



## FEATURE GUIDE

# NRB ENTERPRISE CLOUD SERVICES

NECS 4.0



18 SEPT. 2019

# The NRB Cloud

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## NECS 4.0

Having been ripened over the years with experience, in providing enterprise grade service levels, listening and collaborating with our customers and providing the highest quality of service in IT Cloud Management, the evolution to NECS 4.0 offers unparalleled and exciting opportunities for our Enterprise Cloud customers.

NECS (NRB Enterprise Cloud Services) is a hybrid cloud offering that allows customers to access from a single interface the NRB private cloud and the main public clouds: Amazon AWS, Microsoft Azure, Google Cloud and IBM Cloud.

The NECS platform allows the hybridisation of different clouds. It gathers all IT resources on one single management portal and centralises cost, compliance and optimisation management.

In addition to the NECS platform, NRB also offers a continuum of services that guides you through the steps of your cloud adoption path: Advisory Services, Build Services and Run Services.

NRB's Enterprise Cloud Services Platform (or NECS) 4.0 proposes a compelling, and cutting-edge Cloud Platform and Service. NECS not only encompasses the managed infrastructure, but an intuitive portal to manage it through an automation layer with a web interface front end.

The central web portal makes it easy seamless in managing your infrastructure, allowing for Virtual Machines (VMs) to be created and service-ready within 1 hour, and managed remotely, in a DIY fashion, by the customer.

- NRB's Self Service portal that allows for the automation of requests from a user friendly interface.
- Customer Reporting and system monitoring tools.
- The Configuration Management Database (Asset Management)
- Console Connectivity
- ITSM Service Desk Interface

