

INVITATION TO THE 6th BIANNUAL MEETING OF ANSP (BMA6)

For the 6th time, ANSP will organize a biannual meeting to discuss topics of interest to participants in its ecosystem - BMA6 - August 2014 in São Paulo, in conjunction with the "CineGrid Brazil 2014" International Conference

Amanda Azevedo / NARA Archive



The 6th Biannual Meeting of ANSP (BMA6) will be held in São Paulo, on the University of São Paulo's Butantã campus from 25 to 27 August 2014. This will be a special meeting commemorating the 25th anniversary of the ANSP project!

As one of the objectives of the BMA is to promote closer ties and integration among the members of the ANSP Ecosystem and, in particular, among the institutions that develop innovative research projects, BMA6 will be held in conjunction with CineGrid Brazil 2014, an international conference dedicated to the discussion and dissemination of video streaming projects that require high bandwidth. The activities of BMA6 take place from 25 to 27 August and those of CineGrid on 28 and 29 August.

All the BMA6 activities will take place in the University City (USP-Butantã). On the three mornings, thematic symposiums will be developed in the István Jancsó Auditorium of the Guita and José Mindlin Brasileira Library. Facilities in this new auditorium, in addition to the traditional features, include the capability for image capture and the transmission of IPTV. Courses will be offered in the afternoon, in the LaSSu (Laboratory for Sustainability) building, in USP's Polytechnic School.

Learn more about BMA6 at: rsa.ansp.br

Learn more about CineGrid at: <http://cinegridbr.org/> and <http://www.cinegrid.org/>

ATTEND BMA6! - Stay tuned to the period of registration and program updates for BMA6, via ANSP's website and social networks!

Activity	Themes	Location (USP-Butantã)	Period
Thematic Symposiums	1 - 25 years of many ANSPs Coord.: Luis F. Lopez (NARA-FMUSP)	István Jancsó Auditorium Guita and José Mindlin Brasileira Library	mornings
	2 - Track Cybersecurity Coord.: Adriano Cansian (Unesp/ ACME!)		
	3 - New networking technologies Coord.: Cesar Marcondes (UFSCar)		
Almoço			
Courses	1 - Introduction to OpenFlow Coord.: Cesar Marcondes (UFSCar)	LaSSu (Laboratory for Sustainability)	afternoons
	2 - Introduction to NFV (Network Functions Virtualization) Coord.: Cesar Marcondes (UFSCar)		
	3 - Cybersecurity Coord.: Adriano Cansian (Unesp-ACME!)		
	4 - OpenStack Coord.: Hermes Senger (UFSCar)		
	5 - Big Data Coord.: Hermes Senger (UFSCar)		
http://www.ansp.br	http://rsa.ansp.br	www.facebook.com/redeansp	https://twitter.com/redeansp

25 YEARS OF MANY ANSPs

In April 1989, a year after the ANSP Project was submitted to FAPESP, Brazil's first inter-institutional academic network was officially inaugurated: ANSP!

by Luis Fernandez Lopez | NARA-FMUSP - Coordinator of the ANSP project

In the ANSP yearbooks, the second chapter is called "Project" and the *lead*, below the title, always ends with the words "so ... it will always be a project." We write this because, more than simply a network, ANSP has always been a sequence of innovative projects in the area of networks. Therefore, after completing 25 years of existence in 2014, the ANSP network is still a young project.

Mulled over during the 80s, ANSP was officially founded in 1989, in the guise of a network of four São Paulo research centers (USP, Unicamp, Unesp and IPT) connected to *Bitnet*, the American research network, via FAPESP and Fermilab (the American research laboratory, located just outside of Chicago). At that time, there was no Internet (!) and the project's aim was to improve communication between São Paulo physicists and their colleagues from North America and Europe. In the words of Professor Oscar Sala, then President of the Board of FAPESP:

“I visualized the importance of the communication that scientists would have through that computer, the evolution that science could have, how quickly information from other countries would reach Brazil, and then I wanted to contribute.”

