Jean-Marc Menaud

Full Professor

STACK Team - IMT Atlantique, INRIA, LS2N
4, rue Alfred Kastler BP 20722 44307 Nantes Cedex 3
(full CV on menaud.fr)

Personal

Name:	Jean-Marc Menaud
Date of Birth:	4 Mars 1971 - Mantes la Jolie (78)
Nationality:	French
Email:	Jean-Marc.Menaud@imt-atlantique.fr

Educational background

22/06/2011 **HdR** Université de Nantes, Ascola team
Adaptation dynamique et transparente de systèmes patrimoniaux complexes
Reviewers : Y. Berbers, C. Morin, B. Plateau

5/01/2000 **PhD** Irisa/Inria Rennes, Solidor team, Etel research action
Système de Caches Coopératifs pour les Systèmes d'Informations à Grande Echelle
Directors : M. Banâtre and V. Issarny, Reviewers : J.-P. Courtiat, S. Fdida

Academic background

2017-... **Professor** (First Class) - IMT-Atlantique

2014-2017 **Professor** (Second Class) - IMT-Atlantique (previously Ecole des Mines de Nantes)

2008 - 2013 **Associate Professor** - Ecole des Mines de Nantes
Deputy-head of the computer science department

2006 - 2008 **Full time researcher** INRIA

2000 - 2006 **Associate Professor** - Ecole des Mines de Nantes

1999 - 2000 **ATER** - Université de Rennes I

Industrial Involvement

2011-... **Co-Funder and Scientific Advisor - EasyVirt**
EasyVirt is a innovative SME specializing in the data center management and optimization. It provides a software solution developed in the Ascola research team (EMN, INRIA, LINA) named Entropy. The software allows data center real-time monitoring, reduces energy consumption and secures the infrastructure.
(2017 : 6 employees)

Collective duty

2022-... Deputy-Head of Laboratoire des Sciences du Numérique à Nantes (LS2N).

2015-2021 Organizer for "Pôle Science du Logiciel et des Systèmes Distribués" in Laboratoire des Sciences du Numérique à Nantes (LS2N).

2013-2017 Deputy-head of Ascola research team, Mines Nantes, INRIA, LINA

2014-2017 Elected Mines Nantes's Research Committee Member

2015-2018 Member of the thesis committee « Gilles Kahn Award »

2008-2013 Deputy-head of the computer science department at Ecole des Mines de Nantes, in charge of the scholarship program.

Scientific Contributions and Impact

The main focus of my research is on the energy consumption optimization in large-scale distributed system. From 2006, I am working on **Entropy** then btrCloud, a software solution to manage virtual machine in **cloud computing.** In this context, I proposed a **dynamic consolidation** system for virtualized environment using the constraint programming approach. Around this topic, I am also involved in the **modeling, scaling and validation of cloud IaaS management system.** I am the author or co-author of **more than 50 international publications or communications.** A **technology transfer** has enhanced his research, by the **EasyVirt** start'up creation in 2011, a young innovative enterprise specialized in the data center management and optimization.

Animation of the Community

Member of Steering Committee :

2015-2017	member for "Prix Gilles Khan »
2015-..	member of GIS SyMeTRIC.
2014-..	member of GIS PERLE - Pôle d'Excellence de la Recherche Ligérienne en Energie.
2011-…	co-organizer of the focus Energy and resource effciency in ICT, Labex COMIN Labs
2010-…	member of the OW2 board committee from 2010.
2009-2015	organizer of the CNRS/GDR ASR (then RSD) System group
2008-2014	member of the Compas (RenPar/CFSE/Sympa) steering committee.
2009-2013	management committee member of the european COST Action IC0804: *Energy efficiency in large scale distributed systems*
2008-2011	vice-chair of the French ACM/SIGOPS Chapter (ASF)
2005-2008	treasurer of the French ACM/SIGOPS Chapter (ASF)