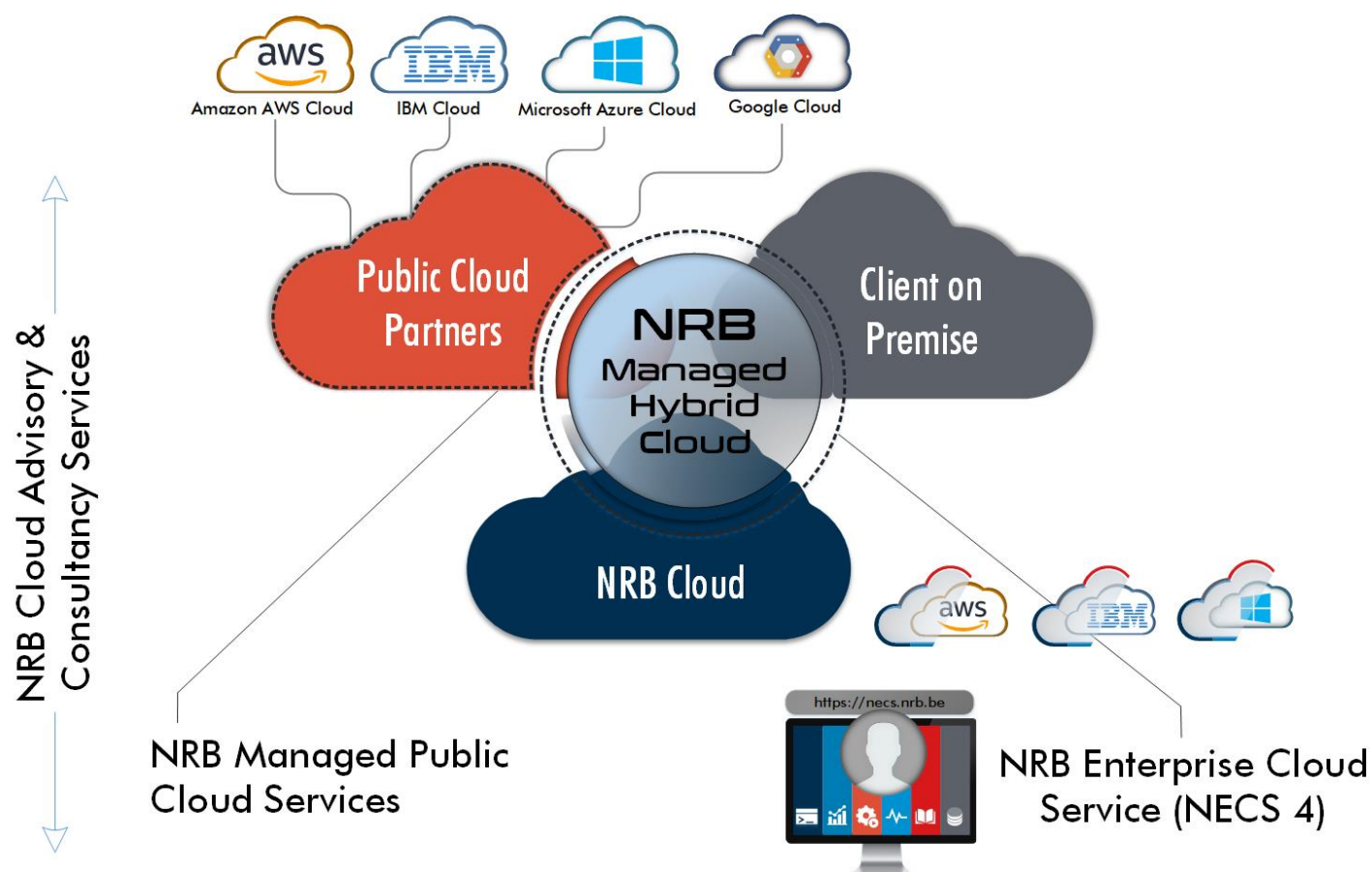
<http://myportal.nrb.be/>



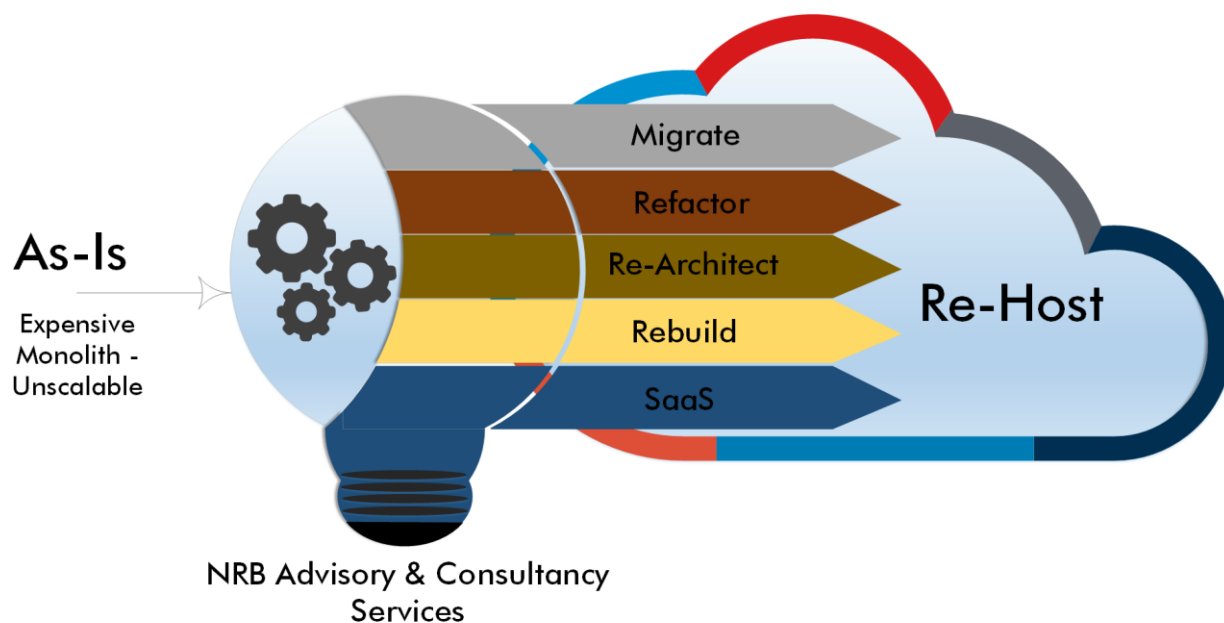
 End Client-Key Users

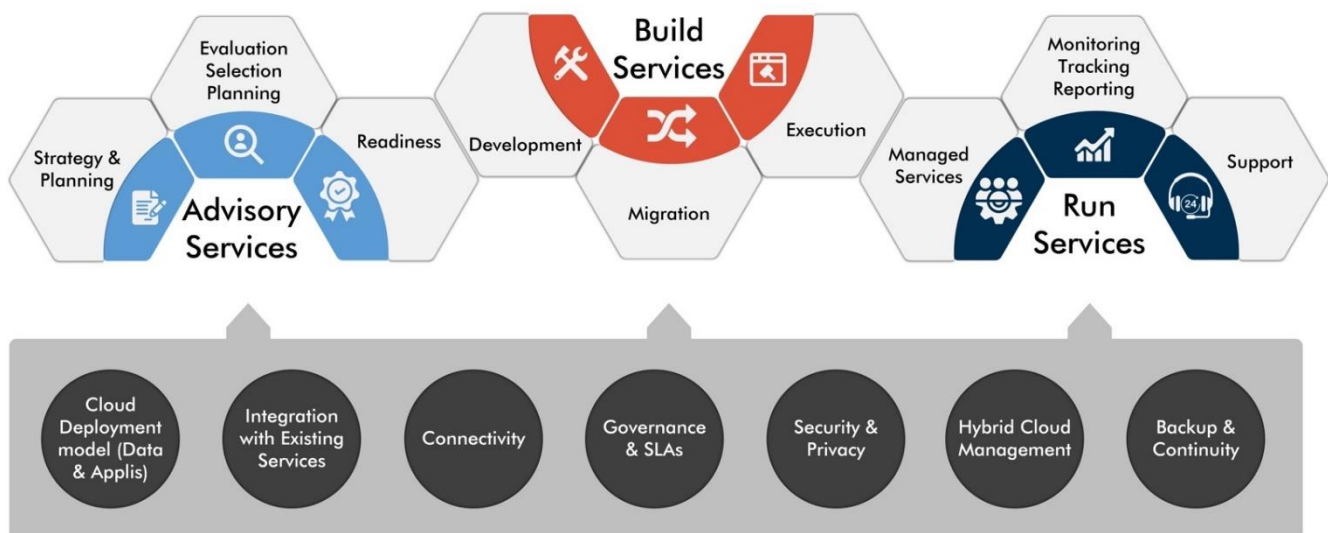
The main goal of NRB's Cloud is to provide business value services.

This infrastructure of a Cloud can be hosted within the customer datacenter(s), the NRB datacenters or some Cloud vendors. On top of this infrastructure NRB offers multiple services in order to manage it and guarantee SLA's.



Our Consultants will be able to support you across the entire continuum of cloud services:





All NRB's Cloud Solutions provide the following benefits of cloud computing:

- **Rapid Elasticity:** This is the ability to instantly dimension your services based on a change on demand. Reflected in this ability, is NRB's Pay as you Use or Pay as you Grow cost model. Not only is this a paradigm shift from the conventional procurement/cost-model, but provides a CAPEX to OPEX opportunity.

