

Security for mobile broadband

Security you can rely on

Presenter

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Security you can rely on

Contents

Growth in
security
threats

Best in class
security

The trusted
partner

Market
trends

Nokia offering
for security

Operators

Increasing demand for security

Operators face an increasing demand for security

- Transition to all IP
- LTE rollouts
- Heterogeneous networks and cloud
- Smart devices and mobile data traffic explosion
- Regulation
- Security awareness



Growth in security threats

New priorities for operators and end users

Security threats are growing significantly

Threats to mobile networks are growing from application layer, from smartphone malware and from LTE architecture

Total mobile malware grew 614% from March 2012 to March 2013

614%

Detected malicious Android apps increased almost 4 fold to 1.3 million in 2013

1.3M

Source: Trendmicro

Security threats are growing significantly

72% of all malware exploit holes in mobile payments by sending fraudulent premium SMS messages, each generating around \$10 USD in immediate profit

72%

Source: Juniper Networks Third Annual Mobile Threats Report 2013

“2012 witnessed a new level of sophistication in organized denial of service attacks against enterprises across the globe, and they will grow in sophistication and effectiveness in 2013. High-bandwidth DDoS attacks are becoming the new norm and will continue wreaking havoc on unprepared enterprises in 2013.”

DDoS

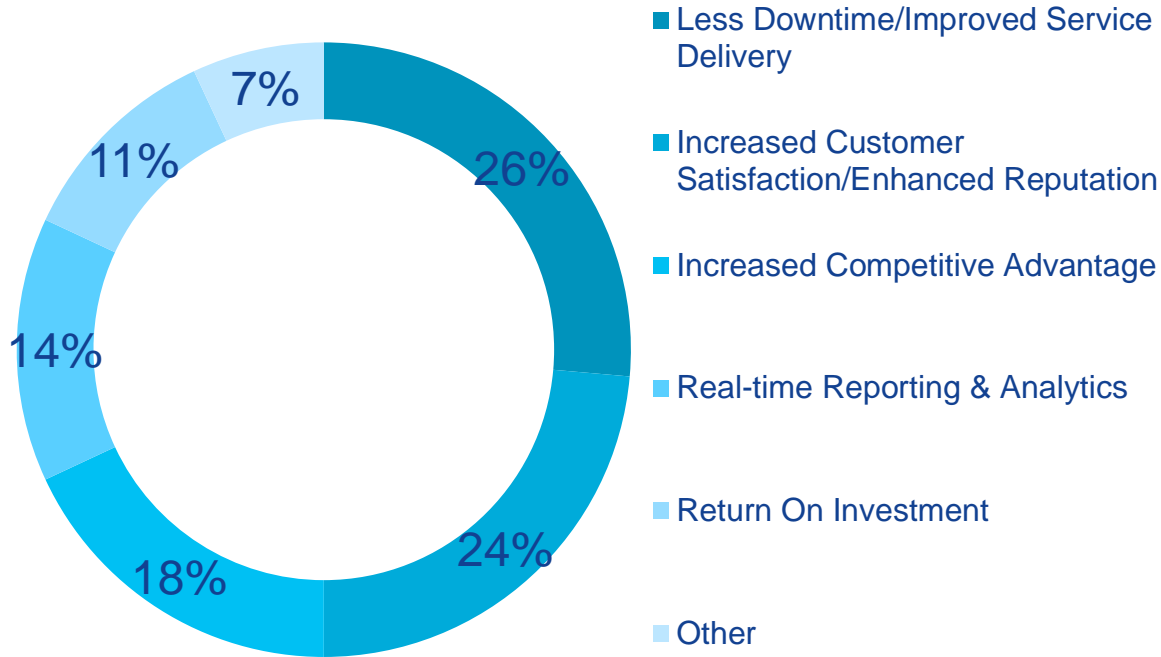
Source: Gartner, press release Feb 21st, 2013

Market trends

The importance of security is increasing

Security is a priority for operators and end-users

Drivers behind mobile network security, 2011-2013*



35%
of mobile operators perceive security as competitive differentiator and platform for revenue growth**

