

**CLOUDFORMS @
GMI**

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WHAT IS CLOUDFORMS?

- “Hybrid cloud manager”
 - Built on top of ManagemIQ
 - Integrates with a variety of virtualization environments
- Self-service portal
 - Automated provisioning
- Quota enforcement
- Reporting and alerting
- Compliance and control checking

BEFORE CLOUDFORMS ERA

- Manual VM provisioning process
 - Performed by Linux administrator
- Approximately 1/2 hour provisioning time
 - DNS, Kerberos, Kickstart, Puppet, Update
- Growing number of Linux applications

CLOUDFORMS POC

- 60-day trial period
- Consultant assisted for three days
- Worked through our requirements
- Imported pre-built customizations

OUR IMPLEMENTATION

- Provision RHEL 6 & 7 VMs
- Automatic approval – under 10 VMs
- Users have free range of resources
- External script for Puppet and Satellite config
- Email user when provisioned
- Email team and user if provision failed
- Retirement workflow

VIRTUAL MACHINE REQUEST DIALOG

Order Service "RHEL 7 VM"

VM Properties

VM Name *	<input type="text"/>
Description	<input type="text"/>
CPU Count *	<input type="text" value="2"/>
Memory (GB) *	<input type="text" value="2"/>
Template	<input type="text" value="cf_rhel7"/>

Access

AD group for Login Access *	<input type="text"/>
AD group for Sudo Access *	<input type="text"/>

Provision Options

Number of VMs *	<input type="text" value="1"/>
Retirement Time *	<input type="text" value="6 Months ▼"/>

Cloud Intelligence

Services

Clouds

Infrastructure

Control

Automate

Optimize

Configure

My Services

Catalogs

Workloads

Requests

Service Catalogs

- ▼ All Services
 - ▼ Open Source DB Catalog
 - MongoDB
 - ▼ Red Hat VM Catalog
 - RHEL 6 VM
 - RHEL 7 VM

Order Service "RHEL 6 VM"

VM Properties

VM Name *	<input type="text"/>
Description	<input type="text"/>
CPU Count *	<input type="text" value="2"/>
Memory (GB) *	<input type="text" value="2"/>
Template	<input type="text" value="cf_rhel6"/>

Access

AD group for Login Access *	<input type="text"/>
AD group for Sudo Access *	<input type="text"/>

Provision Options

Number of VMs *	<input type="text" value="1"/>
Retirement Time *	<input type="text" value="6 Months"/>

Catalog Items

Orchestration Templates

Catalogs

Submit

Cancel

Service Catalog Item "RHEL 7 VM"

