zPRO
Powerful, Easy to Use Cloud Management for Linux on IBM Z

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VELOCITY SOFTWARE

PROVEN PERFORMANCE

The Challenges Today

Three big problems *we all* face to keep z/VM thriving

- Executives want to move to “the cloud” (off-premise)
- Loss and lack of z/VM skills / people
- Lack of solid products or leadership in this space

The Magical Cloud

- **Executives get sold on “the cloud” being:**
  - Easier
  - Cheaper
  - Faster
  - Requiring fewer FTE
  - Able to run everything in the datacenter
  - More secure (are you laughing yet?)
- **They buy into it, especially when:**
  - Anti-mainframe people/executives are pushing it
    - Hidden agendas
  - They want a short-term win on their resume

zPRO support for Z cloud

zPRO leverages the *strengths* of *z/VM*

- All the great tools in z/VM; CMS, REXX, Pipelines, networking capabilities, memory management, communications – we use it all and more
- Very dynamic – extensible
  - zPRO allows you to define different exits, additional APIs, process-windows (called DIRMODELs) and more, to fit your specific needs.
- Enables quick solutioning – both in speed and time
  - zPRO makes managing Linux on z very easy for systems programmers, end-users, operations, management and potentially other groups. It allows you to designate privileges to other users to build and manage their own servers within the guidelines and scope established by YOU.
- **Simple, Fast, Lightweight and Reliable** - This is the premise of zPRO and our commitment to you. There are no other requirements other than z/VM and zVPS to run zPRO!

Why zPRO

- **z/VM Cloud Self Service**
  - Clone (provision), modify, start, stop, move, delete servers
    - Linux w/Oracle, Websphere, etc – any z/VM guest
  - Define server expirations
    - Useful for LAB, test or proof-of-concept servers
  - Selective resource controls and quota management
    - Hierarchical control from global, to group, to user to server
  - SSI / LGR (live guest relocation) support

zPRO support for platform

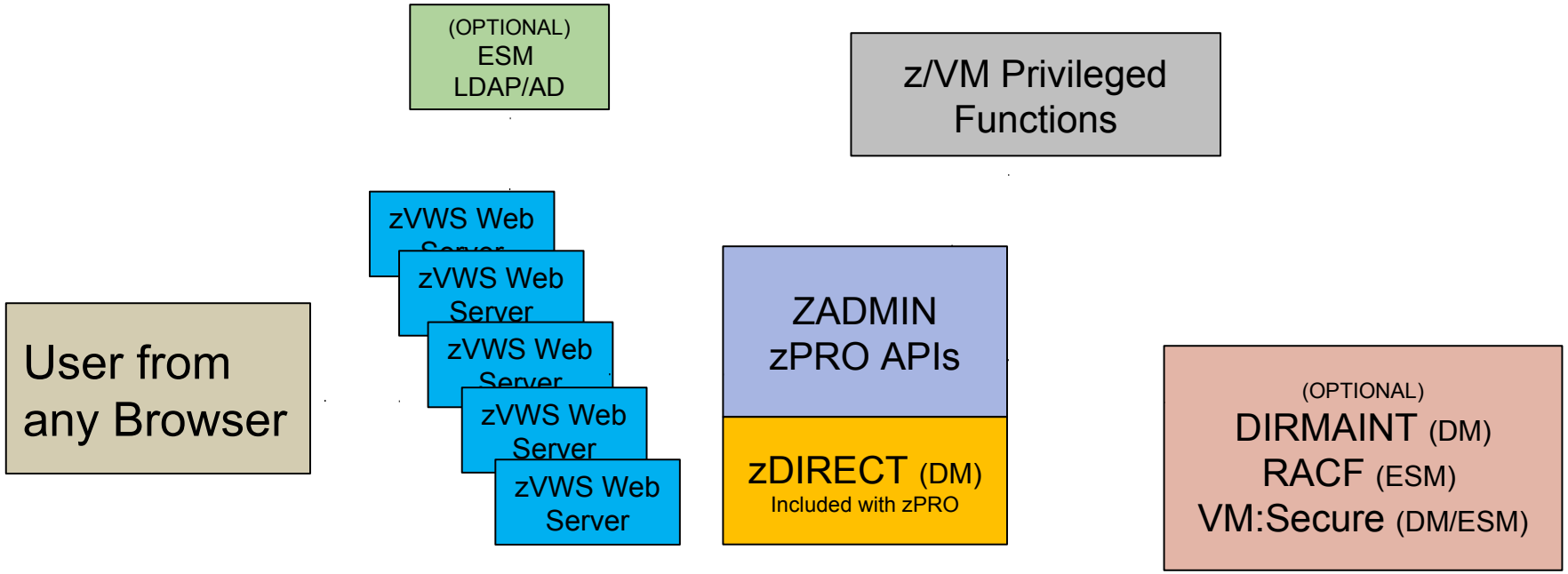
- **Utilizes the zVWS *native* z/VM web server**
  - UI is completely browser-based (remember, no Java Elephant!)
  - **Installs in about 10 minutes***
  - **Velocity Software** is the only vendor to provide a native z/VM Web Server
- **Authentication support via zVWS**
  - VM / LDAP / AD / your own
- **Exceptionally Extensible (™☺)**
  - Can define and “plug in” site-defined services
- **Manage your entire enterprise from one session**
- **Supports common directory/security management**
  - zDIRECT is *included* for Directory Management - with or without RACF

Keep It Simple, Silly!

- **What you DON'T want to deal with:** "If a [WAVE/XCAT/CMA] action fails with a return code of -3, verify that you have enough [SMAPI] worker machines to handle the workload. If needed, add more [SMAPI] worker machines."

- **zPRO** uses workers for tasks too and if it needs more, it ***dynamically adds more*** and then removes them when complete
  - You don't have to dread real work failing and then have to react after it happens

Overview



zVPS includes zVWS, which installs five webservers along with ZADMIN by default. zPRO uses the webservers and ZADMIN to perform all of its required functions. The ZADMIN virtual machine handles the privileged commands and interfaces with the Directory Manager (DM) and External Security Manager (ESM), if present. If there is no DIRMAINT or VMSECURE available, zPRO is shipped with a zDIRECT feature that will handle all the zPRO-required directory maintenance processes for you, while allowing you to maintain the CP Directory manually for other needs.

Customer quote

- “After the second week of {bleeping} around with {product} and still not getting it to work, we gave up. I had zPRO [running] on four systems before lunch.”

  --- z/VM Sysprog

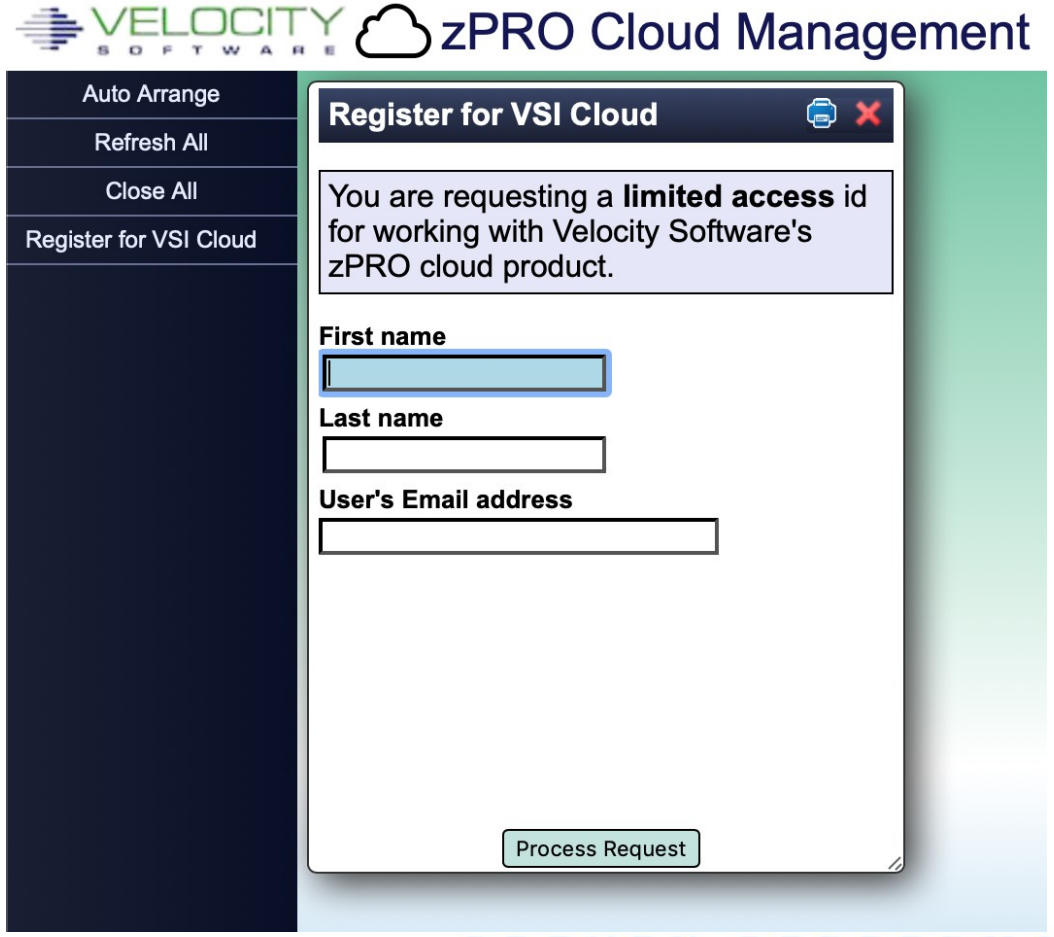
- <customer> spent 4 months getting {product} to clone a server in 2 hours!!

- We (seriously experienced VM people) tried Open Stack, CMA, XCAT with absolutely NO success

Velocity's zPRO Cloud Demo Site

- **To register: https://demo.velocitysoftware.com/zpro/**
  - Userid: **demozpro**
  - Password: **demodemo**

- **Check your email for your login info**



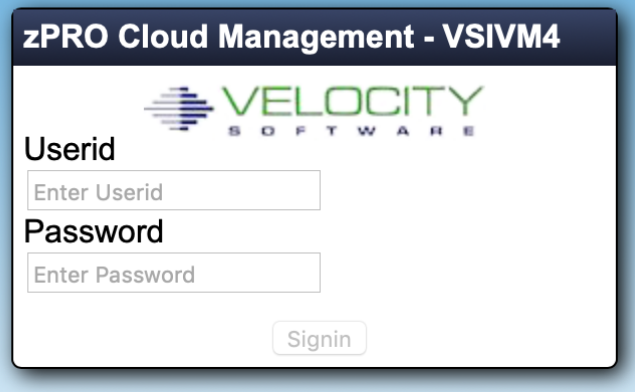
Our Cloud Demo site will allow you to register for your own userid. You can then use that userid to create, manipulate and use a selection of servers through zPRO.

It is a full zPRO system that is running the same code we ship to our customers. **Note** that Demo userids only have access to a subset of zPRO functions and are limited in authorizations.

Sign-in

Login to zPRO is simple – you are presented with a userid/password prompt to enter your zPRO defined information.

Your credentials can be validated on z/VM directly, through LDAP/AD, or any credential verification process that can be implemented via the available security exit.



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Enterprise Functions

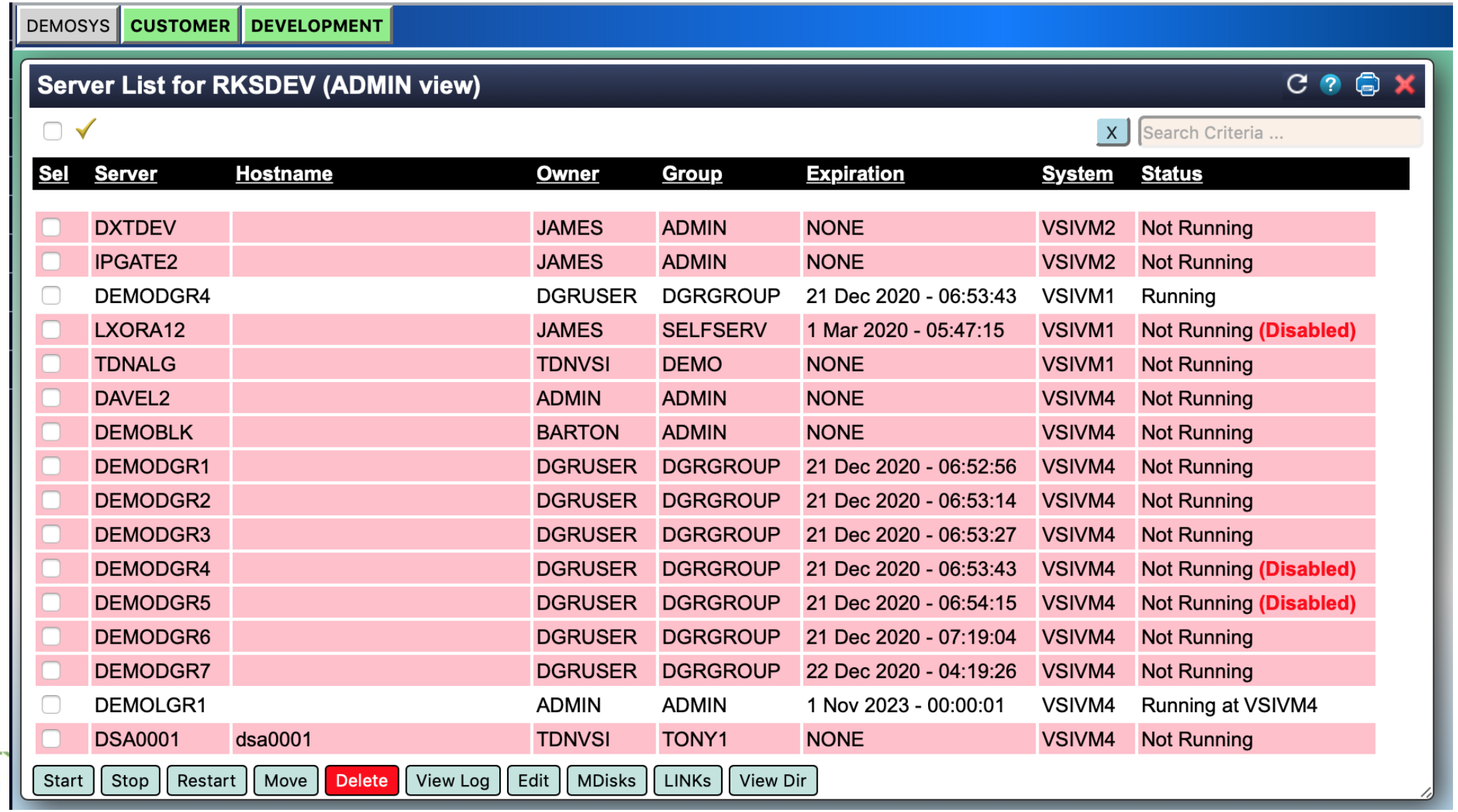
DEMOSYS | CUSTOMER | DEVELOPMENT

zPRO Enterprise allows the configuration and management of any server in any non-SSI z/VM system.

z/VM in an SSI is already Enterprise ready (for members in the cluster).

zPRO tables will provide information from all connected systems.

zPro forms present a list box to select on which system to perform a certain function.



