API Objects	Cloud Stack	FlexiScale	Amazon EC2	openNebula	appnexus	Slicehost	Sun Cloud	Elastichosts	gogrid	DMTF CIM	Reservoir	WSRF (globus)
Virtual Adapter (in VM)	laaS						Х	Х			Х	
. , ,												
Virtual Network (IP Addresses, MACs, Phys Bridges)	PaaS/IaaS/Fabric Combined	Х		Х								
Interface	PaaS						Х					
TCP Ports	PaaS		Х		Х							
Specify Protocols Enabled	PaaS		Х									
Internet Protocol Addressing	PaaS	Х	Х	Х	Х	Х	Х	Х	Х	Х		
Internet Protocol Framing	PaaS									Х		
Name Database/Server (DNS)	Fabric						Х					
Router	Fabric						Х					
Firewall	Fabric	Х							Х			
Virtual Port (on physical adapter ie fibre channel)	Fabric								Х	Х		
Physical Adapter/Bridge (referenced by VM)	Fabric			Х								
Load Balancer	Fabric				Х			Х	Χ			
VLAN (fabric)	Fabric	Х			X				<u> </u>			
Domain Name	Fabric				Х							
Datacenter Name	Fabric				Х							
MAC Address	Fabric	Х		Х			Х		Х	Х		
Ethernet - Operating Statistics	Fabric					Х						
Cloud Feature	Comment	FlexiScale	Amazon EC2	openNebula	appnexus	Slicehost	Sun Cloud	Elastichosts	gogrid	DMTF CIM	Reservoir	WSRF (globus)
Virtual Adapter (in VM)	Looks like a network adapter								5 5			(5 /
,												
								/resources/nic/list; ""/info; ""/create;				
Adapter Number : uint16								"""/destroy				
·												
								/resources/nic/list; """/info; """/create;				
Adapter Model Name : string								"""/destroy				
Name:string							Get; Update; Delete: /interface				VEE Descriptor	
rume.sumg							/ceriade				VEE Descriptor	
Virtual Network	Looks like a ??											
	22.510 1110 0 1 1	ListIpBlocks();										
		ListNetworkInterfac										
Types (fixed/ranged addrs:MACs)		e();		NetTemplate								
Bridge (physical adaptor interface)		-		NetTemplate								
3 (i , i : : : : : : : : : : : : : : : : :		ListNetworkInterfac										
		es();										
Name:string		(number)		NetTemplate								
MAC Address(es) Plurality				NetTemplate								

Cloud Feature	Comment	FlexiScale	Amazon EC2	openNebula	appnexus	Slicehost	Sun Cloud	Elastichosts	gogrid	DMTF CIM	Reservoir	WSRF (globus)
				NetTemplate								
Address count				(NETWORK_SIZE)								
Block_id (block of IP addresses)		ListIpBlocks();										
Interface	Looks like a *NIX style interfa	ce										
							Catalla data Dalata					
Interface Name							Get; Update; Delete: /vnet, /interface	N	N			
IP Address(es) Plurality	IPv4, IPv6						Get; Update; Delete: /vnet, /interface	N	N			
							Get; Update; Delete:					
Name Database(s) Plurality	IPv4, IPv6						/vnet	N	N			
Address Display Format Abbreviated	IPv6						N	N	N			
vnet id							Get; Update; Delete: /interface					
vnet name							Get; Update; Delete: /interface					
TCP Ports	TCP Port Number Settings											
Port Number			ec2-authorize		manage-lb-pool							
Port Number Range			ec2-authorize									
Specify Protocols Enabled	Network protocols enabled for	or VM										
TCP			ec2-authorize									
UDP			ec2-authorize									
ICMP			ec2-authorize									
Internet Protocol Addressing	Supported TCP address comp	onents										
Address Part- Network Part	IPv4											
Address Part- Host Part	IPv4											
Classless Inter Domain Routing(CDIR) Prefix	IPv4											
Addr Format -Class A		ListIpBlocks();		NetTemplate								
Addr Format -Class B	IPv4	ListIpBlocks();		NetTemplate								
			ec2-authorize;			slice:addresses: dns:record:dat						
