



SIMPLY
SECURE

“FROM ASIA WITH LOVE”

SMARTPHONES WITH PRE-INSTALLED MALWARE

ALEXANDER.BURRIS@GDATA.DE | VIRUS BULLETIN 2015



G DATA SOFTWARE AG: \$WHOIS

- Founded in Bochum (Germany), 1985
 - Thx Martijn for the keynote at our security summit last week!
- ~60,500 employees worldwide

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- ~60,500 employees worldwide
 - 60,000 GeeBees
 - 500 humans



AGENDA

- Star N9500 background story
- More devices / more malware
- How to generate \$\$\$
- What could the manufacturers do?

Star N9500

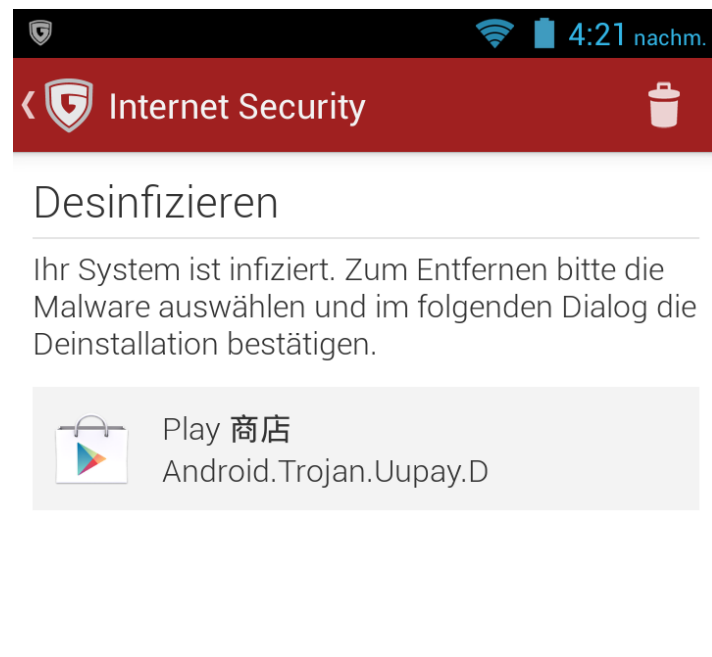
STAR N9500 – SMARTPHONE FROM 2013

FIRST ENCOUNTER

- In 2014 Q1 a customer asked us:

“Why can’t I delete this Malware!?”

→ It was installed in `/system/app/`



<https://blog.gdatasoftware.com/blog/article/android-smartphone-shipped-with-spyware.html>

STAR N9500 – SMARTPHONE FROM 2013 BOUGHT IN Q1 2014



Für eine größere Ansicht klicken Sie auf das Bild

Star N9500 - 5.0 inch (1280*720) HD IPS screen Android 4.2 1.2GHz Quad Core 3G Smart Phone MTK6589 dual sim dual standby, 8MP dual camera 1G RAM (8GB ROM Black)

von Star

★★★★★ 6 Kundenrezensionen

Preis: **EUR 165,99** + EUR 3,00 Versandkosten
Alle Preisangaben inkl. MwSt.

Hinweis: Nicht mit Amazon Prime bestellbar.

Gewöhnlich versandfertig in 2 bis 3 Tagen.

Verkauf und Versand durch [Bestore](#). Für weitere Informationen, Impressum, AGB und Widerrufsrecht klicken Sie bitte auf den Verkäufernamen.

- 5.0inch 1280*720 Pixels IPS Capacitive multi-touch
- MTK6589 Quad Core 1.2G
- Front 3.0 MP+Back 8.0 MP Cameras
- 1GB RAM / 4GB(8GB),Support to 32GB microSD
- Android 4.2 system

[Weitere Produktdetails](#)

