SlapOS Early Success Stories

Agenda:

- What is SlapOS
- SlapOS Success Stories
- SlapOS laaS Compatibility
- SlapOS PaaS Compatibility
- SlapOS API & Protocols
- SlapOS Alpha Release Program





SlapOS: Distributed Cloud OS

Install SlapOS

> apt-get install slapgrid

Use SlapOS

- > slapconsole
- >>> kvm instance = request(kvm, 'i1')
- >>> mysql_instance = request(mysql, 'i2')
- >>> kumo instance = request(kumofs, 'i3')
- >>> wr_instance = request(webrunner, 'i4')
- >>> wp_instance = request(wordpress, 'i5')
- >>> kvm_instance.getParameter('url')
- ... connection strings appears here ...





SlapOS Success Stories

User	Ma rke t	Application	Stack	Guest	S ta te
		KVM	kvm	Bare Metal	P roduction
Nexedi	Development	Unit Testing	Test Runner	Bare Metal	P roduction
		Scalability Testing	Test Runner	Bare Metal	P roduction
Université Paris 13	Education	Web Runner	LAMP	Bare Metal	P roduction
		UNG Docs	ERP5	Bare Metal	P roduction
IFF	Education	Scalability Testing	Test Runner	Bare Metal	Testing
		One Student One ERP	ERP5	Bare Metal	Testing
Central Bank	Banking	Global Banking	ERP5	Bare Metal	P roduction
Aerospace Company	Aerospace	ERP / CRM	ERP5	VMWare	Testing
Trans portation Company	Trans portation	ERP / CRM	ERP5	Bare Metal	Pre Production
S ANE F Tolling UK	Trans portation	Payment system	ERP5	Bare Metal	P roduction
	Dagaga	Coolability to a time	kumofs	Bare Metal	Te s ting
CompatibleOne	Research	S calability testing	sheepdog	Bare Metal	Testing
	Research	Bin Packing	kvm	Bare Metal	Testing
			KVM	Bare Metal	Alpha
VIEID	Claud Computing	In a C / Da a C / C a a C	LAMP	Any	Alpha
VIFIB	Cloud Computing	laaS / PaaS / SaaS	Java	Any	Alpha
			ERP5	Any	Alpha



SlapOS IaaS Compatibility

			Guest			Hos	st
	Recipe	Planne d	S upporte d	Te ste d	Used	S upporte d	Used
Bare Metal			N/A		•	√	$\sqrt{}$
kvm	kvm		$\sqrt{}$	$\sqrt{}$		√	
xen	N/A						
Bluebox	libcloud	√	$\sqrt{}$			√	
Brightbox	libcloud	V				J	
CloudS igma	libcloud	J				J	
Dreamhost	libcloud		$\sqrt{}$				
Amazon EC2	libcloud	$\sqrt{}$	$\sqrt{}$	$\sqrt{}$			
Enomaly ECP	libcloud						
E las tic Hos ts	libcloud	V				J	
Eucalyptus	libcloud	V				J	
Gandi.net	libcloud	V				J	
GoGrid	libcloud	V				J	
HEV	libcloud	V				J	
IBM Cloud	libcloud	V				J	
Linode	libcloud		$\sqrt{}$			√	
Nifft Name	libcloud					V	
Nimbus	libcloud		$\sqrt{}$			V	
OpenNebula	libcloud			$\sqrt{}$			
OpenS tack	libcloud		$\sqrt{}$				
OpS ource Cloud	libcloud		$\sqrt{}$				
Rackspace	libcloud	V				J	
RimuHosting	libcloud	√	$\sqrt{}$			√	
Slicehost	libcloud	√	$\sqrt{}$			√	
S ofL ayer	libcloud	√	$\sqrt{}$			√	
Terremark	libcloud		$\sqrt{}$				
vCloud	libcloud		$\sqrt{}$			J	$\sqrt{}$
Voxel	libcloud	J	$\sqrt{}$			J	
VPS.net	libcloud					$\sqrt{}$	





