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It’s ironic; many of the same things that drive business forward today are often the primary points of entry or vectors of attack that can damage your organisation.

Mobile workers accessing networks through an array of devices can increase productivity and collaboration—but create new challenges for maintaining firewalls. New channels and platforms for deploying applications and engaging with customers can improve brand loyalty—but open new points of vulnerability. Nearly seamless anytime, anywhere access to information can help drive sales on a 24-hour cycle—but requires eternal vigilance.

With the right defence, you can move ahead with confidence. It starts with network-based security from Level 3.
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NAVIGATING THE THREAT LANDSCAPE

Every new connection among your systems, employees, partners and customers is a potential point of vulnerability.

PRIMARY RISKS ACROSS TODAY’S THREAT LANDSCAPE:

- **Network and application layer attacks, such as distributed denial of service (DDoS)**
  Frequency: Very common

- **Social Engineering—Phishing**
  Frequency: Very common

- **Various strains of malware**
  Frequency: Increasing every year

- **Zero-day attacks**
  Frequency: Moderate, but increasing rapidly

- **Device loss or theft**
  Frequency: Very common

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72% OF CYBERSECURITY EVENTS WERE TRACED TO MALICIOUS OUTSIDERS¹

28% WERE DUE TO MALICIOUS OR ACCIDENTAL ACTIONS BY INSIDERS²

² Ibid.
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**PRIMARY RISKS ACROSS TODAY’S THREAT LANDSCAPE:**

1. **Network and application layer attacks, such as distributed denial of service (DDoS)**
   - Frequency: Very common
   - Disrupts servers and network resources connected to the Internet
   - Attack packages easy to find on the black market
   - Often launched to distract focus from other attacks or fraudulent transactions

2. **Social Engineering—Phishing**
   - Frequency: Very common

3. **Various strains of malware**
   - Frequency: Increasing every year

4. **Zero-day attacks**
   - Frequency: Moderate, but increasing rapidly

5. **Device loss or theft**
   - Frequency: Very common

72% of cybersecurity events were traced to malicious outsiders1
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  Frequency: Very common

- Social Engineering—Phishing
  Frequency: Very common
  - Uses psychological manipulation to get people to perform certain actions or divulge confidential information, such as login credentials or other personally identifying information.
  - Difficult to detect, as the email source often appears legitimate

- Various strains of malware
  Frequency: Increasing every year

- Zero-day attacks
  Frequency: Moderate, but increasing rapidly

- Device loss or theft
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  Frequency: Increasing every year
  - Spyware
    Software that threatens privacy due to malicious redirecting (hijacking) of users to servers that secretly collect users’ data
  - Ransomware
    Malicious code that holds victims’ data hostage until a “ransom” fee is paid
  - Viruses, Trojans and worms
    Various types of malicious code that infiltrate IT systems, consume resources, inflict damage to critical systems, or steal or destroy data
- Zero-day attacks
  Frequency: Moderate, but increasing rapidly
- Device loss or theft
  Frequency: Very common

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- Various strains of malware
  Frequency: Increasing every year

- Zero-day attacks
  Frequency: Moderate, but increasing rapidly
  - Vulnerabilities in software that are exploited by hackers before a “fix” can be developed and applied

- Device loss or theft
  Frequency: Very common

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  Frequency: Increasing every year

- Zero-day attacks
  Frequency: Moderate, but increasing rapidly

- Device loss or theft
  Frequency: Very common
  - Increasingly dangerous due to penetration of BYOD policies and the expanding mobile workforce

72% of cybersecurity events were traced to malicious outsiders

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2 Ibid.
EXPERTS SAY IF YOU HAVEN’T YET BEEN ATTACKED YOU WILL BE—AND SOON

EVERY MONTH, YOU FACE:
- 17 Attacks by malicious codes³
- 12 Sustained probes³
- 10 Incidents of unauthorised access³

INCREASING THREATS:
- 6.2 billion Malicious attacks on user computers and mobile devices blocked in 2014, 1 billion more than in 2013⁴
- 12,100 Mobile banking trojans identified, 9 times as many as in 2013³
- 295,500 New mobile malicious programs identified—2.8 times more than in 2013⁴

EFFECT ON BUSINESS:
- $5.6 million in 2015 for costs per incident associated with customer turnover, new customer acquisition, damage to reputation and goodwill—nearly 4x greater than in 2014
- $6.2 million Average cost of a data breach in 2014⁵

FINANCIAL IMPACT:
- 23% Increase since 2013

LOST BUSINESS VALUE:

³ Ponemon Institute, 2014 Cost of a Data Breach Study
⁴ Kaspersky Labs research, based on users of their security software
⁵ Ponemon Institute, 2015 Cost of Data Breach Study: Global Analysis, May 2015

Note: all numbers and statistics are approximate.
OUR PERSPECTIVE ON SECURITY

The sophistication, persistence and global nature of today’s complex cyber threats require a more effective defence. Our approach is rooted in the idea that we’re all stronger when we work together to take on these increasingly difficult challenges.