Member of Scientific/Program Committee for more than 80 National and International Conferences CCGRID WS 2017, SDS'17, Xgreen2017, AICT'17, CEIS'17, EEEP'17, Energy'17, SMARTGREENS'17, *CCGRID'17, SMARTGREENS'16, CLOUD COMPUTING'16, ENERGY'16, COMPAS'16, FiCloud'16, Green'16, SMARTGREENS'15, ENERGY'15, VHPC'15, CFSE'15, CLOUD COMPUTING'15, AICT'15, E2DC'15, GreenCom'15, SMARTGREENS'14, SAC'14, CLOUD COMPUTING'14, CAGing'14, Globecom'14, ICICS'14, SDS'14, VHPC'14, CFSE'14, VHPC'13, AICT'13, CAGing'13, ENERGY'13, CFSE'13, GreenCom'13, EE-LSDS'13, GCG'13, IC3'13, Globecom'13, SMARTGREENS'13, VHPC'12, Cloud&Grid'12, GreenCom'12, AICT'12, COMNET'12, ETRI'12, TPDS'12, GreenCom'11, ASGC'11, ENERGY'11, IT-GloW'11, VHPC'11, HPCVirt'11, COMNET'11, VHPC'10, HPCVirt'10, CFSE'09, HPCVirt'09, VHPC'09 …*

Expert for the *ANR Call (2018, 2017, 2014, 2012, 2011, 2010, 2009, 2008), the JEI (Jeune Entreprise Innovante) evaluation (2013, 2018, 2020), for the WWTF Information and Communication Technology (2013, 2012), The Netherlands Organisation for Scientific Research (NWO) (2014), CIR evaluation (2020, 2017, 2015, 2012) and the Pays de la Loire Council in charge of supervising the development of the high bandwidth networks (2005 to 2007)*

Member or reviewer for 1 HDR and more than 30 Thesis committees. (full list on menaud.fr)

Conference and Event organisation committees:

2018	Workshop : Fog/Edge Computing, état de l'art
2017	Workshop : Gestion Thermique des centres de données
2016	Workshop : Ressources renouvelables et besoins informatiques
2013	Workshop : HPC & Cloud : sont-ils verts ?
2013	Workshop : Energy Issues in Distributed Systems
2012	Workshop : Eco-conception des logiciels
2012	Workshop : efficacité énergétique : quels sont les impacts sur les applications ?
2011	Workshop : Energy Issues in Distributed Systems
2010	Workshop : Virtualization in Distributed Architectures
2010	Conference : member of the EuroSys 2010 organisation committee
2007	Workshop : Les systemes autonomes
2006	Conference : member of the Ecoop 2006 organisation committee
2005	member of the RenPar 2005 organisation comitee

Invited Talk for more than 20 conferences, workshops or doctoral schools like: (selection) *Ecole thématique pour jeunes chercheurs sur l'efficacité énergétique dans les réseaux et systèmes distribués (16), Orange GreenIT state of the art (16), Journees nationales du GDR GPL (13), Salon Solutions Data Center Management (13), Formation datacentre CNRS (12), OW2con'12 (12), Académie des technologies (12), CST Conference on Cloud Computing (10) …*

Contracts and Grants with Industry

Contracts and Grants with Industry are mainly realized Industrial Partners.
Keywords : Energy-aware software solutions, Distributed system Cloud Computing, GreenICT

European Initiatives

2009-2013 COST IC 0840
Participating countries: AT, BE, CH, CY, DE, DK, EE, FI, FR, GR, HU, IE, IL, IT, LU, …
realistic energy-efficient alternate solutions to share IT distributed resources

National Initiatives *(past ten years)*

2020-2024 ANR PicNic - Total 450 Ke
Partners : IRIT, IMT-Atlantique, ENS Lyon, LIG

2017-2020 FSN Hydda - Total 5 175 Ke
Partners : Bull, IMT-Atlantique, Dassault ICO, EasyVirt, LIG
deployment of Big Data applications (with hybrid design (HPC/CLoud))

2015-2020 CPER SeDuCe - Total 1 075 Ke
Partners : Mines Nantes (**lead**)
design an experimental infrastructure for data centers with low energy footprint

2015-2017 FSN Hosanna - Total 1 600 Ke
Partners : Mines Nantes, UshareSoft, Bull, Telecom PSud, Activeon
addresses application deployement on a distributed multi-cloud virtual infrastructure

