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FACT SHEET

REPORT

DATE	RESEARCH INITIATIVE	AUTHOR
2015/Mar/16	Cloud Dependability & High Availability	Konstantin Benz

SUMMARY

„Cloud Dependability & High Availability“ initiative addresses analyses and technologies that enhance reliabilty and availability of cloud computing systems. For this purpose tools are developed that enable reliability analysis of computer systems. Additionally technical systems are implemented and tested in order to increase reliability and availability of cloud technologies. Only research projects that support the goals of the initiative are acquired. This fact sheet shows all research projects, publications, theses, presentations and software projects that were successfully implemented in the context of this initiave.

RESEARCH PROJECTS

CATEGORY	TITLE	DURATION	NOTES
EU-Project	eXtensible Infrastructure for Future Internet (XIFI) http://www.fi-xifi.eu	2013/May – 2015/Sep	Public-Private-Partnership for development of a cloud federation that includes 18 data center locations in Europe. Installation and configuration of data center equipment in Winterthur and Zürich.
EU-Project	Mobile Cloud Networking (MCN) http://www.mobile-cloud-networking.eu	2012/Mar – 2013/Apr	Public-Private-Partnership for development of a cloud which includes mobile telephone networks and which can be used by mobile phone users.

PUBLICATIONS

PUBLICATION	CONFERENCE	LOCATION	DATE
Benz, K., Bohnert, T. M. (2014). Impact of Pacemaker failover configuration on mean time to recovery for small cloud clusters. http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=6973765	7th IEEE Conference on Cloud Computing	Anchorage, Alaska, USA	2014/Jul/02
Harsh, P., Benz, K., Trajkovska, I., Edmonds A., Comi P., Bohnert, T. M. (2014). A highly available generic billing architecture for heterogenous mobile cloud services.	The 2014 World Congress in Computer Science, Computer Engineering, and Applied Computing	Las Vegas, Nevada, USA	2014/Jul/21

Benz, K., Bohnert, T. M. (2013). Dependability Modeling Framework: A Test Procedure for High Availability in Cloud Operating Systems. http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=6692157	78th IEEE Vehicular Technology Conference	Las Vegas, Nevada, USA	2013/Sep/03

SEMINAR PAPERS / THESES

TITLE	DATE	PROFESSOR	NOTES
VT2: Markov analysis of exceptions – Measuring the failure probability of parallel Python programs	2015/Mar/31	T. M. Bohnert	
VT1: VM reliability tester – A tool for measuring cloud reliability of OpenStack virtual machines using Python	2015/Jan/15	T. M. Bohnert	-
TS: High Availability in the Cloud – Evaluation of Opportunities, Risks and Maturity in the Implementation of a High Availability Architecture for an OpenStack Cloud Federation Infrastructure Node	2014/Nov/04	T. M. Bohnert	-

WORKSHOPS / PRESENTATIONS

PRESENTATION	CONFERENCE	LOCATION	DATE
Monitoring Openstack – The Relationship Between Nagios and Ceilometer http://bit.ly/1HVnA5R	Nagios World Conference 2014	St. Paul, Minnesota, USA	2014/Oct/15
Benz, K., Bohnert, T. M. (2013). OpenStack HA technologies: a framework to test HA architectures. http://blog.zhaw.ch/icclab/files/2012/06/2013-05-CFIC-13-HAOpenStack_kobe.pdf	The Conference on Future Internet Communications	Coimbra, Portugal	2012/May/15

SOFTWARE PROJECTS / OPEN SOURCE

TITLE	URL	NOTES
VM reliability tester	https://dornbirn.zhaw.ch/vm-reliability-tester/vm-reliability-tester	Software which is capable to measure and statistically validate hazard rates of virtual machines in OpenStack.
XIFI auto-federation	https://dornbirn.zhaw.ch/xifi-auto-federation/xifi-auto-federation	Tool to automatically federate a standalone OpenStack data center to the XIFI cloud (or to detach them from the XIFI cloud federation).
XIFI test-script	https://dornbirn.zhaw.ch/xifi-test-scripts/xifi-test-scripts	Integration test for nodes (data centers) in the XIFI cloud.

Nagios OpenStack auto-installer	https://github.com/icclab/kobe6661-nagios-openstack-installer	Automatic installation of Nagios in an OpenStack VM for monitoring virtual machines.
Nagios Ceilometer plugin	https://github.com/icclab/kobe6661-nagios-ceilometer-plugin	Nagios plugin to extract data of the OpenStack Ceilometer component.
OpenStack VM creator	https://github.com/icclab/kobe6661-reliability_measurements	Script to generate Python test VMs in OpenStack.
OpenStack HA installation	https://github.com/icclab/kobe6661-openstack-ha-install	Automatic installation of an OpenStack cluster that consists in 2 redundant nodes.

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