Chargeback and monitoring mechanisms are aware of this elastic capability (including cloud bursting) in order to properly monitor, track and bill resources.

- **On Demand-Self Service:** This is the ability to instantly provisioning of services from our self-service portal is a key feature of the NRB Cloud. Customers can not only instantly provision, monitor and request services from our portal, but have access to a wider selection of tools to enable them to efficiently cater for their services. This can ultimately result in greater cost savings, as requests are by-passed from NRB's help desk.
- **Resource Pooling:** Within the context of a multi-tenant infrastructure, the various physical and virtual resources can be dynamically assigned and reassigned according to each customer's needs.

NRB guarantees the segregation of compute, storage and network resources by tenant. Resource pools are shared by default but can also be dedicated to one customer.

Pools can be classified by:

- Speed (fast to slow),
- Recoverability (replicated storage or not),
- Compliance (PCI or general use),

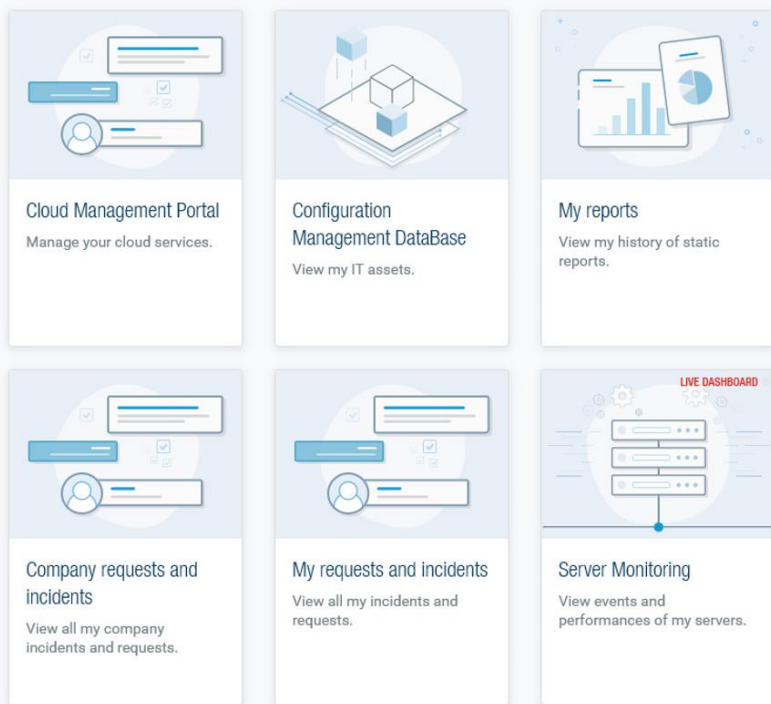
or other characteristics defined by the business.



The NRB Enterprise Cloud Platform provides an advanced and complete end-to-end service management and delivery of IT resources and Infrastructure.

## Self Service Provisioning Portal

### My Services



The self-service portal allows NRB's customers to not only have access to their equipment, but allows for monitoring, documentation, SRQ management, and inventory management.

### Brief example of Some Self-Service Capabilities Through NECS Portal:

You control and manage your own cloud footprint through a simple user service catalogue interface.

### Performing automated SRQs

- Hot-add virtual disk
- Extend an existing disk
- Start/stop/reboot
- Add hot vCPU
- Add hot RAM
- Order a Windows 2012 R2 Virtual Machine (VM)
- Order a Windows 2016 Virtual Machine

(VM)

- Execute a reboot/start/stop of a server
- Access the console of a Virtual Machine (VM)
- Define, at the ordering phase, the RTO/RPO of the VM's backup.
- Order basic monitoring (included for VM's)
- Receive, each month, a report on the performance, in order to detect any under-dimensioning or over-dimensioning issues.
- Order a RedHat 6 VM
- Order a RedHat 7 VM
- Enlarge their existing disk space.
- Create a tenant in an automated fashion
- NRB Admin is able to perform any action that a client can perform.
- Automatic generation of a hostname
- Automatic assignment & Reservation of an IP address.
- Auto-configured Monitoring & Backup
- Real-time service price calculation & display
- Order and actions are subject to prior validation by authorized persons within the customer organization

### Other capabilities

- Access to the virtual screen (console)
- Monthly performance reports

## Inventory, Monitoring, Assets & Reporting

- ITSM access to view and create tickets
- My CMDB to view the inventory of the customer assets
- Monitoring dashboard of all the infrastructure
- My reports to share reports and other documents

The functionality of the NRB Self-Service Portal extends these features to the hybrid Cloud, allowing end users to provision these service requests (SRQs) to a target VM on their selected public cloud provider.

A highly secure web portal directly accessible online allows customers to order new virtual machines (VMs), by completing a form and clicking “order”.

Everything is completed within an hour through our fully automated delivery process. After delivery, you can check the health of all your servers through the monitoring portal, access commodity actions such as rebooting and resizing CPU-RAM or disk space and access the console for troubleshooting. All these actions can be scheduled to start at a later time without your intervention.