2015-2017 Pôle I&R EcoCloud - Total 400 Ke
Partners : Mines Nantes Pentasonic, EasyVirt
Private Cloud Computing sustainable, economic and ecological solution for SME

2013-2017 CominLabs EPOC - 470 Ke
Partners : Mines Nantes (**lead**), INSA, CNRS, ENIB, ENSTB, Univ Nantes
energy-aware task execution from the hardware to application's components

2013-2014 IMT Trans-Energy - 230 Ke
Partners : Mines Nantes, Mines ParisTech, Mines d'Albi, Mines de St Etienne.
scientific and disruptive technologies advances in the field of sustainable development

2013 INRIA Hemera - 80 ke
Partners : Ascola (**lead**) IRIT
resource usage of the individual VM on the hosting computer

2013 Carnot Cheddar - 60 Ke
Partner : Ascola (**lead**), DSEE
clever heat dissipation for data center to reduce their energy consumption

2011-2014 FSN CloudForce - 5 800 Ke
Partners (17) : OrangeLabs (lead), ActiveEon, Ascola, Bull, …
provide an Open Source platform for a collaborative development of Cloud applications

2011-2012 ANR Emergence Entropy - 242 Ke
Partner: Ascola (**lead**).
studies on economic feasibility for creating an industrial business around the Entropy

2011-2013 FUI Cool IT - 2 690 Ke
Partners: Bull (lead), CEA, A.Data, Avob, Eurod., Sds, Sinovia, Willelec, Ascola
design systems adapted to new standards of "Green IT"

2010-2013 ANR Arpege MyCloud
Partners : Sardes (Lead), Ascola, LIP6, WeAreCloud and ElasticGrid
define and implement a SLAaaS (SLA aware Service)

2010-2012 INRIA ADT VASP - 70 Ke
Partner : Ascola (**lead**)
development of the Entropy software

2010 OrangeLab Grant - 26 Ke
Partners : Ascola (lead) and OrangeLab.
Jasmine-VMM (Energy probe) and its connection with Entropy

2009-2012 ANR Arpege SelfXL - 1 200 Ke
Partners : Ascola (lead), IRIT, LIG, ScalAgent, OrangeLab and Bull.
abstractions techniques for complex and large-scale autonomic systems

2006-2009 RNTL SelfWare - 1500 Ke
Parteners : OrangeLab (lead), Bull, Scalagent, SARDES, IRIT and OBASCO.
building of distributed applications under autonomic administration

Supervision

PostDoc

2017-2018 Jonathan Pastor - Optimisation énergétique, and G5K
2016-2017 Ismael Cuadrado - Consommation énergétique des conteneurs docker.
2015-2017 Rémy Pottier - Optimisation et sécurité des données multi-IaaS, and G5K
2013-2017 Guillaume Le Louët - EcoCloud and Hosanna projects
2013-2014 Hemant Kumar Mehta - Energy monitoring, from the VM to the room
2013 Flavien Quesnel - Vers une gestion holistique d'un centre de données
2012 Ismael Mejia - Modèles pour la reparation des charges thermique dans les centres de calculs
2009-2012 Marc Leger - Modèles pour l'administration de systèmes large échelle