Sel	Server	Hostname	Owner	Group	Expiration	System	Status
	DXTDEV		JAMES	ADMIN	NONE	VSIVM2	Not Running
	IPGATE2		JAMES	ADMIN	NONE	VSIVM2	Not Running
	DEMODGR4		DGRUSER	DGRGROUP	21 Dec 2020 - 06:53:43	VSIVM1	Running
	LXORA12		JAMES	SELFSERV	1 Mar 2020 - 05:47:15	VSIVM1	Not Running (Disabled)
	TDNALG		TDNVSI	DEMO	NONE	VSIVM1	Not Running
	DAVEL2		ADMIN	ADMIN	NONE	VSIVM4	Not Running
	DEMOBLK		BARTON	ADMIN	NONE	VSIVM4	Not Running
	DEMODGR1		DGRUSER	DGRGROUP	21 Dec 2020 - 06:52:56	VSIVM4	Not Running
	DEMODGR2		DGRUSER	DGRGROUP	21 Dec 2020 - 06:53:14	VSIVM4	Not Running
	DEMODGR3		DGRUSER	DGRGROUP	21 Dec 2020 - 06:53:27	VSIVM4	Not Running
	DEMODGR4		DGRUSER	DGRGROUP	21 Dec 2020 - 06:53:43	VSIVM4	Not Running (Disabled)
	DEMODGR5		DGRUSER	DGRGROUP	21 Dec 2020 - 06:54:15	VSIVM4	Not Running (Disabled)
	DEMODGR6		DGRUSER	DGRGROUP	21 Dec 2020 - 07:19:04	VSIVM4	Not Running
	DEMODGR7		DGRUSER	DGRGROUP	22 Dec 2020 - 04:19:26	VSIVM4	Not Running
	DEMOLGR1		ADMIN	ADMIN	1 Nov 2023 - 00:00:01	VSIVM4	Running at VSIVM4
	DSA0001	dsa0001	TDNVSI	TONY1	NONE	VSIVM4	Not Running

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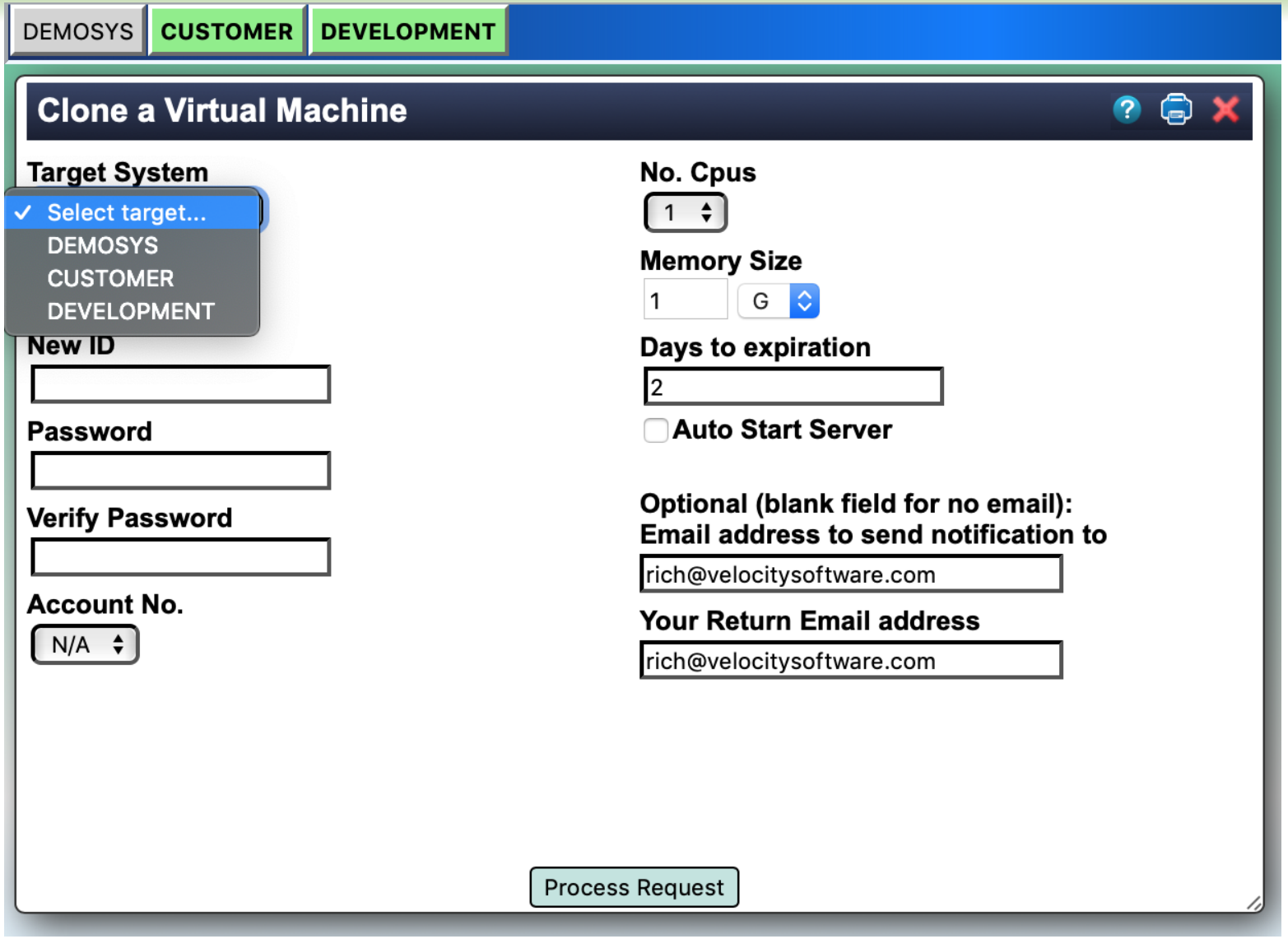
Enterprise Functions

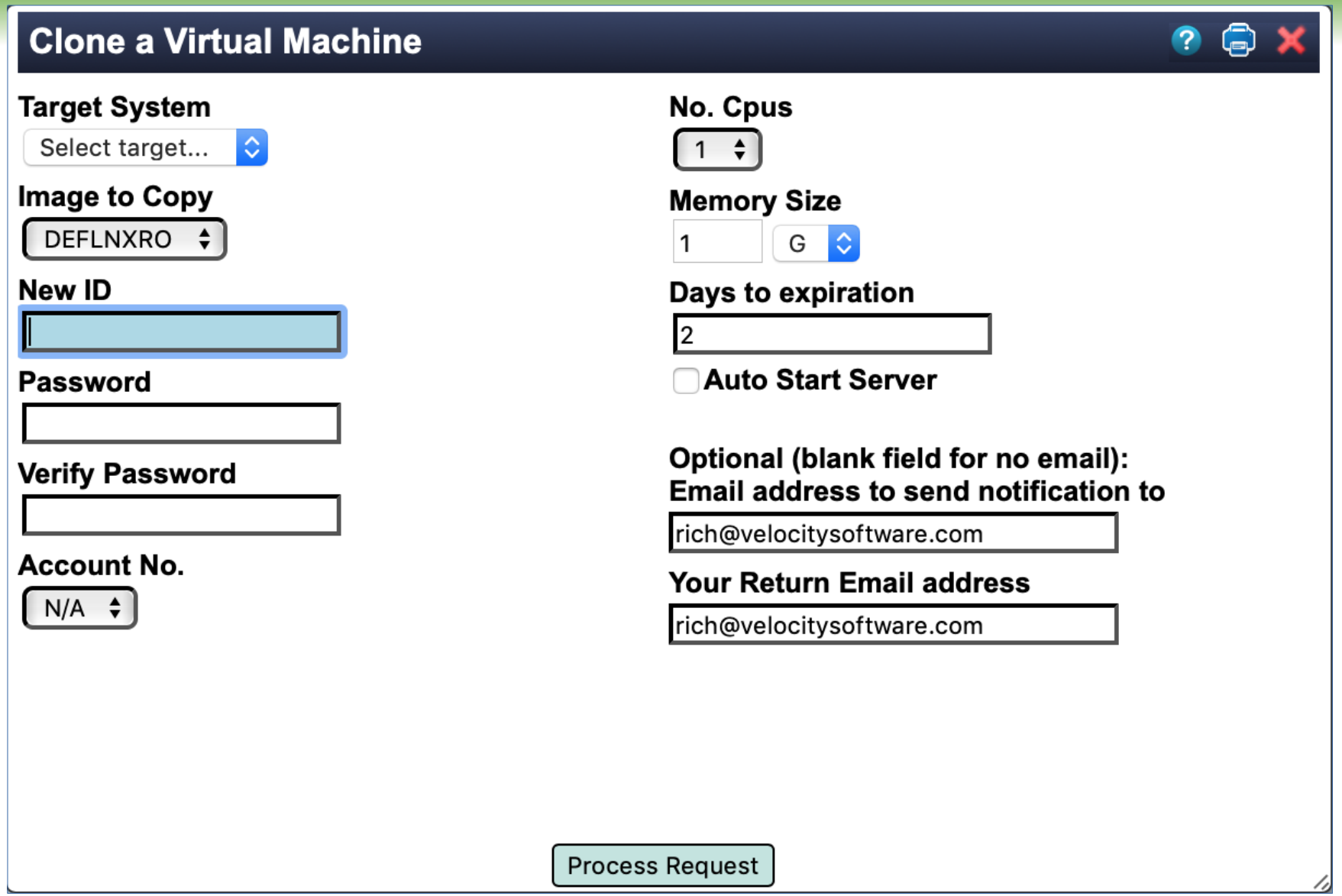
zPRO dialogs present a list box to select on which system to perform the function.



Provisioning

There are many ways to provision servers in zPRO. This shows you two different ways. The first is a self-defined server creation (Clone a Virtual Machine). This approach allows the user to define a new server and set specific resource characteristics.

Upon successful creation, this process will cause an email notification to be sent to the requestor. Optionally, the target email address can be changed if perhaps it is being built for someone else.