## Global Dashboard:

The screenshot displays the NRB Enterprise Cloud Services Global Dashboard. The interface includes a top navigation bar with the NRB logo and the text 'NRB Enterprise Cloud Services'. Below the navigation bar, there are tabs for 'Catalog', 'Deployments', 'Administration', 'Inbox', 'Infrastructure', and 'Business Management'. The 'Catalog' tab is active, showing a list of 15 items. The items are organized into a grid of cards. Each card contains an icon, a title, a description, and a 'REQUEST' button. The items include:

- CentOS 7 Machine Products 2
- CentOS 7 New 02
- Create group
- Create IP Address
- JustinCentOS6Template
- JustinRHEL6Template
- JustinRHEL7Template
- NRB Premium IaaS Centos 6
- NRB Premium IaaS Centos 7
- NRB Premium IaaS Linux Red Hat 6
- NRB Premium IaaS Linux Red Hat 7
- NRB Premium IaaS Windows Server 2012 R2

## Public Cloud Management of VMs:

The screenshot shows the NRB Enterprise Cloud Services dashboard. The top navigation bar includes 'Catalog', 'Deployments', 'Administration', 'Inbox', 'Infrastructure', and 'Business Management'. The left sidebar lists 'Launchpad', 'Overview', 'Expenses', 'Consumption', 'What-If Analysis', and 'Reports'. The main content area is titled 'You are here: Business Management > Launchpad' and features a 'Business Insight' section with four tiles: 'Expenses', 'Charges', 'Budget', and 'Optimization'. Below this is a 'Cloud Operations' section with three tiles: 'Private Cloud', 'Amazon Web Services', and 'Microsoft Azure'. The 'Cloud Planning' section at the bottom has three tiles: 'Cloud Comparison', 'Datacenter Comparison', and 'What-If Analysis'. The user 'pgoessens.pro' is logged in, and the status is 'Help' and 'Status'.

The screenshot shows the NRB Enterprise Cloud Services dashboard with the 'AWS Instances (0)' table. The table has columns: 'Instance Name', 'Total Monthly Cost', 'Month', 'ID', 'Account Name', 'Account ID', 'Instance Type', 'State', and 'Avg'. The 'Month' column is currently selected. The table is empty, showing 0 instances. The left sidebar shows the 'Expenses' section expanded, with 'Public Cloud (AWS)' selected. The 'Instances' sub-section is also selected. The top navigation bar and user information are consistent with the previous screenshot.

Instance Name	Total Monthly Cost	Month	ID	Account Name	Account ID	Instance Type	State	Avg
AWS Instances (0)								

CentOS 7 Machine Products 2 | Business group PRO ▾

CentOS 7 Machine Product...

VirtualMachine

## vSphere (vCenter) Machine: VirtualMachine

General Storage Properties

Instances: \*CPUs:  (Select 1-14)\*Memory (MB):  (Select 1024-262116)Storage (GB): 

Description:

\*Network:  ▾\*Storage tier:  ▾

Disclaimer: After deployment, I must use the second day operation to register the license of the operating system. Write "yes" in the input box if you agree. ⓘ

Confirm:  ⓘBackup frequency:  ▾Backup policy:  ▾\*Datacenter:  ⓘ\*Disaster Recovery:  ▾Enable backup:  ▾\*Invoicing Category:  ⓘTotal price: [Update](#)

SUBMIT

CANCEL



## Approval Policies

## Users &amp; Groups ▾

## Business Groups

## Catalog Management ▾

## Entitlements

## Business Management

## Entitlements

Create and manage access to your catalog items in the service catalog, and the actions you can run on provisioned items. When you entitle services, catalog items, and actions, you grant access to one or more members of a selected business group. You can also apply approval policies to the services, items, and actions, and then prioritize multiple entitlements for the same business group to set the order in which approvals are applied.

[New](#) [Edit](#) [Delete](#) [Deactivate](#) [Prioritize](#)

Name	Business Group ▾	Order	Description	Status	Expires On	Last Updated By	Last Updated On
EN_NRB_Access_Management	PRO	1	Managing Active Directory user	Active		Production Admin	14/01/2019 16:12
EN_NRB_Business_Management	PRO	2		Inactive		Production Admin	14/01/2019 16:05
EN_NRB_Compute_IaaS	PRO	3		Active		admin admin	23/04/2019 09:36
EN_NRB_Compute_IaaS_Pri...	PRO	4		Active		admin admin	15/05/2019 12:23
EN_NRB_Network_IaaS	PRO	5		Active		admin admin	18/04/2019 14:39



# User Management

NECS 4.0 Role to Account Type Mapping			NECS 4.0 user management is based on roles to account mapping for authenticated users. User Authentication is always achieved through Multi-Factor-Authentication (MFA).
Role	Account/Role Description	Created by:	
Initial Owner	Created per tenant	NRB	
Manager(s)	This is an admin level role, and hence an admin level user (at the tenant level) that can create new users, or delete users.	Initial Owner Account	
Approvers	An approval role can approve any request from a user requiring authorisation to purchase any new service or purchase an upgrade to an existing service.	Managers	
Standard User	A Standard user Account is capable of doing standard tasks such as creating a VM, managing VMs etc – and their actions can be approved by an Approver Role.	Initial Owner/Managers	
Limited Access User	A view only account that cannot create, or delete any resources, but can only view resources available.	Managers	

## Workflow Management

Concerning workflow approval-process - our ITSM tool allows for the creation of pre-defined workflows where tasks are signed off between several approval-authorities who ensure that validation occurs before the next sub-task is started. The workflow process that is integral with our HPSM tool, and has an interface in our CMP, is essential for how our CAB and ECAB meetings work.

For all Standard Change requests, workflow processes are normal and their implementation for specific client Service requests (SRQs) are an integral part of how NRB's Change Management Process operates.

## Silo Application Management

For scenarios where the client has a need to have application partners manage an application on their behalf, NRB's NECS 4.0 Management platform offers a Silo Management capability allowing for each application partner to manage the Virtual Machine Environment under their remit independently from other partners. Any changes, modifications, purchases, or deletions for the VM's under their remit is sent to the Global User Account (The Client) for approval.