EU

Gewöhnlich
Tager



Loggen

Auf me

Alle Ang

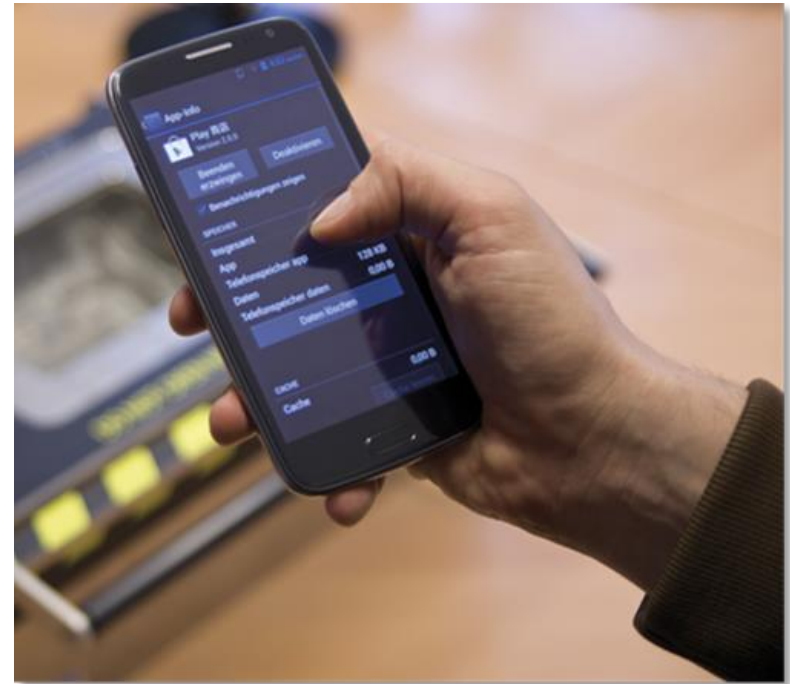
7 neu ab

Mö

STAR N9500 – SMARTPHONE FROM 2013

ANDROID.TROJAN.UUPAY

- Hidden as Google Play service
- Extensive permissions:
 - Install/delete/restart package
 - Receive OnBoot
 - Read, write and send SMS
 - ...



MD5: e7d6fef2f1b23cf39a49771eb277e697

STAR N9500 – SMARTPHONE FROM 2013

ANDROID.TROJAN.UUPAY

- Uploads id's, imei, mac, sim info, device hardware information, ...
- Receives a list of apk's to download & install from a 3rd party market

- 3rd party market?
 - 2014 Q3 → downloaded 6,100 apps... 20% not clean
 - 2015 Q3 → downloaded 4,422 apps... 29.7% not clean

... but it's October 1st in 2015 and that was a 2013 phone!

STAR N9500 – SMARTPHONE FROM 2013 STILL ALIVE ?

The screenshot shows a web browser window with the Amazon.de search results for 'n9500'. The browser's address bar shows the URL: www.amazon.de/s/ref=nb_sb_noss_2?_mk_de_DE=ÄMÄŽÖÑ&url=search-alias%3Daps&field-... The Amazon.de logo is visible in the top left, with a search bar containing 'n9500'. Navigation links include 'Alle Kategorien', 'Mein Amazon', 'Angebote', 'Gutscheine', 'Verkaufen Sie Ihre Produkte', and 'Hilfe'. A '20% G' badge is present in the top right. Below the navigation, there are links for 'Amazon.de', 'Warehouse Deals', 'Coupons', 'Fashion-Sale', 'Family', 'Student', 'Spar-Abo', 'Geschenke', 'Amazon Apps', and 'Amazon 1Button App'. The search results section shows '1-16 von 19.849 Ergebnissen in "n9500"'. On the left, there is a sidebar with 'Auswahl einschränken' and categories like 'Elektronik & Foto', 'Computer & Zubehör', and 'Baumarkt'. The main product listing is for the 'New N4 5.7 Zoll (14,5 cm) 1280x720 IPS HD Dual SIM Smartphone N4 Android 4.2 8GB Flash...' by Zixoon. The price is listed as 'EUR 159,49 Prime' with a delivery date of 'Donnerstag, 10. September'. There are also 'Andere Angebote' for 'EUR 159,49 neu (2 Angebote)'. A star rating of 4.5 is shown, along with 'Kostenlose' and 'Elektronik &' text.

Suchergebnis auf A... x +

www.amazon.de/s/ref=nb_sb_noss_2?_mk_de_DE=ÄMÄŽÖÑ&url=search-alias%3Daps&field-

amazon.de Prime testen

Alle n9500

Alle Kategorien

Mein Amazon Angebote Gutscheine Verkaufen Sie Ihre Produkte Hilfe

Hallo! Anmelden Mein Konto

Amazon.de Warehouse Deals Coupons Fashion-Sale Family Student Spar-Abo Geschenke Amazon Apps Amazon 1Button App

1-16 von 19.849 Ergebnissen in "n9500"

Auswahl einschränken


Elektronik & Foto >

- Handyzubehör
- Handytaschen & -schalen
- Handys & Smartphones

Computer & Zubehör >

- Tablet PCs

Baumarkt >



New N4 5.7 Zoll (14,5 cm) 1280x720 IPS HD Dual SIM Smartphone N4 Android 4.2 8GB Flash...

von Zixoon

EUR 159,49 Prime

Lieferung bis zum Donnerstag, 10. September

Andere Angebote

EUR 159,49 neu (2 Angebote)

★★★★☆

Kostenlose

Elektronik &

STAR N9500 – SMARTPHONE FROM 2013 STILL ALIVE!

20 von 23 Kunden fanden die folgende Rezension hilfreich.

★★★★☆ **Eigentlich ein tolles Smartphone**

Von [Avatar] am 4. Juli 2014

Farbe: weiß | **Verifizierter Kauf**

Ich habe das Smartphone nach ca. 11 Tagen erhalten. Die Verpackung war gut. Nach dem Auspacken stellte sich erst mal ein gutes Gefühl ein. Das Smartphone wirkt sehr hochwertig verarbeitet, alle Druckpunkte der Knöpfe sind gut. Wie im Lieferumfang beschrieben, wurde ein Flipcase mitgeliefert, sämtliches Zubehör wie z.B. der 2 Akku war auch vorhanden. Lediglich die angegebene Displayschutzfolie war nicht angebracht. Auch das Zubehör wie z.B. Ladeadapter, Ladekabel und das Headset machen einen guten Eindruck. Technisch ist das Smartphone sehr gut ausgereift. Das Display ist wirklich sehr scharf und hell und frei von Pixelfehlern. Merkwürdig ist nur, dass das Smartphone angeblich gerootet zu sein scheint. Zumindest wurde mir das angezeigt, als ich eine Onlinebanking App installieren wollte. Also habe ich aus Sicherheitsgründen davon lieber Abstand genommen. Des Weiteren bietet die Android Software keine Updatemöglichkeit. Vielleicht wurde die Updatemöglichkeit durch das Rooten unterbunden ?? Fazit:, Dieses Smartphone bietet für den Kaufpreis ein wirklich gutes Preis Leistungsverhältnis und ich kann es weiterempfehlen, wenngleich sich auch durch die angeblich gerootete Software ein ungutes Gefühl einschleicht.