Attackers commonly share their expertise and methods. The security community must partner as well. Collaboration will benefit everyone as we leverage our combined expertise and strategies for safeguarding data while maintaining privacy.

Level 3 actively seeks opportunities to work with leading security organisations to strengthen the security profile of our customers and the Internet in general. That collaboration, along with our truly global reach and comprehensive vantage point as an operator of a global fibre network that connects the world, gives us the ability to see more threats as they develop—and stop them before they mature.

82% of companies with high-performing security practices collaborate with others to deepen their knowledge of security and threat trends.  

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During September 2014, the information security community identified an emerging persistent threat to Internet traffic. Nicknamed SSHPsychos, the new botnet demonstrated an ability to launch massive DDoS attacks Internet-wide. Level 3’s Threat Research Labs and Cisco’s Talos Group worked together to investigate the threat, block its traffic from the Level 3 network, and perform outreach to other network operators globally to remove it from the Internet.

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WE SEE MORE, SO WE STOP MORE

Certified security professionals operate the Level 3 Threat Research Lab and our globally dispersed Security Operations Centres (SOCs).

LEVEL 3 THREAT RESEARCH LABS
Security specialists monitor communications between malicious actors and their victims, enabling us to predict risks, detect attacks and track zero day exploits.

SECURITY OPERATIONS CENTRES
Staffed 24x7 with analysts and engineers ready to efficiently respond to your security issues, our SOCs respond to physical and logical alarms, attacks, and suspicious or abnormal network activity.

EACH DAY, OUR SECURITY EXPERTS TRACK, MONITOR AND MANAGE:

- MALICIOUS PACKETS: 1 MILLION
- ROUTE MILES OF FIBRE GLOBALLY: 200,000
- SECURITY EVENTS: ~1.3 BILLION
- NETFLOW SESSIONS FOR MALICIOUS ACTIVITY: 45 BILLION

Note: all numbers and statistics are approximate.

7 Level 3 internal research
WE SEE MORE, SO WE CAN STOP MORE

Certified security professionals operate the Level 3 Threat Research Lab and our globally dispersed Security Operations Centres (SOCs).

DEVELOPING ACTIONABLE THREAT INTELLIGENCE

We monitor command and control servers worldwide, along with known malware and phishing domains, giving us deep visibility into where threats originate. Every day, experts in our Threat Research Labs proactively analyse the global threat landscape, sharing that information to help defend our customers and the public Internet. We also track communications traffic, seeking abnormalities such as changes in traffic patterns, which can indicate an impending attack. Armed with this threat information, Level 3 acts to protect our customers and our network.

EACH DAY, OUR SECURITY EXPERTS TRACK, MONITOR AND MANAGE:

- 200,000 ROUTE MILES OF FIBRE GLOBALLY\(^7\)
- \(~1.3\) BILLION SECURITY EVENTS
- 45 BILLION NETFLOW SESSIONS FOR MALICIOUS ACTIVITY
- 1 MILLION MALICIOUS PACKETS
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REAL-WORLD SUCCESS
LEVEL 3 TAKES ON POSEIDON

PoSeidon, one of the most sophisticated recent examples of point-of-sale (PoS) malware, stole credit card data from compromised PoS systems and sent it to hackers in near real time. Level 3 Threat Research Labs monitored traffic to identify victims, isolated the attack’s criminal origins, and worked quickly to reduce the impact of the attack.

READ MORE.
CHAPTER 06 » NETWORK BASED SECURITY OWN YOUR DEFENSE

NETWORK-BASED SECURITY
OWN YOUR DEFENCE

Traditional point security solutions have had their day. But those reactive, isolated point solutions are simply unable to keep pace with the complexities of today’s business environments and the evolving nature of threats.

Point solutions are labour intensive, needing to be individually managed and updated, and trying to get a complete picture of an organisation’s security posture is time consuming—if it can be done at all.

LEVEL 3 IS THE BETTER CHOICE FOR NETWORK-BASED SECURITY

Proactive, network-based security from Level 3 eliminates the complexity of point solutions and simplifies the management of your security profile. Level 3 will work with you make the transition to an outsourced model, helping you cut the costs of administration and reduce capital investment requirements—freeing budget and staff for other critical business needs.

WE MAKE THE CONVERSION TO NETWORK-BASED SECURITY EASY

Transition incrementally, to evaluate the service with very low risk. We’ll identify the most efficient implementation strategy, while minimising disruption through comprehensive support and guidance every step of the way.