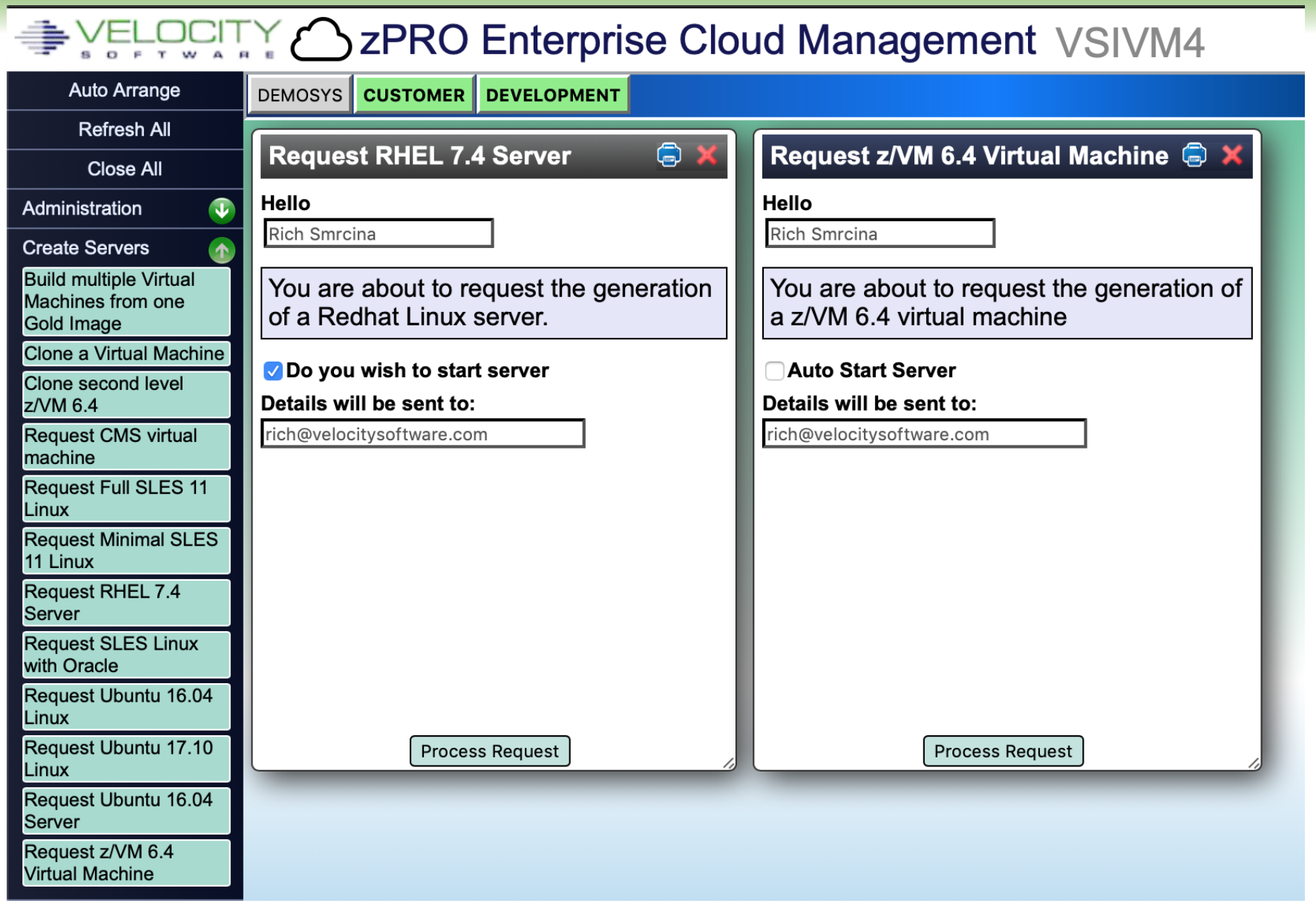


Provisioning (cont.)

The second provision model is a self-contained definition where all the details are pre-defined for the user.

In this example, a provision model for a RHEL 7 server and one for a z/VM 6.4 2nd level guest is presented.

All the user has to do is click one button to provision the new server. They will receive an email on completion with any additional instructions or information on the new server.



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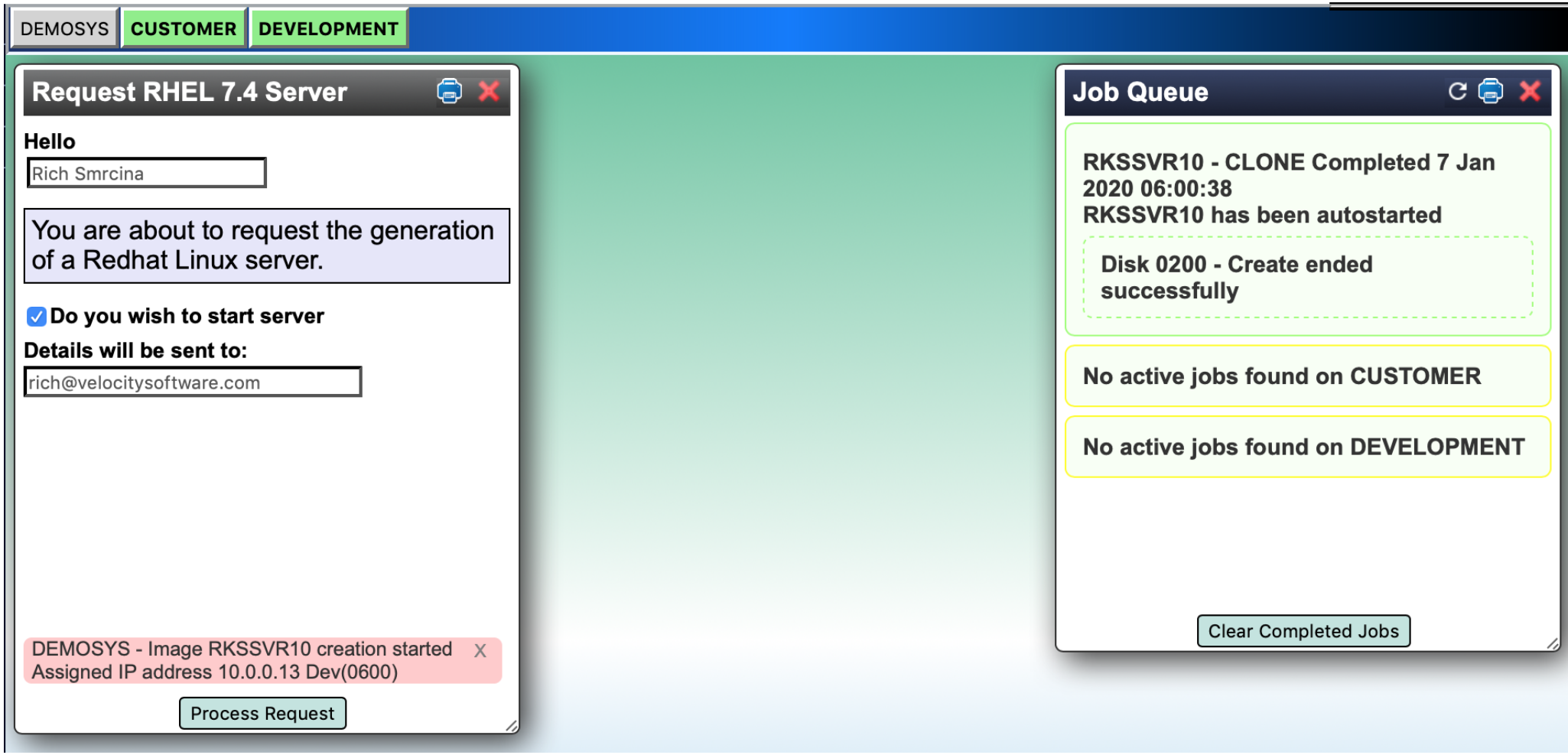
Provisioning Status

When you create a new server, zPRO will give you the initial status and IP (if assigned). It will also open the Job Queue window to allow you to know the status of the new server generation process.

Some server clone processes will take time; the Job Queue gives you a way to know what the status is of the new servers.

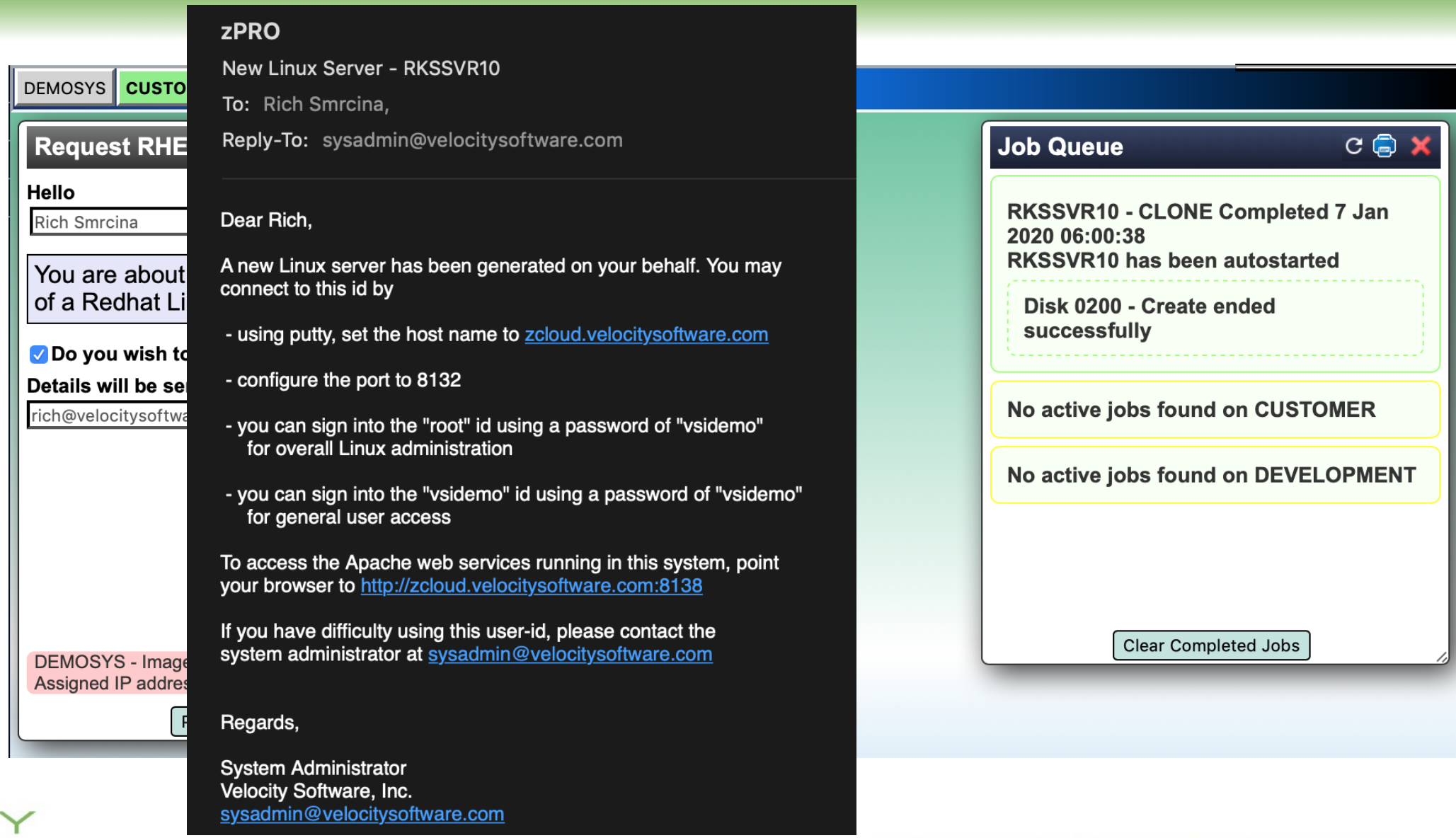
Clicking on the server information in the Job Queue will open the Audit log for that server… (see next slide)



Provisioning Status

After creating a server in this way, zPro can be set up to send out an email telling the user about their server and how to access it.

Email templates are delivered with zPro that can be tailored to deliver the exact message required.

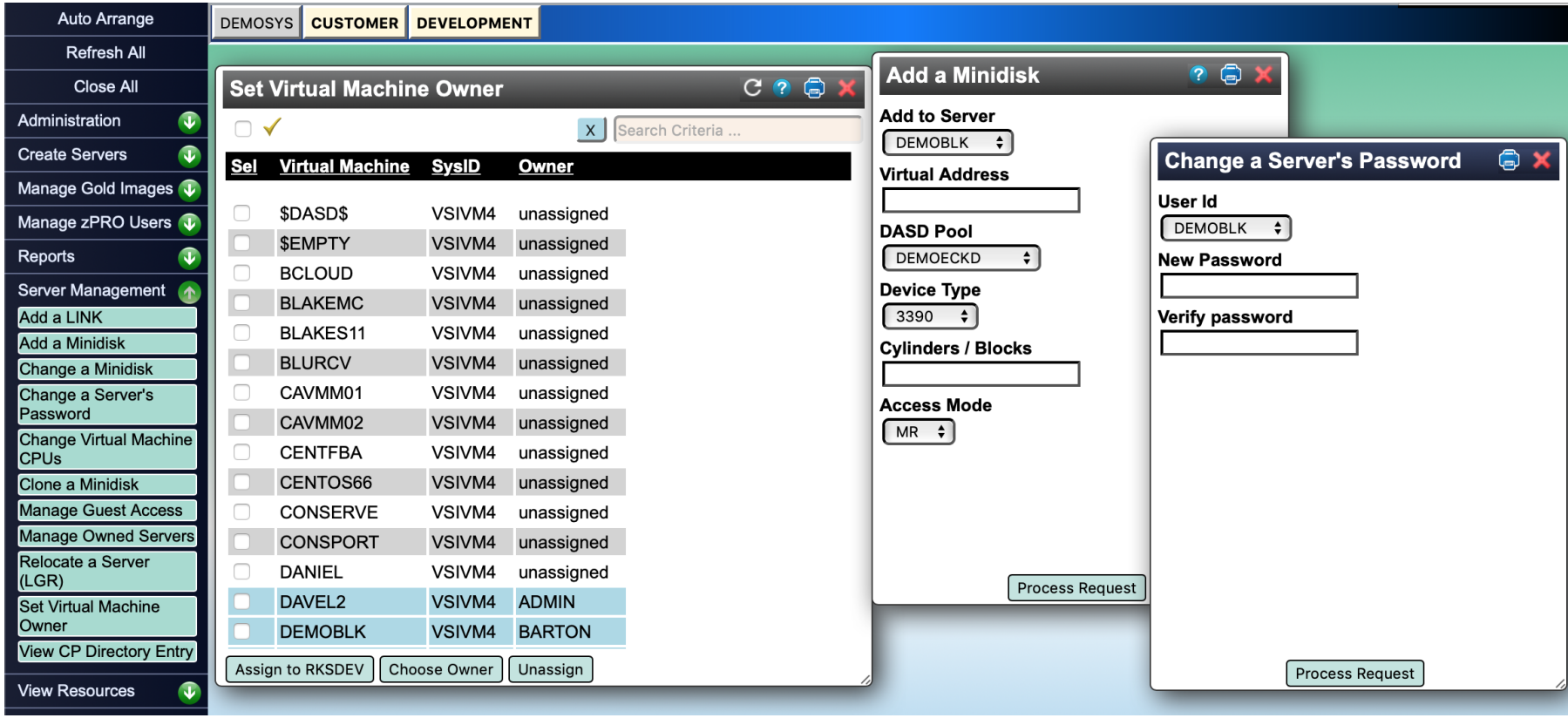


Server Management

The Server Management menu items give you a multitude of ways to manage your servers.