Therefore, a client can have a number of application partners - working independently, and within a secure environment, without any contact with other partners, all under the supervision of the main user.

<http://myportal.nrb.be/>

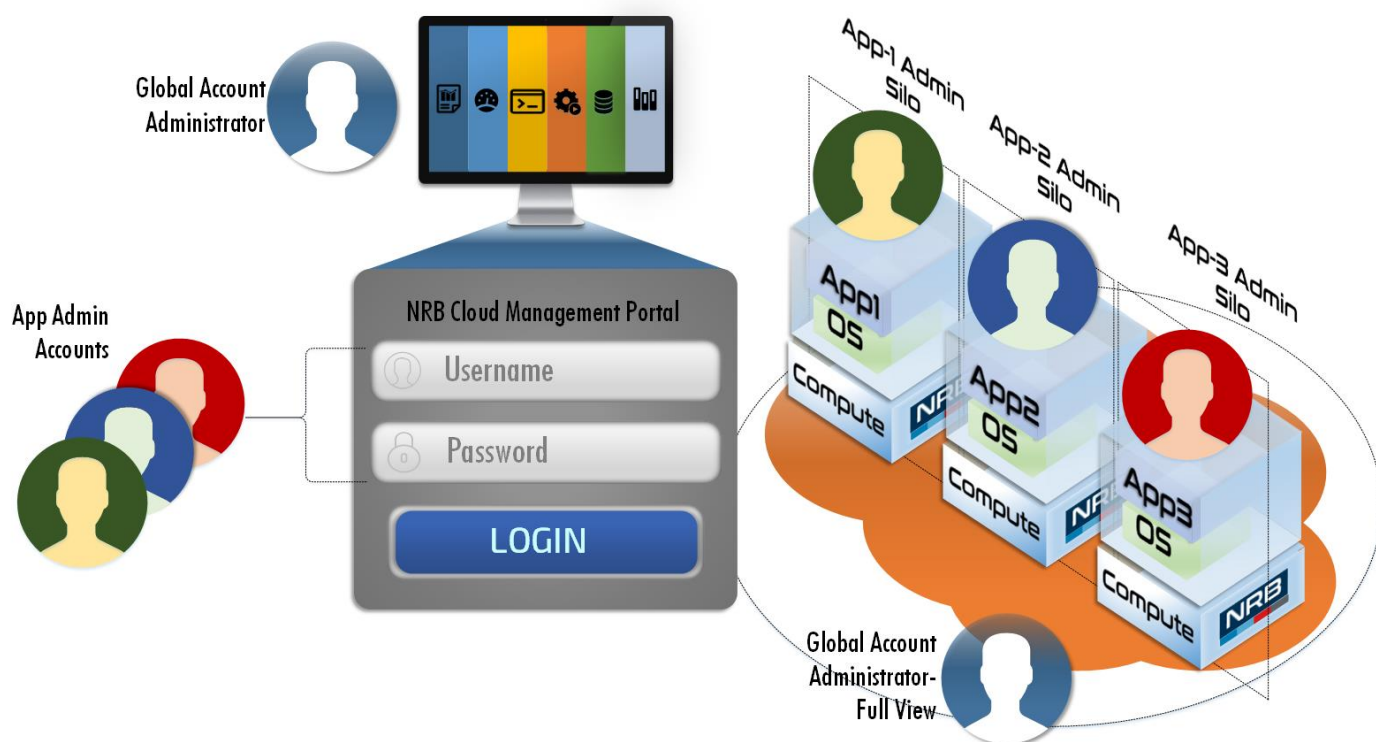


End Client-Key Users

This ability of managing applications in “silo” mode is made possible through our **NECS 4.0 Cloud Management Portal**. Given that there are different applications partners who will manage different applications, NRB's unique Cloud Management Portal will allow each application partner the ability to access the VM's for their applications without any contact, or mixing with the VM's of other applications that are outside their remit.

NRB hence will provide a common infrastructure platform from which all Application providers can work normally to manage, monitor, and provision the nodes responsible for their respective applications under our common Framework: NECS 4.0 (or NRB Enterprise Cloud Solution Portal, v.4.0).

The schema below shows exactly how this can work:



Each application partner (Red/Blue/Green) will have a login/user unique for them, and will enable them to manage their nodes as they wish; again, with a workflow approval to the "Global Account Administrator".

# NECS Cost Model

There are 2 cost models that the customer can choose from:

- **Pay-Per-Use:** Choose pay-per-use for when your architectures are designed from the start for high scalability or when your technical and application infrastructures do not need to be available 24/7. You only pay when you consume
- **Reserved:** Choose the “Reserved” cost model and pay a fixed cost per month, whether the machine is used or not. The advantage is a high predictability of your invoice, and a lower cost than in pay-per-use when your services are used 24/7.

You pay monthly for each existing virtual machine, depending on its size (vCPU, RAM and hard disk) and the options chosen.

- The minimum duration is defined in your contractual agreement.
- The first and last month are invoiced prorata by the number of days, i.e. from the date the virtual machine is commissioned until the end of the month, and from the first day of the month until the date your virtual machine is decommissioned.

Both models are billed by the month, depending on the size and options chosen.

