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1		T1-1 / T1-2 T1-3	A1-1-1 A1-1-2 Linux A1-2-1 A1-3-1	MySQL
2		T2-1 T2-2 T2-3	A2-1-1 A2-1-2  A2-2-1 OpenStack IaaS A2-3-1  A2-3-2	
3		T3-1 T3-2 T3-3	A3-1-1 A3-1-2 KVM	

A3-1-3

A3-2-1

A3-2-2      Docker

A3-3-1

T4-1

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T4-2

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	1	(1) (2) (3)	(1) IP TCP/IP OSPF BGP SDN/NFV/VXLAN VRRP

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	3	SQL  DML		
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Java	1  2  3	Java  Java  Bug	(1) (2) (3) (4)  5  6  7	(1) Java  (2) " "  (3) ,  (4) 60% 40%

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	1	1	(1) shell python OpenStack/Ceph/KVM
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	OpenStack 3	4 5	(3) . (4) 60% 40%
	1 2 3 Svår m K8s 3 K8s	Docker Docker Svår m K8s Docker Svår m K8s	(1) Docker (2) Svår m (3) Docker (4) K8s (5) (2) " " (3) . (4) 60% 40%
	1 2 3	KVM KVM Li nux yum Li nux	(1) (2) (3) I/O (4) KVM (5) Li nux (6) VMWare VSphere (3) . (4) 60% 40%
	1 2 SAMB A APACHE	Li nux DHCP DNS FTP	(1) Li nux (1) Li nux(redhat/centos/suse) (2) (3) (2) " "
			I P TCP/I P OSPF BGP SDN/NFV/VXLAN (2) " "

	3 Linux		(3) , (4) 60% 40%
Python	1  2 Python  Python Python Web Python 3	(1)  (2) Python  Python  Supervisor/Fabric Python	(1)  (2) " - "  (3) , (4) 60% 40%
	1  2 NAS SAN Ceph GlusterFS Openstack 3	(1) (2) (3) NAS (4) SAN (5) Ceph  (6) GlusterFS (7) Openstack	(1) C Java Ruby Python Perl  (ceph, / / )  (2) "  (3) , (4) 60% 40%
	1  2 JSP JSP JavaBean Java	(1)  (2)  (3) (4) JSP	(1) Spring Boot SpringMVC netty  mysql mongodb  , WEB (2) "

Servl et      JSP  
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   JSP  
   JSP  
   JDBC

JSP+JavaBean              JSP  
   JSP

Véb	(1)  (2) Véb  SQL  (3) Véb	(1) Htt p (2) Véb  (3) XSS (4) CSRF (5) SSRF (6) SQL (7) (8) Véb	(1) Véb  (2) Véb  (3)  (4) 60% 40%
	1  2 Véb  3 Windows/Li nux  Véb	(1) :  (2) Véb Véb  (3) Véb  SQL	(1) OpenStack KVM Vmware WAF IPS anti-DDOS HCl E CCl E Cl SA  (2) "  (3) Véb  (4) 60% 40%
	1  2	(1)  (2)  (3) Openstack H	(1)  (2) (3)  (4)  2000



	<p>3</p> <p>Openstack</p>	(4)	<p>2000 A4</p>
	<p>1</p> <p>2</p> <p>VLAN IP</p> <p>KVM yum</p> <p>Li nux Li nux</p> <p>Docker Docker</p> <p>Swarm K8s</p> <p>3</p> <p>Li nux</p> <p>Openstack</p>	<p>(1)</p> <p>(2)</p> <p>(3) Windows Server</p> <p>(4) Windows Server</p> <p>(5) Li nux</p> <p>(6) I/O</p> <p>(7) Openstack</p>	<p>(1) shell python</p> <p>OpenStack/Ceph/KVM</p> <p>(2) " — "</p> <p>(3)</p> <p>(4) 60% 40%</p>
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( )	<p>1</p> <p>2</p> <p>Openstack Li nux</p> <p>3</p> <p>KVM</p>	<p>(1)</p> <p>(2)</p> <p>(3)</p> <p>(4)</p> <p>(5)</p> <p>(6)</p> <p>(7)</p> <p>(8)</p> <p>PPT</p>	<p>(1)</p> <p>(2) " _ "</p> <p>(3)</p> <p>(4)</p>
	<p>1</p> <p>2</p> <p>3</p> <p>TCP/I P</p>	<p>(1)</p> <p>(2)</p> <p>(3)</p> <p>(4)</p> <p>(5)</p> <p>(6)</p>	<p>(1)</p> <p>(2) : " _ "</p> <p>(3)</p> <p>(4)</p> <p>60% 40%</p>
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	3	Windows		
	Linux			