You can add, change, and delete MDISKs, CPU and Storage size. You can change a servers VM password if needed. There is also a Set Virtual Machine Owner model to bring servers that were built outside of zPRO, under the zPRO umbrella of server management. This process also assigns “ownership” of servers to an end-user for subsequent server management. In addition, by using the “Unassign” feature servers can be removed from zPRO’s scope of management.

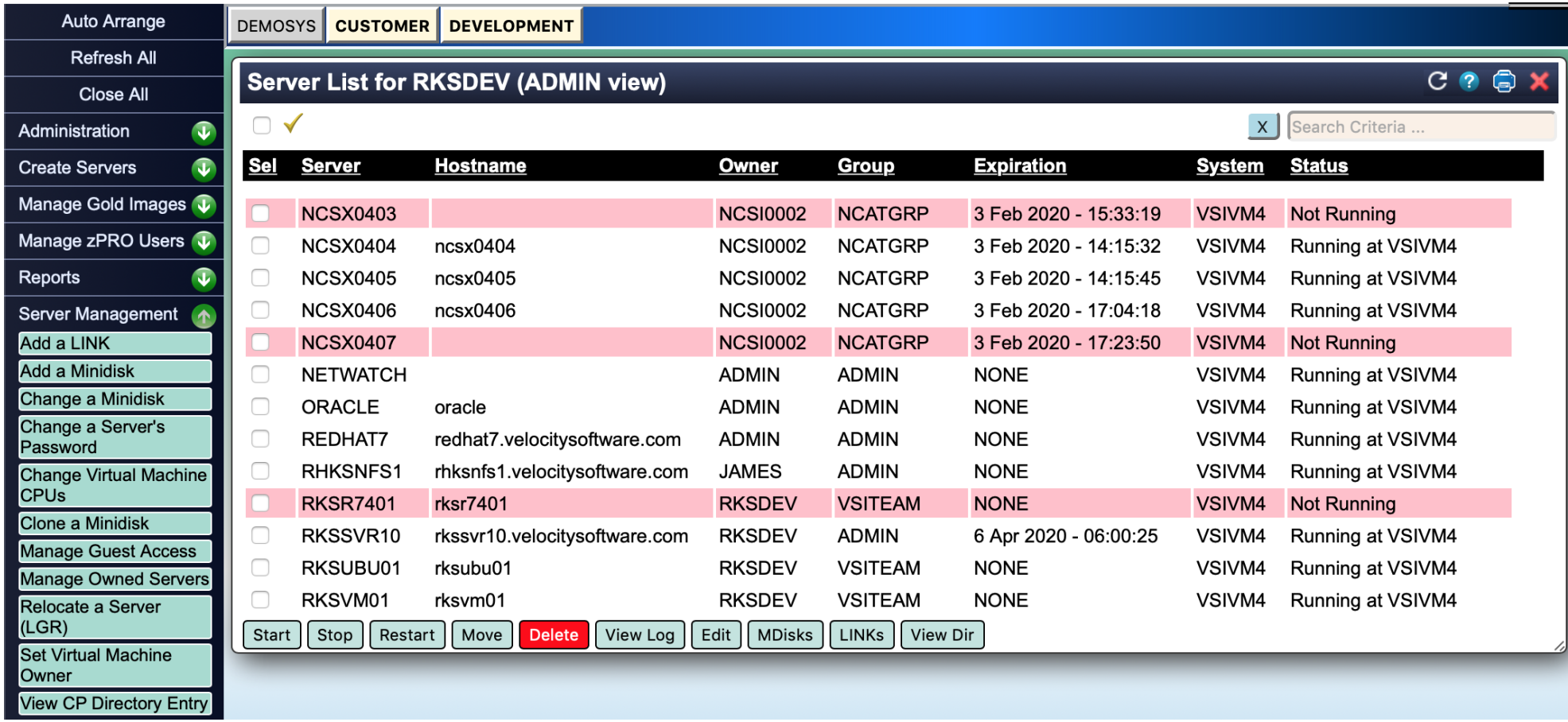
zPRO utilizes two “NOGO” lists, which identify virtual machines that can never be added to zPRO server management. zPRO is shipped with a standard list and you can define your own list locally. These are to protect system userids from inadvertently being added to zPRO.



Server Management (cont.)

Managing servers in zPRO is done in many ways. The "Display/Modify owned servers" menu item is the most commonly used method for this purpose. The table shows all the servers that you have access to manage, and details about each.

The row of buttons at the bottom of the window will include only operations that you are authorized to perform for any selected servers. Selecting one or more servers and clicking an action button will initiate the action FOR ALL SELECTED SERVERS. Confirmations are presented for anything that causes a state-change to the server (like stopping, deleting, etc) You can manage MDISKS and LINKS for each server from here also.

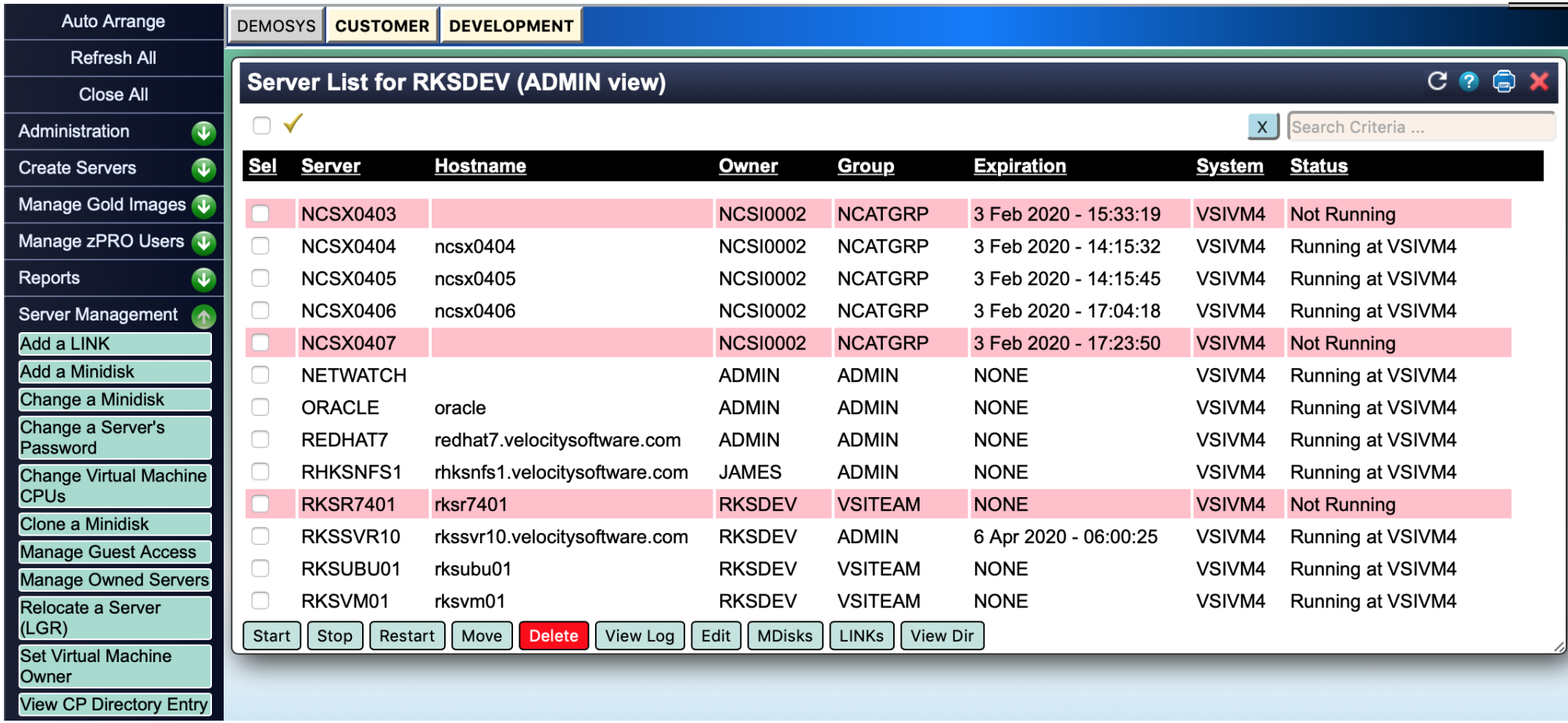


Server Expiration

zPRO allows you to define servers with optional expiration periods. This can be handy for groups/users that you want to allow servers to exist for a finite amount of time.

There are different configurations you can set for expirations including the type of delete (a soft-delete where the server is disabled but still defined on the system, a hard-delete where the server is completely deleted and all associated resources are reclaimed or a notification-only). Notifications can be set up to go to the owner and the system admin before and as expiration actions occur.

Expiration target date/time can also be edited at any time.

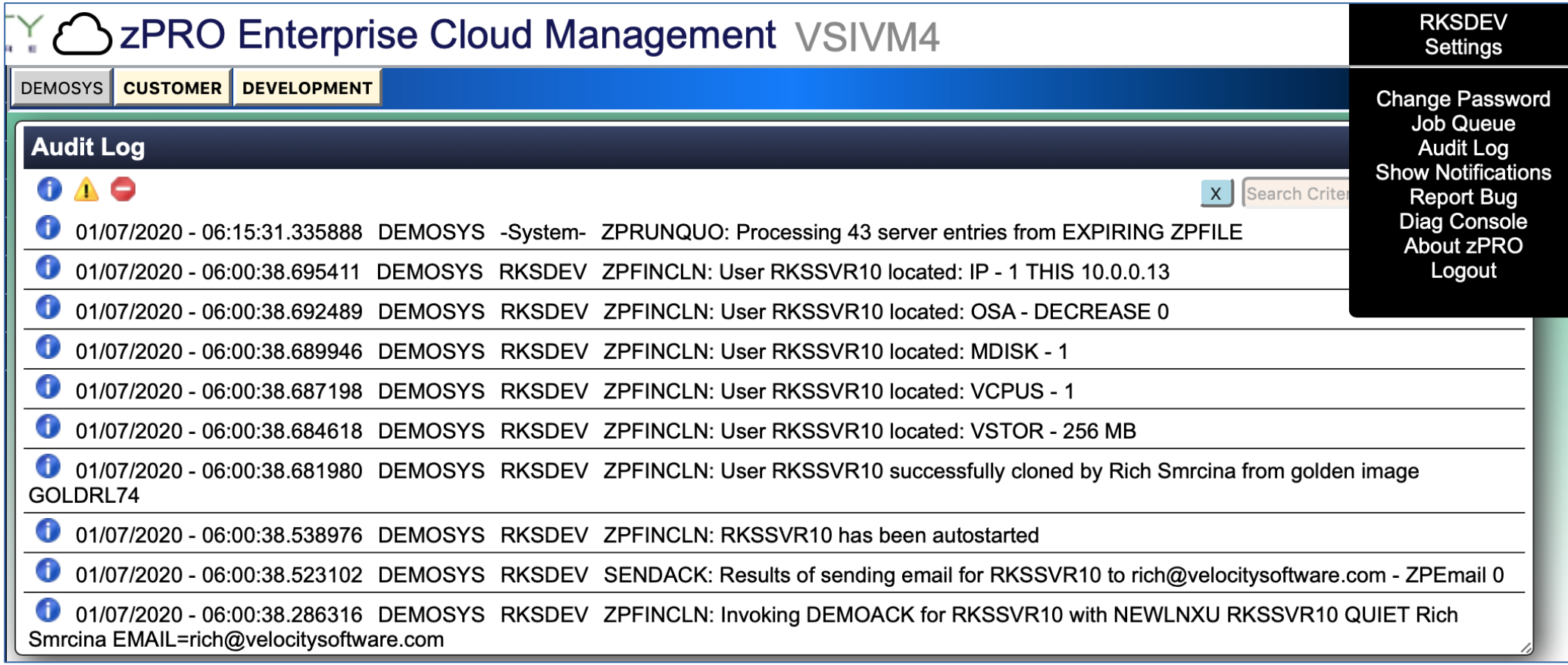


Auditing

The Audit Log provides step by step details on each action zPRO performed to complete a request on behalf of the end-user. This information is a useful way to see what steps were done, any issues that may have occurred and an audit-trail of processes for problem determination and resolution.

The Audit Log is also available from the Userid drop-down. This drop-down also gives you access to the Job Queue, Reporting a bug and Logout.

