CERT.br
Incident Handling and Network Monitoring Activities

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Computer Emergency Response Team Brazil - **CERT.br**

Network Information Center Brazil - **NIC.br**
Brazilian Internet Steering Committee - **CGI.br**

Agenda

- Our Organization and Mission
  - Brazilian Internet Governance
- CERT.br Incident Handling activities
  - Reactive
  - Proactive
  - Network Monitoring

The Brazilian Internet Steering Committee - CGI.br

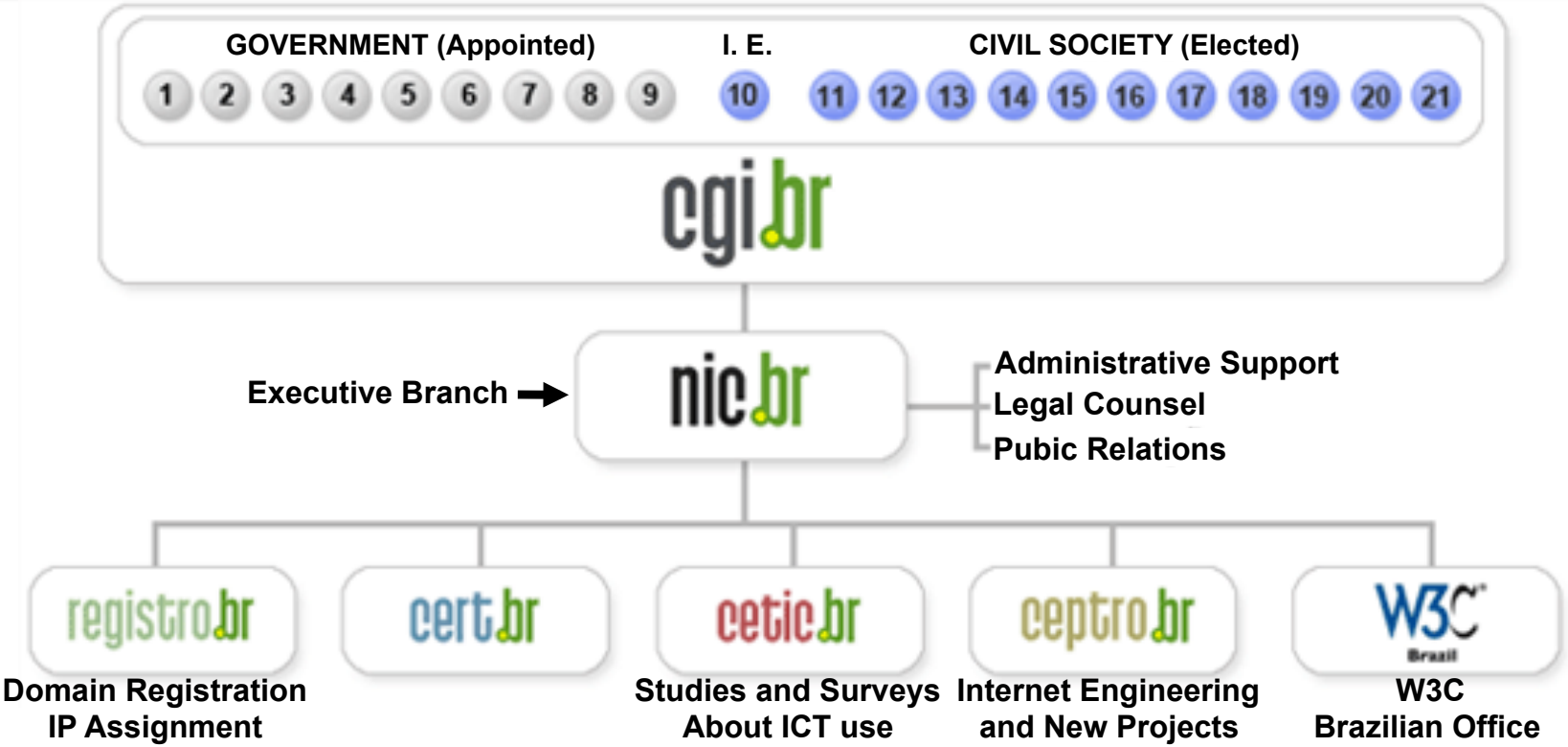
CGI.br is a multi-stakeholder organization created in 1995 by the Ministries of Communications and Science and Technology to coordinate all Internet related activities in Brazil.

Among the diverse responsibilities reinforce by the Presidential Decree 4.829, has as the main attributions:

- **to propose policies and procedures related to the regulation of Internet activities**
- **to recommend standards for technical and operational procedures**
- **to establish strategic directives related to the use and development of Internet in Brazil**
- **to promote studies and recommend technical standards for the network and services' security in the country**
- **to coordinate the allocation of Internet addresses (IP) and the registration of domain names using <.br>**
- **to collect, organize and disseminate information on Internet services, including indicators and statistics**

http://www.cgi.br/english/

CGI.br and NIC.br Structure



1 – Ministry of Science and Technology (Coordination)
2 – Ministry of Communications
3 – Presidential Cabinet
4 – Ministry of Defense
5 – Ministry of Development, Industry and Foreign Trade
6 – Ministry of Planning, Budget and Management
7 – National Telecommunications Agency
8 – National Council of Scientific and Technological Development
9 – National Forum of Estate Science and Technology Secretaries
10 – Internet Expert

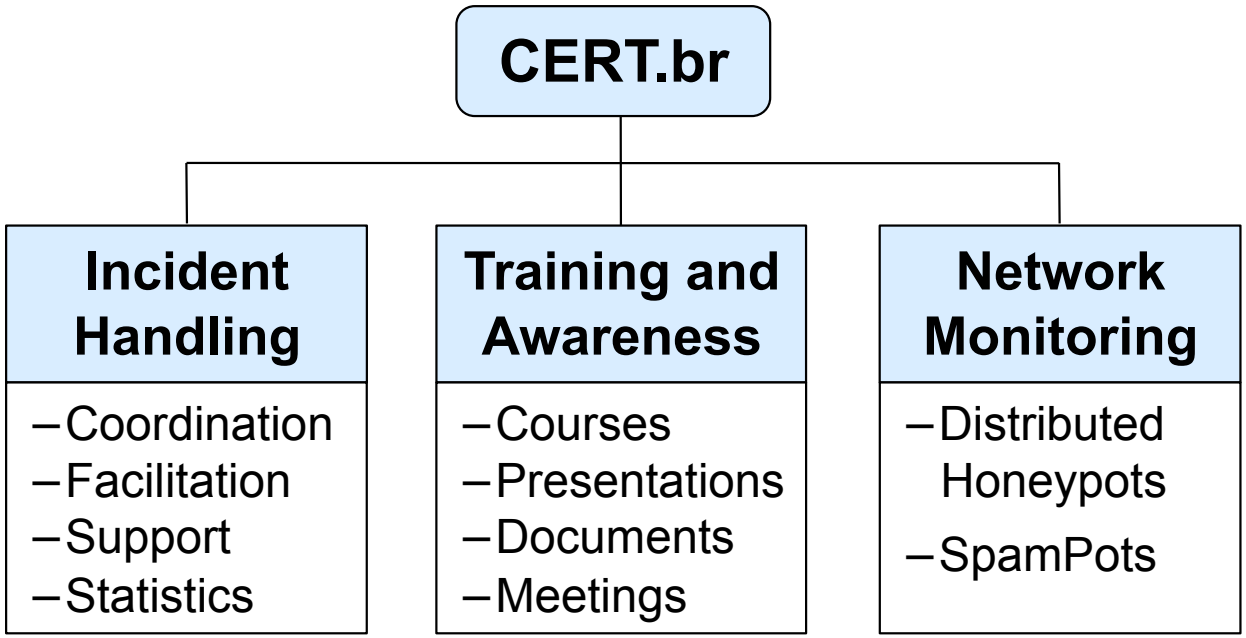
11 – Internet Service Providers
12 – Telecommunication Infrastructure Providers
13 – Hardware and Software Industries
14 – General Business Sector Users
15 – Non-governmental Entity
16 – Non-governmental Entity
17 – Non-governmental Entity
18 – Non-governmental Entity
19 – Academia
20 – Academia
21 – Academia

Early Developments on Incident Handling in Brazil

- August/1996: CGI.br released the report: "*Towards the Creation of a Security Coordination Center for the Brazilian Internet*."[1]
- June/1997: CGI.br created CERT.br (at that time called NBSO), as a CSIRT with national responsibility, based on the report's recommendation[2]
- August/1997: the Brazilian Research Network (RNP) created it's own CSIRT (CAIS) [3], followed by the Rio Grande do Sul Academic Network (CERT-RS)[4]
- 1999: other institutions, including Universities and Telecommunication Companies started forming their CSIRTs
- 2003/2004: task force to discuss the structure of a CSIRT for the Federal Government Administration
- 2004: CTIR Gov was created, with the Brazilian Federal Government Administration as their constituency[5]