#3
Security is #3 in top priorities for new services***

Sources:

*Heavy Reading Mobile Networks Insider, based on supplier estimates

**Heavy Reading, 3rd Multi-Client Study On Mobile Network Security 2013

***2013 Acquisitions and Retention Study Report from Nokia

Best in class security

Providing the world's most efficient and secure mobile networks

Nokia Security Portfolio

Nokia Network Products Designed for Security

Radio Access Security



3GPP
compliant
security for
radio access

Core Network Security



Protect the
mobile core
and customer
data efficiently

End User Security



Protect the
end-user from
malware and
spam

Security Services: Analyze – Design – Integrate – Optimize - Support

Nokia network products designed for security

Design for security

Feature screening

- Security threat & risk analysis

Systems engineering

- Security requirements
- Security architecture specification

Development

- Secure coding
- Product hardening

Integration & verification

- Security testing

Security vulnerability monitoring

Fault management process

Vulnerability information from public sources



3GPP compliant security for radio access

Threats



Unprotected IP-based
radio access

Eavesdropping

Unauthorized access

Denial of service

3GPP compliant security for radio access

Solution

3GPP compliant solution building blocks

- Macro and micro base stations with built-in IPsec functionality
- Security Gateway and Certificate Authority enabling PKI-based encryption
- Automated certificate lifecycle management

Operator benefits

- Automated and scalable solution for cost effective fulfilment of 3GPP security requirements
- Unified security across access technologies
- 99,999% carrier grade high-availability
- 25% faster rollout and 25% cost savings compared to manual rollout

Protect the mobile core and customer data efficiently

Threats



Denial of Service attack

Eavesdropping

Theft of subscriber data

Unauthorized access

Compromise of core network element

Manipulation of network configuration

Protect the mobile core and customer data efficiently

Solutions

Carrier grade solution building blocks

Firewalls

Intrusion Detection and Prevention Systems

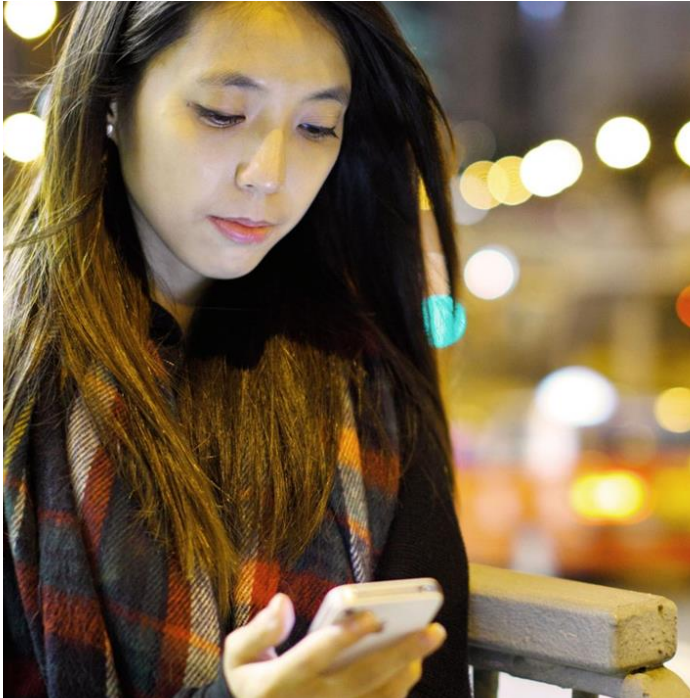
Secure Domain Name Systems

Operator benefits

- Protect all-IP core domains against attacks from Internet, roaming interface and smart devices
- Maintaining confidentiality and integrity of data
- Pre-validated configurations to reduce deployment time and assure performance