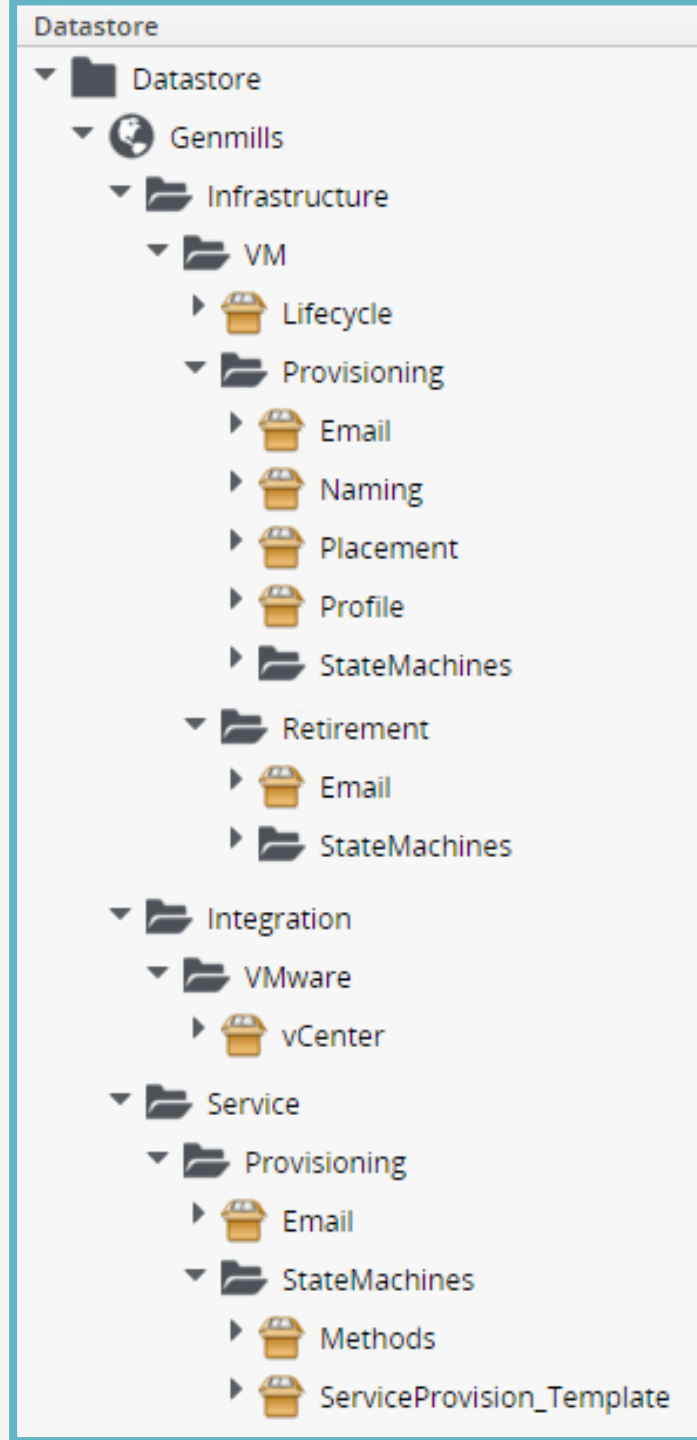
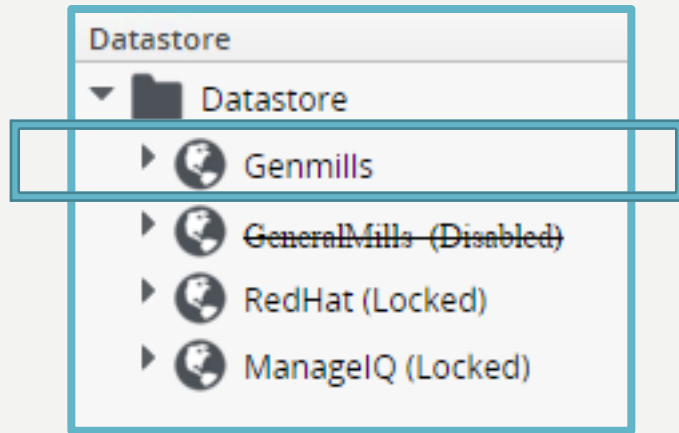
Basic Info

Details

Basic Information

Name / Description	RHEL 7 VM / <input checked="" type="checkbox"/> Display in Catalog
Catalog	Red Hat VM Catalog
Dialog	RHEL 7 VM Request
Provisioning Entry Point State Machine (NS/CIs/Inst)	/Genmills/Service/Provisioning/StateMachines/ServiceProvision_Template/Build_VMProvisionRequest
Reconfigure Entry Point State Machine (NS/CIs/Inst)	
Retirement Entry Point State Machine (NS/CIs/Inst)	/ManageIQ/Service/Retirement/StateMachines/ServiceRetirement/Default

AUTOMATE MODEL



VM PROVISION STATE MACHINE

- Pre-provisioning
 - Acquire IP & MAC addresses, register DNS
- Placement
- Customizations
- Provision
- Check success
- Post-provision
- Email request owner