[1] http://www.nic.br/grupo/historico-gts.htm
[2] http://www.nic.br/grupo/gts.htm
[3] http://www.rnp.br/_arquivo/documentos/rel-rnp98.pdf
[4] http://www.cert-rs.tche.br/cert-rs.html
[5] http://www.ctir.gov.br

CERT.br Activities



FIRST Improving Security Together MEMBER

APWG RESEARCH PARTNER www.antiphishing.org

SEI Partner Carnegie Mellon

Staff:

- 8 Security Analists
  - 2 with PhD
  - 4 with MSc

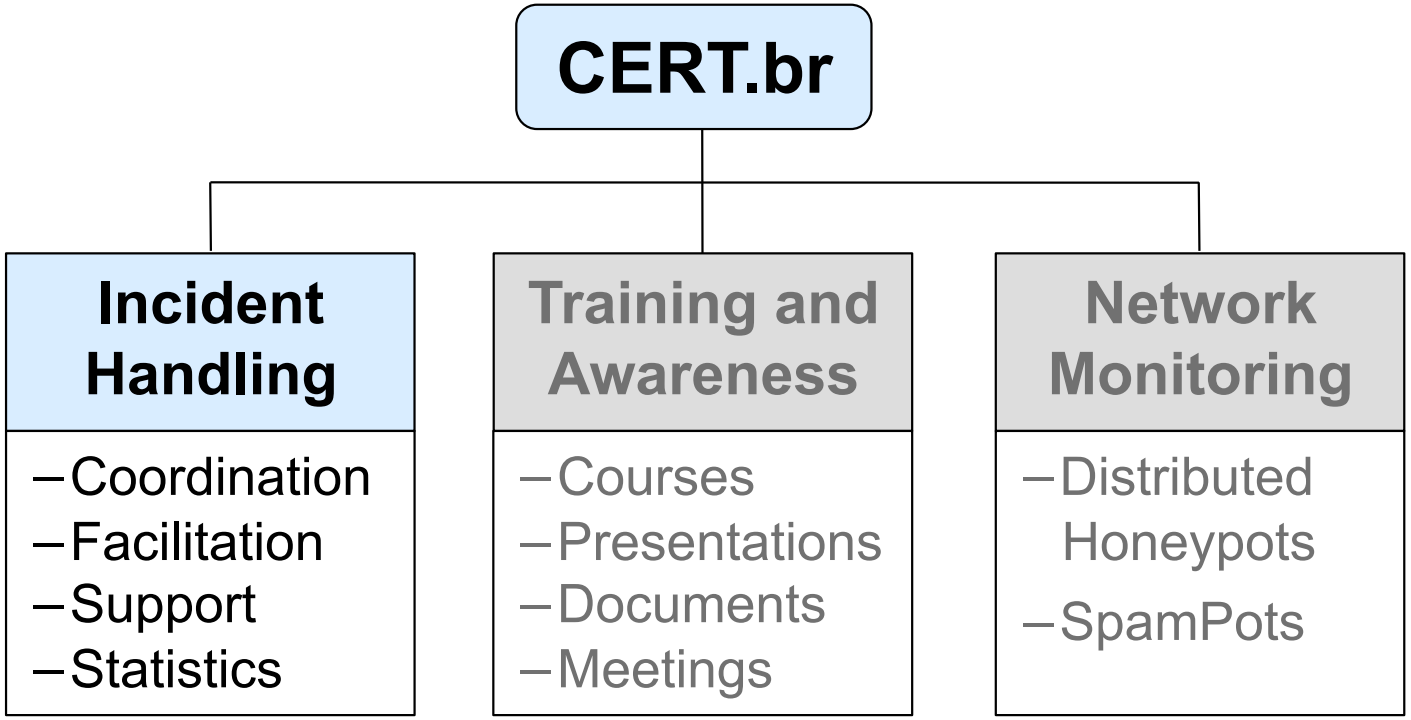
Staff background:

- Computer Science or Engineering degrees
- System Administration
- Network Security

Staff shared with NIC.br/ CGI.br:

- Administrative Support
- Legal department
- Public Relations
- 24/7 Data Center and Network Operations Support

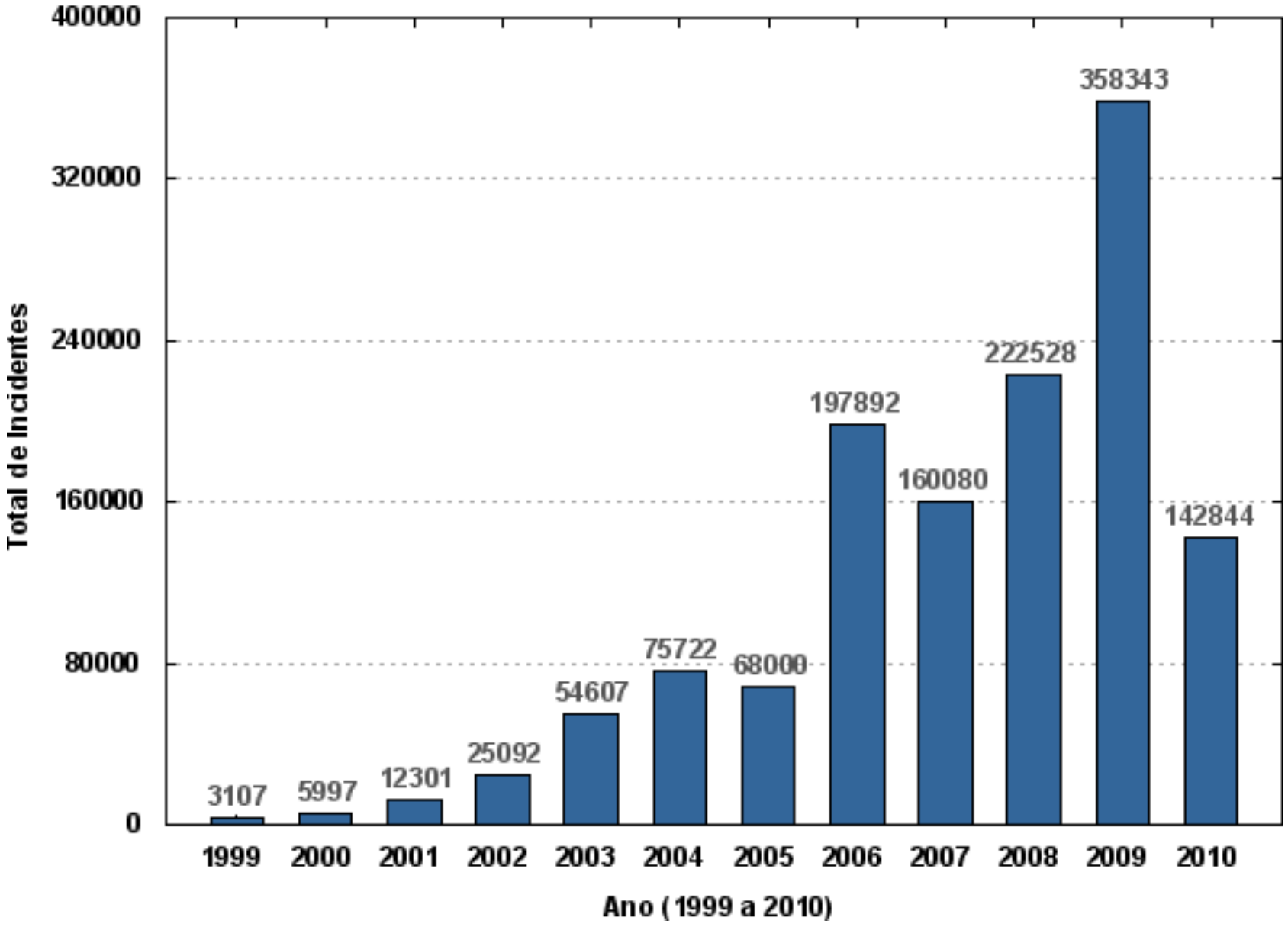
http://www.cert.br/about/


CERT.br
Incident Handling
– Coordination
– Facilitation
– Support
– Statistics
Training and Awareness
– Courses
– Presentations
– Documents
– Meetings
Network Monitoring
– Distributed Honeypots
– SpamPots