SlapOS Storage Compatibility

Category	S oftware	Considered	Pla nne d	S upporte d	Production	Applications
	MyS QL		$\sqrt{}$	√	$\sqrt{}$	
	MariaDB				$\sqrt{}$	
S QL	Cubrid					
	Infin iDB					
	VectorWize					
	S QL Lite		$\sqrt{}$			
	P os greS QL		$\sqrt{}$			
	KumoFS		$\sqrt{}$		$\sqrt{}$	
	Memcached	√	V	√	$\sqrt{}$	
	Membase	√				
	Handlers ocket	√	V	√		
	Flare	√	V	√		
	Sheepdog		V			
	NBD		$\sqrt{}$		$\sqrt{}$	
	Ceph RBD					
	Ceph S 3					
	Tahoe					
NI COI	OpenS tack Object S torage					
NoS QL	Amazon S 3		$\sqrt{}$			
	Mons tore S 3		$\sqrt{}$			
	S phinxS earch		$\sqrt{}$		$\sqrt{}$	
	Solair					
	Cassandra					
	MongoDB					
	Redis					
	CouchDB					
	ZEO		$\sqrt{}$		$\sqrt{}$	
	NE OP P OD		$\sqrt{}$			
	PALO		$\sqrt{}$			PALO Web

SlapOS PaaS Compatibility

Category	S oftware	Considered	Planne d	S upporte d	Production	Applications
	Apache		√		$\sqrt{}$	
	Varnish		$\sqrt{}$		$\sqrt{}$	
	Traffa Serve					
D (D 1	Postfx		$\sqrt{}$		$\sqrt{}$	
Front End	s tunne l		$\sqrt{}$			
	hookbox		$\sqrt{}$			
	nginx		$\sqrt{}$			
	ha proxy		√		$\sqrt{}$	
Conversion	Cloudooo		√		$\sqrt{}$	OpenOffi e, ffin peg, Imagemagick, tesseract, ghostscript
	LAMP					Wordpress, Dotclear, PHPMyAdmin, Joomla, Lighforum
	Zope		$\sqrt{}$		$\sqrt{}$	ERP5, Plone
	Perl		$\sqrt{}$			
	Java		$\sqrt{}$			Xwiki
0.4	P roActive		$\sqrt{}$			
Stack	WSGI		$\sqrt{}$		$\sqrt{}$	Cloudooo, WebRunner
	OS GI					
	Node.js					Cloud9
	Django					
	Ruby on Rails	$\sqrt{}$				



SlapOS API & Protocols

API

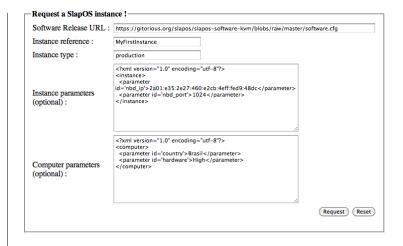
XML-RPC + XML

REST + JSON

class IOpenOrder(Interface):

def request(software_release):

Request the instanciation of a given software release



POST /software_instance_module/
Host: vifib.net
Content-Length: nnn
Content-Type : application/json

{
 "software_release" :
 "http://link/to/the/software/release.cfg",
 "instance_id" : "My first instance",
 "instance_type": "production",
}

libslap-python libslap-java

slapos-proxy slapos-master

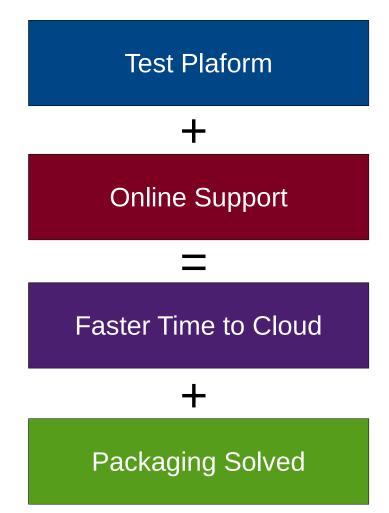
slapos-proxy *(done)* slapos-master *(planned)*