(Testimony given in 2006, available on the ANSP site:
<http://www.ansp.br/index.php/us/testimonials>)

That same year, 1989, encouraged by the community of computer scientists and, after the National Laboratory for Scientific Computing (LNCC) had connected to the University of Maryland, the Brazilian government created the RNP (National Education and Research Network). Since ANSP's network was already operating, it was asked to support the creation of the new network. ANSP had now become the builder of the national network, and not just for physicists, but for the entire academic community.

In 1991, Fermilab adopted the TCP-IP protocol. Its partner from the beginning, the Brazilian network did the same. With the consolidation of Tim Berners-Lee's World Wide Web, throughout the following years, ANSP was, in effect, the "Brazilian Internet." This process culminated in its nomination in 1997 as administrator of the Domain Registry and of the other activities of the newly created Brazilian Internet Steering Committee. ANSP was, now, an Internet builder.

In 1998, focusing once again on São Paulo and on academia, ANSP became "Advanced ANSP", the first statewide academic network over broadband links. ANSP now had "national" dimensions, being larger and trafficking more bits than most national academic networks in Europe and other continents.

This growth meant that, during the 2000s, ANSP was chosen to provide technical and administrative support for projects that, up to that point, constituted the largest funded program of research into the Internet in Brazil, FAPESP's TIDIA program. These projects required strong international collaboration and ANSP orchestrated a partnership with the RNP and Florida International University (FIU), Miami, USA, which allowed the establishment of the first 10Gbps academic links between the Americas of the South and the North. ANSP now became one of the most important research infrastructures in the State of São Paulo.

In 2012, with the perspective of software defined networks and the convergence and virtualization of computers, storage arrays and other network functions bringing about a paradigm shift, ANSP launched the BMAs (ANSP's Biannual Meetings). Environments for discussion and learning about new concepts and new networking technologies, these meetings are open to the entire community of IT technicians, teachers, and undergraduate and graduate students from the universities and research centers in the State of São Paulo. ANSP has now become a School too.

What will the next project be?



Learn more about the history of ANSP in the ANSP 2013 Yearbook: <http://www.ansp.br/index.php/us/ansp-yearbooks>

INTERVIEW

NETWORK ENGINEERING

JORGE MARCOS DE ALMEIDA, Network Engineer at the NARA-USP, one of the longest serving employees of the ANSP Project, talks about Network Engineering. He conducted the workshop on "ANSP's Routing Policy" at BMA2 (2nd Biannual Meeting of ANSP). He is the author of "A Looking Glass for ANSP" (03.02.2014, Tech Corner, ANSP Newsletter No. 8) and "The Padtec demonstration of the 100 Gbps USP-Unicamp link via the Kyaterra network during BMA4" (29.10.2013, Tech Corner, ANSP Newsletter No. 7), available on the ANSP site.

(On 10/07/2014, Amanda Azevedo, NARA-FMUSP Public Relations)

Eduardo César / NARA Archive



Could you describe your academic background and the early days of your professional career?

I completed a degree in Electrical Engineering with emphasis on digital electronics and microelectronics, at USP's Polytechnic School, in 1987. The following year, I started working in USP's Electronic Computing Center (now the Department of Information Technology - DTI). At the time, the university used a mainframe to handle administrative systems and I took care of the maintenance of the basic software. I performed the installation and updating of the operating system and other software packages provided by the equipment manufacturer. The hardware of the time, mostly disks and tapes, was unreliable and consequently there was a lot of work to do. Over time, the hardware improved, updating tasks were partially automated and the number of network terminals accessing the mainframe continued to grow. These were serial terminals with dot matrix printers that were later replaced by PC computers connected to the University intranet. And so I ended up moving into the area of networks and started working with software and videoconferencing, besides taking care of the mainframe, which no longer took much time.

How has your career in ANSP evolved?

In 2000, I was invited to work at ANSP by the then technical coordinator Milton Kaoru, the current coordinator of ptt.br. The managers of CCE agreed and I went to work in the FAPESP building, initially developing software to resolve some network problems we had at the time. Sometime later, the network engineer left the project and I started working on the configuration and maintenance of the network.