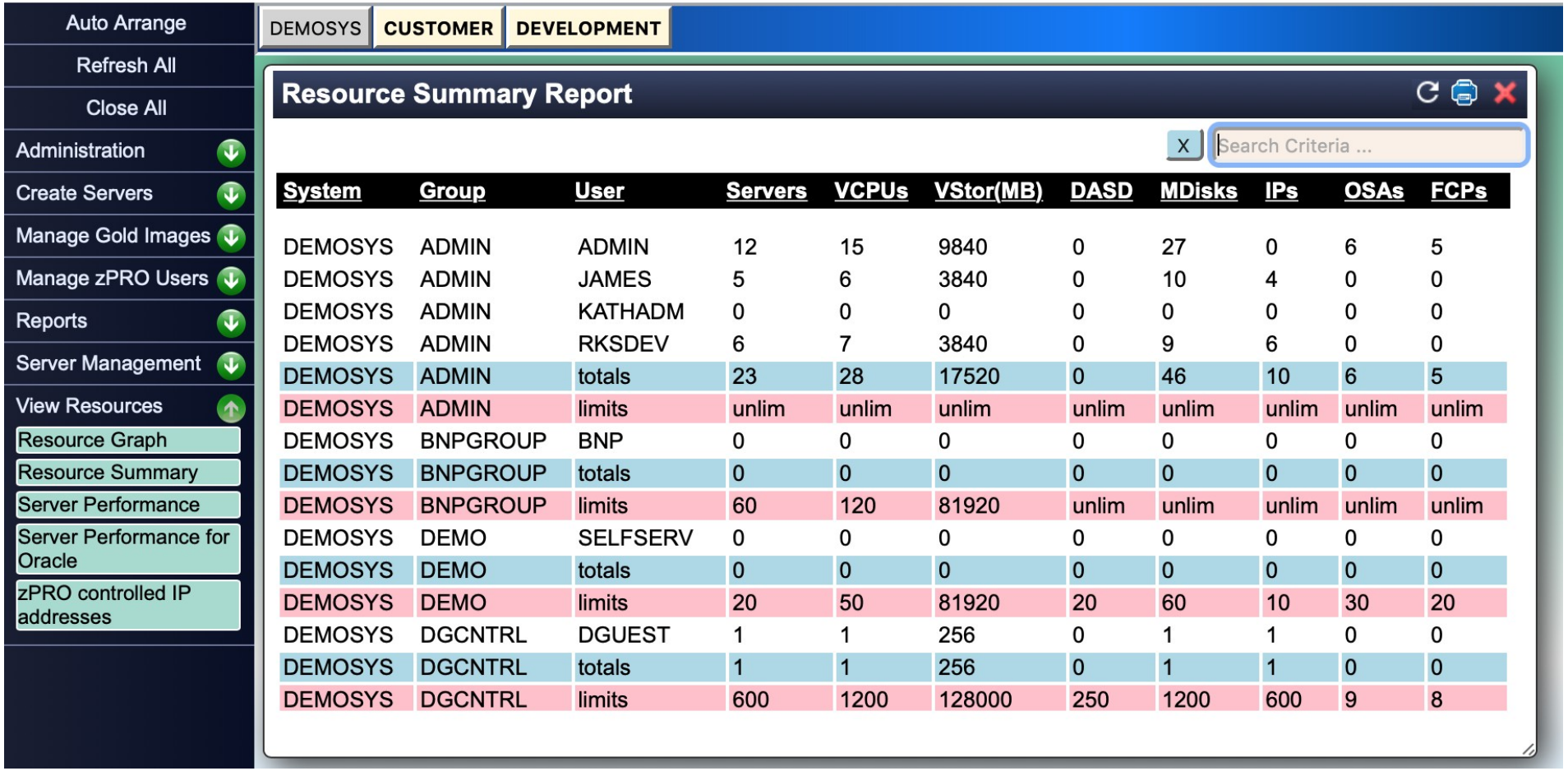
Only audit information that falls within the scope of the end-user's authorizations is displayed.



Managed Resources

The View Resources menu items give you a view into resource consumption.

Resource Usage shows you a break-down by user and group of the number of servers and the amount of resource consumed by each. These totals are used in conjunction with installation defined resource-limits. These limits are used to control resource allocation by Groups and/or Users. You can configure a limit on any of the resources so that any group or user does not consume more than they should. You can also limit resources at a server level. For example, if you do not want servers to have memory in excess of 10G for instance, you can set a memory limit for all servers.

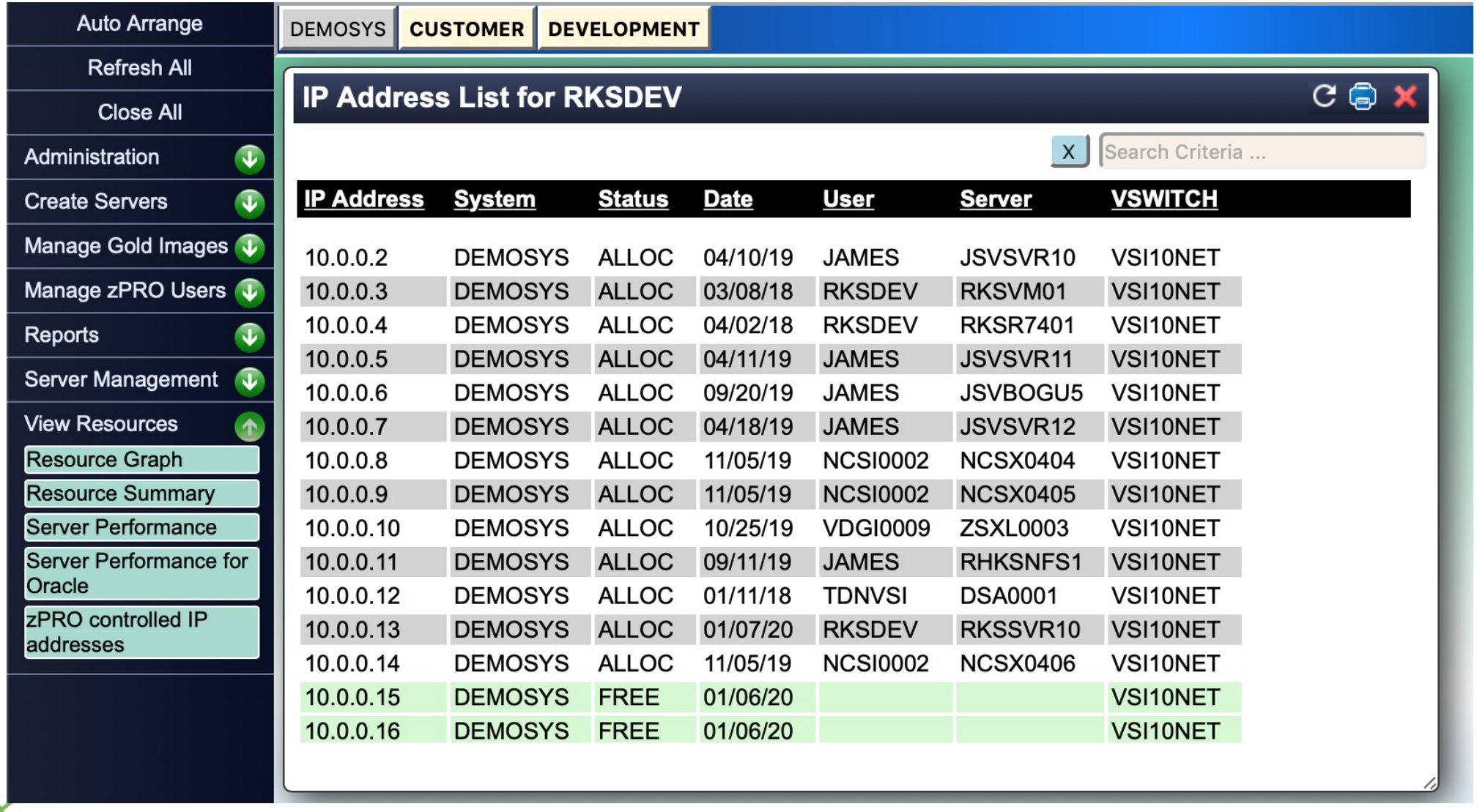


System	Group	User	Servers	VCPUs	VStor(MB)	DASD	MDisks	IPs	OSAs	FCPs
DEMOSYS	ADMIN	ADMIN	12	15	9840	0	27	0	6	5
DEMOSYS	ADMIN	JAMES	5	6	3840	0	10	4	0	0
DEMOSYS	ADMIN	KATHADM	0	0	0	0	0	0	0	0
DEMOSYS	ADMIN	RKSDEV	6	7	3840	0	9	6	0	0
DEMOSYS	ADMIN	totals	23	28	17520	0	46	10	6	5
DEMOSYS	ADMIN	limits	unlim	unlim	unlim	unlim	unlim	unlim	unlim	unlim
DEMOSYS	BNPGROUP	BNP	0	0	0	0	0	0	0	0
DEMOSYS	BNPGROUP	totals	0	0	0	0	0	0	0	0
DEMOSYS	BNPGROUP	limits	60	120	81920	unlim	unlim	unlim	unlim	unlim
DEMOSYS	DEMO	SELFSERV	0	0	0	0	0	0	0	0
DEMOSYS	DEMO	totals	0	0	0	0	0	0	0	0
DEMOSYS	DEMO	limits	20	50	81920	20	60	10	30	20
DEMOSYS	DGCNTRL	DGUEST	1	1	256	0	1	1	0	0
DEMOSYS	DGCNTRL	totals	1	1	256	0	1	1	0	0
DEMOSYS	DGCNTRL	limits	600	1200	128000	250	1200	600	9	8

IP Address Allocation

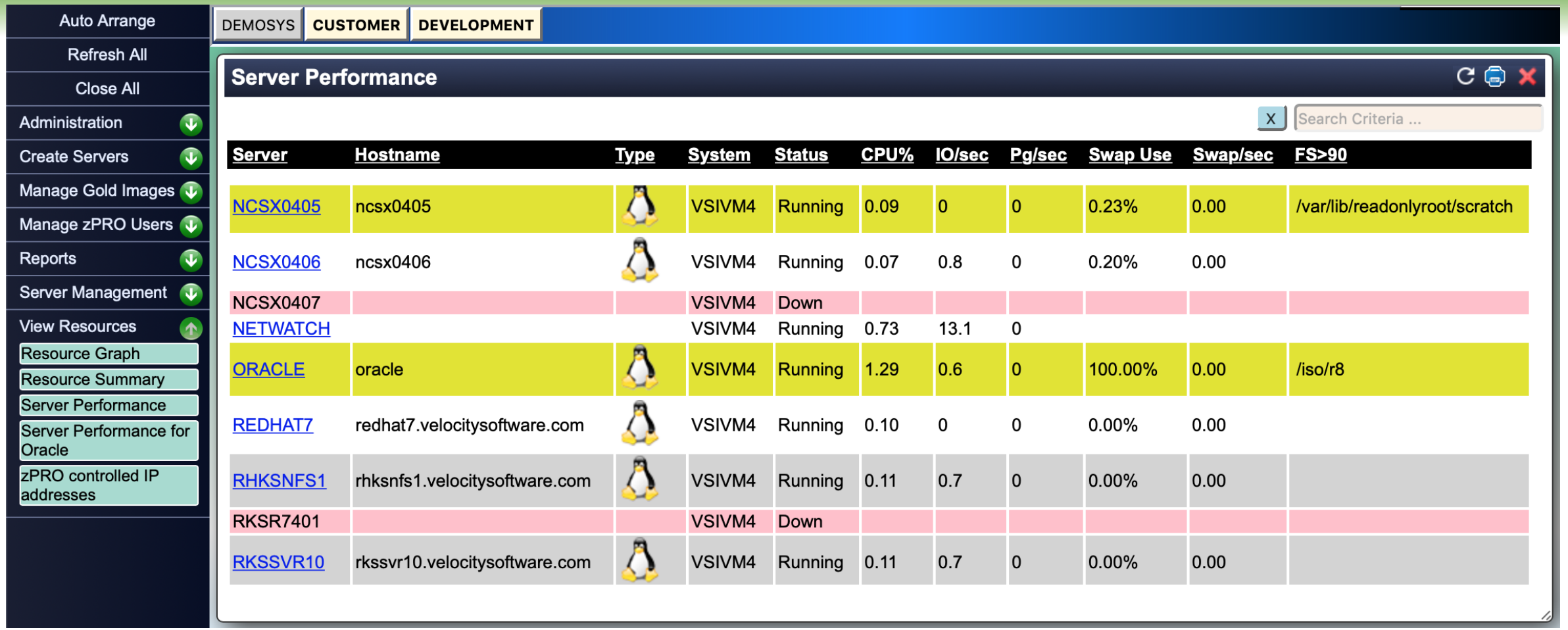
Display zPRO controlled IP Addresses is a view to present a list of IP addresses managed by zPRO. The display shows whether an IP address is available or, if allocated, which end-user allocated it and to which server it has been allocated.

IP addresses are maintained within a table, described in the zPRO Admin Guide. You can define Tables for Groups and Users also to help contain what they use for the servers. For instance, in a Lab you may want them to only use a Lab VSWITCH and IPs and not the production VSWITCH/IPs.