► [Kommentar](#) | War diese Rezension für Sie hilfreich? [Missbrauch melden](#)

„[...] What seemed odd to me, though, is the fact that the device appears to be rooted. That’s at least the information that I saw on the display when I tried to install an online banking app. So for security concerns I decided against installing the online banking app.[...]“

more devices / more malware

STAR N9500 – SMARTPHONE FROM 2013

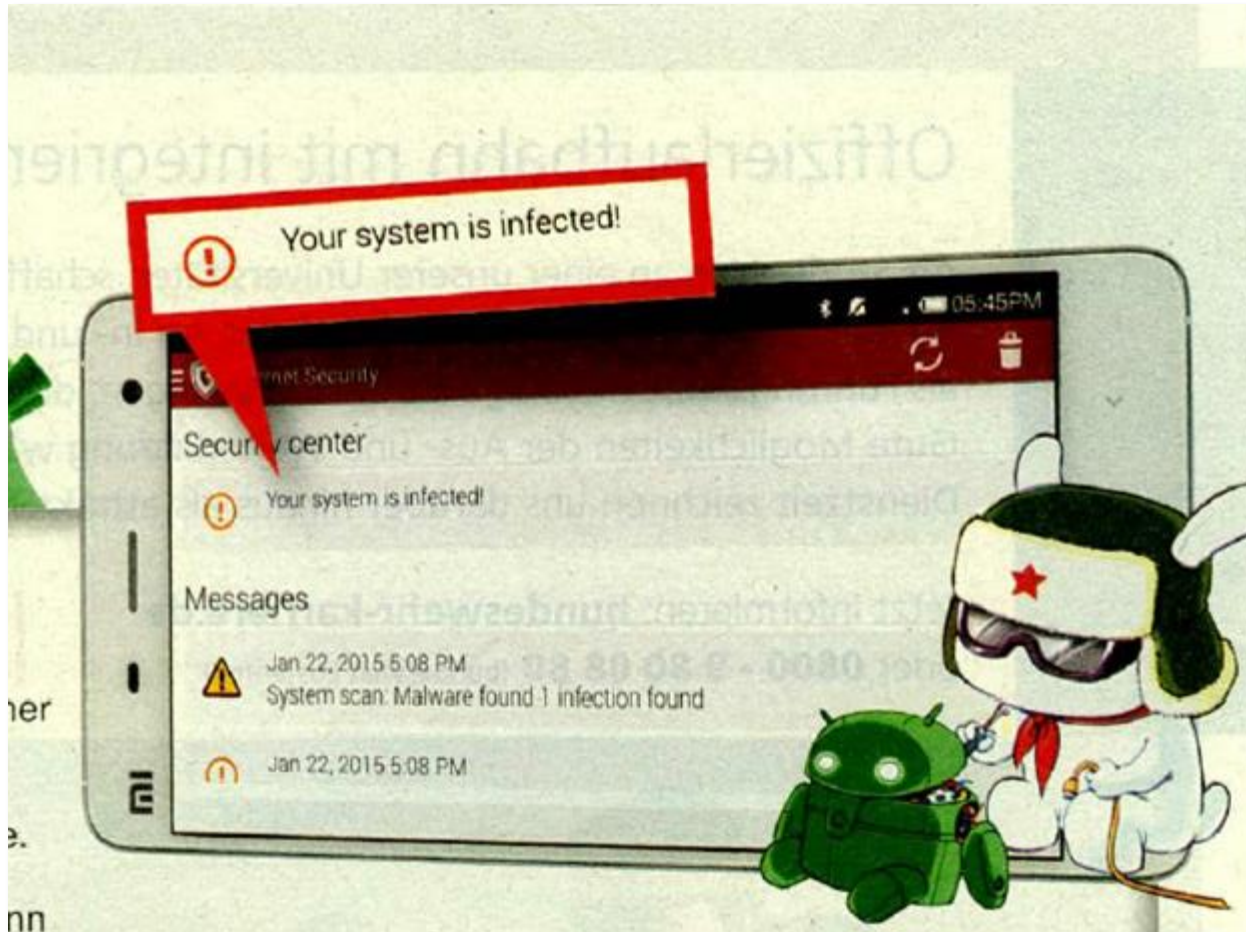
ONE SIGNATURE LEAD TO 100+ DEVICES

09_v89_jbla828_hd GCFONE 570Q 106_v89_gq3009fwvga Phablet 4.5Q 2106_v89_gq3009qhd i3000 Syreni-62FHD
01v21_v89_gq2008s 719v92_gq3015 v89_gq2008s Woxter Zielo S10 01v21_v89_jbl1a698_2g AVUS A-24
02_jbla668 N3 06_v89_gq3009fwvga E82101_v89_gq3008s 2100_v89_gq3012 H9001 Q508 709_v82_jbla828 U650
01v21_v89_gq3008s_89t_5g ALTEREGO DREAM L800 01_v89_jbl1a698 ConCorde SmartPhone5001 H6000+
MP06v20_v89_jbla768_asx_s4lockscreen DND N9500S OCTA-S 101_v82_zlh_hd P6s 106_v89_gq3009_hd H7100
PrimuxZeta 2106_v89_gq3009_hd i6000 syreni53qhd 01v21_v89_gq3008s 809T v89_jbl1a668 01v21_v89_zlh_fhd
AVUS A57 M506 ZUUM N9330 06v20_v89_gq2009qhd N7100 06_v89_jbla768_asx_s4lockscreen 106_v82_jbaol
2106_v82_jbla768_fwvga 0_v89_gq3012fhd709_v82_jbla858 v89_gq2002sc 01v21_v89_jbl1a698 worldphone 4
01_v89_zlh_fhd ConCorde SmartPhone5700 MT7017 S9500 06v20_v89_jbla768_hd N9389 101_v89_gq3002c GT-