PhD Students

2017-2020 Maxime Belair - Security and container - *Cifre OrangeLab* - (co-supervision S. Laniepce)
2017-2020 Dimitri Saingre - Energy and Blockchain - (co-supervision Thomas Ledoux)
2017-2020 Emile Cadorel - A dynamic, multi-spatial, flexible and energy aware distributed placement framework for Hybrid applications - (co-supervision with Helene Coullon)
2016-2020 Yewan Wang - Estimation globale et modélisation de l'impact énergétique des nouveaux centres de télécommunications en fonction de l'architecture hardware/software et de l'environnement associé - *Cifre OrangeLab* - (co-supervision with Stéphane Le Masson)
2016-2020 Mehdi Bazm - Sécurité des environnements virtualisé- *Cifre OrangeLab* - (co-supervision with Mario Sudholt and Marc Lacoste)
2014-2017 Yacine Hebbal - Mécanismes de Monitoring sémantique dédiés au Cloud - *Cifre OrangeLab* - (co-supervision with Sylvie Laniepce)
2013-2016 Alexandre Garnier - Wireless smart energy metering for data center - (co-supervision with Nicolas Montavont)
2013-2016 Yunbo Li - Sustainable Cloud - (co-supervision with Anne-Cecile Orgerie)
2013-2016 Frederic Dumont - Synthesizing Realistic CloudWorkload Traces for Studying Dynamic Ressource System Management - Cifre EasyVirt
2010-2014 Guillaume Le Louet - Repartition des charges thermiques dans un centre de données
2009-2012 Remy Pottier - Conception et coordination de langages dédiés pour l'administration de systèmes large échelle
2007-2011 Hien Nguyen Van - Gestion de ressources virtualisées pour plates-formes d'hébergement de services - (co-supervision with Frederic Dang Tran) - Cifre Orange- Labs
2006-2009 Fabien Hermenier - Gestion dynamique des t^aches dans les grappes de serveurs. Une approche a base de virtualisation
2004-2007 Nicolas Loriant - Extensibilité dynamique des systèmes informatiques pour applications scientifiques et systèmes hautement parallèles
2001-2005 Marc Segura-Devillechaise - Programmation par aspect pour les adaptations non anticipées. Application au cache web

Engineers

2011-2012 Frederic Dumont - Outils pour la collecte des mesures énergétiques 2011-2012
Clotilde Massot - Développement d'une interface graphique pour Entropy
2011-2014 Thierry Bernard - Developpement d'un outils d'analyse energetique pour les centres de donnees virtualises et physiques
2010-2011 Thomas Chavrier - Développement d'une interface graphique pour Entropy

Master Students (more than 20) *recents* :

2018 Yuang Trong - Blockchain energy consumption
2017 Sebastian Sierra-Cuervo - TrustyDrive
2016 Patient Wa Ntumba - Cloud pour la santé
2013 Ludovic Gaillard - (EV) - Monitoring des équipements réseaux
2013 Antoine Buisson - (EV) - Pilotage des centres de données via SNCMM
2012 Victor Leclere - (EV) - Migration a chaud de réseaux virtuels dans les centres de données
2011 Alexandre Garnier - Etude comparative des solutions de Capacity Management
2011 Frederic Dumont - Hétérogénéité pour la maitrise énergétique des centres de données

Teaching Experience

20 years of teaching experience mainly at IMT-Atlantique (previously Mines Nantes)

Summary

Courses	2013-2014	2014-2015	2015-2016	2016-2017
Operating system	120	120	120	70
Cloud and GreenIT	40	40	40	40
Project/ Supervision	60	70	40	40
Others	10	60	20	20
Total (equiv. hours)	**230**	**290**	**220**	**170**

Designed and developed mainly the following undergraduate and graduate courses :

Operating System courses where students are implicated in a hands-on kernel-level project experience with a real operating system. To address this challenge, I created a complete kernel development environment in which operating systems can be developed, debugged, and rebooted in the eclipse framework in conjunction to qemu. The system to be developed is named sextant (sextant.menaud.fr).

Cloud and GreenIT where the main goal is to provide a global view on techniques and practices of cloud computing with a focus on energy efficiency in large scale distributed systems. Topics include cloud computing principals, X as a service virtualization, and current issues of advanced research in energy efficiency. This course will be supplemented by practical work that will enable students to develop their own algorithm for power management

In charge of four modules at IMT-Atlantique

Democratization of scientific research

Involved in the democratization of science at both student and general public level:

invited talk: U Learn (2018), *fête de la science (2017, 2016, 2014, 2012, 2011), Radio Suisse Romande (2012), Prun' (2017, 2012, 2010), Labo des savoirs (2017, 2011), Association CRI'Ouest (2009, 2010), …*

news paper: *Le Monde (2017), Environnement Magazine (2017), Magazine J3E (2017), Magazine Têtes chercheuses (2011, 2012), Quotidien Le Dauphiné Libéré (2010), 01 netPro (2009), Terra Eco (2009), La Tribune (2009), Le Monde Informatique (2009), …*