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SDN	1		(1) SDN (2) OVS (3) Python (4) SDN	(1) SDN
	2	SDN OVS SDN OpenFlow	(5) SDN (6) SDN (7) SDN	(2) " - "
		Python RG-CNP SDN REST API		(3)
	3			(4)
	VM			60% 40%
Windows	1		(1) (2) (3)	(1) Windows
	2	Windows WEB FTP DHCP DNS		(2) "
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9	001009		B		3	60	36	24	2*15	2*15			
10	001010		B		7	120	96	24	4*15	4*15			
11	001011		B		3	48	10	38	4*12				
12	001012		B		2	40	20	20	2*1	2*8	2*8	2*1	4*1
13	001013		B		1	30	14	16		2*15			
14	001014		C		1	20	6	14	4*1	4*1	4*1	4*1	4*1
15	001015		B		1	16	8	8	4*1	4*1	4*1	4*1	

49 866 378 488 21/410 15/294 5/90 3/56 1/16

1	052001	*	B		3	60	52	8	6*10				
2	052002	Li nux *	B		3	48	16	32	6*8				
3	052003	Wèb	B		3	48	16	32	6*8				
4	052005	Python *	B		3	60	20	40		6*10			
5	052004	MySQL *	B		3	48	16	32		6*8			
6	052006	Java	B		3	60	20	40		6*10			

18 324 140 184 8/156 8/168

1	052083	Python	B		3	60	20	40			6*10		
2	052084		B		9	156	52	104			6*10	6*16	
3	052085		B		6	96	32	64			6*16		
4	052086		B		3	60	20	40				6*10	
5	052087		C		3	60	20	40				6*10	
6	052088		B		6	96	32	64				6*16	
7	052090		B		3	60	20	40				6*10	

33 588 196 392 11/216 19/372

1	052091		B		3	60	20	40			6*10		
2	052059	Wèb	B		3	60	20	40			6*10		
3	052096		B		3	60	20	40				6*10	
4	052018	*	C		1	20	20		2*10				
5	052097		C		1	20		20		20*1			

6	052093		C		5	80	0	80					10*8	
7	052094		C		2	40		40					4*10	
8	052099		C		2	40	0	40					20*1	20
9	052100		C		6	100		100					20*5	
10	052101		C		30	480		480					20*4	20*20
					56	960	80	880	1/20	1/20	6/120	3/60	16/320	21/420
					107	1872	416	1456	9/176	9/188	17/336	22/432	16/320	21/420
1	003001		A		3	50	50	0		50				
2	003002		B		1	20	10	10		20				
3	003003		A		6	108	108	0	36	36	36			
4	003004		C		1	30	0	30			30			
5	003005		B		1	20	10	10			20			
					12	228	178	50	2/36	5/106	4/86			
1	052095	SDN	B		3	48	16	32				6*8		
2	052026	Windows	B		3	60	20	40		6*10				
3	052027		B		3	48	16	32				6*8		
					6	108	36	72		3/60	2/48	2/48		
					18	336	214	122	2/36	8/166	7/134	2/48		
					174	3074	1008	2066	31/622	32/648	28/560	27/536	24/336	21/420

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1		15	49	378	488	866	56.4	28.2
2		6	18	140	184	324	56.8	10.5
3		7	33	196	392	588	66.7	19.1
4		10	56	80	880	960	91.7	31.2
5		5	12	178	50	228	21.9	10.9
6		2	6	36	72	108	66.7	
		45	174	1008	2066	3074	67.2	100

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1	ACA ACP		4		4		1-2
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3	RHCVA		4		4		
4	( ) ( )		3	Python	2		
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WiFi

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1			100m <sup>2</sup> 100	100
2			180m <sup>2</sup> AP 150	150
3		Windows Server Linux Web	120m <sup>2</sup> 100	100
4			120m <sup>2</sup> 100	100

5		OpenStack Vue	60m <sup>2</sup> 50	50
6		SDN Python PHP SDN	60m <sup>2</sup> SDN SDN SDN 50	50
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OpenStack

1	360	SparkSQL	50 <sup>2</sup> 16	80
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3			50 <sup>2</sup> 16	30
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