			ec2-allocate-address;			a	Create;					
	10.4		ec2-describe-addresses; ec2-disassociate-address;		manage-lb-ip;		Get;Update;Delete:					
Addr Format -Class C	IPv4	Lists Dississing	ec2-release-address;	NetTemplate	manage-lb-pool		/vdc/*, /vnet	"""/info; """/create;	grid.server.add ()	-		
Address Type - Unicast	IPv4	ListIpBlocks();					1			-		+
Address Type - Transitional Unicast (6to4 Tunnel)	IPv6						1			-		+
Address Type - Global Unicast Address Type - Local-Link Unicast	IPv6											
	IPv4											
Address Type - Multicast	IPv6											
Address Type - Broadcast	IPv6											
Address Type - Anycast Address Part- Site Prefix	IPv6											
Audress Part- Site Prenx	Irvo		1	<u>i</u>			L				_i	

Cloud Feature	Comment	FlexiScale	Amazon EC2	openNebula	appnexus	Slicehost	Sun Cloud	Elastichosts	gogrid	DMTF CIM	Reservoir	WSRF (globus)
Address Part- Subnet ID	IPv6		ec2-authorize	•								
Address Part- Interface ID	IPv6		ec2-authorize									
									grid.ip.list();			
							Create; Get;Update;Delete:		grid.server.ad			
Network Mask	IPv4						/vdc/*, /vnet		d ()			
					manage-lb-ip;	slice:addresses: dns:record:dat						
Host Name(s) Plurality [Multihoming]	IPv4, IPv6			NetTemplate	manage-lb-pool	a a						
Name Database(s) Plurality				p.acc	manage is peer							
Address Config -Static	IPv4, IPv6			NetTemplate								
Address Config -DHCP	IPv4			procedure								
Address Config -Autoconfigure	IPv6			p. occuu. c								
Mobile Addresses ? Moving from MAC to MAC	IPv4, IPv6											
Persistence -On Demand	, -											
Persistence - Permanent												
Persistence - Leased				NetTemplate								
Persistence - Leased Period												
Internet Protocol Framing	Supported IP framing											
Packet mtu	IPv4, IPv6											
	,											
Name/Address Databases	Supported NameServer technology	ologies										
							Create; Get; Update;					
DNS	IPv4, IPv6						Delete: /vdc/*, /vnet					
SLP	IPv4, IPv6						/vac/ ,/viict					
X.500 Directory	IPv4, IPv6											
NIS NIS	IPv4, IPv6											
isns	IPv4, IPv6											
.5115												
Route Service	Supports Router configuration	support										
Forwarding	Supports House somigaration	Support										
Routing - RIP	IPv4											
Routing - RIPng	IPv6											
Routing - Open Shortest Path First (OSPF)												
	IPv4						ł	1			+	
Routing - Border Gateway Protocol (BGP)	IPv4 IPv4, IPv6 IPv4, IPv6											
Routing - Border Gateway Protocol (BGP) Route Type - Static	IPv4, IPv6											
Routing - Border Gateway Protocol (BGP) Route Type - Static Route Type - Dynamic	IPv4, IPv6 IPv4, IPv6											
Routing - Border Gateway Protocol (BGP) Route Type - Static	IPv4, IPv6 IPv4, IPv6 IPv4, IPv6											
Routing - Border Gateway Protocol (BGP) Route Type - Static Route Type - Dynamic Route Configuration - Dynamic (via DHCP)	IPv4, IPv6 IPv4, IPv6 IPv4, IPv6 IPv4, IPv6						Create; Get; Update;					
Routing - Border Gateway Protocol (BGP) Route Type - Static Route Type - Dynamic Route Configuration - Dynamic (via DHCP) Route Configuration -Static (via host)	IPv4, IPv6 IPv4, IPv6 IPv4, IPv6 IPv4, IPv6 IPv4, IPv6						Delete:					
Routing - Border Gateway Protocol (BGP) Route Type - Static Route Type - Dynamic Route Configuration - Dynamic (via DHCP)	IPv4, IPv6 IPv4, IPv6 IPv4, IPv6 IPv4, IPv6											

Cloud Feature	Comment	FlexiScale	Amazon EC2	openNebula	appnexus	Slicehost	Sun Cloud	Elastichosts	gogrid	DMTF CIM	Reservoir	WSRF (globus)