H9500 106_v89_gq3010hd_op H7189 2206_jbla768_f i7000 01v21_v89_gq3008st A9500 KSMART 6008DX4
v89_jdt1fwvga ZP100 01_v89_gq3008s_89t ConCorde SmartPhone5000 06v20_v89_gq3009fwvga_2g
Diamond_II P8 Bright Future KSMART 5004DX4 ConCorde SmartPhone6500 DNDN DNDN9500 GLOBUSGPS
GL-900 I9500 I9500 iNew M2 ITOUCH ITOUCH itouch Infinity HD28 MANTA MS5801 Manta MS5001 MEDIACOM
M-PP2S500B MID V975m Core4 MIZ Z3 MODE P7-0001X-SP OASS OASS60 Otium
Otium-S5 Privileg Privileg SM30 SESONN N9500 SESONN N9000+ Turbo Turbo Pad 650 u-ta PAD-2
XtraPhone_4.5_Q4 EVOLVEO_XtraPhone_4.5_Q4

and then we started to look at manufacturer, packagename, app label, server ...

XIAOMI MI4 – SMARTPHONE FROM 2014

TEST IN A MAGAZINE

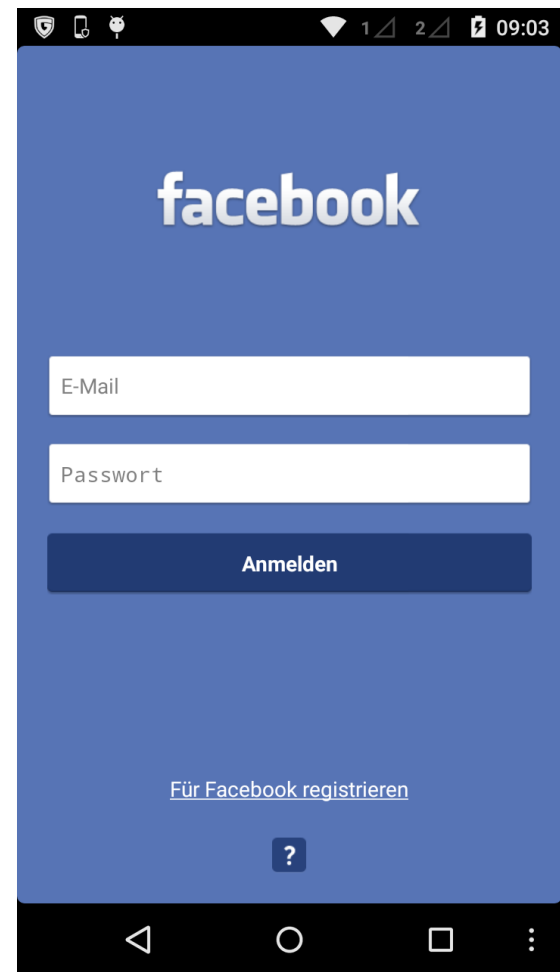


Computer Bild, Jan 2015

XIAOMI MI4 – SMARTPHONE FROM 2014

ANDROID.TROJAN.ANDUP

- Hidden as Twitter and Facebook app
- Piggybacked, but other packagename
- Extensive permissions
 - Install/delete/restart package
 - Receive OnBoot, UserPresent
 - Read, write and send SMS
 - ...
- Seen on Xiaomi Mi4/Mi3, OnePlus, ZTE Nubia, Xidoo X111...



MD5: e82ac31cb3771e07c572d526f075bbf4

XIAOMI MI4 – SMARTPHONE FROM 2014

XIDO X111

amazon.de
Prime testen

Mein Amazon Angebote Gutscheine Verkaufen Hilfe

Alle Kategorien ▾

Suche

Alle ▾

Xido 10.1 Zoll /Android 4.2.