BACKED 24X7 BY CERTIFIED, HIGHLY EXPERIENCED SECURITY PROFESSIONALS, NETWORK-BASED SECURITY SERVICES ARE AVAILABLE TO DELIVER A LAYERED DEFENCE THAT ENHANCES SECURITY AS BUSINESSES EVOLVE AND GROW.
Network-based security from Level 3 is built around four essential actions:

**Detect**
Those insights help us detect even the most sophisticated attacks before they occur.

**Alert**
We alert customers to the threat, provide details of our response, and notify them of any further action they should take.

**Secure**
We secure the network, protecting your business critical information and systems.

**Predict**
We predict threats by unlocking analytics-based insights from global threat traffic.
WE HAVE A DIFFERENT PERSPECTIVE ON SECURITY

NETWORK-BASED SECURITY IN ACTION

Network-based security from Level 3 is built around four essential actions:

1. **DETECT**
   - Those insights help us detect even the most sophisticated attacks before they occur.

2. **ALERT**
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3. **SECURE**
   - We secure the network, protecting your business critical information and systems.

4. **PREDICT**
   - We predict threats by unlocking analytics–based insights from global threat traffic.

**PREDICT**

WE PREDICT THROUGH ANALYTICS THAT UNLOCK INSIGHTS INTO GLOBAL THREATS.

Our unique perspective and vast global network gives the security experts in the Level 3 Threat Research Labs both a broad view of the threat landscape and the ability to track potential bad actors across the Internet. Bad actor profiles are defined based on “big data” behavioural analytics, threat intelligence research and third-party correlation.

**DETECT**

Those insights help us detect even the most sophisticated attacks before they occur.
NETWORK-BASED SECURITY IN ACTION

Network-based security from Level 3 is built around four essential actions:

1. **DETECT**
   We use these insights to detect potential issues and expose even the most sophisticated attacks before they occur.
   The Level 3 global network acts as a sensor for anomalous traffic. Armed with rich threat intelligence, our 24x7 global Security Operations Centres vigilantly monitor our network and systems for any indicators of physical and virtual malicious activity. Using insight gained through our deep visibility across multiple network layers, we can in many cases, shut down attacks right at the source, before they do damage.

2. **PREDICT**
   We predict threats by unlocking analytics-based insights from global threat traffic.

3. **ALERT**
   We alert customers to the threat, provide details of our response, and notify them of any further action they should take.

4. **SECURE**
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  We secure the network, protecting your business critical information and systems.

- **PREDICT**
  We predict threats by unlocking analytics-based insights from global threat traffic.

**WE ALERT YOU TO THREATS AND HELP YOU KNOW WHAT ACTIONS YOU SHOULD TAKE NEXT.**

Depending on the type and severity of attack, our customers may receive a call from a global Security Operations Centre, auto-alerts, firewall updates or auto-mitigation. Customers may also call into our Security Operations Centre to initiate security countermeasures. Our Security portal, with 2-factor user authentication, provides secure access into alerts, mitigation, and reports.
WE HAVE A DIFFERENT PERSPECTIVE ON SECURITY

NETWORK-BASED SECURITY IN ACTION

Network-based security from Level 3 is built around four essential actions:

1. DETECT
   Those insights help us detect even the most sophisticated attacks before they occur.

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   We alert customers to the threat, provide details of our response, and notify them of any further action they should take.

3. SECURE
   We secure the network, protecting your business critical information and systems.

4. PREDICT
   We predict threats by unlocking analytics-based insights from global threat traffic.

AND WE SECURE THE NETWORK, TO ENSURE THAT YOUR CRITICAL INFORMATION IS PROTECTED.

Network-based security solutions provide protection closer to the edge, near the point of attack. DDoS mitigation, network-based managed firewall, unified threat management (UTM), email and web protection, and real-time security reporting can all be managed efficiently and effectively right in the network. You’re protected 24x7 by our Security Operations Centres, which continuously monitor the threat landscape and are “on call” whenever your team needs additional support. Our security countermeasures can be enacted on your behalf depending upon global threat intelligence, all based on mutually agreed upon scenarios.
THE LEVEL 3 MANAGED SECURITY SERVICES PORTFOLIO

Level 3 is dedicated to providing you with 24x7 business continuity. The size and sophistication of our global network gives us access to a massive amount of security threat data, so we can help protect you from attacks before they affect your business.
SECURITY PROFESSIONAL SERVICES

Defending against today’s complex security threats requires a dedicated team of specialists. By drawing on expertise and insight gained from serving a global customer base and managing a diverse fibre network, we will develop a comprehensive security plan that enables your business to operate with confidence wherever you choose.