System State -Enabled	IPv4, IPv6	TIEXISCAIC	Amazon LCz	Орениевина	аррпехиз	Silceriost	Sun Cloud	Liasticiiosts	gogriu	DIVITI CIIVI	Reservoir	word (globus)
System State -Enabled System State -Disabled	IPv4, IPv6											
System State -Disabled	1674, 1670											
Virtual Port (on Adapter)	Support for Virtual ports on a	Dhysical Adaptor										
MAC Address(es) Plurality	Support for virtual ports on a	Priysical Adapter								Υ		
										Y		
Min Packet Size Max Packet Size												
Min Packet Burst Size												
Max Packet Burst Size												
Status - UP												
Status - Down												
Status - Bypass												
Mode - Promiscuous												
Mode - Private												
Mode - Isolated												
PortNumber : uint16									grid.loadbalancer.	Y		
LinkTechnology : uint16 {enum}										Υ		
OtherLinkTechnology: string										Υ		
Permanent Address : string									grid.loadbalancer.	Y		
Network Addresses : string []									grid.loadbalancer.	Y		
Full Duplex : boolean										Υ		
AutoSense : boolean										Υ		
SupportedMaximumTransmissonUnit: uint64 {units}										Υ		
ActiveMaximumTransmissonUnit : uint64 {units}										Y		
Physical Adapter/Bridge (referenced by VM)	Referencing a physical adapte	r in system										
Name				NetTemplate								
Load Balancer	Supports Load Balancer config	uration										
Pool Name /ID					manage-lb-pool							
Certificate file (path)					manage-lb-pool							
Intermediate (chain) Certificate file(path)					manage-lb-pool							
Key file (path)					manage-lb-pool							
Protocol Type(HTTP/HTTPS offload)					manage-lb-pool							
, r - v - v - v - v - v - v - v - v - v -					manage-lb-							
					pool:request_stri							
Connect to Port & send string (ng()							
					manage-lb-							
Connect to Dort & reanance string /					pool:search_strin							
Connect to Port & response string (<u> </u>				g()							
Activity History	-				manage-lb-pool							
Activity History depth					manage-lb-pool							
Activity History filter					manage-lb-pool							
Activity History sort					manage-lb-pool]]]	

Cloud Feature	Comment	FlexiScale	Amazon EC2	openNebula	appnexus	Slicehost	Sun Cloud	Elastichosts	gogrid	DMTF CIM	Reservoir	WSRF (globus)
Activity History resort		rexionale	7	оренневана	manage-lb-pool		San Sisaa	Ziastisiissts	808114		neservon	(8.0000)
Activity History raw (comma delim)					manage-lb-pool							+
received thistory raw (comma defining					manage to poor							+
Load Balancing Policies	Supports Load Balancer	policy configuration										
		, , <u></u>							grid.loadbalancer.			
Round Robbin									*()			
Gradient Exchange												
Dimensional Exchange												
Randomized Dynamic Loading												
Least Connections					manage-lb-pool				grid.loadbalancer. *()			
fastest node address					manage-lb-pool				()			+
			1		+							+
observed_node_address					manage-lb-pool							+
Load Balancing Route Policies	Supports Load Balancer	routing configuration										
Load Balancing Route Policies	Supports Load Balancer	routing configuration							grid.loadbalancer.			
SSL Sticky									*()			
									grid.loadbalancer.			
Persistent Source Addr									*()			
Load Balancing List	Supports Load Balancer	General configuration										
Virt Port(outside)/Real Port List					managa lb maal				grid.loadbalancer.			