Los

Hallo! Anmelden
Mein Konto ▾

Computer Angebote Notebooks Tablets PCs Komponenten Computer-Zubehör PC-Gaming Monitore Drucker Bestseller Software

Computer & Zubehör > Tablet PCs



Für größere Ansicht Maus über das Bild ziehen

XIDO X111 Tablet-Pc 25,7 cm (10,1 Zoll) Widescreen Tablet Pc (Boxchip A31s A7 4x 1,2GHz, 1GB RAM, 16GB interner Speicher, 2x Kamera, 3G extern,WiFi, Android 4.4, Bluetooth, HDMI, Mini USB) Laptop 7 Notebook 8 9

von XIDO

★★★★☆ ▾ 115 Kundenrezensionen | 56 beantwortete Fragen

Preis: **EUR 99,90** **Kostenlose Lieferung.** [Details](#)

Alle Preisangaben inkl. MwSt.

Auf Lager.

Verkauf durch [Electronicfox](#) und [Versand durch Amazon](#). Für weitere Informationen, Impressum, AGB und Widerrufsrecht klicken Sie bitte auf den Verkäufernamen. Geschenkverpackung verfügbar.

2 neu ab **EUR 99,90** 8 gebraucht ab **EUR 59,90**

- Qualität und Preisleistung treffen hier perfekt zusammen Kompakt und schlank, mit einem Gewicht von nur 560g angenehm leicht • Das 10" Tablet verfügt über ein kapazitives 5 Punkt Display • Durch leichte Berührungen des Touchscreens wird eine kinderleichte Bedienung ermöglicht.
- 10 Zoll Widescreen XIDO Tablet PC • Android 4.4.2 KitKat • 16GB interner Speicher (erweiterbar bis zu 32GB)
- Quad Core A31s Prozessor A7 (4x1,20Ghz) • 1GB DDR3 Arbeitsspeicher • Bluetooth • HDMI • USB

XIAOMI MI4 – SMARTPHONE FROM 2014

XIDO X111

0 von 1 Kunden fanden die folgende Rezension hilfreich

★☆☆☆☆ **sehr enttäuscht!!**, 22. März 2015

Von 

Rezension bezieht sich auf: XIDO X111 Tablet-Pc 25,7 cm (10,1 Zoll) Widescreen Tablet Pc (Boxchip A31s A7 4x 1,2GHz, 1GB RAM, 16GB interner Speicher, 2x Kamera, 3G extern,WiFi, Android 4.4, Bluetooth, HDMI, Mini USB) Laptop 7 Notebook 8 9 (Personal Computers)

ich habe ein tablet Ende November gekauft. zu Anfang war noch alles in Ordnung. nach ein paar Tagen ging es aber dann erst los... das tablet lädt sich selber irgendwelche batteryapps und Speicherplatz Apps runter und es hat sich um das dreifache verlangsamt. auch der Touch lässt zu wünschen übrig. es nimmt nicht die Buchstaben an, die man eintippt und auch Apps kann man nicht verschieben, da alles von links nach rechts hoppst. also für das Geld würde ich mir lieber etwas anderes kaufen!

Helfen Sie anderen Kunden bei der Suche nach den hilfreichsten Rezensionen

[Missbrauch melden](#) | [Kommentar als Link](#)

War diese Rezension für Sie hilfreich?

„[...] after a few days it started to download by itself some battery apps and memory apps and is now three times as slow.[...]“

ICEFOX – SMARTPHONE FROM 2014 ANDROID.TROJAN.DOWNLOADER

- Detected in 2015 Q2
- Hidden as „Setting Provider“
- Extensive permissions
- Daily notifications, first one we clicked was a Ransomware
- The tool Androguard measured a