KEY FEATURES

- Identifies areas of concern through penetration testing and vulnerability assessments
- Defines a security strategy that maps security policy to critical applications, corporate culture, staff, processes and technologies
- Augments your security blueprint to include a recommended plan, set of priorities and expected return on investment (ROI)
- Measures results and value creation
- Provides a trusted security advisor every step of the way

BENEFITS

- Provides unbiased advice on the state of your current security posture
- Delivers a clear roadmap and detailed action plan for improving your network security
- Enables rapid return on investment
LEVEL 3 DDOS MITIGATION SERVICE

Today’s highly sophisticated distributed attacks require more than typical scrubbing centre mitigation techniques. Our network-based DDoS mitigation solutions defend enterprise resources through a multi-layered security approach backed by extensive threat research.

KEY FEATURES

• Provides 4.5 Tbps of attack ingestion capacity
• Can be paired with network protection services that includes routing, filtering and rate limiting
• Enables reroute and scrubbing of all Internet connections, not just Level 3 on-net capacity
• Connect via GRE, Proxy or more than 250 multiprotocol label switching (MPLS) points of presence (POPs) globally

BENEFITS

• Leverages Level 3 threat intelligence capabilities, based on our global IP networks, content delivery networks (CDNs) and domain name server (DNS) networks, which enable unique visibility into attack traffic and emerging threats
• Helps ensure business continuity and safeguard brand reputation, by keeping critical assets and systems up and running
• Simplifies operations, through network-based, carrier-agnostic service with a single point of contact for threat resolution
LEVEL 3 MANAGED SECURITY SERVICES

Moving managed firewalls and UTM into the network helps you to simplify security infrastructure and operations, while reducing costs. And with gateways on four different continents, we offer a low latency access option for improved Internet speeds and quick application response times.

KEY FEATURES

Delivers the protections you need most:

- 24x7 proactive monitoring and alerts
- Firewall
- Premises or cloud-based deployments
- Intrusion protection
- Web content filtering
- Antivirus/Anti-spam
- Real-time security reporting

BENEFITS

- Scales easily and cost effectively to support networks regardless of size, number of sites, traffic volumes or geographic location
- Controls both capital expenditures and operating expenses, while providing predictable monthly costs and freeing staff for other projects
- Simplifies IT management by providing Level 3 experts, knowledge, systems and technologies that deliver “always on” Internet security
- Defends against a wide range of malware and attack types, helping secure your Internet connections from threats to business-critical applications, systems and endpoints
LEVEL 3 SECURE ACCESS SERVICES

Our dedicated team of certified security specialists provides 24x7 monitoring and threat analysis of your security appliances for a complete view of security incidents. And we’ll keep your network safe—without sacrificing accessibility.

KEY FEATURES

Three options are available:

- **Site option**: Extends virtual private network (VPN) access to small or remote offices with a basic Internet connection, and helps ensure data remains unmodified and private while in transit.

- **Mobility option**: Securely connects remote users or teleworkers to networks, critical data and applications via laptops, tablets or smartphones.

- **Cellular option**: Provides secure 4G/LTE cellular connectivity for small remote sites, providing backup in the event of primary VPN connectivity failure.

BENEFITS

- Delivers confidence through continuous protection of your sensitive data.

- Solutions managed and monitored 24x7 by our security experts, which frees resources, so your team can focus on growing your business.

- Drives better productivity by giving employees safe, secure network access from anywhere, on any device.
THREAT INTELLIGENCE

Our comprehensive vantage point and global footprint enables us to monitor massive Internet traffic volumes for malicious activity. We can help you identify threat communications before they infiltrate your data, systems and network.

KEY FEATURES

• Provides threat impact reporting that gives insights on botnet behavior, DDoS attack patterns and other vulnerabilities
• Speeds research into geographic trends, victim and successful attacker profiles, and discover why tracking two-way communications is critical for mitigating evolving cyber threats.

BENEFITS

• Reveals where threats originate, through regular monitoring of known command and control servers, as well as malware and phishing domains
• Tracks traffic to detect abnormal spikes that are a leading indicator of cyber threats
• Helps defend against social engineering, using techniques that focus on intelligent, role-based targeted attacks
DEFEND YOUR BUSINESS WITH NETWORK-BASED SECURITY FROM LEVEL 3


Getting started is easy. Our security solutions architects are ready to assess your current security infrastructure and explore how our network-based security and managed security solutions can help keep your organisation secure, within the ever-evolving global threat landscape.

And, if you’re currently planning your next network expansion, this may be the perfect time to make the switch. We can implement network-based security on just the expanded network area only, so you can experience the benefits firsthand, before rolling out this improved protection across the organisation.

LEARN MORE ABOUT NETWORK-BASED SECURITY, OR OTHER LEVEL 3 SECURITY SERVICES, AT:

www.level3.com

TAKE CONTROL OF YOUR NETWORK SECURITY. OWN YOUR DEFENCE.