VIII FOIT(Outside)/ Real Fort List					manage-lb-pool manage-lb-ip;				U			+
Virtual IP					manage-lb-pool							
TCP port Number					manage-lb-pool							1
Datacenter Name					manage-lb-pool							
Node (ipaddress entry)					manage-lb-pool							
Firewall	Supports Firewall Gener	al configuration										
Firewall_id (name)	· ·	ListFirewalls										
IP_address		ListFirewalls										
Policy Names		ListFirewallRules								1		+
Rule Name		ListFirewallRules			†			1		1		+
nane manne		ListFirewallRules										+
Firewall State	Supports Firewall state of											
Public, Private	Supports The wan state t	omgaration							grid.ip.list()			
i done, i iii die									P. iaribilist()			+
Firewall Route Policies	Supports Firewall route	policies configuration										
DROP	Supports in estall foute	ListFirewallRules										
ALLOW		ListFirewallRules										+
REJECT		ListFirewallRules			+							+
Source Port		ListFirewallRules			+							+
					+			1		1		+
Source Address		ListFirewallRules						-		-		+
Destination Port		ListFirewallRules										

Cloud Feature	Comment	FlexiScale	Amazon EC2	openNebula	appnexus	Slicehost	Sun Cloud	Elastichosts	gogrid	DMTF CIM	Reservoir	WSRF (globus)
Destination Address		ListFirewallRules										,
Direction		ListFirewallRules										
Firewall Protocols	Supports Firewall protocol co	nfiguration										
ANY		ListFirewallProtocols();										
TCP		ListFirewallProtocols();										
UDP		ListFirewallProtocols();										
ICMP		ListFirewallProtocols();										
GRE		ListFirewallProtocols();										
IPSEC-ESP		ListFirewallProtocols();										
IPSEC-AH		ListFirewallProtocols();										
L2TP		ListFirewallProtocols();										
Firewall Templates	Supports Firewall protocol co	nfiguration										
firewall_template_id(number)		ListFirewallTemplates										
template_name:string		ListFirewallTemplates										
default_policy:Firewall Route Policy		ListFirewallTemplates										
IP Address Lifecycle (state)	Supports reporting IP Address	state										
Assigned, Unassigned									grid.ip.list()			
VLAN (fabric)	Supports configuring/assignin	g ethernet vlans										
		ListIpBlocks();										
		ListNetworkInterfac										
lan_id (number)		e(); ListVlans(); ListIpBlocks();			manage-vlan							
		ListNetworkInterfac										
Vlan Name		e(); ListVlans();			managa ylan							
Activity History		e(), Listvians(),			manage-vlan manage-vlan						+	
Activity History Activity History depth											+	
Activity History depth Activity History filter					manage-vlan manage-vlan							
Activity History sort											+	
Activity History resort					manage-vlan manage-vlan							
Activity History raw (comma delim)					manage-vlan							
Activity History raw (commit definit)					manage-viall						1	
Address Assignment Method	Supports IP Addr assignment	Configuration										
Automatic Static Configuration	Supports if Addi assignment	omiguration -										
Automatic Static Comparation												
									grid.server.add ();			
User Defined Static Configuration									grid.loadbalancer.			