95% code similarity between our sample and the sample from

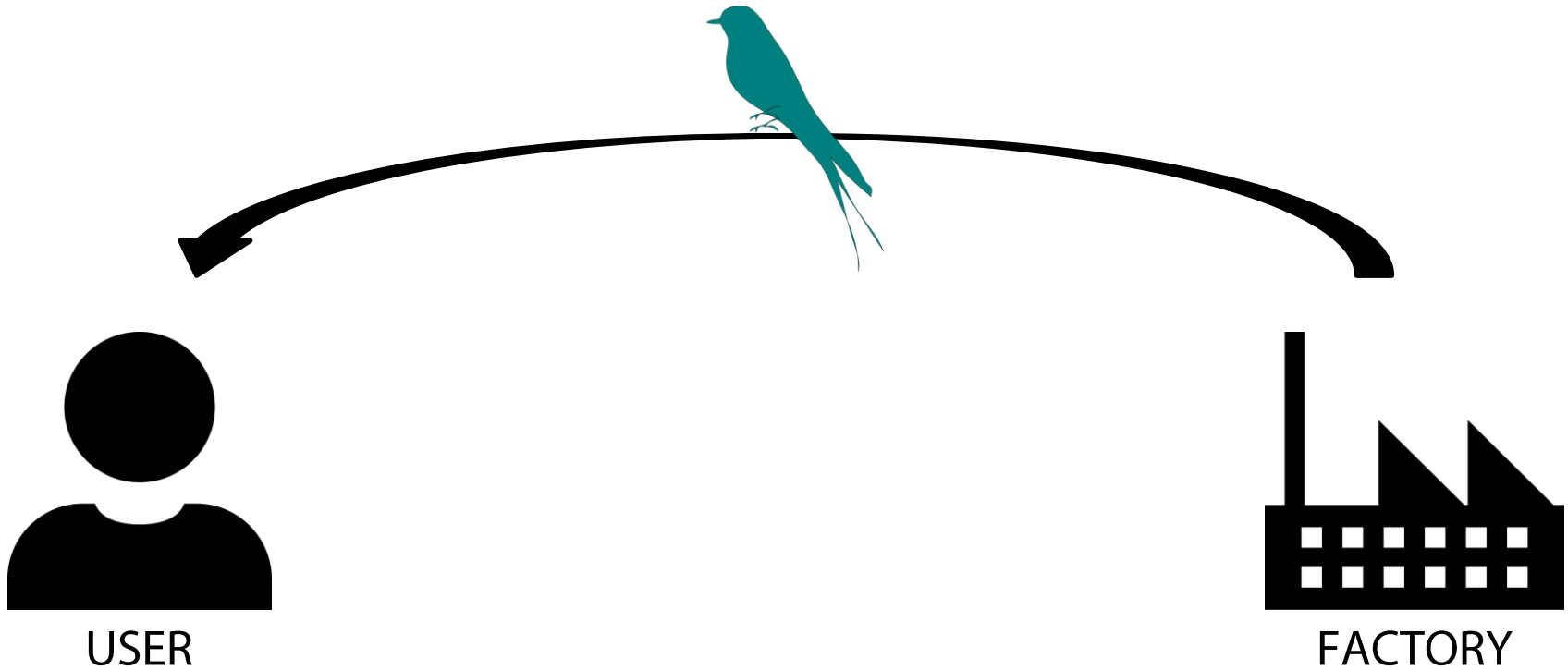
<http://blog.checkpoint.com/2015/09/21/braintest-a-new-level-of-sophistication-in-mobile-malware/>