SlapOS Developer Prerelease Program



register on http://www.vifib.net





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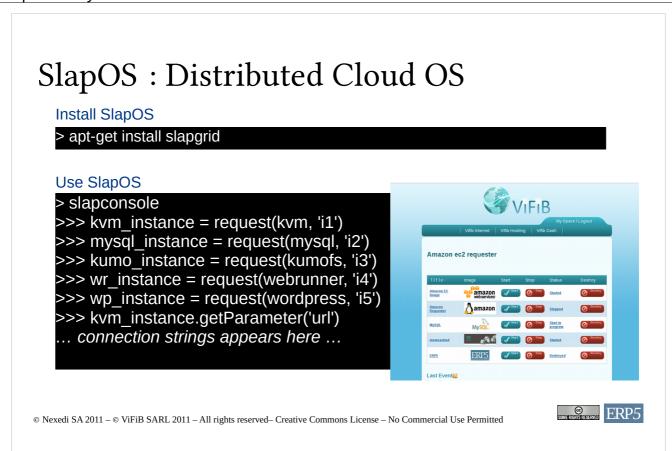


This document provides a presentation of early success stories of SlapOS as of June 7th 2001. SlapOS success stories were first introduced at the OSCi workshop of the Compatible ONE collaborative research project to an audience of consisting of representatives of companies such as Bull, Intel, Alcatel Lucent, Thales, Orange, Nuxeo, Xwiki, Nexedi, Activeon, eNovance, Mandriva and VIFIB. Success stories were then announced officially during FISL, the largest open source conference worldwide, organized in Porto Alegre (Brazil).

SlapOS early success stories provide an overview of the future of Open Source Cloud Computing. This presentation highlights in particular how SlapOS can perfectly complement privaote Cloud implementations including VMWare and increase productivity for Enterprise information systems.

This presentation provides a simple description of SlapOS from a user perspective. A list of success stories is then provided in the field of aerospace, banking, transportation and IT industry. The presentation then list existing solutions for Infrastructure as a Service (IaaS) which are compatible or supported by SlapOS. It provides a list of already supported and planned storage for SlapOS. SlapOS itself can be used as a Platform as a Service (PaaS) to port existing applications to the Cloud. SlapOS already provides numerous software components and stacks. Components and stacks can be combined thanks to a simple API supported by REST/JSON protocol.

Last, SlapOS Alpha Developer Program is introduced to help software componaies move to the Cloud in short time and deliver their software as SaaS or PaaS with a full subscription and billing platform solely based on Open Source Software.



SlapOS is a distributed cloud operating system. It aggregates servers located worldwide in data centers, in offices or at home into a large Cloud resource pool which developers can access to run any software. Developers can contribute their own servers or laptops to SlapOS distributed cloud and specialize them for specific applications or closed groups of users.

From a user perspective, SlapOS is beautifully simple.

To add your own server or laptop to SlapOS cloud, simply install **slapgrid** daemon on your favourite GNU/Linux distribution (soon BSD, MacOS and possibly Windows). Register your computer to a **SlapOS Master** such as www.vifib.net. Your server or laptop will then contribute to the worldwide pool of SlapOS resources. You may restrict access to your own laptop... only to yourself and use SlapOS while disconnected from the network thanks to **SlapOS Proxy**. Having your own server or laptop registered onto SlapOS Cloud simplifies greatly the development of new SlapOS components.

To use SlapOS, launch **slapos-console**. You may then invoke the **request()** method to create instances of about any software: **kvm** for virtual machines, **mysql** database, **kumofs** NoSQL database, **Web Runner** online IDE, **Wordpress** blog, etc. There is no limit to the number of software, components or stack which SlapOS can support. It is even possible to use SlapOS as a broker between developers and pure Cloud resources such as Amazon EC2 or Amazon S3 and unify Cloud resource allocation through a single API.

SlapOS Masters such as www.vifib.net provide a Web overview of all resources allocated by developers through a friendly user interface. They also implement a general purpose metering, accounting and billing platform for Cloud providers.