User Defined Static Configuration Dhcp Configuration					1				U			
Ency Configuration									grid.loadbalancer.*(
Virtual IP Address												

Cloud Feature	Comment	FlexiScale	Amazon EC2	openNebula	appnexus	Slicehost	Sun Cloud	Elastichosts	gogrid	DMTF CIM	Reservoir	WSRF (globus)
Deal ID Address									grid.loadbalancer.*(
Real IP Address)			
Domain Name	Supports VM domain name as	configuration										
Domain Name	Supports vivi domain name as	Configuration			manage-cdn-							
Assign Name to VM					domain							
Datacenter S	Supports VM Data Center nan	ne in configuration										
DataCenterID: string					manage-lb-pool							
MAC Address S	Supported MAC address comp	onents										
ŗ	Ethernet, 802.11 wireless											
	networks, Bluetooth											
	IEEE 802.5 token ring, most	Listis Dissission ()										
	other IEEE 802 networks,	ListIpBlocks();										
	EDDL ATM Fibra Channal	ListNetworkInterfac							grid.ip.list();			
ر ا	and Serial Attached SCSI	e();		_			Get; Update; Delete:		grid.server.ad			
Address Format - MAC-46 (IEEE Std 802-2001)				NetTemplate			/interface		d ()			
	FireWire, IPv6, ZigBee /											
	802.15.4 wireless personal-											
	area networks											
Address Format - Network Service Access Point (NSAP)												
•	SDH, SONET											
Address Value												
Persistence -On Demand												
Persistence - Permanent										Y		
Persistence - Leased				NetTemplate								
Persistence - Leased Period												
		<u></u>										
	Supports ethernet general cor	ifiguration items								.,		
MaxDataSize : uint32										Y		
Capabilities : uint16[] {enum}										Y	1	
CapabilityDescriptions : string[]										Y	1	
EnabledCapabilities : uint16[] {enum}										Y		<u> </u>
Ethernet Capabilities 5	Supports ethernet capabilities	config items										
SpeedConfigurable : boolean	Supports ethernet capabilities	Coming Items								Υ		
PortSpeedsSupported : uint64 []										Y		
RequestedSpeedsSupported[]: uint16										Y	1	
AutoSenseSpeedConfigurable : boolean										Y	+	
Autosensespeedeonngarable . boolean										'		
Ethernet Port Settings S	Supports ethernet port config	uration										
RequestedSpeed : uint64	oupports ethernet port comig									Υ		
AutoSenseSpeed : boolean				 						Y	+	
NAULOSERISESDEED : DOOIEAN										Y		

Cloud Feature	Comment	FlexiScale	Amazon EC2	openNebula	appnexus	Slicehost	Sun Cloud	Elastichosts	gogrid	DMTF CIM	Reservoir	WSRF (globus)
Ethernet - Operating Statistics	Reports ethernet port statistic	S								.,		
BytesTransmitted : uint64 {units}						slice(string)				Y		
BytesReceived : uint64 {units}						slice(string)				Y		
PacketsTransmitted : uint64										Y		
PacketsReceived : uint64										Y		<u> </u>
Ethernet - Diagnostic Statistics	Reports ethernet diagnostics s	tatistics										
SymbolErrors : uint32										Υ		
AlignmentErrors : uint32										Y		
FCSErrors : uint32										Y		
SingleCollisionFrames : uint32										Y		
MultipleCollisionFrames : uint32										Y		
SQETestErrors : uint32										Y		+
DeferredTransmissions : uint32										Y		
LateCollisions : uint32										Y		+
ExcessiveCollisions : uint32										Y		+
InternalMACTransmitErrors : uint32										Y		
InternalMACReceiveErrors : uint32										Y		+
CarrierSenseErrors : uint32										Y		+
FrameTooLongs : uint32												+
Diag - Packet CRC Error												
Diag - Packet Framing Error												
Diag - Packet Gap Error												+
Diag - Sync Lost												
- 110 - 110												
Link/Port Aggregation IEEE 802.3ad	Reports ethernet link aggregat	ion info										
Link - Back to Back (chassis to chassis)												
QOS Parameters TBD												
Link/Port Failover IEEE 802.3ad	Reports ethernet link failover	configuration										
Link Down Failover Time												
Link Bounce Failover Watermark												
Link Bounce Window												
Link Up Failback Time												
PollingRateMax : uint32										Υ		
PollingRateMin : uint32										Υ		
AutoFailbackSupported : boolean										Υ		
AutoFailbackEnabled : boolean										Υ		
BadPathPollingRate : uint32										Υ		
InactivePathPollingRate: uint32										Υ		
DefaultLoadBalanceType : uint16 {enum}										Υ		
· · · · · · · · · · · · · · · · · · ·												†