CERT.br Incident Handling Activities

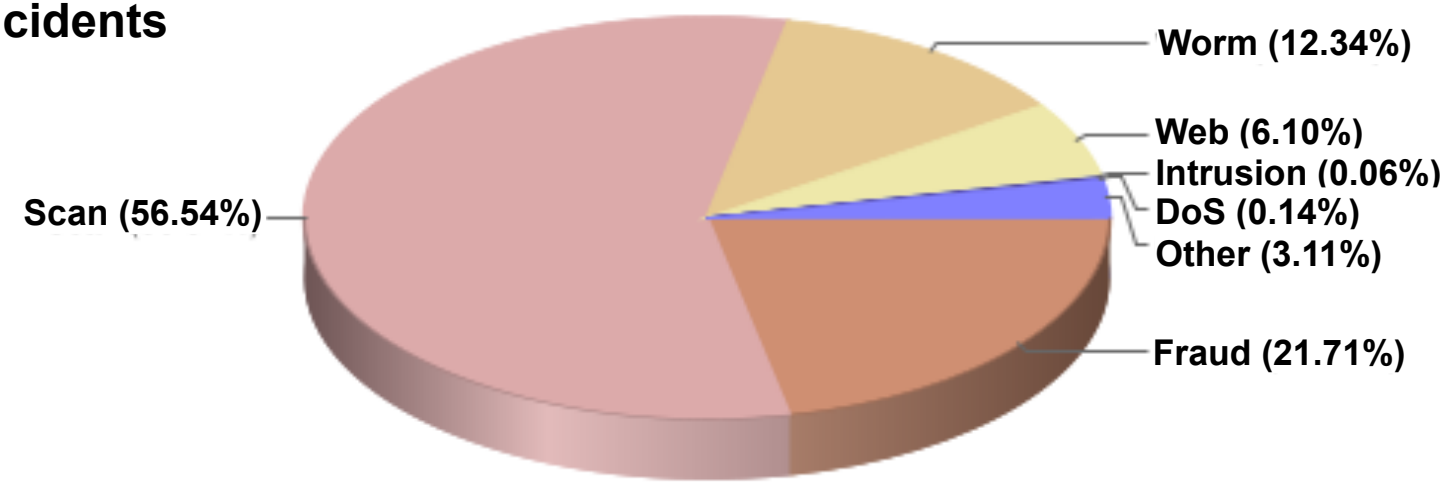
- Provides a focal point for incident notification in the country
- Provides the coordination and necessary support for organizations involved in incidents
- Supports the analysis of compromised systems and their recovery process
- Establishes collaborative relationships with other entities, such as other CSIRTs, Universities, ISPs and telecommunication companies
- Maintains public statistics of incidents handled and spam complaints received