What was the ANSP project like in those days?

ANSP located its equipment in FAPESP's CPD and shared space with the domain registry that worked on the same floor. At the time, there were still many institutions that used leased or private lines of up to 2 Mbps. These were dedicated phone lines with modems that gave many problems, especially with lightning in the summer, and it took some time to get used to the numbers used in the modems to indicate the interface signals. Although I already knew them before, I had never performed loop tests on these lines. An STM-1 (155 Mbps) international link was provided to replace the six 2 Mbps links we had before, and I quickly had to learn the Sonet/SDH hierarchy, since we also began using E3 channeled circuits that replaced the modem lines with modems.

And how did ANSP's performance evolve?

ANSP spread throughout the State connecting some campuses of Unesp, USP and Unicamp, and another arm of the network ran to INPE and CPTEC in Cachoeira Paulista. We began using Nortel equipment that really did not work that well, so we moved on

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to using the Foundry (now known as Brocade) equipment we use today. Then we handed the inter-campus network over to the universities and dedicated ourselves to maintaining just the network core.

ANSP's equipment was moved to Brazil's NAP, because we needed more space and better infrastructure, resources that the CPD at FAPESP was unable to provide at that time. The project team moved to USP's Pinheiros campus where the School of Medicine is located.

Traffic growth has led us to lease dark fibers and use CWDM and, subsequently DWDM. Contacts with Padtec were initiated and supervision of the DWDM equipment was outsourced. A new agreement with AMPATH and RNP increased the bandwidth and redundancy of the international links, the agreement with Terremark was broadened, new participants entered NAP and so we arrived at what we have today.

What is ANSP's role in today's networking technology scene?

We are currently going through another revolution. SDN is the trend of the moment, and this time, the challenge is much greater, because the technology is not yet mature and there is much to learn and try out.

Learn more: <http://www.ansp.br/index.php/us/tech-corner>

Learn more: http://www.ansp.br/images/docs/publicacoes/engl_2013-09-22_whitepaper_sdn-network-cloud.pdf

CINEMA IN DEFINITION

CineGrid Brazil 2014 will be held in the city of São Paulo, on 28 and 29 August

by Jane de Almeida (Mackenzie)

CineGrid is an interdisciplinary event that promotes the meeting of researchers and developers of technology related to the transmission of moving images over photonic networks. In order to reflect on the new social, scientific and cultural parameters of the digital image, the CineGrid community has been organizing annual seminars and demonstrations since 2006 at CALIT2 (California Institute for Telecommunications and Information Technology), at the University of California, San Diego, USA.

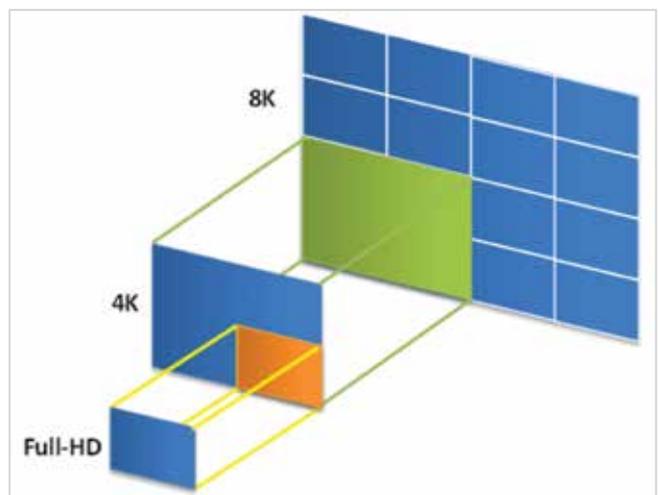
Currently, the association has sixty-four affiliated institutions, including the Keio University (Japan), the University of Southern California (USC), the University of Illinois at Urbana Champaign, the Electronic Visualization Laboratory (EVL) at the University of Chicago, the University of California, San Diego (UCSD), and in Brazil, the National Research and Education Network (RNP), ANSP (an Academic Network at São Paulo), the Mackenzie Presbyterian University and CPqD (Center for Research and Development). It is also part of the association of institutions such as the Academy of Motion Picture Arts and Sciences, Lucasfilm, Disney, SONY, JVC, Cisco and NTT.