Protect the end-user from malware and spam

Threats



Malware from email and web

Mobile botnets

Phishing attacks

Breach of subscriber privacy

Malicious sending of premium SMSs

Infected mobile devices

Protect the end user: Network based web and email filtering

Customer care



Self Care Portal

Operator network & operations

Network-based Content Security



Web
Security



E-mail
Security

Service Oriented Architecture

Billing
Integration



CRM
Integration



Services

Internet



Enterprise



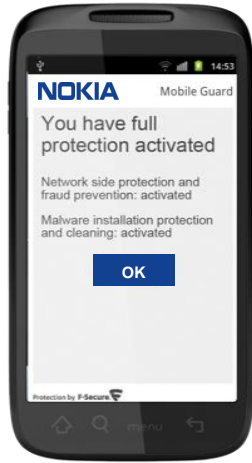
Key use cases

- > URL filtering:
Safe Browsing
- > Parental control:
child protection
- > E mail Anti-
spam: network
protection
- > Anti-malware:
download
prevention

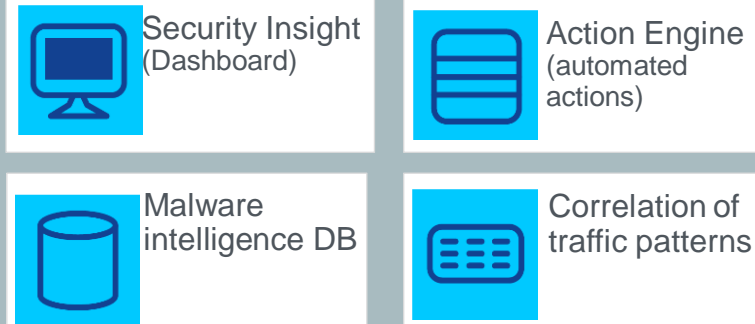
Mobile Guard

Complete end-user protection

Prevent: Device client AntiVirus cleans the malware on the device



CEM on Demand **Mobile Guard**



Radio Network

Core network

Monitor: Shows mobile malware security threats, e.g. infected subscribers, most active malware, most affected devices

Detect: Correlates traffic patterns from telco network with malware patterns from:

- Malware intelligence database
- Self-learned patterns

Mitigate: Minimizes negative impacts by applying automated actions, e.g.:

- Inform subscriber (SMS)
- Block value added services

Protect the end user from malware and spam

Solutions

Carrier grade solution building blocks

Network based web and email filtering

Network based mobile malware protection

Optional anti virus client

Operator benefits

- Attract new subscribers and reduce churn by protecting end users from malware and spam
- Save OPEX in customer care with proactive support for infected subscribers
- Increase revenue by selling security as a service to private and enterprise customers
- Increase competitive advantage with modular network- and client based protection

Introduction to Nokia security ecosystem



Provider of market leading security gateways, which combined with Nokia's integration expertise form the most reliable and secure telco environment.



Global provider of security as a service through operators for both consumer and enterprise customers.



Helps mobile operators deliver low-latency Internet services and secure their DNS infrastructure against malware and DoS/DDoS attacks.



Provides sophisticated PKI products and services for mission-critical customers globally. Joint solution for device authentication ensures superior security in LTE networks.



Leader in security, providing comprehensive solutions that are easy to create and scale, protecting consumer data and privacy, as well as operator infrastructure.



Internet security global leader enabling Security-as-a-Service and delivering high-performance multi-tenant solutions to service providers.

Helping operators ensure best-in-class security

- End-to-end security solutions tailored to Mobile Operators needs
- Strong security ecosystem including market leading security product vendors
- Market leader on LTE security with 3GPP compliant scalable solution
- Active in establishing security standards
- Dedicated security resources



Nokia offering for security

- Secure network products
- Radio access security
- Core network security
- End user security
- Security management

Nokia is the market leader in secure MBB networks

Security projects
world-wide – from design
to support

500+

Certifications held by our
security experts, e.g.
CISSP

350+

Firewalls installed on
operator networks

4000+

Commercial LTE
networks secured

No. 1

Global presence, fostered by a
dedicated global expert pool



Active role in establishing
key security standards

10+

Security – from risk and cost to profit and growth

TOP 12 customer references



End-to-end security solution for Packet Core and LTE Transport



Radio transport security solution for reliable and secure 4G services



Security for the innovative subscriber database solution of T-Mobile Germany



Tele2 Netherland secured LTE radio using 2600 MHz and 800 MHz frequency bands.