IP Address	System	Status	Date	User	Server	VSWITCH
10.0.0.2	DEMOSYS	ALLOC	04/10/19	JAMES	JSVSVR10	VSI10NET
10.0.0.3	DEMOSYS	ALLOC	03/08/18	RKSDEV	RKSVM01	VSI10NET
10.0.0.4	DEMOSYS	ALLOC	04/02/18	RKSDEV	RKSR7401	VSI10NET
10.0.0.5	DEMOSYS	ALLOC	04/11/19	JAMES	JSVSVR11	VSI10NET
10.0.0.6	DEMOSYS	ALLOC	09/20/19	JAMES	JSVBOGU5	VSI10NET
10.0.0.7	DEMOSYS	ALLOC	04/18/19	JAMES	JSVSVR12	VSI10NET
10.0.0.8	DEMOSYS	ALLOC	11/05/19	NCSI0002	NCSX0404	VSI10NET
10.0.0.9	DEMOSYS	ALLOC	11/05/19	NCSI0002	NCSX0405	VSI10NET
10.0.0.10	DEMOSYS	ALLOC	10/25/19	VDGI0009	ZSXL0003	VSI10NET
10.0.0.11	DEMOSYS	ALLOC	09/11/19	JAMES	RHKSNFS1	VSI10NET
10.0.0.12	DEMOSYS	ALLOC	01/11/18	TDNVSI	DSA0001	VSI10NET
10.0.0.13	DEMOSYS	ALLOC	01/07/20	RKSDEV	RKSSVR10	VSI10NET
10.0.0.14	DEMOSYS	ALLOC	11/05/19	NCSI0002	NCSX0406	VSI10NET
10.0.0.15	DEMOSYS	FREE	01/06/20			VSI10NET
10.0.0.16	DEMOSYS	FREE	01/06/20			VSI10NET

Performance Link



Server	Hostname	Type	System	Status	CPU%	IO/sec	Pg/sec	Swap Use	Swap/sec	FS>90
NCSX0405	ncsx0405		VSIVM4	Running	0.09	0	0	0.23%	0.00	/var/lib/readonlyroot/scratch
NCSX0406	ncsx0406		VSIVM4	Running	0.07	0.8	0	0.20%	0.00	
NCSX0407			VSIVM4	Down						
NETWATCH			VSIVM4	Running	0.73	13.1	0			
ORACLE	oracle		VSIVM4	Running	1.29	0.6	0	100.00%	0.00	/iso/r8
REDHAT7	redhat7.velocitysoftware.com		VSIVM4	Running	0.10	0	0	0.00%	0.00	
RHKSNFS1	rhksnfs1.velocitysoftware.com		VSIVM4	Running	0.11	0.7	0	0.00%	0.00	
RKSR7401			VSIVM4	Down						
RKSSVR10	rkssvr10.velocitysoftware.com		VSIVM4	Running	0.11	0.7	0	0.00%	0.00	

The Server Performance model gives you a direct link into zVIEW to show details on your Linux servers.

For any Linux server running, you can click the server name link and it will open zVIEW in another tab with the MYLINUX views. That view setup is predefined for you in zVIEW.

Performance Link

MYLINUX

ESALNXC - Linux Process Configuration - DEMO

Node	Process Name	<------ Process --- ID	PPID	Group
oracle	init	1	1	0
oracle	migration/0	2	1	0
oracle	ksoftirqd/0	3	1	0
oracle	events/0	4	1	0
oracle	khelper	5	1	0
oracle	kthread	6	1	0
oracle	kblockd/0	8	6	0
oracle	cio_chp	29	6	0
oracle	cio	30	6	0
oracle	cio_notify	31	6	0
oracle	kslowcrw	32	6	0
oracle	appldata	65	6	0
oracle	aio/0	78	6	0
oracle	cqueue/0	82	6	0
oracle	scsi_eh_0	278	6	0
oracle	scsi_wq_0	279	6	0
oracle	fc_wq_0	281	6	0
oracle	fc_dl_0	282	6	0
oracle	scsi_eh_1	290	6	0
oracle	scsi_wq_1	291	6	0
oracle	fc_wq_1	293	6	0
oracle	fc_dl_1	294	6	0
oracle	scsi_eh_2	301	6	0
oracle	scsi_wq_2	302	6	0
oracle	fc_wq_2	304	6	0
oracle	fc_dl_2	305	6	0
oracle	kauditd	1242	6	0
oracle	pdflush	7408	6	0
oracle	pdflush	12974	6	0
oracle	rpciod/0	17269	6	0
oracle	kswapd0	77	1	1
oracle	kmcheck	100	1	1
oracle	zfcperp0.0.0201	277	1	1
oracle	zfcperp0.0.0202	289	1	1
oracle	zfcperp0.0.0204	300	1	1
oracle	kjournald	424	1	1
oracle	udevd	470	1	470 47
oracle	kjournald	1047	1	1
oracle	kjournald	1050	1	1
oracle	dbus-daemon	1235	1	1235 123

ESALNXP - VSI Linux Percent Usage by Process - DEMO

Time	Node	Name	<-Process Ident-> ID	PPID	GRP	<-----CPU Percents-----> Tot	sys	user	syst	usrt	nice valu	prty valu	<---------------Storage Metrics (MB)----------> Size	RSS	Peak	Swap	Data	Stk	EXEC	Lib	Lck	PTbl	<--Faults/Second min	maj	mint	m
18:16:00	oracle	*Totals*	0	0	0	1.6	0.2	0.4	0.4	0.7	0	0	7685	813	7695	0	761	4.4	1830	402	0	9.7	243	0	3855	0
18:16:00	oracle	init	1	1	0	1.0	0	0	0.3	0.7	0	16	0.8	0.1	0.8	0	0.1	0.1	0.6	0	0	0.0	0	0	3650	0
18:16:00	oracle	events/0	4	1	0	0.0	0.0	0	0	0	-5	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:16:00	oracle	cron	2219	1	2219	0.0	0	0	0.0	0.0	0	16	2.2	0.3	2.3	0	0.2	0.1	0.0	1.8	0	0.0	0	0	150	0
18:16:00	oracle	snmpd	2295	1	2294	0.4	0.1	0.3	0	0	-10	6	36.8	9.6	43.1	0	5.1	0.1	0.0	29.2	0	0.1	50	0	0	0
18:16:00	oracle	tnslsnr	2386	1	2386	0.1	0.0	0.0	0.0	0	0	16	31.1	4.7	31.1	0	3.6	0.1	0.4	25.3	0	0.1	69	0	53	0
18:16:00	oracle	oracle	2565	1	2565	0.0	0	0.0	0	0	0	16	396	14.1	396	0	2.0	0.2	107	15.4	0	0.7	0	0	0	0
18:16:00	oracle	oracle	2567	1	2567	0.0	0	0.0	0	0	0	16	397	22.6	397	0	2.1	0.2	107	15.4	0	0.7	0	0	0	0

ESAHST2 - LINUX HOST Storage Analysis Report - DEMO

Time	Node/ Group	Index	<-Utilization-> <MegaByte> Size	Used	Pct Full	Err	Alloc Units	R/W	Boot	Storage Description
18:16:00	oracle	10	4762	4762	100	0	1M	r/w	No	/iso/r8
18:16:00	oracle	8	11087	7600	68.5	0	4K	r/w	No	/home
18:16:00	oracle	7	11080	7616	68.7	0	4K	r/w	No	/opt

ESAUCD2 - LINUX UCD Memory Analysis Report - DEMO

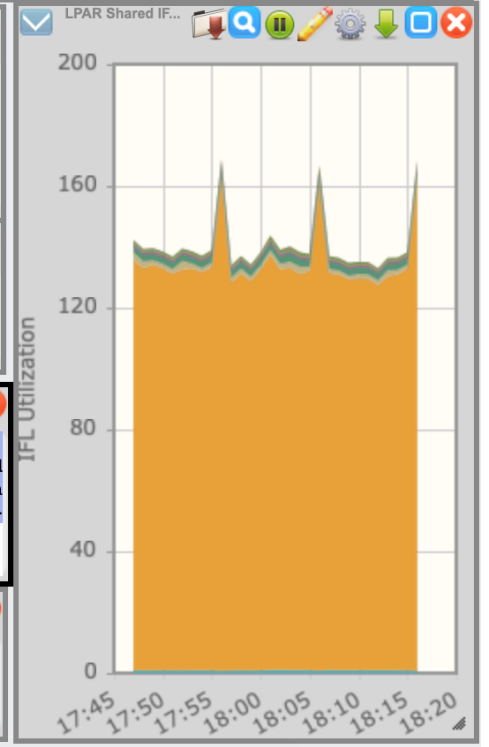
Time	Node/ Group	<Real Storage (MB)> Total	Avail	Used	<--SWAP Storage (MB)--> Total	Avail	Used	Total MIN	<-----Storage in Use (MB)-----> Avail	CMM	Buffer	Cache	Ovrhd	Shared	Error Message
18:16:00	oracle	996.8	15.9	980.9	123.9	0	123.9	15.6	15.9	0.0	11.1	256.9	712.8	0.0	Swap Space I

ESAUCD4 - LINUX UCD System Statistics Report - DEMO

Time	Node/ Group	<Processor Pct Util> Total	Syst	User	Nice	Idle	<----------Rates (per sec)--------> <-Swaps-> In	Out	<-Disk IO-> In	Out	Switch Rate	Intrpt Rate	<-Load Averages-> 1Min	5Min	15Min	<-CPU Overhead Krnl	IRQ	In
18:16:00	oracle	2.0	0.9	1.1	0	97.4	0	0	24.5	140.6	56.4	18.5	0.03	0.01	0	0.52	0.02	

ESAHST4 - LINUX HOST System Statistics Report - DEMO

Time	Server	Num Users	<Processes> Current	Max	StgSz (MB)	<----Local-----> Date	Time	System Uptime	<--System Initialization---------- Dev	Parameter
18:16:00	oracle	2	85	0	996.0	2020/1/13	18:15	60	0600	root=/dev/disk/by-path/ccw-0.0.0200-pa

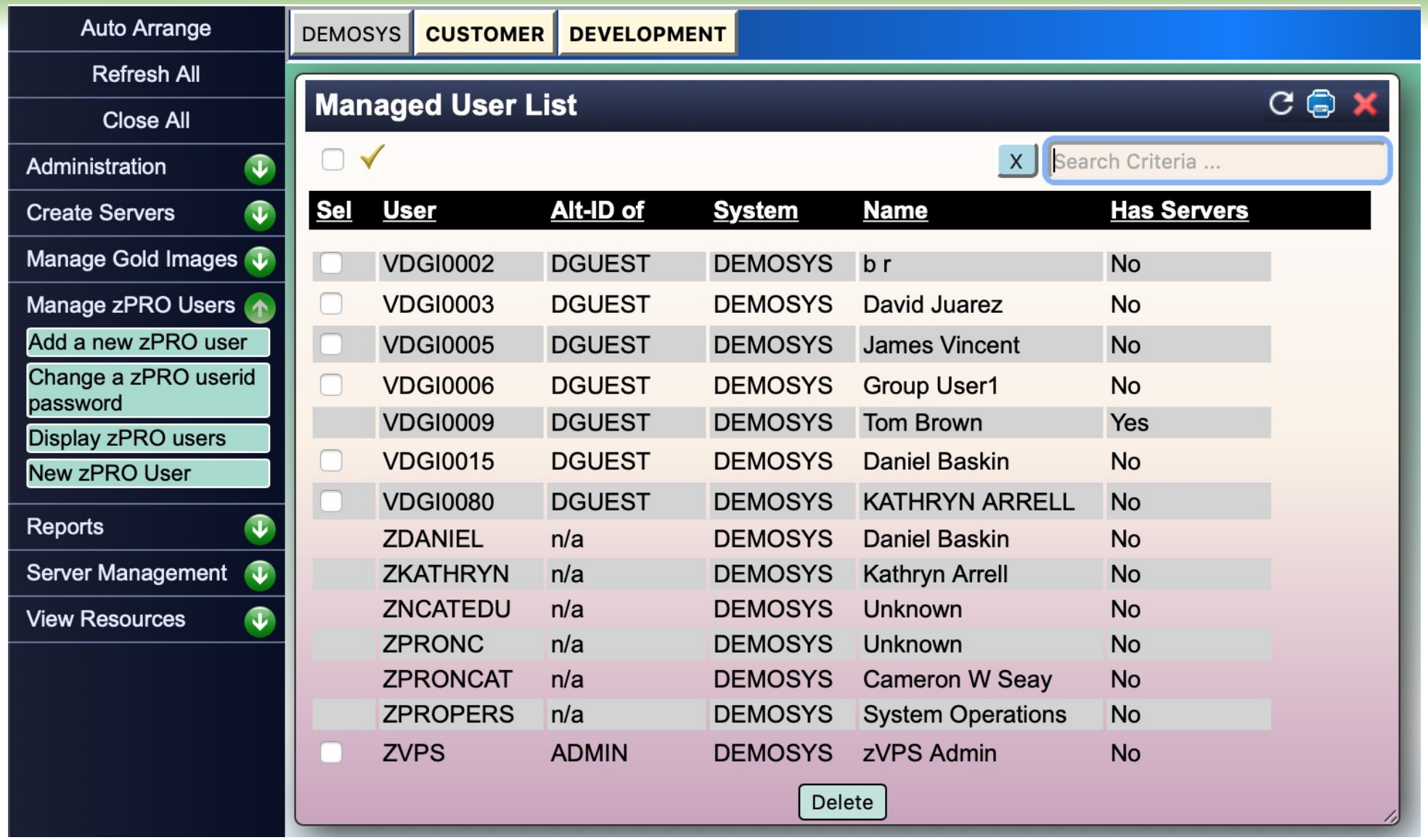


zPRO User Management

The Manage zPRO Users menu items allow you to manage your zPRO end-user userids.