Incidents Reported to CERT.br – 1999-2010

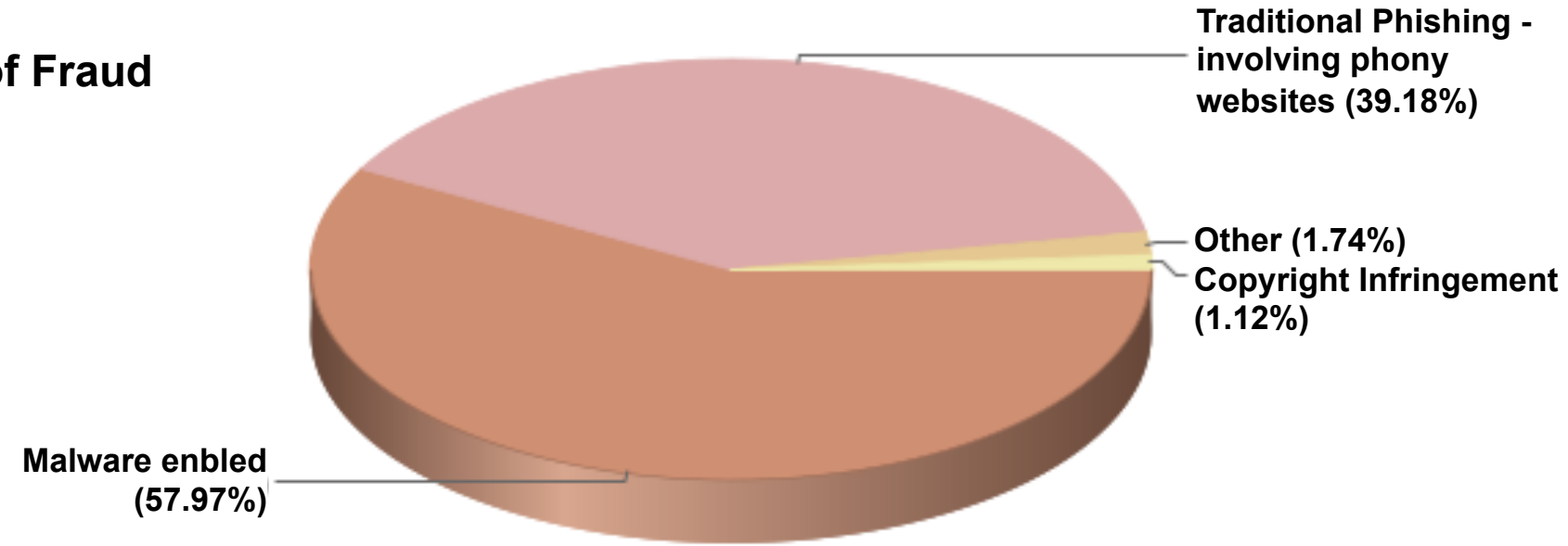


Incidents Reported to CERT.br in 2010

Types of Incidents



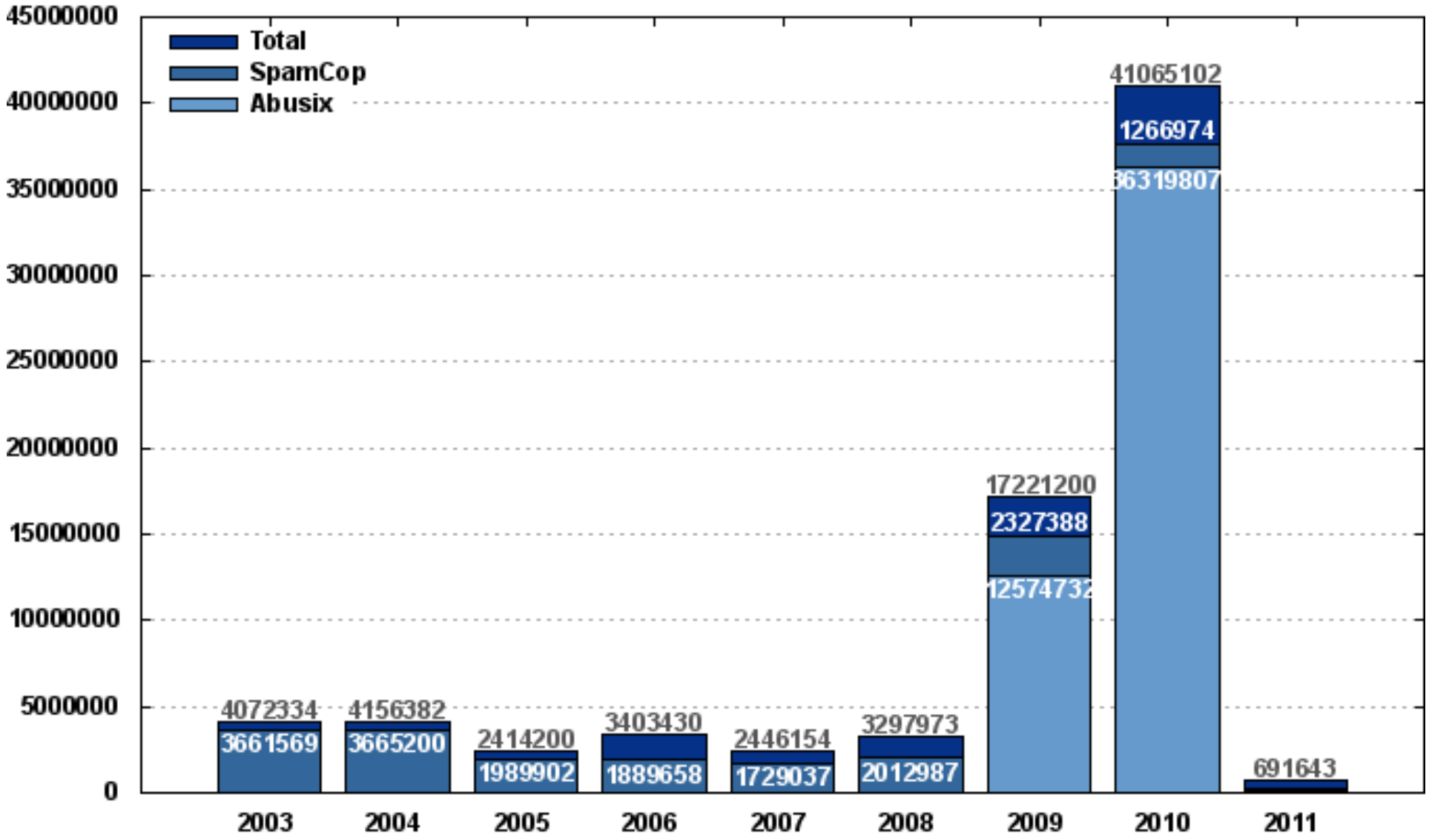
Types of Fraud



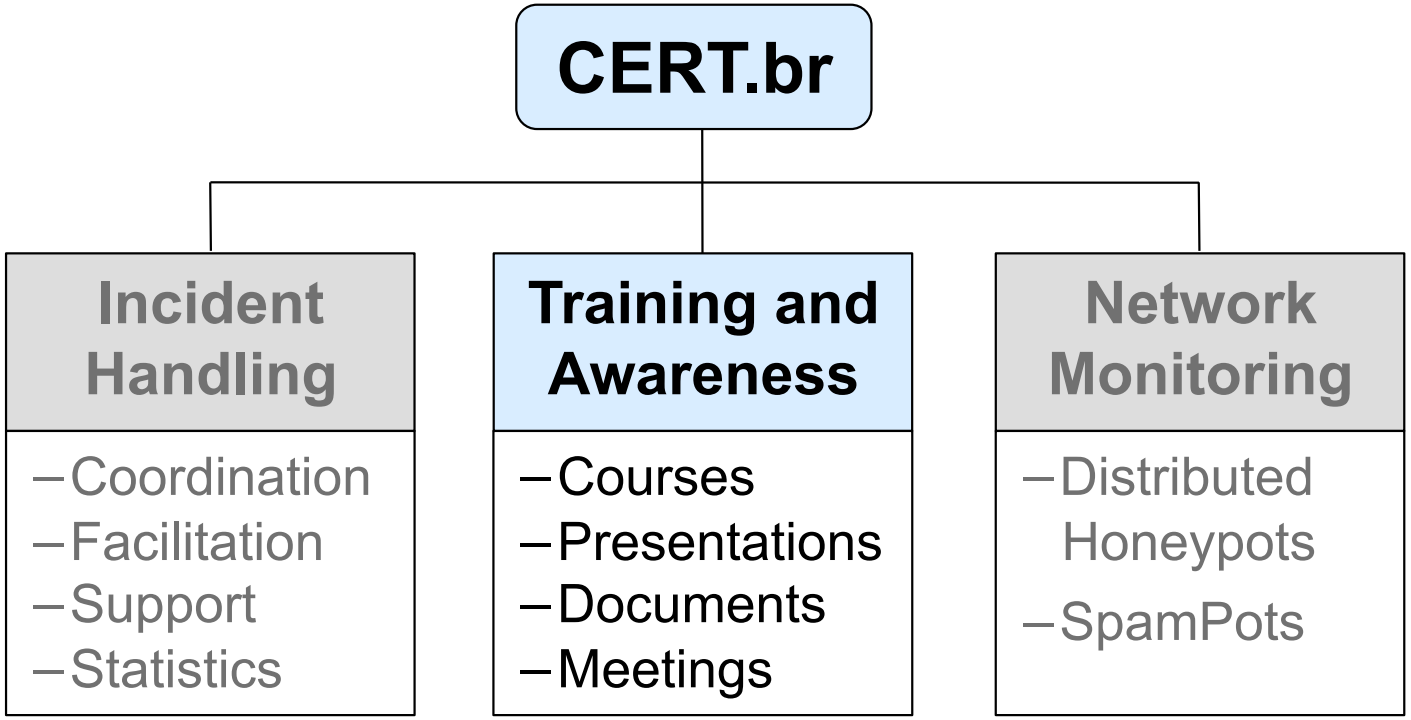
http://www.cert.br/stats/incidentes/

Spams Reported to CERT.br – 2003-Feb/2011

Mainly botnets and open proxies at broadband networks



http://www.cert.br/stats/spam/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Establishment of new CSIRTs

- **Help new Computer Security Incident Response Teams (CSIRTs) to establish their activities**
  - **meetings, training and presentations at conferences**
- ***SEI/CMU Partner* since 2004, delivers in Brazil the following CERT® Program courses:**

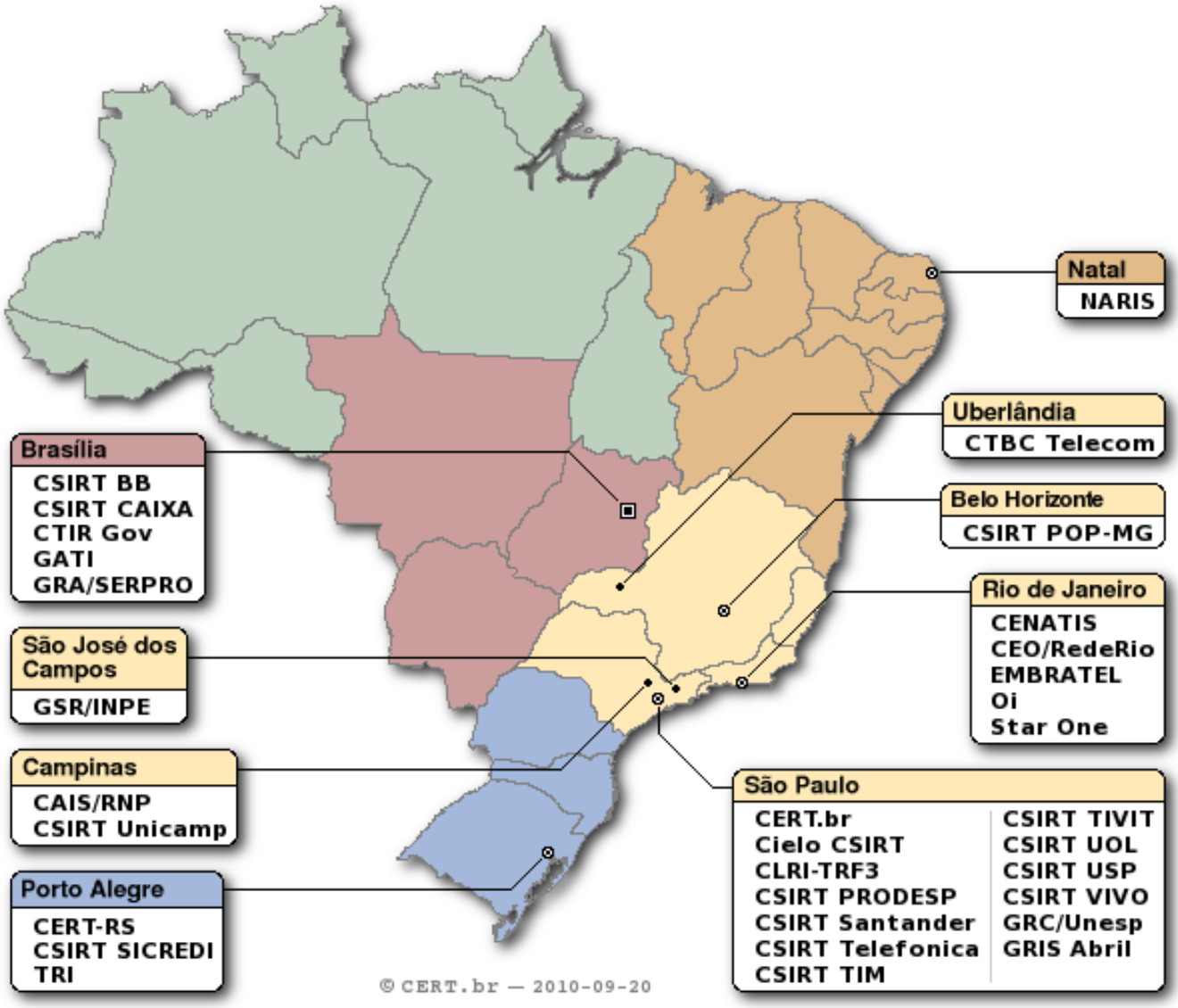
SEI Partner
Carnegie Mellon

  - **http://www.cert.br/courses/**
    - ***Overview of Creating and Managing CSIRTs***
    - ***Fundamentals of Incident Handling***
    - ***Advanced Incident Handling for Technical Staff***
  - **400+ security professionals trained in Brazil**
  - ***Overview of Creating and Managing CSIRTs* workshop delivered at 2008, 2009 and 2010 LACNIC Conferences, with permission of SEI/CMU**

Brazilian CSIRTs as of March/2011

32 teams with services announced to the public

Sector	CSIRTs
National Responsibility	CERT.br, CTIR Gov
Government	CLRI-TRF-3, CSIRT Prodesp, CTIR Gov, GATI, GRA/SERPRO
Financial Sector	Cielo CSIRT, CSIRT BB, CSIRT CAIXA, CSIRT Sicredi, CSIRT Santander
Telecom/ISP	CTBC Telecom, EMBRATEL, StarOne, Oi, CSIRT Telefonica, CSIRT TIM, CSIRT UOL, CSIRT VIVO
Research & Education	GSR/INPE, CAIS/RNP, CSIRT Unicamp, CERT-RS, NARIS, CSIRT POP-MG, CENATIS, CEO/RedeRio, CSIRT USP, GRC/UNESP, TRI
Other Sectors	CSIRT TIVIT, GRIS Abril



http://www.cert.br/csirts/brazil/

Internet Security Best Practices – for End Users

"*Cartilha de Segurança para Internet*"