Everything Everywhere completes Radio Access Security solution



Telekom Srbija overcomes security challenges in a cost-effective way



China Mobile JiangSu improves network resilience to growing security challenges



Revenue-boosting content security solution in half the time for Vodafone Spain



Eplus improves network security for radio network



Proactive security mgmt. gives HCPT peace of mind and keeps fraudsters at bay



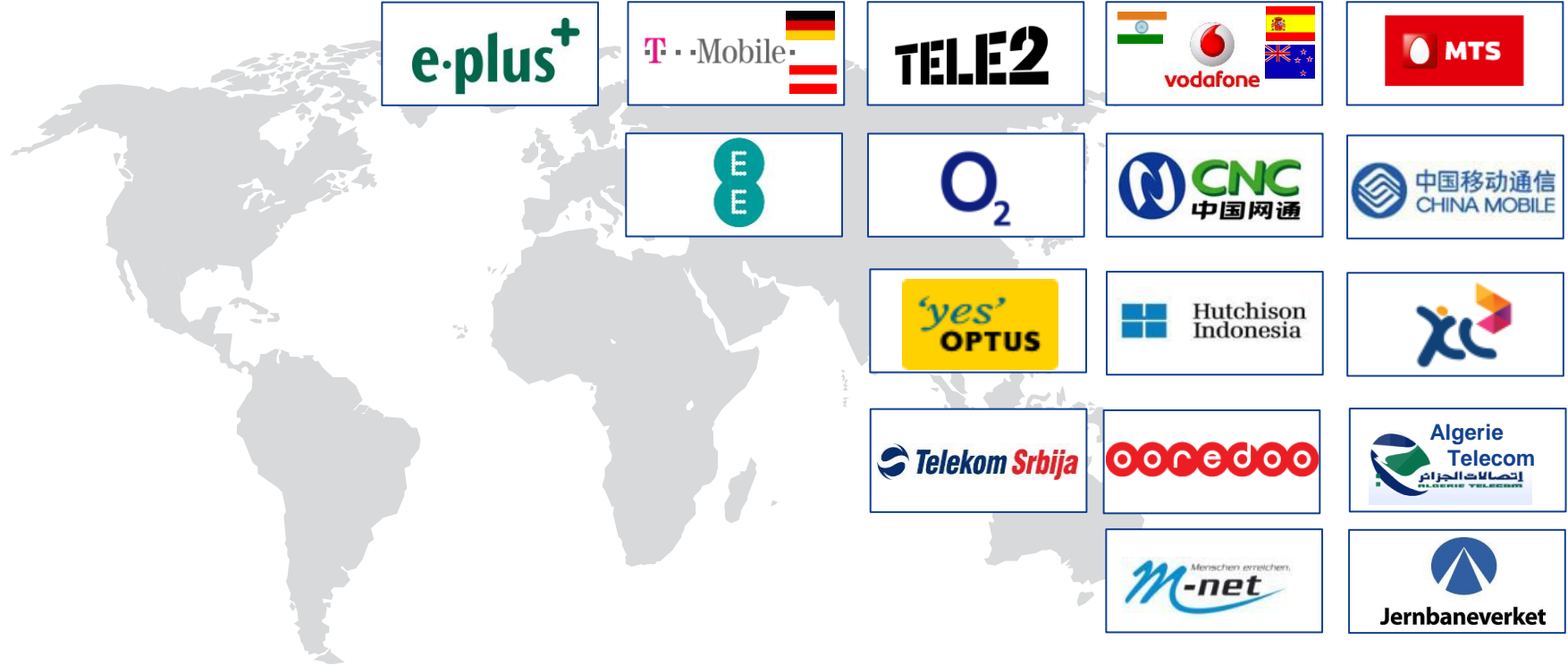
Securing IP infrastructure a breeze for Excelcomindo with security consulting



Enabling O2 Czech Republic to deliver 'Security as a Service' from the network

Security – from risk and cost to profit and growth

Public references



NOKIA