SlapOS Success Stories

User	Ma rke t	Application	Stack	Guest	S ta te
		KVM	kvm	Bare Metal	Production
Nexedi	Development	Unit Testing	Test Runner	Bare Metal	Production
	_	Scalability Testing	Test Runner	Bare Metal	P roduction
Université Paris 13	Education	Web Runner	LAMP	Bare Metal	Production
		UNG Docs	ERP5	Bare Metal	Production
IFF	Education	Scalability Testing	Test Runner	Bare Metal	Te s ting
		One Student One ERP	ERP5	Bare Metal	Te s ting
Central Bank	Banking	Global Banking	ERP5	Bare Metal	P roduction
Aerospace Company	Aeros pace	ERP / CRM	ERP5	VMWare	Te s ting
Trans portation Company	Trans portation	ERP / CRM	ERP5	Bare Metal	Pre Production
S ANEF Tolling UK	Trans portation	Payment system	ERP5	Bare Metal	P roduction
	Dagaga	Coolobility tooting	kumofs	Bare Metal	Te s ting
CompatibleOne	Research	Scalability testing	sheepdog	Bare Metal	Te s ting
	Research	Bin Packing	kvm	Bare Metal	Testing
			KVM	Bare Metal	Alpha
VIFIB	Claud Commuting	In a C / Da a C / C a a C	LAMP	Any	Alpha
A IL ID	Cloud Computing	IaaS / PaaS / SaaS	Java	Any	Alpha
			ERP5	Any	Alpha

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SlapOS is still alpha quality software as of June 30th 2001. Yet, it is no longer in its early development stage. SlapOS has reached a good level of stability thanks to a wide coverage by unit tests and functional tests. It is stable enough to be used on production systems and deploy mission critical ERP applications.

SlapOS early success stories include the provisioning of virtual machines at Nexedi for developers who use a network PC instead of a laptop, unit testing of software, scalability testing of software. SlapOS was used to teach Cloud computing and PaaS to students at Paris 13 University. It was also used to deploy UNG Docs open source Web Office, teach scalability testing and teach ERPs at Instituto Federal Fluminense (IFF) in Brazil.

Four majour customers of ERP5 open source ERP have moved their production systems to SlapOS. A Central Bank has been using ERP5 for currency issuing and global banking since May 30th 2011. An aerospace company is finalizing tests of ERP5 over SlapOS for ERP/CRM applications. ERP5 has been implemented on SlapOS for SANEF UK tolling as well as in another highway tolling company.

Compatible ONE collaborative project uses SlapOS to run scalability tests on NoSQL storages and gather results. SlapOS implementations of sheepdog and kumofs were made for this purpose.

Last, VIFIB hosting company has started alpha testing of SlapOS for devlopers of SaaS and PaaS applications which may be based or not on IaaS. VIFIB supports various stacks such as LAMP, Java or ERP5. It provides Billing as a Service (BaaS) to any software publisher looking for the shortest time to market solution to offer their solutions on the Cloud.