CUSTOMIZATION STEP

Get provisioning object

```
prov = $evm.root['miq_provision']
```

Set customization options

```
prov.set_customization_spec("dhcp_one_nic")
```

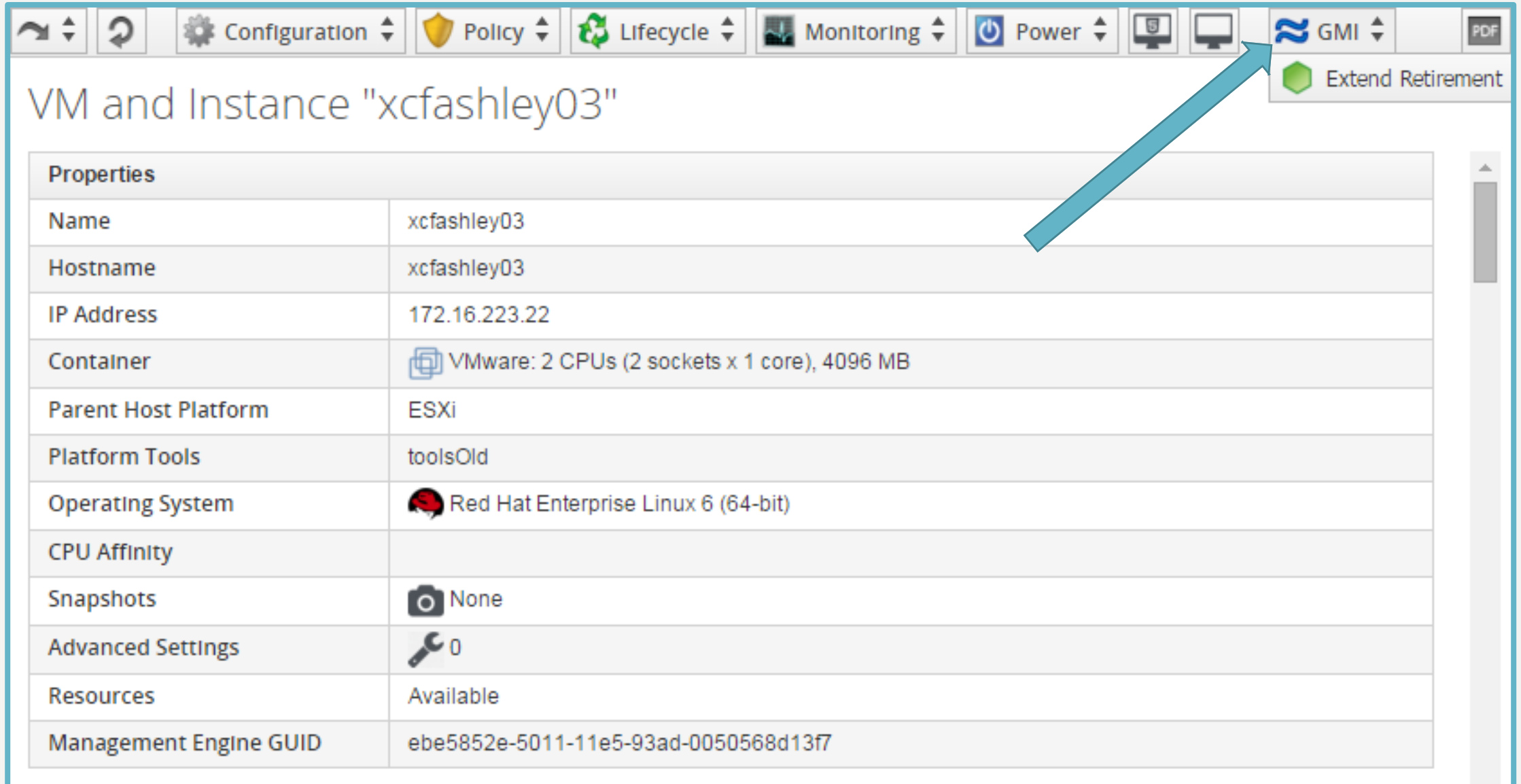
```
prov.set_vlan("Tier2 UTL")
```

```
prov.set_option(:vm_auto_start, true)
```





```
prov.set_folder("WHQ/CloudForms")
```

```
prov.set_option(:cores_per_socket, '1')
```

CUSTOM MENU OPTIONS



The screenshot displays a management console interface for a VM and Instance named "xcflashley03". The top navigation bar includes tabs for Configuration, Policy, Lifecycle, Monitoring, Power, and GMI. A custom menu option, "Extend Retirement", is visible in the GMI tab, highlighted by a blue arrow. The main content area shows a table of properties for the VM.