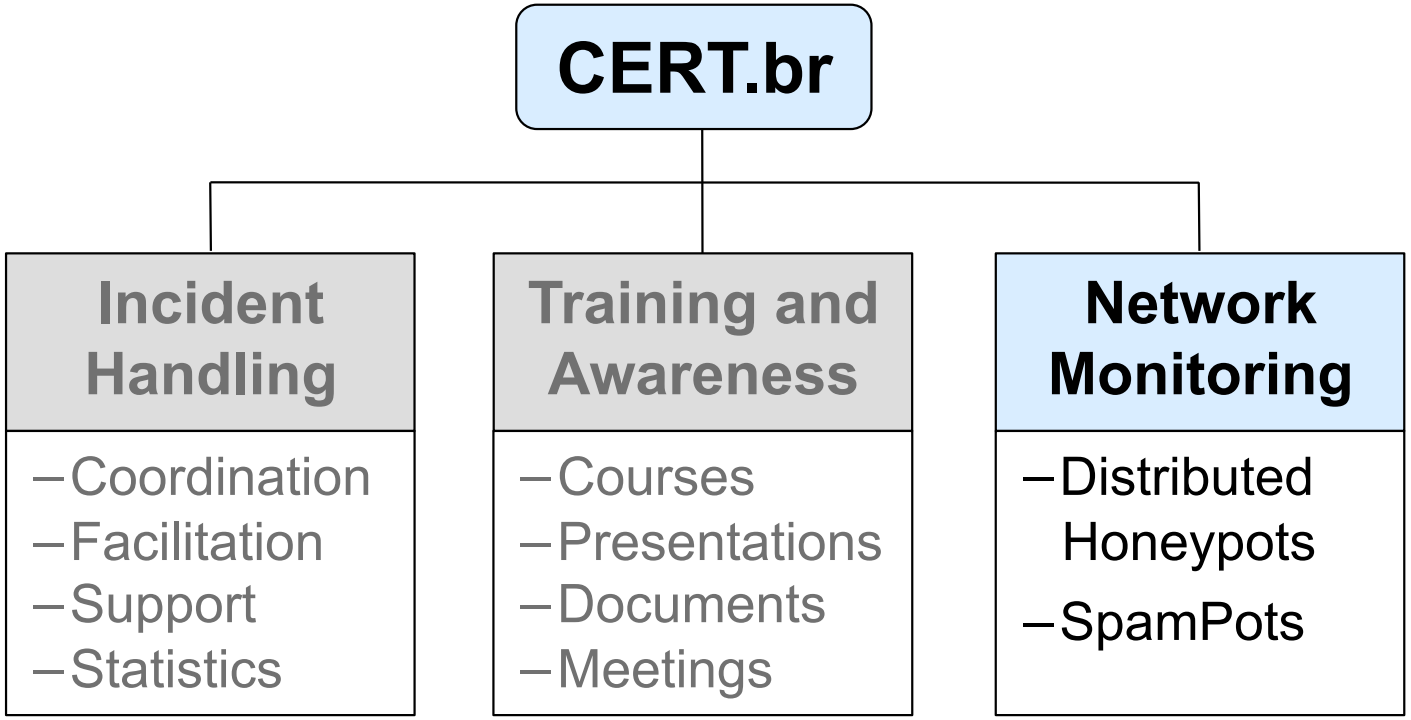
http://cartilha.cert.br/

Antispam.br

Website and cartoons about spam and security

http://www.antispam.br/

http://www.antispam.br/videos/english/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Use of Honeypots for Network Monitoring

CERT.br honeyTARG

http://honeytarg.cert.br/

Google

cert.br Computer Emergency Response Team Brazil

cgi.br nic.br

honeypots for Threats and Abuse passive Reconnaissance and information Gathering

honeyTARG

This site contains statistics, papers and general information about CERT.br activities regarding the use of low-interaction honeypots for *Abuse and Threat Analysis*.

Currently we have the following projects:

- Spampots
- Distributed Honeypots for Attack Trend Analysis

SpamPots Project

The Spampots Project uses low-interaction honeypots to gather data related to the abuse of the Internet infrastructure by spammers. The main goals are:

- measure the problem from a different point of view: abuse of infrastructure X spams received at the destination
- help develop the spam characterization research
- measure the abuse of network infrastructure to send spam
- develop better ways to
  - identify phishing and malware

Distributed Honeypots

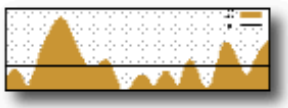
CERT.br maintains the Distributed Honeypots Project, whose objective is to increase the capacity of incident detection, event correlation and trend analysis in the Brazilian Internet space.

The data produced by the project include

- Daily summaries to project partners, with detailed information about the traffic observed in each honeypot;
- A system to notify CSIRTs of networks that generate attacks against the honeypots;
- The following public statistics:

Flows

Daily statistics for the network flow data directed to honeypots from the Distributed Honeypots Project



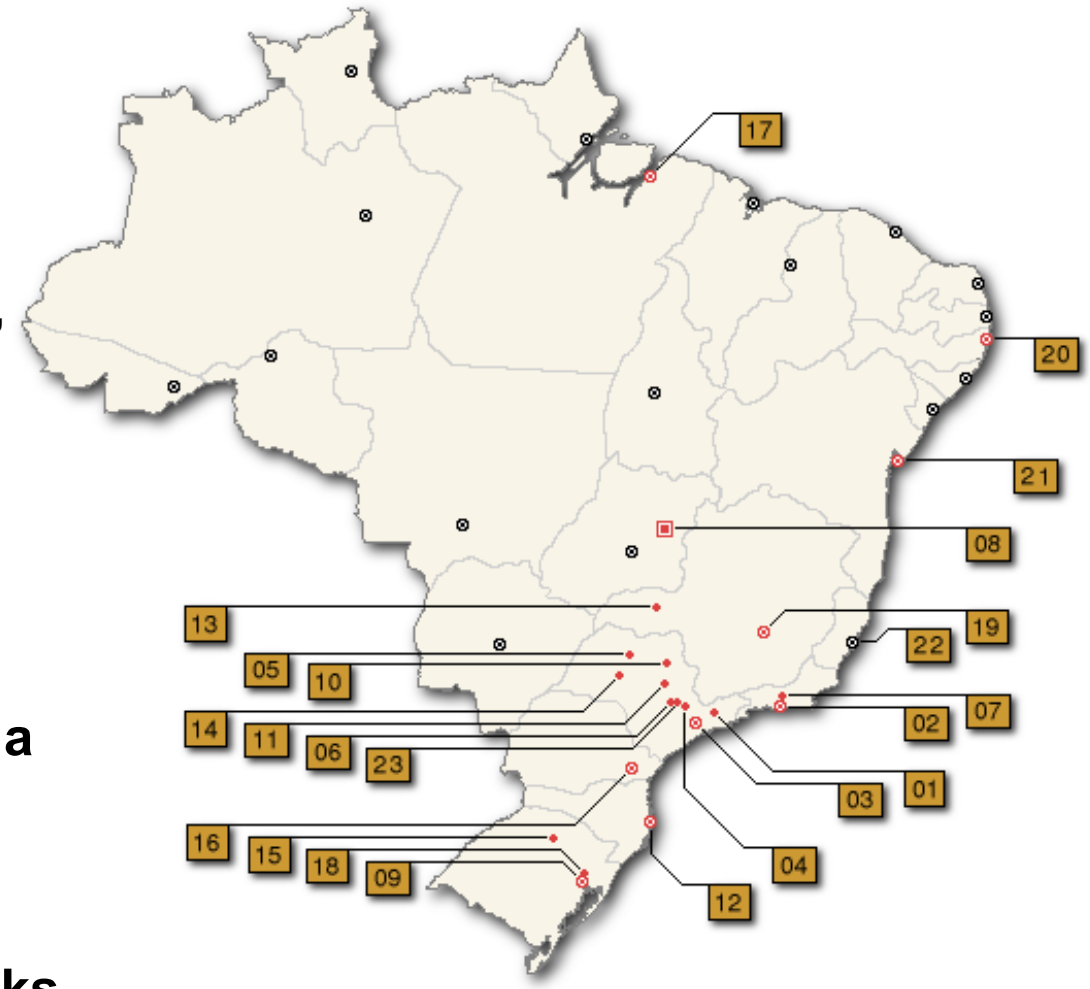
TCP/UDP Port Summary

Port summary statistics for TCP/UDP traffic data directed to honeypots from the Distributed Honeypots Project.