			Guest				ility	-	- DITTE	_
	Recipe	Planned	Supported	Te ste d	Use d	S upporte d	Used	brightb	OX REAL	ElasticHosts
Bare Metal	1	1	N/A			11	√	doud	BLUE BOX GRO	UP, LLC Flexible servers in the cloud
kvm	kvm	√	√	V	√	√		sliceh	and E	OpenNebula
xen	N/A					√		Silceri	iost 💗	Орепиерою
Bluebox	libcloud	√	√			√			tinode	com
Brightbox	libcloud	V	√			√		D	U	oron onomaly (
CloudS igma	libcloud	√	√			V		Dred	imriost 👑 am	azon enomaly 🕏
Dreamhost	libcloud	V	√			√				
Amazon EC2	libcloud	V	√	√		√		GŮG	DID T	1 ==== <i>=</i>
Enomaly ECP	libcloud	√	√			√		222		
E las tic Hos ts	libcloud	√	√			√			Eucaly	ptus
Eucalyptus	libcloud	√	√			J			(3)	
Gandi.net	libcloud	√	√			√		racksp:	ace cloud	SOFTLAYER'
GoGrid	libcloud	√	√			√			HOST	ĮŲ.
HEV	libcloud	√				√			HOST	NG
IBM Cloud	libcloud	√	√			√		VPS NET	voxel	mware.
Linode	libcloud	√	√			√		VIDINE	THE VOXE	terremark: wmware:
Nifft Name	libcloud	√	,			√.				
Nimbus	libcloud	√	√ /	,		1		CloudSi	ama 👢	OpSource
OpenNebula	libcloud	√	√ ,	√		1		Oloudoi	open	
OpenS tack	libcloud	√	√ ′			√ /			Орен	
OpS ource Cloud	libc loud libc loud	1	1			1				
Rackspace	libeloud	١				1				
RimuHos ting S lic ehos t	libeloud	1	√ √			1				
Silicenost Soft aver	libeloud	1	J			J				
Soit ayer Terremark	libeloud	./	√ √			./				
vCloud	libeloud	J	1			J	-/			
Voxel	libeloud	J	1			J	V			
VPS.net	libcloud	J	7			J				

SlapOS is compatible with most if not all IaaS providers.

SlapOS can be hosted on any bare metal server or on any virtualized server. Success stories of SlapOS show two major use cases: bare metal and **VMware**. Bare metal is used by 90% SlapOS users since it is the most cost efficient and the only way to compete in price with companies such as Google on collaboration software. VMWare is used by some large corporations which already purchased a virtualization infrasture based on VMWare and on Storage Area Network (SAN). The addition of VMware increases costs by a magnitude of two to four with few if no benefits: the theoretical reliability of virtualized server and storage is often killed by human errors which put down the whole IaaS infrastructure at once for a couple of hours. We have observed until now that many private IaaS infrastructures are less reliable overall than a collection of bare metal dedicated servers running at home.

SlapOS can host various IaaS infrastructures. It is possible for example to allocate **qemu-kvm** virtual machines directly on SlapOS bare metal servers. This possibility is used by Nexedi developers to create servers and package ERP5 for different GNU/Linux distributions. It is also possible to allocate virtual machines on existing public or private clouds thanks to libcloud library. SlapOS plays in this case the role of a broker between a unified resource allocation API and a collection of IaaS providers, each with its own API.

It would be possible also to use SlapOS as a way to automate the deployment of open source Cloud stacks such as NiftyName, OpenNebula, Eucalyptus or OpenStack. This has been already implemented for some storage backends used by IaaS.

SlapOS Storage Compatibility

Category	Software	Considered	Planne d	S upporte d	Production	Applications
	MyS QL	√	√	√	√	
	MariaDB	√	√	√	√	
SQL	Cubrid	√				
	Infin iDB	√				
	VectorWize	1				
	S QL Lite	1	√	√		
	P os greS QL	√	√			
	KumoFS	√	√	√	√	
	Memcached	√	√	√	√	
	Membase	√				
	Handlers ocket	1	√	√		
	Flare	√	√	√		
	S heepdog	√	√	√		
	NBD	√	√	√	√	
	Ceph RBD	1				
	Ceph S3	1				
	Tahoe	√				
N COL	OpenS tack Object S torage	1				
NoS QL	Amazon S 3	1	√			
	Mons tore S 3	1	√			
	S phinxS earch	1	√	√	√	
	Solair	J				
	Cassandra	√				
	MongoDB	√				
	Redis	√				
	CouchDB	√				
	ZE O	√	√	√	$\sqrt{}$	
	NE OP P O D	√	√			
	P ALO	√	√			PALO Web

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SlapOS provides SQL and NoSQL storage.

MySQL and MariaDB are supported and already used in production by SlapOS systems. SQL Lite is also provided. Addition of PostgreSQL is planned. Cubrid, InfiniDB and VecttorWize are considered for future addition.