Properties	
Name	xcflashley03
Hostname	xcflashley03
IP Address	172.16.223.22
Container	 VMware: 2 CPUs (2 sockets x 1 core), 4096 MB
Parent Host Platform	ESXi
Platform Tools	toolsOld
Operating System	 Red Hat Enterprise Linux 6 (64-bit)
CPU Affinity	
Snapshots	 None
Advanced Settings	 0
Resources	Available
Management Engine GUID	ebe5852e-5011-11e5-93ad-0050568d13f7

Service \neq VM

MONGO CATALOG ITEM

Order Service "MongoDB"

Requirements

Database Type	<input type="text" value="MongoDB"/>
Disk Space (GB)	<input type="text" value="2"/>
Data Classification	<input checked="" type="radio"/> Public <input type="radio"/> Internal <input type="radio"/> Classified <input type="radio"/> Special Controls
Admin Password	<input type="text"/>

SERVICE “PROVISION” STEP

```
uri = URI.parse('http://xconthost01:2376/containers/create')
```

```
json_body = '{  
  "Image": "mongo"  
}'
```

```
json_headers = {"Content-Type" => "application/json", "Accept" =>  
"application/json"}
```

```
http = Net::HTTP.new(uri.host, uri.port)
```

```
response = http.post(uri.path, json_body, json_headers)
```

```
parsed_res = JSON.parse(response.body)
```

```
response = http.post("/containers/#{parsed_res['Id']}/start", json_body,  
json_headers)
```

MONGO

```
g527769@xconthost01:~  
"db" : "admin",  
"roles" : [  
  {  
    "role" : "dbAdminAnyDatabase",  
    "db" : "admin"  
  }  
]  
{  
  "_id" : "admin.superAdmin",  
  "user" : "superAdmin",  
  "db" : "admin",  
  "roles" : [  
    {  
      "role" : "readWriteAnyDatabase",  
      "db" : "admin"  
    },  
    {  
      "role" : "dbAdminAnyDatabase",  
      "db" : "admin"  
    },  
    {  
      "role" : "userAdminAnyDatabase",  
      "db" : "admin"  
    },  
    {  
      "role" : "clusterAdmin",  
      "db" : "admin"  
    }  
  ]  
}  
>
```

MONGO EXPRESS

The screenshot shows the Mongo Express web interface in a browser window. The address bar displays 'xconthost01:32793/db/admin'. The page title is 'Mongo Express'. A sidebar on the left shows the 'ADMIN' database selected, with options to 'View Database', 'system.indexes', 'system.users', and 'system.version'. The main content area shows the path 'Home / admin' and the heading 'Viewing Database: admin'. Below this, there is a 'Database Stats' section with a table of statistics.

Database Stats	
Collections (including system.namespaces)	4
Data Size	2.16 kb
Storage Size	28.7 kb
File Size (on disk)	67.1 mb

SATELLITE 6 CONTAINER VIEW

Containers

New container

xconthost01

xconthost02

Search:

Name	Status	Image	Command	Uptime	Running on	Managed	
Evil Yonath	On	9259cd41f345226d1febb161f7cb7...	/entrypoint.sh --auth	about 7 hours	xconthost01 (Docker)	No	Power Off
Romantic Euclid	On	mongo	/entrypoint.sh mongod	about 6 hours	xconthost01 (Docker)	No	Power Off
Elegant Galileo	On	mongo-express	npm start	3 days	xconthost01 (Docker)	No	Power Off
Mongo Ashley	On	9259cd41f345	/entrypoint.sh --auth	3 days	xconthost01 (Docker)	No	Power Off
Mysql Test	On	mysql:latest	/entrypoint.sh mysqld	22 days	xconthost01 (Docker)	No	Power Off