NRB NECS Pay-Per-Use Price Guide - 2019				
INFRASTRUCTURE ELEMENT	Payment Model	Consumption	Billing Cycle	Notes
Storage	Pay-Per-Use	Per Gb	Per Month	Price depends on: A) Storage Tier (Gold, Silver Bronze. B) Replication – Is it replicated? Note – the minimum is always 1 month.
vCPU Rate	Pay-Per-Use	vCPU number (QTY) x Active Hours	Per Month	1CPU cost x the On-Time of the CPU Single Site vCPU per Core Dual Site vCPU per Core
Memory Rate	Pay-Per-Use	GB of vRAM (QTY) x Active Hours	Per Month	GB of RAM x the On-Time of vRAM Single Site vRAM per GB Dual Site vRAM per GB
Network Rate	Pay-Per-Use	vNIC number (QTY) x Active Hours	Per Month	1vNIC Cost x the On-Time of the vNIC

# Reporting & Invoicing

The NECS Cloud Management Portal provides cost and usage visibility of virtual infrastructure/private cloud and public cloud infrastructure services consumed.

It is also able to perform what-if analysis of virtual infrastructure/private cloud and public cloud, based on cost & utilization.

Automatically prices the services available through the Self-Service portal.

NECS is also able to produce a cost comparison between Private & Public cloud resources.

The invoicing, reporting and cost tabs are given as follows:

You are here: [Business Management](#) ► [Consumption Analysis](#) ► [Consumers List](#)

[? Help](#) [Status](#)

[Edit](#)

[All Data Centers](#)

Business Units	VMs	CPU	RAM	Storage	OS	Cost	Budget	Charge
Dev	14					\$1.704	\$500	\$436
Finance	8					\$988	\$400	\$179

Finance - Virtual Machines

Name	# of Vcpu	CPU			RAM			Storage			Direct VM Cost (\$)	Total (\$)	Tot (\$)
		Cost (\$)	Price (\$)	Usage (GHz)	Cost (\$)	Price (\$)	Usage (GB)	Cost (\$)	Price (\$)	Usage (GB)			
▶ Vader 2	2	\$27.56	\$12.82	0.30	\$2.63	\$7.23	0.18	\$2.04	\$0.83	20.40	\$94.45	\$127	\$21
▶ Vagus 2	2	\$29.88	\$17.24	0.32	\$2.64	\$2.06	0.18	\$2.00	\$0.90	19.97	\$94.45	\$129	\$20
▶ Vahai 2	2	\$24.01	\$26.13	0.26	\$2.61	\$1.41	0.18	\$1.84	\$0.83	18.41	\$94.45	\$123	\$26
▶ Xocai 2	2	\$26.71	\$26.13	0.29	\$2.66	\$1.41	0.18	\$1.70	\$0.77	17.02	\$94.45	\$126	\$26
▶ Yoda 2	2	\$24.05	\$17.24	0.28	\$2.73	\$2.06	0.19	\$1.80	\$0.81	17.99	\$94.45	\$123	\$20
▶ Yoshi 2	2	\$23.16	\$12.82	0.25	\$2.72	\$7.23	0.19	\$2.05	\$0.84	20.48	\$94.45	\$122	\$21
▶ Zapho 2	2	\$18.82	\$17.24	0.20	\$2.51	\$2.06	0.17	\$2.22	\$1.00	22.19	\$94.45	\$118	\$20
▶ Zeddi 2	2	\$21.72	\$17.24	0.23	\$2.65	\$2.06	0.18	\$1.31	\$0.59	13.09	\$94.45	\$120	\$20

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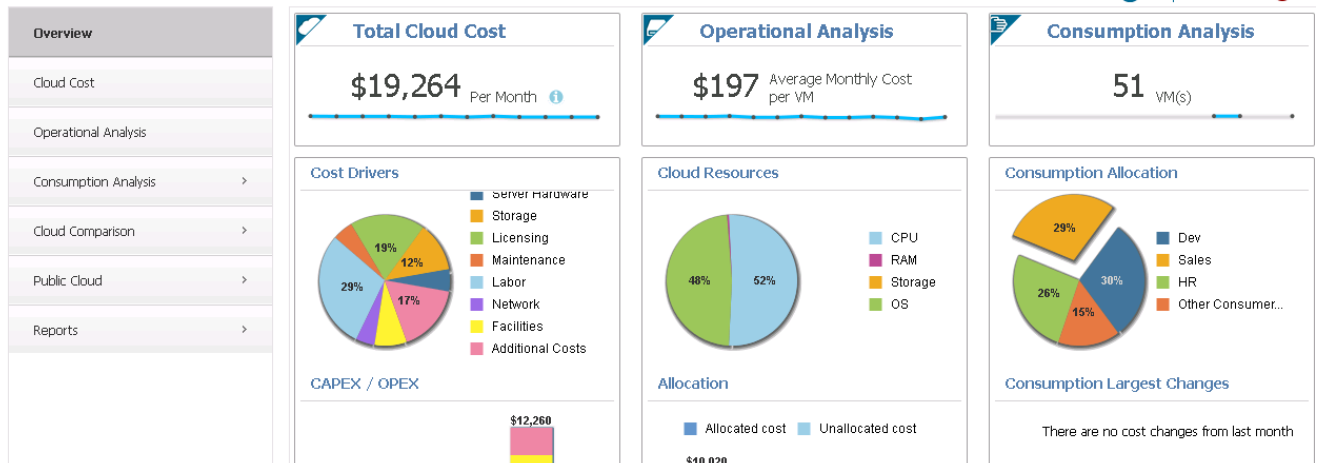
Show 10 records per page

In terms of consumption reports, we provide 3 main areas:

- **Total Cloud Cost:** Total cost of the infrastructure, with break-up of cost drivers. This provides insight into Opex and Capex.
- **Operational Analysis:** Average monthly cost per VM with insight into allocated and non-allocated cost.
- **Consumption Analysis:** Total number of VMs running and the break-up of cost consumption by different departments.