MD5: dd3dc2838f2d4a43ac4b685585d98689 / Picture from amazon

\$\$\$

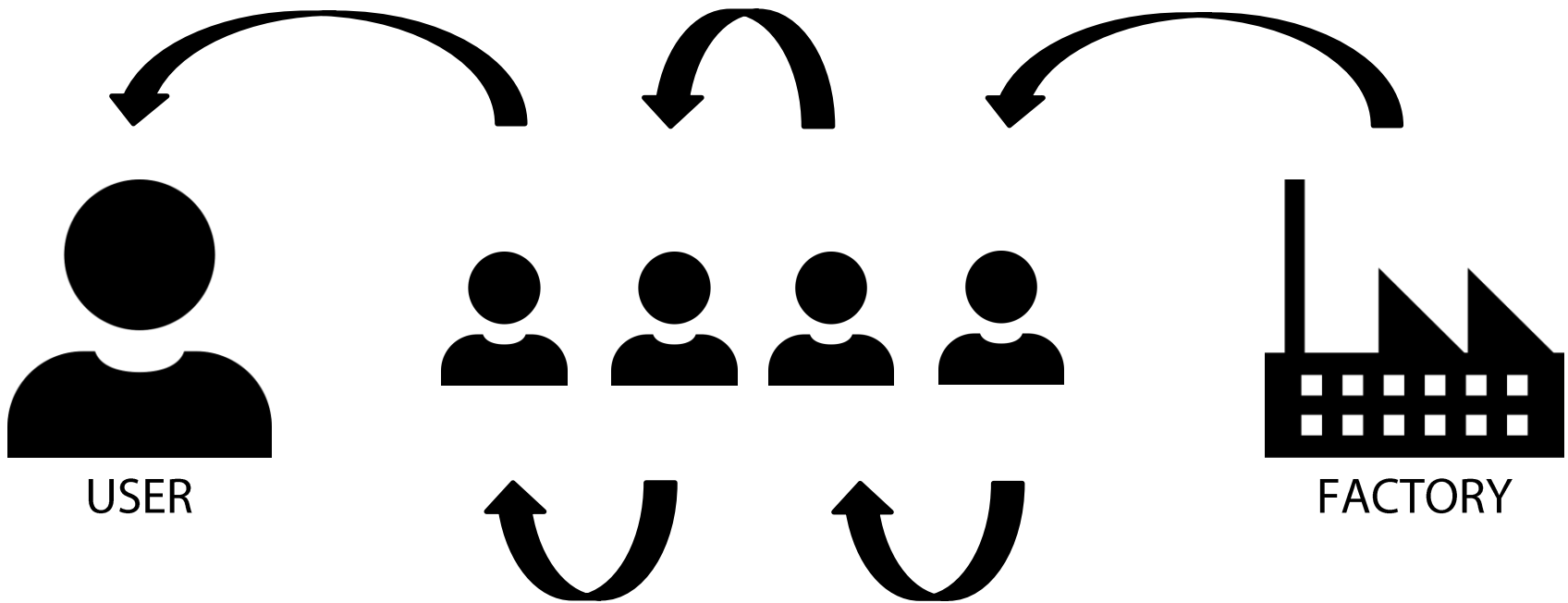
\$\$\$

DELIVERY - FROM THE FACTORY TO THE USER



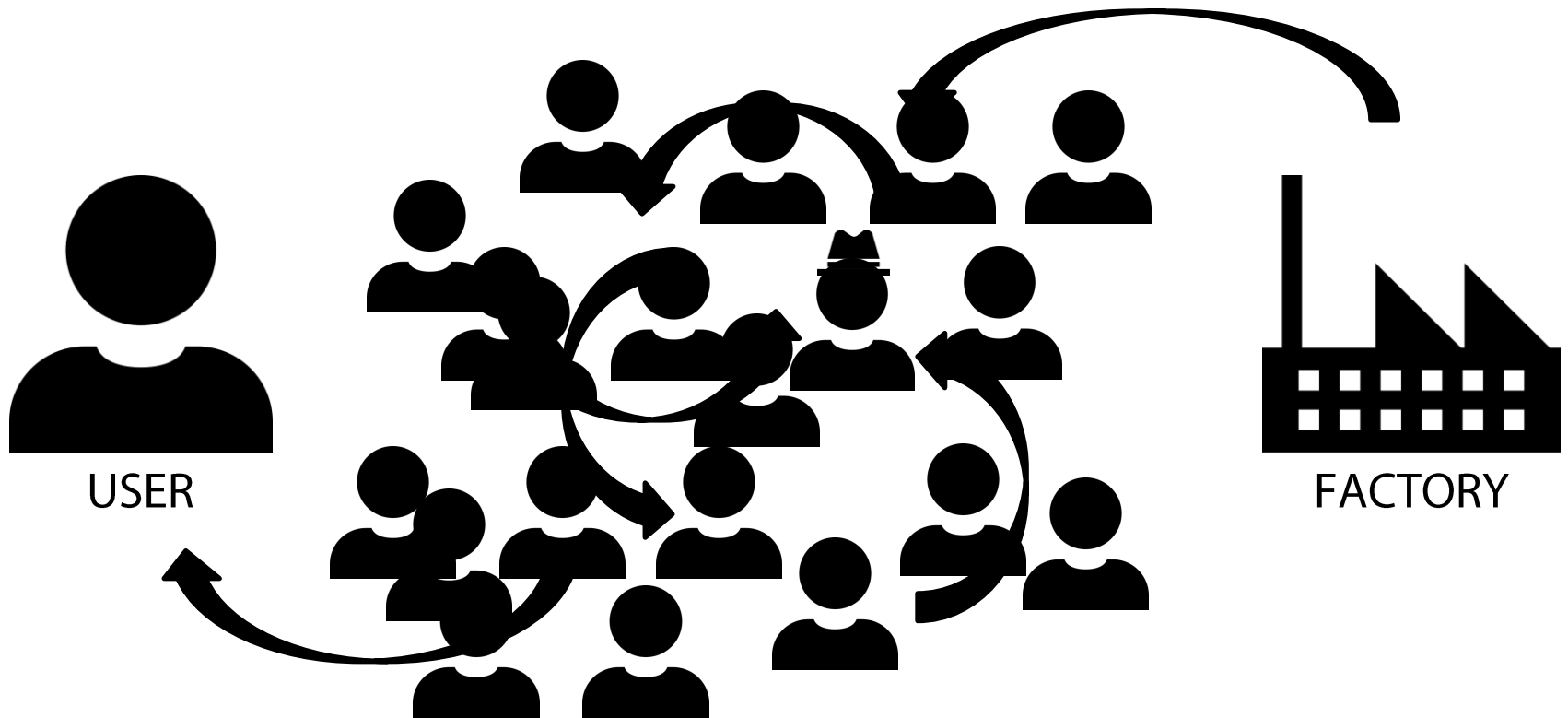
\$\$\$

DELIVERY - WHAT YOU THINK IT LOOKS LIKE



\$\$\$

DELIVERY - TIP OF THE ICEBERG



\$\$\$

HOW TO DEPLOY YOUR MALWARE?



source: <https://securelist.com/blog/virus-watch/59356/caution-malware-pre-installed/>

\$\$\$

100% TRUSTWORTHY

▲ [REDACTED] days ago

When I worked for a company that distributed malware (mostly desktop, but trying to break into mobile), we had relationships with a few people who would buy up android devices in bulk and then charge money to companies like ours to have our apps pre-installed. You could pay extra to have the app baked into a custom rom to make it non-removable.

The business model from our end is we'd find app developers who are willing to pay X amount per install (a conversion was usually tracked by the first time an end user opens the app), and then we pay Y amount per install to a shady phone re-seller to bake that app into the rom of their latest batch of phones. As long as X is sufficiently higher than Y to account for whatever our conversion rate is, we make our money back plus profits as the app developer pays us for conversions.

The shady re-sellers would take their phones with new roms and either sell direct to consumer or, in the case of the bigger guys, move those phones on to a big-box retailer.