The Manage zPRO Users model shows you all the users defined as zPRO end-users, their name and if they have servers defined. You can delete any ALT-ID user if they do not own servers.

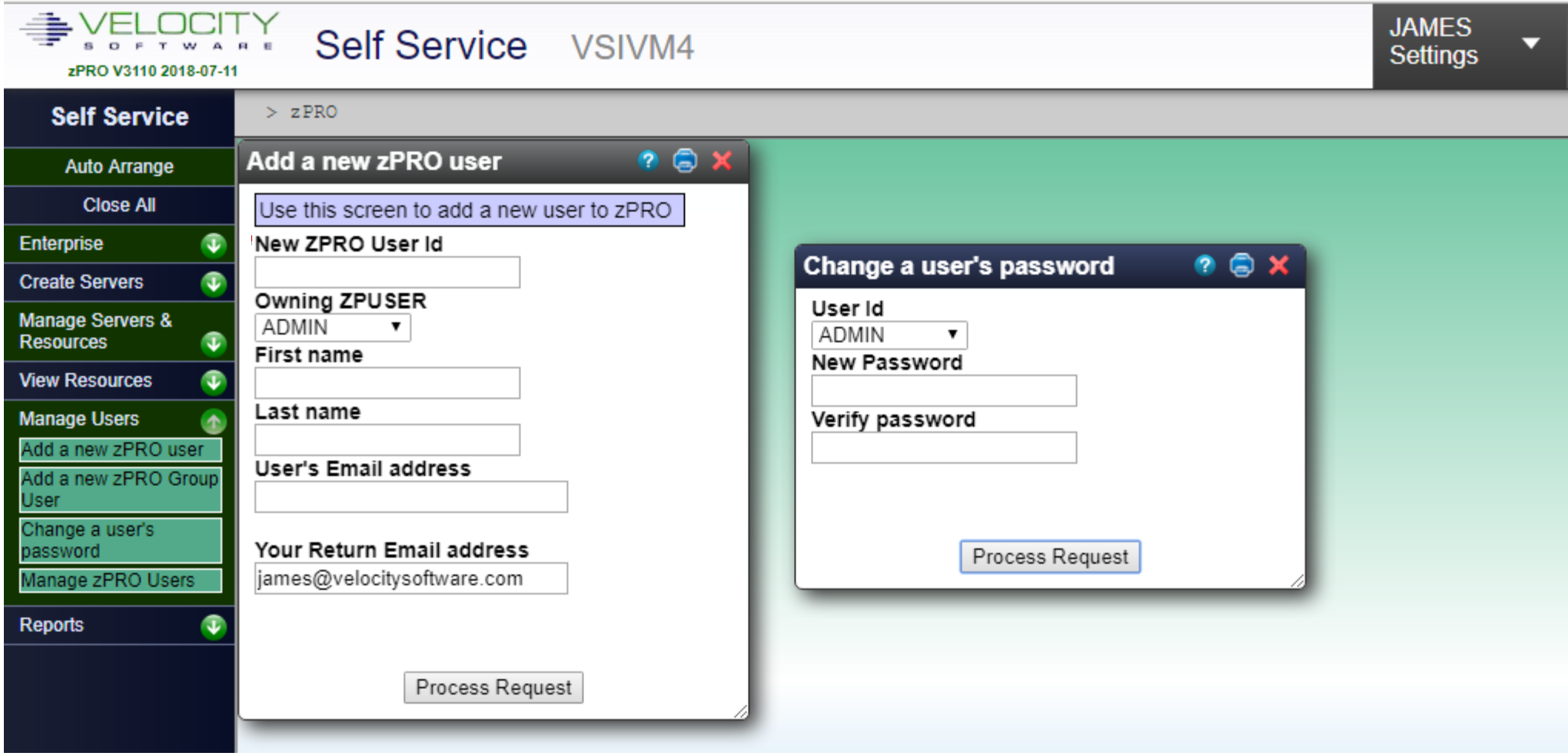
An ALT-ID is defined within another zPRO user. That ALT-ID has its own userid, but it uses/inherits all the authorities and resource limits of the base zPRO user. ALT-IDs is also a means to allow users to authenticate via LDAP/AD with greater than 8 character userids.



Add End-user

Within Manage zPRO Users, you can Add a new zPRO user as an ALT-ID of another zPRO user. This process emails the new user with information on how to login to zPRO.

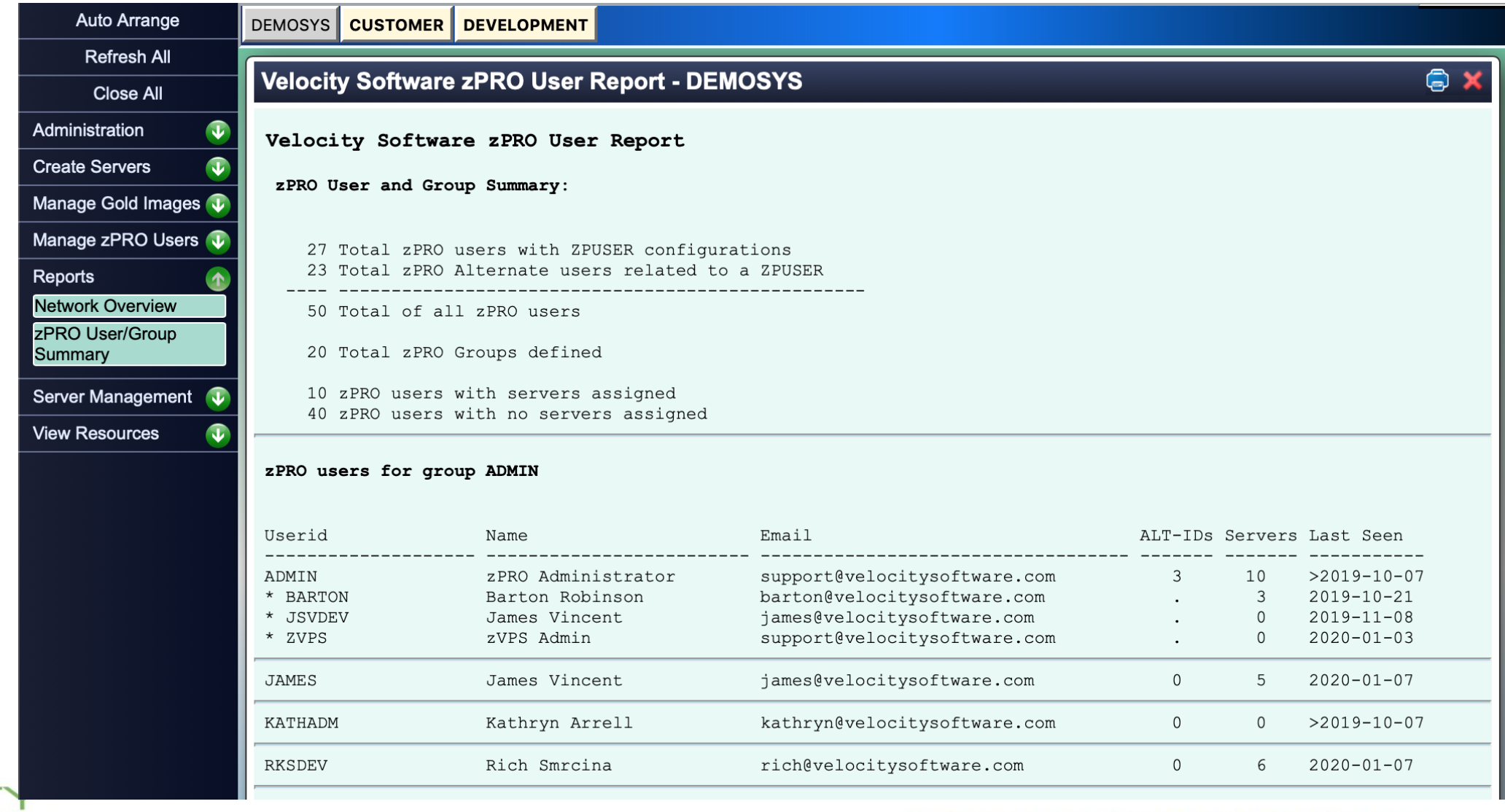
You can also manage zPRO end-users' passwords. Any user that forgets their password or that you simply need to change a password for, can be done from this self-service model.



Resource Reports

Currently, zPRO ships with a report for User/Groups summary. This report shows you not only the counts of defined users/groups, but details on each user. This includes servers built, if the zPRO user has ALT-IDs defined to it and the last time zPRO saw that user in the system (based on the available Audit logs).

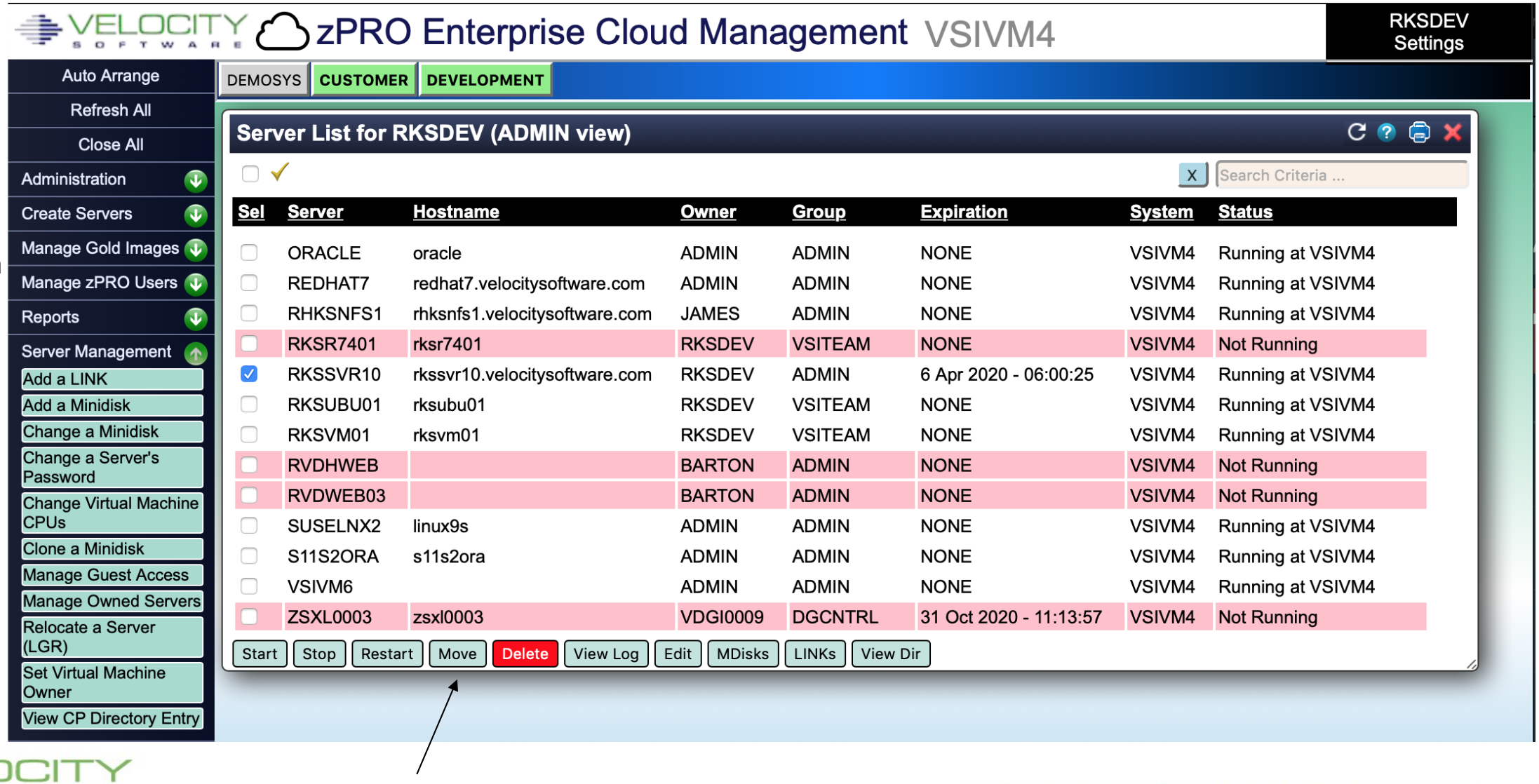
More reports will be added as more releases of zPRO are made available.



Server Relocation (LGR)

zPRO has multiple ways to manage relocating servers, via LGR(Live Guest Relocation), within your SSI clusters.

zPRO is aware when it is running in an SSI cluster and will present the Move function in the Server List model if you are authorized for it. You can select and move servers by selecting the target member to move them to, or zPRO will ask to move it to the other member for a two-member cluster.