HOW WE DID IT

OUT OF THE BOX

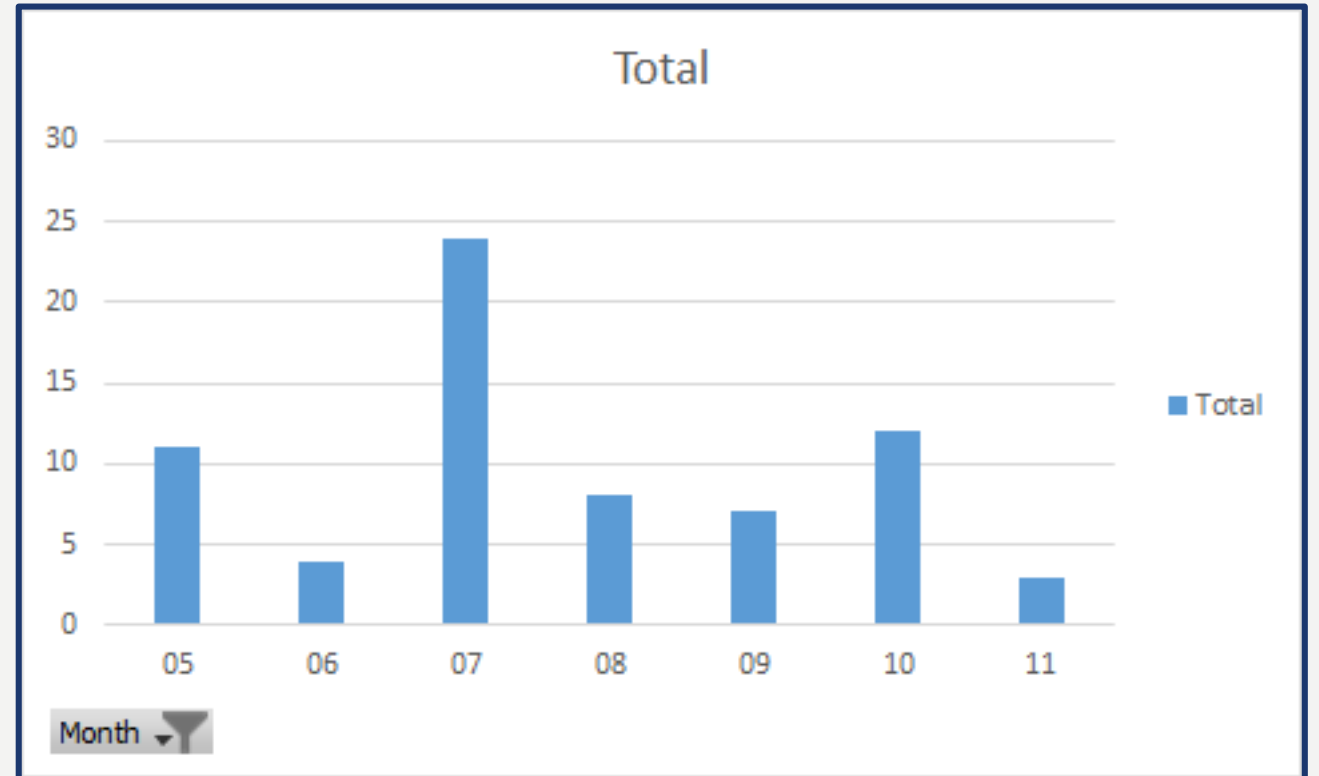
- VMware API calls
 - Provision VM from template
 - Read VM metadata
- Best-fit placement
- Service state machine
 - Error detection
 - Email workflow
- Provisioning scope

ON OUR OWN

- VMware templates
- DHCP setup
- Request dialogs
 - Custom fields
- Retirement state machine
- Puppet and Satellite integration
- Additional VMware API calls

USAGE

- We are our biggest customer
- Other regular users:
 - Enterprise Architects
 - Basis
 - Oracle & SQL DBAs
 - Application Developers
 - Web Application Team



FUTURE PLANS

- Set up monitoring of software
- Alerting around unused VMs
 - Right-sizing
- Request Docker containers
 - Open source databases
 - Apache Spark for Hadoop

ADVICE

- Consultant is necessary
- Clean install after consultation
- Git repo for automation code
- ManageIQ GitHub Repo for error messages
- <http://talk.manageiq.org/>



THANK YOU!