A couple of NoSQL stores are already part of SlapOS, some of which are used in production. The memcached protocol is supported both in non persistent form with **memcached** and in persistent form with **kumofs** and **flare**. Block storage publication is possible through **NDB** server and **sheepdog**. Full text search and document storage is possible with **sphinxsearch**. **HandlerSocket** provides high performance key-value store. **ZEO** provides an object database.

More NoSQL stores are planned. Various implementations of S3 will be added soon. PALO cube server will also soon become part of SlapOS standard distribution. NEO distributed transactional object database will provide in SlapOS one of the only implementations of "always consistent" NoSQL.

Other NoSQL stores which are considered will be added through community effort or based on user requirements. This includes more options for the memcached protocole with **membase**, more options for block storage with **ceph**, encrypted object store with **tahoe** and a couple of rich NoSQL stores such as **Cassandra**, **MongoDB** or **Redis**.

SlapOS PaaS Compatibility

Category	Softw are	Considered	Planned	S upporte d	Production	Applications
	Apache	√	√	√	√	
	Varnish	√	√	√	√	
	Traffi Serve	√				
r . r 1	Postfix	√	√	√	√	
Front End	stunnel	√	√	√		
	hookbox	√	V	√		
	nginx	√	√			
	ha proxy	√	√	√	√	
Conversion	Cloudooo	√	√	√	√	OpenOffie, ffin peg, Imagemagick, tesseract, ghostscript
	LAMP	√	√	√		Wordpress, Dotclear, PHPMyAdmin, Joomla, Lighforum
	Zope	√	√	√	√	ERP5, Plone
	Perl	√	√	√		
	Java	√	√	√		Xwiki
C . 1	P roAc tive	√	√	√		
Stack	WS GI	√	√	√	√	Cloudooo, WebRunner
	OS GI	√	√			
	Node.js	√	√			Cloud9
	Django	√				
	Ruby on Rails	√				

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SlapOS includes its own Platform as a Service: SlapOS Web Runner, a.k.a. SlapIDE.

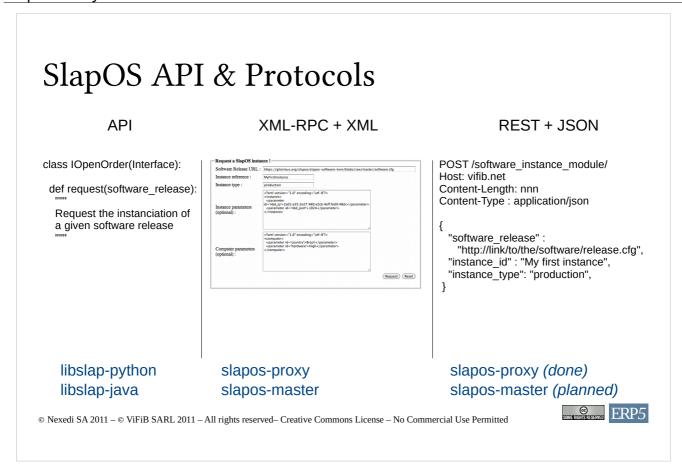
Through a simple web based interface, developers can create SlapOS profiles and recipes to port their applications to the Cloud. Applications are normally based on a front-end, a stack and sometimes file conversion services.

SlapOS provides HTTP, SMTP and Web Socket/COMET front-ends. This includes **Apache** for general purpose applications, **Varnish** for HTTP caching, **Postfix** for SMTP and **ha-proxy** for load balancing. All of which are already in production. **Hookbox** provides an elegant solution for Web Sockets and COMET applications so that developers can turn their application into a real time application in a matter of hours. More front-ends are considered: **Apache Traffic Server** for caching and **nginx** for HTTP.

stunnel can secure any protocol between virtual machines hosted on a public clouds and thus remove the need to create complex virtual networks or virtual switches spanning over multiple public clouds. Through a single X509 certificate, all communications between the difference services of a SlapOS application can be secured.

SlapOS provides **cloudooo** to convert files from any format to any format. Cloudooo supports more than 200 file formats including office files, images, videos, audio and raw data.

