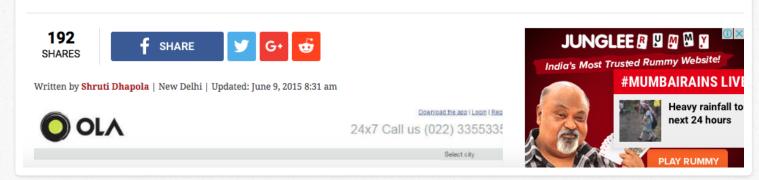


The patch has been responsibly taken care of by now. It's to bring the essence of where the Indian Enterprises are failing. To opt another example out as per Public Disclosure Record after Glorious Patch Success Days ..

.. This was exactly what needs to be pointed out in the Indian Eco-System, you really do not need to articulate non-closures if not already taking Security Operations Serious, more explanation to that later in this series ..

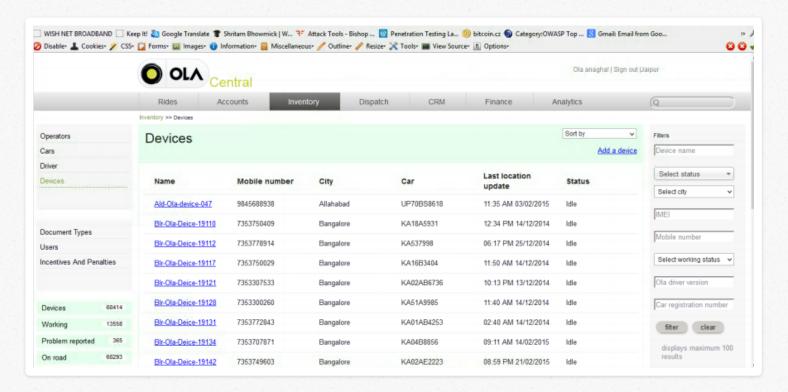
# OlaCabs hacked, credit cards accessed; company says there was no data breach

The hackers said they had not intention of misusing the credit card or voucher codes and had even emailed OlaCabs



Amazon Servers are real taste these days ..

.. Sad proved to be very misleading story.



All patches were responsibly closed. This isn't about the de-motivation but to really take a point across - BugBounties often isn't any real Penetration Testing to start with nor a Vulnerability Assessment can make organizations any better. The Indian Eco-System has sustained by the rule of Politics where it bends the way management decides but this only later proves the fish to be roasted later during serious compliances & disclosures.

Hence, point proved to our questioning of **Does Indian Enterprise Eco-Space take Security Operations Serious?**. Please be my Guest to be the Judge. The Executioner & this to me, atleast is looking like a complete Joke by now. This isn't about these Enterprises - ALL of them have a positive hit ratio. Let's not try turning a Blind Eye!

### Let's Re-Focus Ourselves to the Cause & Countermeasures!

- Blame Game
- Poor Work Culture
- Management Politics Dependency
- .. & etc ..

# The 5 Stages of Debugging

At some point in each of our lives, we must face errors in our code. Debugging is a natural healing process to help us through these times. It is important to recognize these common stages and realize that debugging will eventually come to an end.



# Denial

This stage is often characterized by such phrases as "What? That's impossible," or "I know this is right." A strong sign of denial is recompiling without changing any code, "just in case."



# **Bargaining/Self-Blame**

Several programming errors are uncovered and the programmer feels stupid and guilty for having made them. Bargaining is common: "If I fix this, will you please compile?" Also, "I only have 14 errors to go!"

VHHUR



# Allyci

Cryptic error messages send the programmer into a rage. This stage is accompanied by an hours-long and profanity-filled diatribe about the limitations of the language directed at whomever will listen.



# Depression

Following the outburst, the programmer becomes aware that hours have gone by unproductively and there is still no solution in sight. The programmer becomes listless. Posture often deteriorates.



# **Acceptance**

The programmer finally accepts the situation, declares the bug a "feature", and goes to play some Quake.

# Most Organizations do not have a well defined IT Operations & IT Security Operations Segregation ..

1. You heard it. The processes itself which segregates IT Security Operations from that of normal IT Operations aren't segregated & eventually run parallel thinking **buying a really costly https** certificate would help prevent any & every attacks.

- 2. There are **no ways to communicate to upper management on a defined segregation of IT Operations Budget to that of IT Security Operations Budget** which entirely at a later stage put the Organization to the every possible Security Risk in-front of their investors. This really is a problem when you do not have an approved budget for any expenditure on Security lest the whole hard work in already in ruins.
- 3. Organization Managers are not well informed of their IT Operations Risks & Hazards as this will definitely put senior managers to an extra work load & few might even miss a beautifully love wedding at Miami Beach for that matter. Most managers, senior managers cum Executive Directors including that of Excreting on Money Current Chairmen & the Board Of Directors DO NOT UNDERSTAND Security Risks, Threats, Glitches & eventually everything that's in-between.

# Organizations literally BUY Compliances without really any Actual Compliance ..

- 1. Buy a https certificate & they'll say you're secure. Please re-consider, you're just not.
- 2. **Get a fancy Compliance Security Audit done from a Big4 & you're Secure?**: I've gotten this really covered & laughed twice thrice to this. I'd only hint all Big4's at this moment compromised.
- 3. **They trust Certificates**: when hiring, this really doesn't work for Security Operations bench. EC|CEH certified will be really a waste for your resource. Use money & use a brain!

# The Trendy Bug Bounty get's the Cut!?

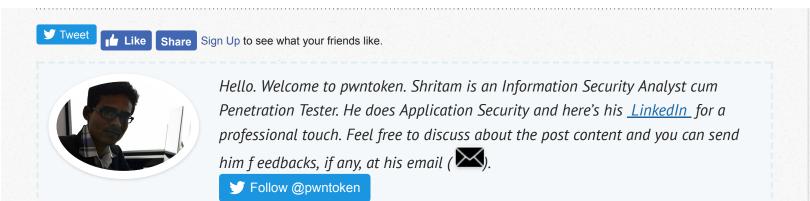
Just don't. You'll realize when I make this post useful & define penetration tests at later stages & it's applicable scopes for different ranges of selected optimized on a very controlled productivity-full for maximizing end-results with different unique modes in SecOps (Security Operations).

I intend to Debunk Bug Bounties at a later part in my life time in order to save me the disaster of just proving as it is meant to be proved in true fashion. I'm hoping my readers can direct me to a great gentlemen who can take this up for me using the mainstream media houses.

# When it's Pricey?

- 1. When Organizations are literally bombarded with a FULL DISCLOSURE which evaporates money, finances, data, reputation & probably would risk their wives if lucky in the sleepless process.
- 2. When Organizations are dis-qualified to be any more Compliant to that Investment Bank you're hoping not checking in security controls. Better Stay non-compliant if not ready. Because it's just a major embarrassment.
- 3. When userbase have alternatives & they really think their data isn't any safe than the duck aimed to be killed & not even pyre/burial arrangements are made.
- 4. When Organizations are ransomed. But instead later, kicked again after having the ransom money. haha. That was humorous tho. That's called the state of getting into a over pricey tricky situation in the White House Situation Room during an Afgan War lost because Special Forces were not given real equipments for the war operations.

Posted by Shritam Bhowmick • Aug 30th, 2017 1:00 am • penetration\_test



« Enterprise Web Application Security Program

# **Comments**