The entities comprising CineGrid form an interdisciplinary group focused on the research, development and demonstration of network collaborations that enable the production, use, preservation, and exchange of digital media and super high-definition tools. A major focus of the CineGrid debate is the broadcast of film and video in super and ultra-definition (4k or

higher), in addition to tools for collaborative and online editing of movies with high amounts of data.

Collaboration between Mackenzie and CineGrid started in 2008 from a sample of 4K films at FILE (the International Festival of Electronic Language) and progressed in 2009 with the broadcast of a Brazilian film completed in 4K for UCSD and the University of Keio via the KyaTera network, with support from USP, ANSP and RNP.

In 2011, RNP produced the first CineGrid in Brazil, in Rio de Janeiro, during the international meeting of GLIF (the Global Lambda Integrated Facility). Since then, the Brazilian community intensified its participation in CineGrid, including participants from



8k Definition

LAVID (the UFPB Laboratory of Digital Video) who developed a 4K player called FOGO. In a recent demonstration at CineGrid, LAVID presented an application that it developed to integrate and play movies with an 8K resolution on the SAGE (Scalable Adaptive Graphics Environment) platform.

CineGrid Brazil 2014 will take place in the Brasiliana Library of the University of São Paulo (USP), on 28 and 29 August, following BMA6 (6th Biannual Meeting of ANSP). CineGrid 2014 Brazil is supported by USP's Dean of Culture, by CNPq (National Council for Scientific and Technological Development) and by CAPES (Coordination for the Improvement of Higher Education Personnel) and it consists of an international scientific committee that organizes meetings of national and international researchers and developers to promote collaboration on technological, scientific, cultural and social advances. The event will be open to the interested public, with demonstrations and lectures. Demonstrations of cinema, music, dance and telemedicine are planned.

The interests of the participants in CineGrid are wide-ranging, embracing various terminologies and idiosyncrasies, and reminding us of the "Universal Exhibitions" in Paris or the "Great Exhibitions" of London in the nineteenth century, without the

massive proportions of space and audience. The precursors of several of the devices of the contemporary world were exhibited at these fairs. Many inventors and artists astounded the public with the viewing devices of the era such as the Panoramas, the Mareoramas and the Kaiserpanoramas. At the 1900 World Fair, the Lumière brothers presented their films on the "Cinématographe Géant" with a screen of 60 x 70 meters in a theater that could accommodate 15,000 people.

Such an environment, however, is not exclusive to CineGrid. But what is of particular interest in this case is precisely the axis that will determine the "cinema" and its future configuration over the next 100 years, with reference to the creative chaos of optical-digital devices and computational processes. This will be a unique opportunity for testing, collaboration and presentation of the technology in very exceptional circumstances in Brazil that will benefit both the developer of the technology, as well as the viewer searching for expanded films in multi-user spaces.

Jane de Almeida - Professor and researcher on the post-graduate program in Education, Art and Cultural History at the Mackenzie University, where she coordinates the LabCine (Laboratory of Cinematic arts and Visualization).

TECH CORNER

CYBER INTELLIGENCE: AFTER ALL, WHO NEEDS IT?

Abstract: Based on the analysis of the Brazilian scenario of Internet security and the activity of cyber-criminals and cyber-terrorists, a proposal is presented for the application of concepts of cyber intelligence as a means to efficiently and effectively combat current threats in the area of information security.