SlapOS is compatible with LAMP, Python/Zope, Python/WSGI, Perl, Java and ProActive stacks. More stacks are considered of planned to be added: OSGI, Node.js, Django and Ruby on Rails. The LAMP stack has been used by students to port a couple of PHP applications to SlapOS, including Wordpress and Dotclear.

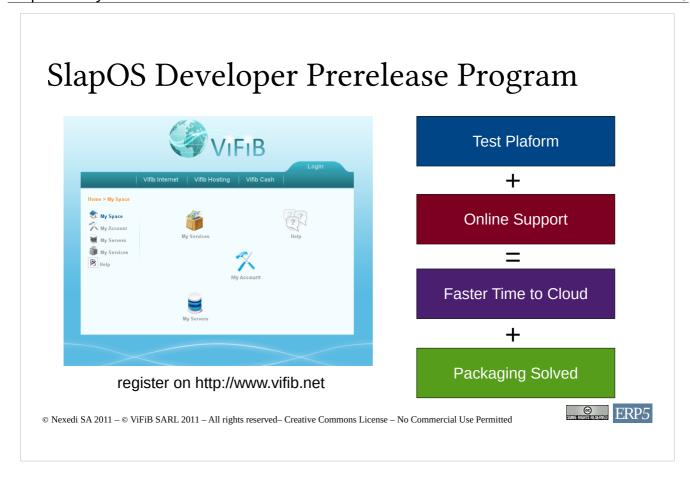


The core of SlapOS is the SLAP protocol. SLAP stands for "Simple Language for Accounting and Provisionning". With SLAP, every computer part of a Cloud publishes on so-called SlapOS Master the list resources which are available to others then receives from SlapOS Master resources to allocate and notifies to SlapOS Master resource usage for a given period of time. Thanks to SLAP, IaaS, PaaS and SaaS are unified together with metering, accounting and billing.

SLAP is implemented in SlapOS by SLAPGRID, the accounting and provisionning runtime of the Compatible ONE R&D project. Developers can use SLAP either through the SLAP API or by implementing the SLAP Procol.

The SLAP API mainly consists of the **request()** method. Python and Java libraries are provided to developers. PHP, Javascript, Ruby and Perl libraries are considered.

The SLAP protocol exists in two form: **XML-RPC** and **REST**. The SLAP payload can either be XML or JSON. XML-RPC is the easiest for integration to existing web sites, since it mimics HTML form data and requires practically no coding. REST is the modern way to use the SLAP protocol with a documentary approach. The choice of XML vs. JSON is mostly a question of taste. XML provides more mature tools for data validation in most environments while JSON is preferred for its lighter syntax in other environments.



SlapOS is ready for developers who are planning to port their applications to the Cloud. It can help them save tremendous time to turn an existing application into PaaS or SaaS, and start billing new customers. In addition, SlapOS can also solve the increasingly complex problem of software packaging for multiple GNU/Linux distributions by providing a simple way to create universal RPM/DEB packages and test them.

SlapOS Developer Program was created to support developers in the current context of SlapOS which can be currently (June 30th 2011) characterized by a relative lack of documentation. By teaming with SlapOS core development team and using the existing VIFIB.net platform, developers can benefit from online support and port their applications to SlapOS in a matter of hours. Our experience and success stories show that third party developers who teamed with SlapOS core developers could bring their software to the Cloud while others faced difficulties to understand SlapOS due to lack of tutorials. We thus recommend for the time being to subscribe to www.vifib.net and request (Free) membership to the **SlapOS Developer Release Program**. Nexedi can also provide commercial support for very tight time-to-market requirements.

In a couple of months, based on current developer experience and questions, documentation and tutorials will be extended to help other developers join SlapOS without the need to be in contact with SlapOS core developers. In order to make this happen faster, we are looking for contributors ready to write documentation and explain the specification of SLAP and SlapOS. The best way to help us is to send your staff to our office or to define joint collaboration projects. SlapOS is a community project. We need your support.