Brazilian Distributed Honeypots Project

Goal: to increase the capacity of incident detection, event correlation and trend analysis in the Brazilian Internet space

- Sensors distributed in 22 cities
- Hosted by 46 Partners in
  - government, energy, finantial, ISPs, academia
- Based on voluntary work
- Transparent configuration
  - no “black-box”
- No production data is captured
- Each partner can use its sensor as a complement to its own IDS

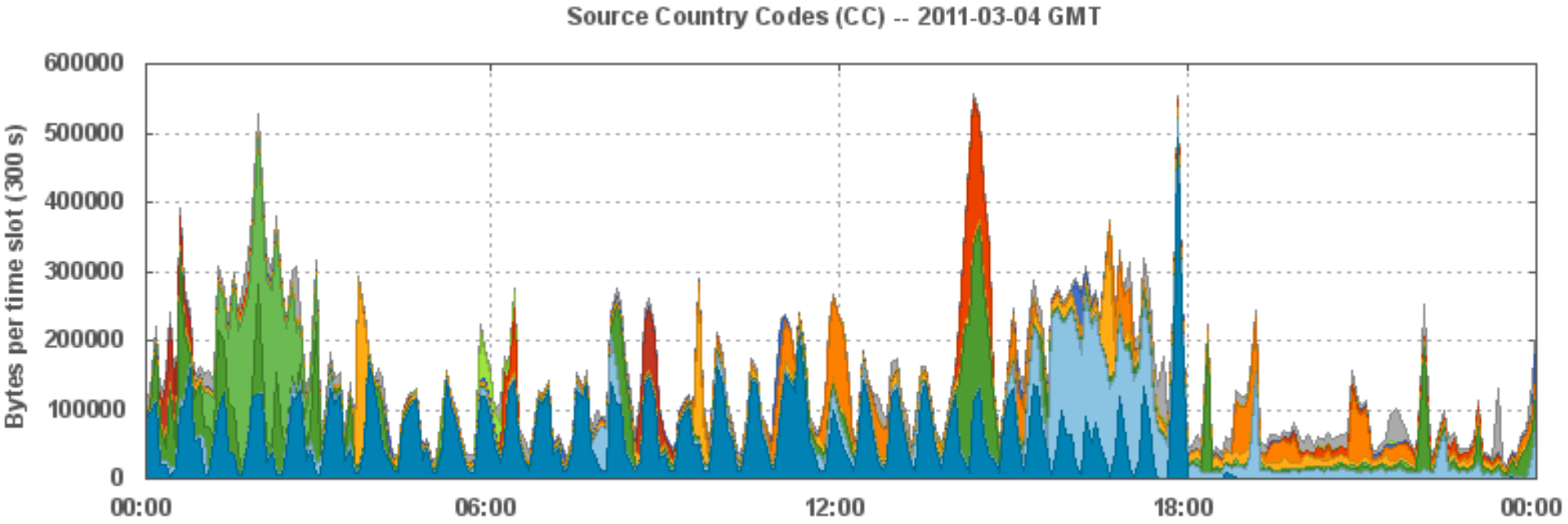


Data collected is used to

- Notify networks that originate attacks
- Donate data to other National CSIRTs
- Generate public statistics/trends

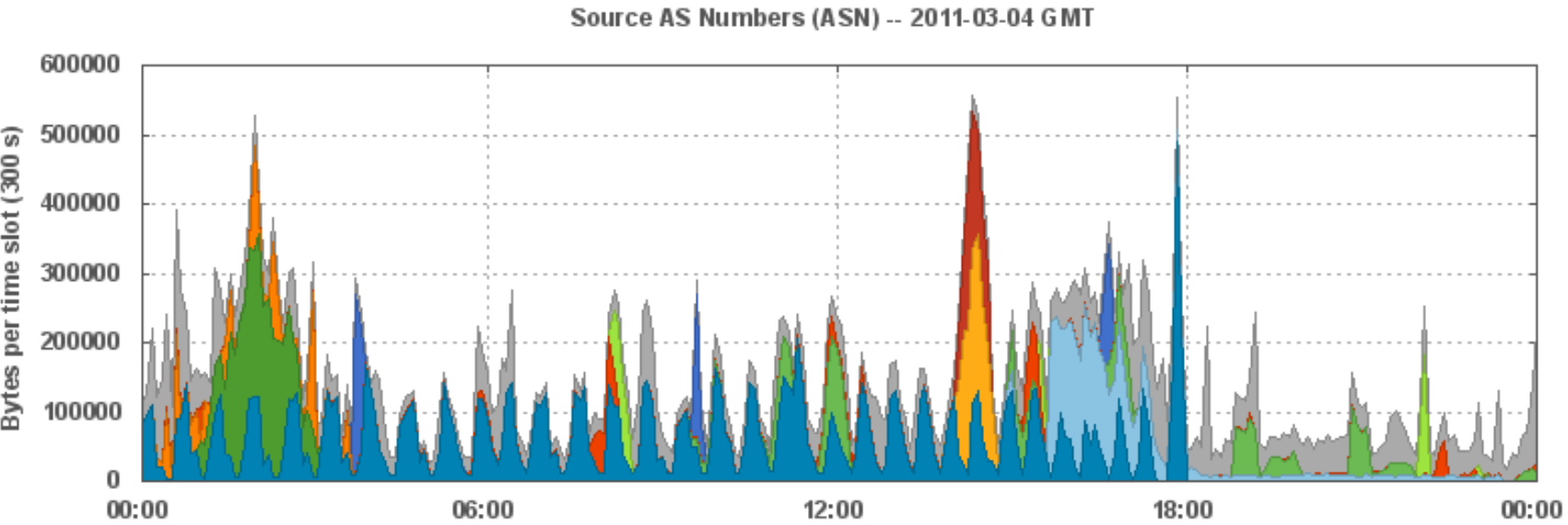
http://honeytarg.cert.br/honeypots/

Public Statistics – Country Codes originating Attacks



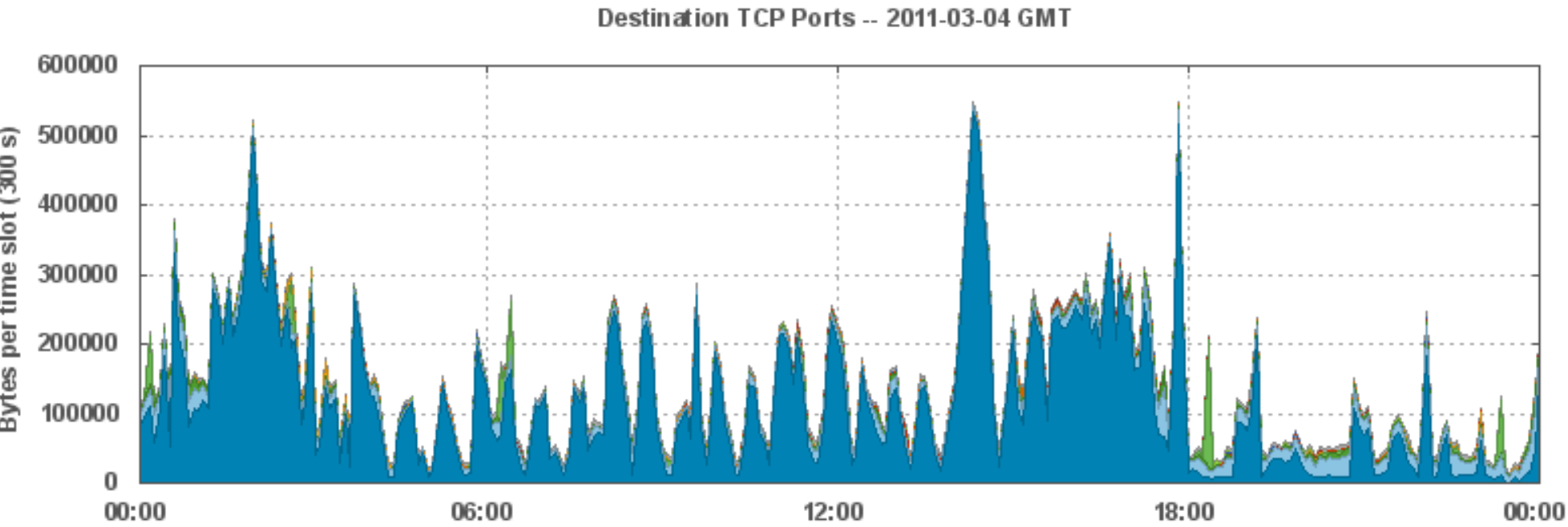
#	Key	CC	Name	Total		Max	Avg
01		DE	Germany	14.37 MB	33.14 %	1.64 KB/s	166.30 B/s
02		CN	China	6.24 MB	14.38 %	752.61 B/s	72.19 B/s
03		US	United States	5.70 MB	13.16 %	772.56 B/s	66.02 B/s
04		MX	Mexico	3.70 MB	8.54 %	779.91 B/s	42.85 B/s
05		BR	Brazil	3.54 MB	8.16 %	904.43 B/s	40.97 B/s
06		RU	Russian Federation	2.89 MB	6.66 %	412.92 B/s	33.44 B/s
07		JP	Japan	1.58 MB	3.65 %	734.93 B/s	18.31 B/s
08		PL	Poland	820.12 KB	1.89 %	294.33 B/s	9.49 B/s
09		TW	Taiwan, Province of China	649.69 KB	1.50 %	207.70 B/s	7.52 B/s
10		EU	NA	379.51 KB	0.88 %	228.13 B/s	4.39 B/s
11		Others		3.49 MB	8.04 %	309.69 B/s	40.36 B/s