CYBER INTELLIGENCE: AFTER ALL, WHO NEEDS IT?

by Adriano Mauro Cansian and André Ricardo Abed Grégio

As researchers into cyber security, we have unfortunately found that, against a current panorama of changing threats that are increasingly more complex, and with cybercriminals or cyber-terrorists increasingly more specialized, professionals in the area becoming outdated and unarmed. A battle against time is fought on a daily basis. The traditional strategy of waiting for a warning and then responding to an event, has proven ineffective against threats that spread and rapidly become more sophisticated. Belated responses to events involving information security, endangering the tangible and intangible assets of an organization, represent a serious problem for institutions.

During 2013 and the beginning of 2014, our research on the Brazilian scene indicates that the targeted and coordinated attacks, associated with manually prepared exemplars of malware, are increasing in number and technical sophistication, while our capabilities of detection and response are becoming inadequate. APTs (Advanced Persistent Threats), organizational and State espionage, electronic and financial crimes, theft of intellectual property and denial of service attacks have become more frequent, complex and orchestrated. This has required information security analysts to defend their networks and data proactively, in addition to a high capability of keeping abreast of developments, on top of instruments, techniques and knowledge to deal with the threats.

Thus, we have proposed that concepts of cyber intelligence should be applied as a means of efficiently and effectively combating current threats. Data collected from both attack detection systems as well as malware analyzers developed within the ambit of our research lead us to affirm that, without mechanisms for cyber intelligence and analysis of efficient threats, we will no longer be able to protect ourselves properly. Within an acceptable time frame, we will have difficulties in understanding and evaluating important variables for cyber defense, among them: the motivations and methods of the attackers, the shortcomings and existing internal and external vulnerabilities, the mechanisms for implementing and activating malware, how long since the opponent penetrated or has been within our lines of defense, or even the vectors of attack that lead to threats themselves.

Integrated systems for the defense of networks bring together several protection technologies, including systems for the prevention and detection of intruders, firewalls, spam blocking, antivirus applied to network traffic and files in transit, controlled access to documents, content filtering at the application layer, storage and analysis of logs, and mechanisms for handling denial of service attempts. However, the mere deployment of a system of this type, which is robust and possesses a wide range of security mechanisms, does not guarantee protection of the network. These integrated systems rely on specialized and detailed configuration, constant updating of subsystems, signatures and detection heuristics, as well as analysis of the data collected (logs, alerts, statistics, quarantined files) and the taking of countermeasures.

Therefore, it is necessary to promote the training of alert and highly skilled professionals who can act where the machine cannot. This is where the concepts of cyber intelligence should be applied. After all, a counter threat system is only as good as the classifier who has been educated and trained for that purpose; attack detection and antivirus systems are only as effective as those signatures known and the heuristics developed; anti-malware is only effective against known exemplars; anti-spam is only as efficient as the security configuration of the mail server and the quality of the blocking lists used; a log is only as informative as its capacity and scope to register events for audit. All these data, coming from different sources and with different types of information and possibilities of correlation are only as useful as the expertise of the security professional that can benefit from their analysis for the cyber defense and protection of the systems under their responsibility. Without human resources, there is no threat analysis. Without threat analysis it is impossible to provide adequate security.

Currently all the most advanced security systems use the analysis of cyber threats as a key part of their mechanisms. There are still a few global institutions acting and delivering public or private data on threat analysis and cyber intelligence. We argue that it is imperative that Brazil should have at least one center for the analysis of cyber threats, capable of providing information on knowledge of the internal and external vulnerabilities related to cyber attacks in the real world. Cyber intelligence, after all, is something we really do need.

Adriano Mauro Cansian - is Assistant Professor at Unesp (Paulista State University), São José do Rio Preto, SP, and coordinator of the ACME! Cyber Security Research Laboratory.

André Ricardo Abed Grégio - holds a PhD in Computer Engineering from Unicamp and is Senior Technologist in the Renato Archer Information Technology Center (CTI) in Campinas, SP. He is involved in R & D in the field of Security of Information Systems.



Map of cyber threats produced in real time by the Kaspersky Laboratory. (Snapshot obtained on 22.07.2014, at 18.15, Brasilia time zone.)

 Learn more: <http://www.acmesecurity.org> (ACME!)

STAFF

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