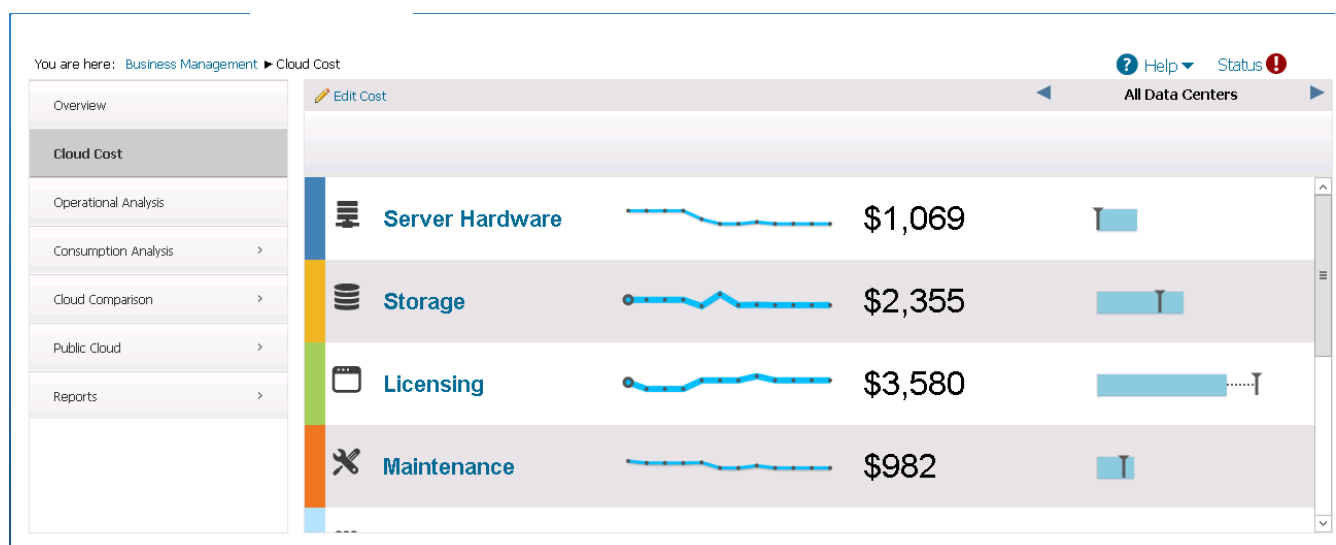
You are here: [Business Management](#) ► Overview

[Help](#) [Status](#)



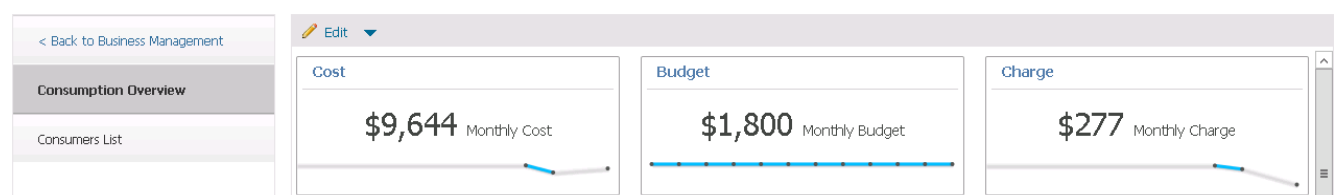
### The cost tab:

NECS categorizes the cost drivers into Server Hardware, Storage, OS Licensing, Maintenance, Labor, Network, Facilities and additional costs.



**Monthly Cost:** The graph shows the total monthly cost of all your virtual machines, which includes cost of the RAM, CPU, storage and OS.

**Monthly Charge:** The graph shows the monthly charge of all virtual machines. Charge is calculated on the capacity allocated to the virtual machines.



## Reporting Tab

You are here: [Business Management](#) ▶ [Reports](#) ▶ [vCenter Server](#) ▶ [VMs](#)

[Help](#) [Status](#)

[Export](#) [Clear Filters](#) [Historic Reports](#)

☒ Show VMs in a grid display ☐ Show VMs in vCenter Server folder structure

VMs

Infrastructure Type	VM Name	vCenter Server Alias	Data Center Name	Total Monthly Cost
VC VM	Eland	vc-sim	DC0	\$197.34
VC VM	Beliskner	vc-sim	DC0	\$99.00
VC VM	Ackbar	vc-sim	DC0	\$97.31
VC VM	Abyss	vc-sim	DC0	\$99.01
VC VM	Hawk	vc-sim	DC0	\$191.59
VC VM	Elixir	vc-sim	DC0	\$98.81
VC VM	Elara	vc-sim	DC0	\$96.72