Public Statistics – ASes originating Attacks



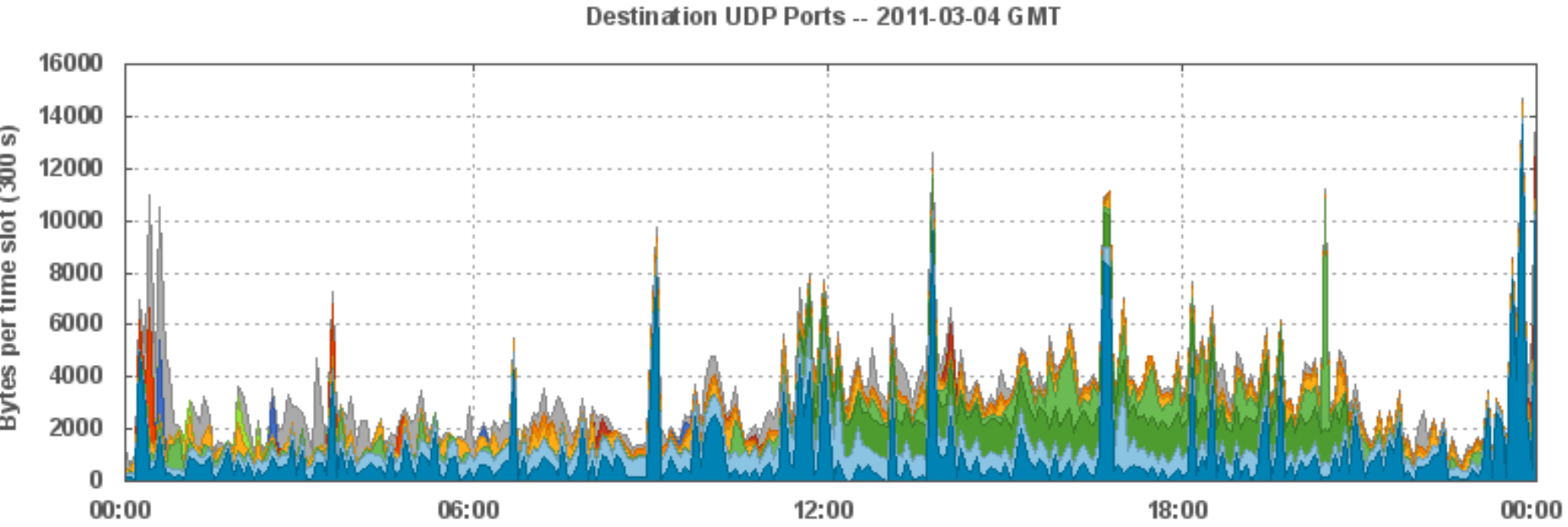
#	Key	ASN	Name	CC	Total		Max	Avg
01		8972	PLUSSERVER-AS PlusServer AG, G...	DE	14.16 MB	32.66 %	1.64 KB/s	163.89 B/s
02		4835	CHINANET-IDC-SN China Telecom ...	CN	3.55 MB	8.19 %	743.61 B/s	41.08 B/s
03		6503	Axtel, S.A.B. de C.V.	MX	3.32 MB	7.66 %	779.91 B/s	38.43 B/s
04		12768	ER-TELECOM-AS JSC ER-Telecom	RU	2.45 MB	5.64 %	408.31 B/s	28.32 B/s
05		8001	NET-ACCESS-CORP - Net Access C...	US	1.40 MB	3.24 %	758.00 B/s	16.25 B/s
06		46475	LIMESTONENETWORKS - Limestone ...	US	1.24 MB	2.85 %	669.49 B/s	14.32 B/s
07		4134	CHINANET-BACKBONE No.31,Jin-ro...	CN	1.20 MB	2.76 %	268.80 B/s	13.87 B/s
08		9371	SAKURA-C SAKURA Internet Inc.	JP	1.01 MB	2.34 %	731.37 B/s	11.73 B/s
09		27664	CTBC MultimAdia	BR	998.47 KB	2.30 %	869.11 B/s	11.56 B/s
10		33657	CMCS - Comcast Cable Communica...	US	778.74 KB	1.80 %	568.75 B/s	9.01 B/s
11		Others			13.25 MB	30.56 %	711.43 B/s	153.38 B/s

Public Statistics – Top TCP Ports Scanned



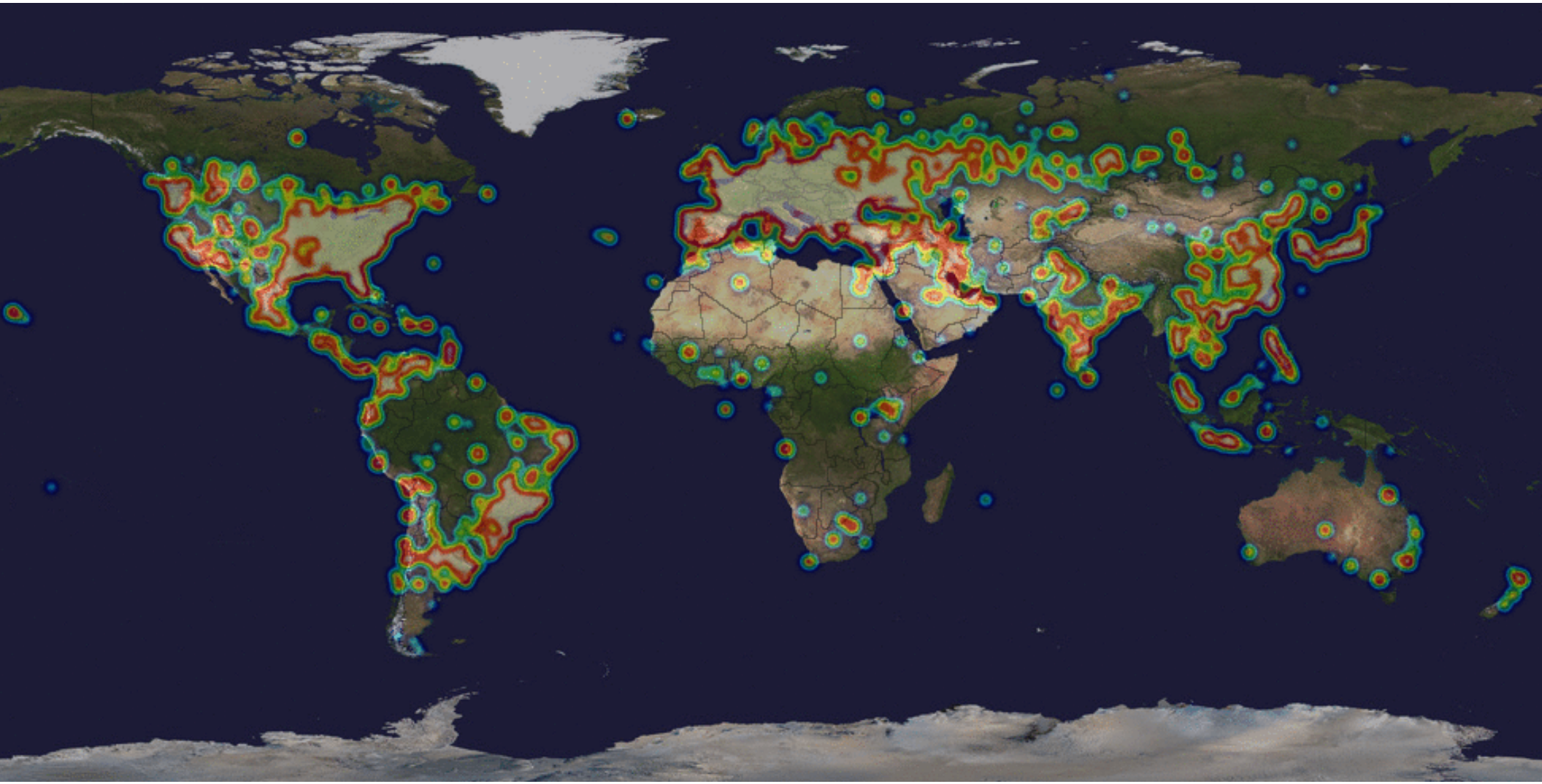
#	Key	Port	Name	Total		Max	Avg
01		22	SSH (Secure Shell)	33.20 MB	80.07 %	1.77 KB/s	384.24 B/s
02		445	Microsoft-DS Active Directory	4.26 MB	10.27 %	224.78 B/s	49.28 B/s
03		139	NETBIOS Session Service	1.01 MB	2.44 %	87.04 B/s	11.70 B/s
04		9988	Rbot/SpyBot	709.86 KB	1.71 %	602.90 B/s	8.22 B/s
05		80	HTTP (Hypertext Transfer Protocol)	218.09 KB	0.53 %	69.23 B/s	2.52 B/s
06		1433	Microsoft SQL Server	142.71 KB	0.34 %	59.49 B/s	1.65 B/s
07		4899	Radmin (remote administration tool)	99.53 KB	0.24 %	14.83 B/s	1.15 B/s
08		135	Microsoft RCP	95.22 KB	0.23 %	38.12 B/s	1.10 B/s
09		1080	SOCKS	92.35 KB	0.22 %	19.72 B/s	1.07 B/s
10		5900	VNC (Virtual Network Computing)	74.83 KB	0.18 %	19.85 B/s	0.87 B/s
11		Others		1.56 MB	3.77 %	45.54 B/s	18.09 B/s