[reply](#)

▲ [REDACTED] 3 days ago

instead of paying 10? 30% of your sleazy revenue to the middle man, why not offer one payment to QA manager at the factory?

ironically, the same economics that make it worthwhile to manufacture in country X, also makes it very cheap to bribe in country X (e.g. the guy that would drive to eastern europe to buy pez dispensers at the factory for collectors)

[reply](#)

▲ [REDACTED] 2 days ago

That's the kind of suggestion that would get you ahead quickly at a company like that (assuming you were also willing to personally follow through with it).

[reply](#)

\$\$\$

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[reply](#)

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\$\$\$

RISE OF PRE-INSTALLATION SOFTWARE COOPERATIONS

buzzword „pre & post loading“

What could the manufacturers do?

MANUFACTURES

CHECK IF THE DEVICE IS A RIP-OFF

[Redmi Note](#)[Redmi 1S](#)[Mi 3](#)[Mi TV](#)[Mi Box](#)[Mi Power Bank](#)[Mi Headphones](#)

Xiaomi Product Authentication



Please enter the 20-digit security code

Please calculate



[Try another](#)

Verify now

Change Language

[English](#) | [繁體\(台灣\)](#) | [繁體\(香港\)](#)

How to obtain the security code

Locate the authentication label, scratch off its coating to obtain the 20-digit security code, then enter the code for verification.



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Global Home

MANUFACTURES

HAS THE PACKAGING BEEN TAMPERED WITH?



So, you bought a new phone?

USERS

SO, YOU BOUGHT A NEW PHONE!

- Buy from a trusted source!
- Check the reviews!
- Is there any sign of tampering (check the seals)?
- Can the origin of the device be verified (check serial # on website)?
- Replace the firmware with the stockrom of the manufacturer!

[CAVEAT: may depend on laws or manufacturer's limitations]

- **Install a mobile security solution from a trusted source!**

One last thing!

LENOVO K3 NOTE K50-T5 – SMARTPHONE FROM 2015 WITH LOLLIPOP

- 4G LTE network support, dual sim slot
- 5.5 inch FHD IPS display
- Octacore MediaTek MT6752 processor at 1.7Ghz
- 2GB of RAM, 16GB internal storage, expandable w/ microSD
- **Android 5.0 Lollipop OS**
- 13 megapixel main camera, 5 megapixel front-facing camera
- OTG USB, WiFi 802.11 b/g/n, Bluetooth 4.0, GPS, FM Radio
- Battery: 3000mAh
- Dimensions: 143.5 x 72.5 x 6.9 mm, Weight: 140g



LENOVO K3 NOTE K50-T5 – SMARTPHONE FROM 2015 **THREE WEEKS LATER**



LENOVO K3 NOTE K50-T5 – SMARTPHONE FROM 2015 **THREE WEEKS LATER**



LENOVO K3 NOTE K50-T5 – SMARTPHONE FROM 2015 **THREE WEEKS LATER**



LENOVO K3 NOTE K50-T5 – SMARTPHONE FROM 2015 THREE WEEKS LATER

Quality Control Check List

Your package was thoroughly checked before it shipped out.

Quality control was accomplish on device

Tablet/ E-book Reader Phone
Color: Black white Red Grey Silver Other: _____

fw Accessories:

Charger Battery Tablet Stand
 Case Bluetooth Waterproof case
 Keyboard case Car charger SD Card
 screen protector Screen protector installed HDMI
 ROOT ****Firmware update will disable root superuser**** Other: _____

If ever an item should be missing, please advise us immediately by contactiong us by EMAIL. Thank you!

LENOVO K3 NOTE K50-T5 – SMARTPHONE FROM 2015 THREE WEEKS LATER

Quality Control Check List

Your package was thoroughly checked before it shipped out.

Quality control was accomplish on device

Tablet/ E-book Reader Phone
Color: Black white Red Grey Silver Other: _____

fw Accessories:

Charger Battery Tablet Stand
 Case Bluetooth Waterproof case
 Keyboard case Car charger SD Card
 screen protector Screen protector installed HDMI

ROOT **Firmware update will disable root superuser** Other: _____

If ever an item should be missing, please advise us immediately by contacting us by EMAIL. Thank you!

ROOT **Firmware update will disable root superuser**

LENOVO K3 NOTE K50-T5 – SMARTPHONE FROM 2015

INITIAL ANALYSIS

- 7 apps were directly flagged for further analysis
 - 2x PUPs
 - 4x clean

- 1x special “Google Search App”
 - Opens Yahoo???
 - 4 ad networks with extensive data uploading
 - Can install other apps from various websites
 - Can show appwalls

LENOVO K3 NOTE K50-T5 – SMARTPHONE FROM 2015

WHAT GIZCHINA SAYS



The Lenovo K3 Note has proven itself to be an amazing budget phablet in our review yet there are a few things that you might need to fix before actually using the phone. Some shops pre-install some custom Vibe UI ROM which includes multi-language and Google Play services. While that might seem like a handy thing to have it isn't in fact since those "shop ROMs" do not support OTA updates, come with lots of bloatware, run much slower than the original Lenovo stock ROM and often include viruses, adware and spyware. Obviously you don't want to face issues like that, so if you find such a ROM on your newly ordered Lenovo K3 Note, make sure to follow this tutorial to get things straight.

Conclusion

QUESTIONS?



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