Page 1 of 3 Show 25 records per page

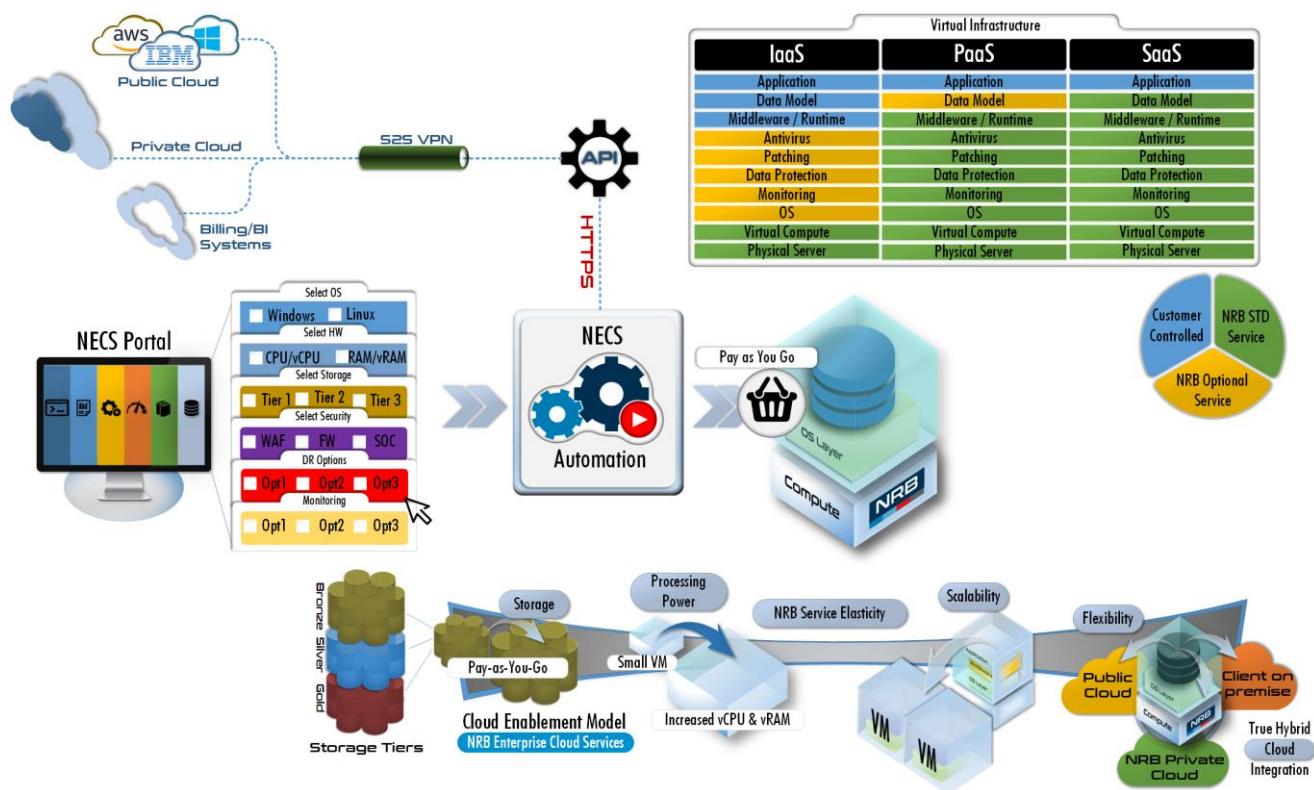
## NECS 4.0 Application Programming Interface & Command Line Interface

### Application Programming Interface [API]

The NRB Enterprise Cloud Services (NECS) Platform offers the entire API library of all NECS features open to our end users. Although the entire API is open for our end users, connectivity is secured over a site-to-site VPN connectivity between the two endpoints as a pre-requisite.

- NECS 4.0 REST API enables the creation of custom services by exposing any orchestration workflow to our Service Catalog to provide custom functionality such as Blueprints, Resource Mappings and Actions.
- Tenant administrators can create and manage the workflow subscriptions that are specific to their tenant.
- System administrators can create and manage system workflow subscriptions. The created system workflow subscriptions are active for events in any tenant and for system events.

The NECS Automation REST API provides consumer, administrator, and provider-level access to our service catalog with the same services that are presented in the console user interface. You can perform API Automation functions programmatically by using REST API service calls.



The NECS Automation REST API provides consumer, administrator, and provider-level access to the service catalog with the same services that support the NECS Cloud Management Portal (CMP) user interface. You can perform NECS Automation functions programmatically by using REST API service calls.

# Secured, HTTPs Compatible Command Line Interface (CLI)

As NECS solution is based on VMware's vRealize solution, and hence our NECS portal equally benefits from the VMware CloudClient Command-Line Utility. This is a command-line utility that provides verb-based access with a unified interface across vRealize/NECS Automation APIs.

## *CLI Use Case Highlights*

- > Browse the catalog and submit a request
- > Approve a catalog request
- > Manage provisioned machines
- > Create tenants and groups
- > Configure IaaS, including endpoints, data collection, and reservations
- > Manage catalog services and entitlements
- > Import and export blueprints and other content to human-readable format
- > Submit authenticated vRealize Automation API calls from the command line
- > Automate updates to VM reservations following SRM failover
- > Execute vRealize Orchestrator workflows

## *CLI Features and Benefits*

- > Standardized command-line interface that remains stable as underlying APIs evolve
- > Auto login for scripting (password and keyfiles)
- > JSON, CSV, and tabular formatting
- > File export
- > Sample scripts to demonstrate common scenarios
- > Plugin model enables extensibility to additional use cases

```

Do you accept the terms of license agreement? (Y)es/(N)o:Y
CloudClient Truststore password is stored at /Users/gocallag/.cloudclient/cloudc
lient.secure.truststore.password
=====
CloudClient
=====
Version : 4.4.0
*Tip* : You can hit tab to move through commands and arguments
*Tip* : You can autologon with a CloudClient.properties file
Welcome to the VMware CloudClient
CloudClient>
  
```

The pre-req for using it is a working Java JRE/SDK on your system.

This can be launched using the cloudclient.bat (for windows) or cloudclient.sh for OSX / Linux, after which you must accept the licence. This then leads you to the interactive shell that is an ideal way for exploring your NECS environment.





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[info@nrb.be](mailto:info@nrb.be)



+32 (0)4 249 72 11

NRB S.A. / nv Parc Industriel des Hauts-Sarts - 2<sup>e</sup> Avenue 65 - 4040 Herstal | Rue d'Arlon / Aarlenstraat 53 - 1040 Bruxelles / Brussel