Public Statistics – Top UDP Ports Scanned



#	Key	Port	Name	Total		Max	Avg
01		5060	SIP (Session Initiation Protocol)	288.78 KB	29.28 %	45.68 B/s	3.34 B/s
02		53	DNS (Domain Name System)	175.77 KB	17.82 %	10.41 B/s	2.03 B/s
03		161	SNMP (Simple Network Management Protocol)	141.68 KB	14.36 %	4.22 B/s	1.64 B/s
04		137	NETBIOS Name Service	101.30 KB	10.27 %	29.25 B/s	1.17 B/s
05		1434	Microsoft SQL Monitor	76.68 KB	7.77 %	4.80 B/s	0.89 B/s
06		21665	n/a	38.14 KB	3.87 %	1.67 B/s	0.44 B/s
07		36135	n/a	9.80 KB	0.99 %	16.92 B/s	0.11 B/s
08		35623	n/a	7.36 KB	0.75 %	6.07 B/s	0.09 B/s
09		39207	n/a	5.37 KB	0.54 %	9.38 B/s	0.06 B/s
10		4903	n/a	4.96 KB	0.50 %	3.38 B/s	0.06 B/s
11		Others		136.49 KB	13.84 %	17.00 B/s	1.58 B/s

Public Statistics – Next Month: Heat Maps



nic.br Núcleo de Informação e Coordenação do Ponto BR

cert.br

SpamPots Project

CERT.br honeyTARG – SpamPots Project

http://honeytarg.cert.br/spampots/ Reader Google

cert.br Computer Emergency Response Team Brazil cgi.br nic.br

honeyTARG

SpamPots Project

The Spampots Project, coordinated by CERT.br, uses low-interaction honeypots to gather data related to the abuse of the Internet infrastructure by spammers. The main goals are:

- measure the problem from a different point of view: abuse of infrastructure X spams received at the destination
- help develop the spam characterization research
- measure the abuse of network infrastructure to send spam
- develop better ways to
  - identify phishing and malware
  - identify botnets via the abuse of open proxies and relays

Data Mining Research

The spam characterization and data mining research, SpamMining, is being developed by the e-Speed Laboratory, from the Federal University of Minas Gerais (UFMG) Computer Science Department (DCC)

Papers in English

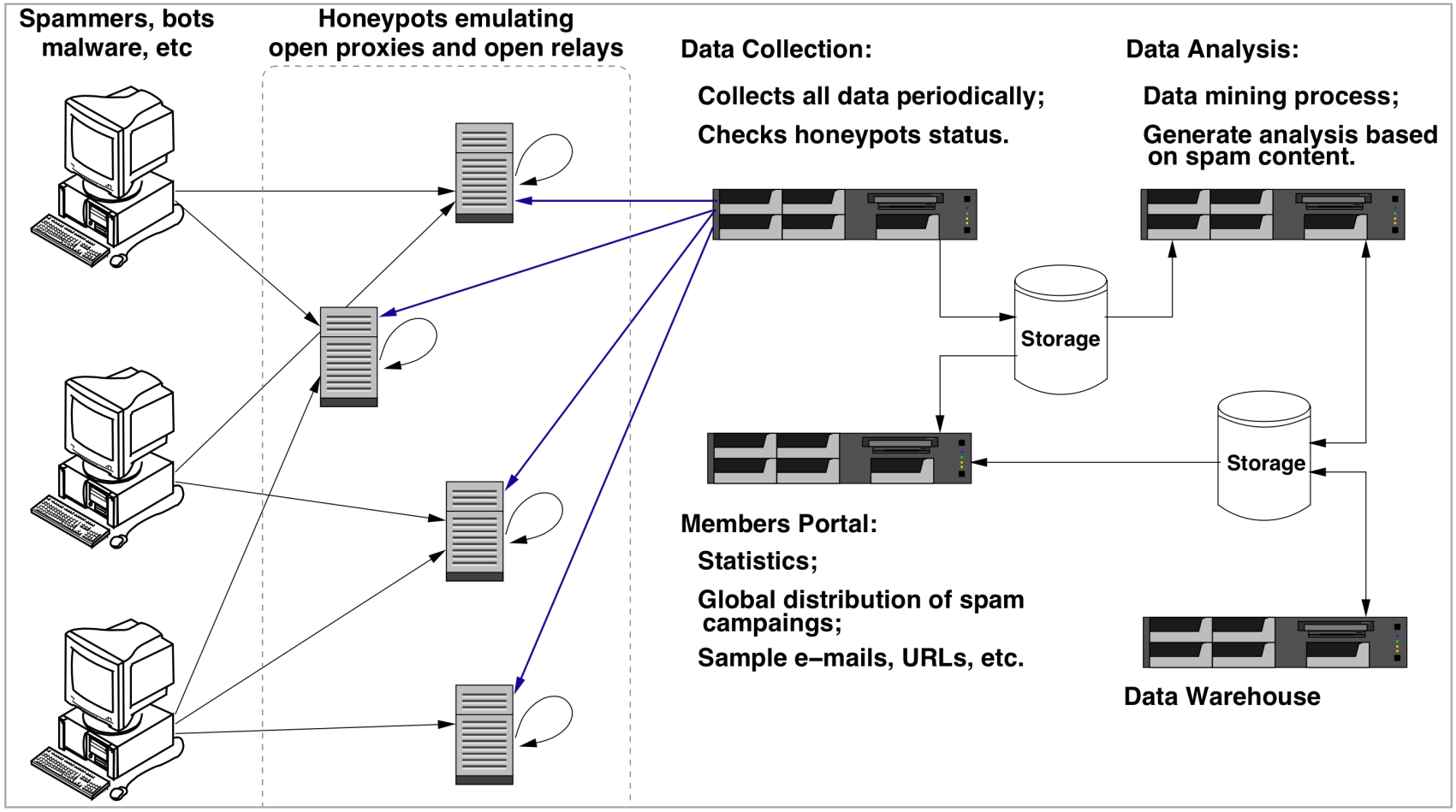
- **Exploring the Spam Arms Race to Characterize Spam Evolution**
  Pedro H. Calais Guerra, Dorgival Guedes, Wagner Meira Jr., Cristine Hoepers, Marcelo H. P. C. Chaves, Klaus Steding-Jessen.
  Collaboration, Electronic messaging, Anti-Abuse and Spam Conference (CEAS'10), 2010, Redmond, USA.
  PDF File (240 KB)

- **Spam Miner: A Platform for Detecting and Characterizing Spam Campaigns (demo paper)**
  Pedro H. Calais Guerra, Douglas Pires, Marco Túlio Ribeiro, Dorgival Guedes, Wagner Meira Jr., Cristine Hoepers, Marcelo H. P. C. Chaves, Klaus Steding-Jessen.
  International Conference on Knowledge Discovery and Data Mining (KDD'09), 2009, Paris, France.
  PDF File (400 KB)

- **Spamming Chains: A New Way of Understanding Spammer Behavior**
  Pedro H. Calais Guerra, Dorgival Guedes, Wagner Meira Jr., Cristine Hoepers, Marcelo H. P. C. Chaves, Klaus Steding-Jessen.

SpamPots Project – Overview of the Architecture

- **Network of Honeypots emulating open proxies and SMTP servers**
- **Capturing 8 million spams/day, on average**
- **Sensors in cooperation with:** CERT.at (AT), AusCERT (AU), CSIRT-USP (BR), CLCERT (CL), CSIRT UTPL (EC), SURFcert (NL), TWCERT/CC (TW), University of Washington (US), CSIRT Antel (UY)



SpamPots Project Objectives

Better understand the abuse of the Internet infrastructure by spammers

- Measure the problem from a different point of view: abuse of infrastructure X spams received at the destination
- Help develop the spam characterization research
- Measure the abuse of end-user machines to send spam
- Use the spam collected to improve antispam filters
- Develop better ways to
  - identify phishing and malware
  - identify botnets via the abuse of open proxies and relays

We provide a grant to the e-Speed Laboratory of the Federal University of Minas Gerais (UFMG) to develop research with the data collected

Improving cooperation in spam fighting

- Provide data to trusted parties
- Help their constituency to identify infected machines
- Identify malware and scams targeting their constituency
- Currently providing data about spams coming from networks assigned to
  - JP - to JADAC / IIJ / JPCERT/CC / Min. of Communications – had a workshop in Brazil with representatives from these organizations and local ISPs and network providers to discuss how to reduce spam and network abuse
  - TW - to NCC-TW – they are using the data to shutdown spammers infrastructures

Links

- CGI.br – Brazilian Internet Steering Committee
  http://www.cgi.br/
- NIC.br – Network Information Center Brazil
  http://www.nic.br/
- CERT.br – Computer Emergency Response Team Brazil
  http://www.cert.br/
- honeyTARG – honeypots for Threats and Abuse passive Reconnaissance and information Gathering
  http://honeytarg.cert.br/