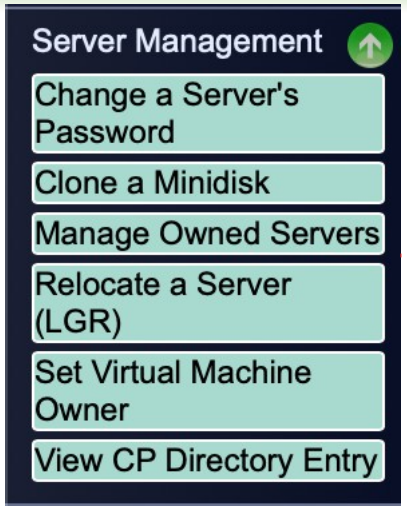


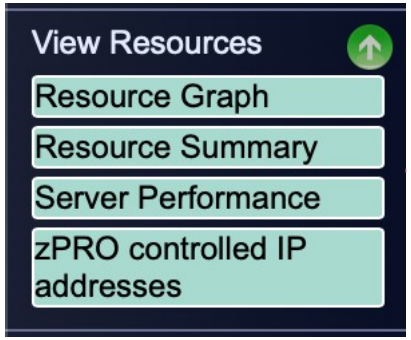
Server Relocation (cont)

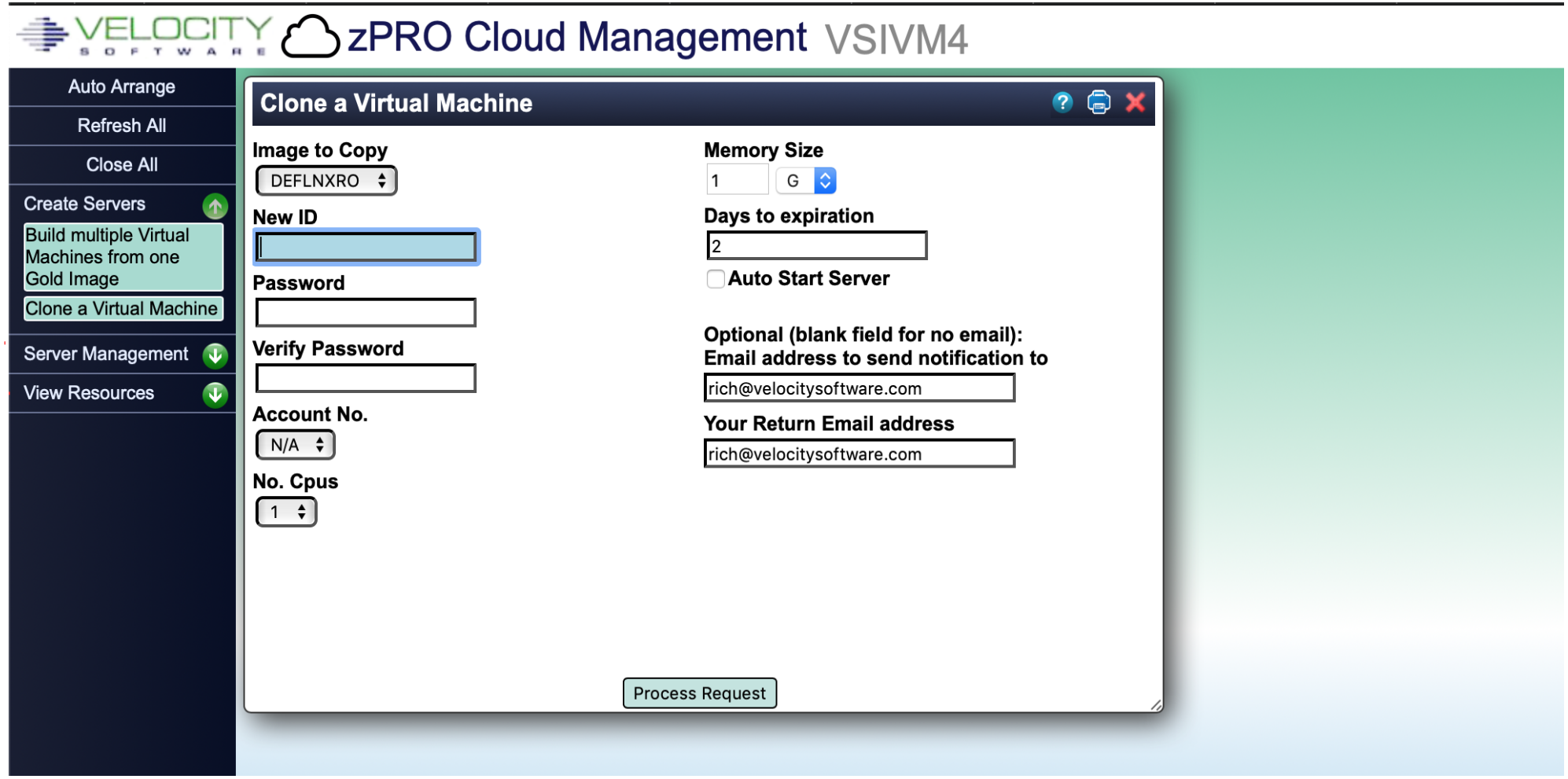
You also have the option in zPRO to use the Relocate a Server model. Under SSI, zPRO will enable the model to let you select a userid and the target member within the SSI cluster.

The destination list will show all members, including the member the server may be running on but will tell you so and let you chose another member easily.

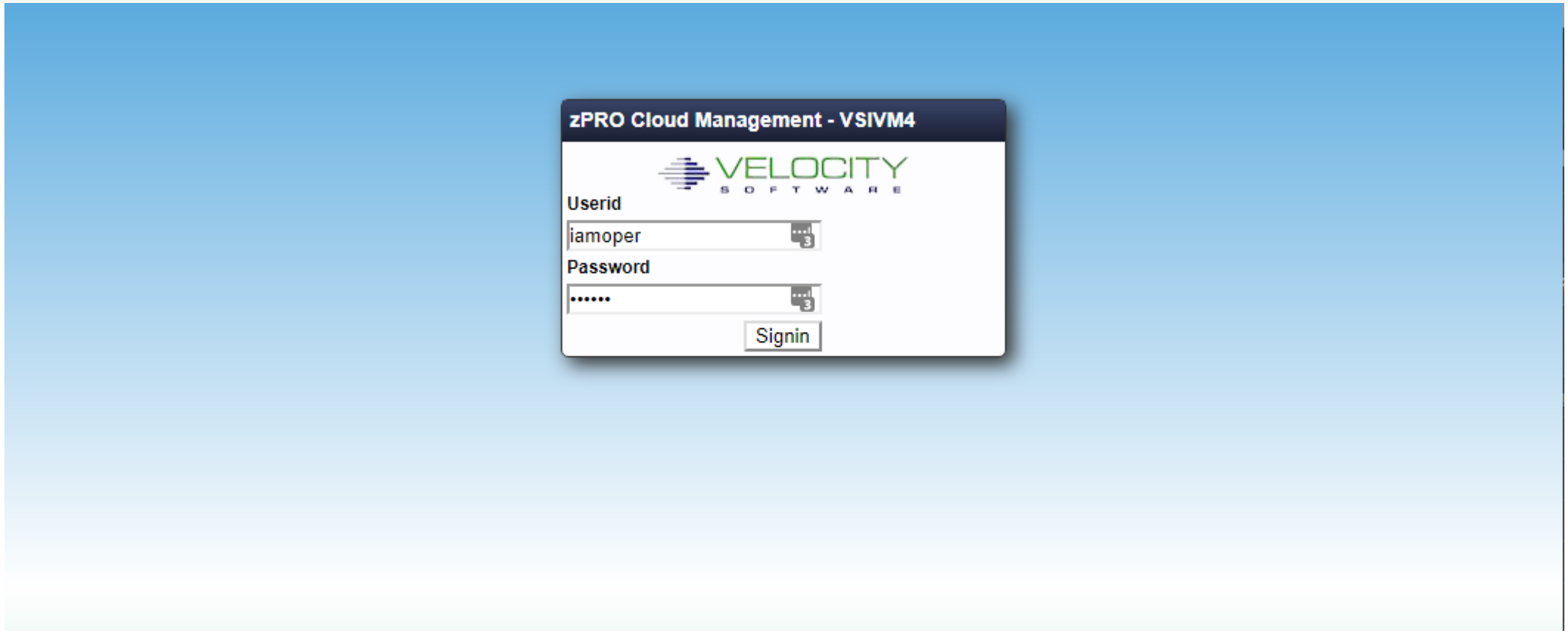
A typical Linux admin view







Operator view

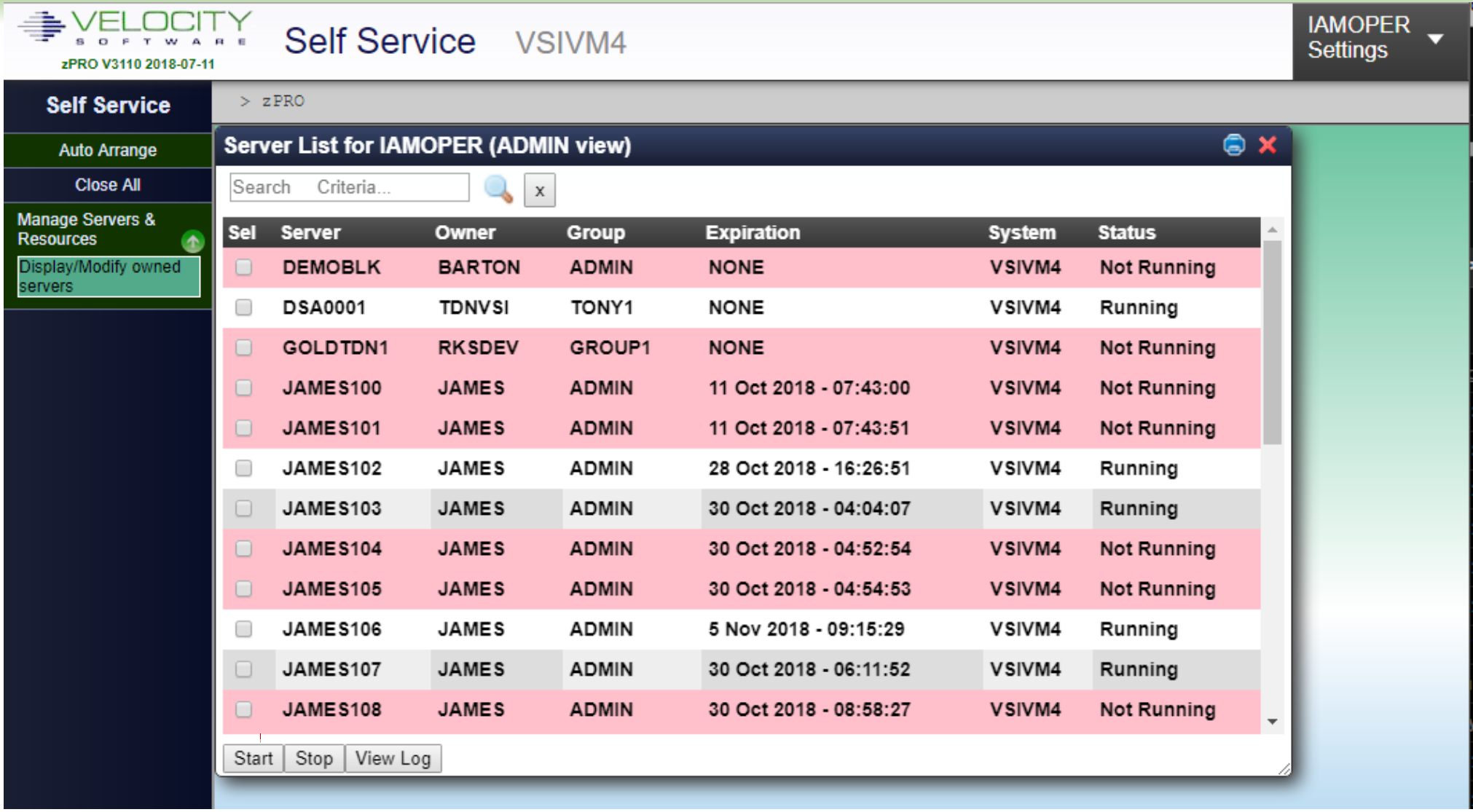


The next examples will show you just a hint of how you can utilize zPRO with other groups in your organization. In this case we will login with an Operations userid.

Sample Operations User

This Operations zPRO user has very limited access to self-service functions and actions. In this example, they can see every server zPRO has through the Server List model as shown, but they can only Start, Stop and View Log for any server.

zPRO can be configured, exactly as needed to for each group or user, to whom you wish to grant access to. There are a multitude of options available for scope and authorizations.



zPRO's Management Benefits

Management of an enterprise, from the resource perspective, requires knowledge of resource allocation, usage, and growth. zPRO keeps track of system resources which are defined within the scope of zPRO management.

Managers can:

- View resource consumption by individuals and/or groups of individuals
- Keep track of activities related to system usage and/or provisioning (Auditing)
- Provide a more responsive environment for end-users. In a mainframe environment, the procurement process for a new collection of Linux servers is generally eliminated. zPRO can be used to "spin up" one or more new servers in the amount of time it takes for the end-user to click and get a cup of coffee.

For even more details, see zPRO Product Highlights at

https://www.velocitysoftware.com/zPRO.html

Thank you!

- **We at Velocity Software sincerely hope you found this zPRO Virtual Demo useful**

  and remember,

- **Contact us to learn more or to schedule a real-time demo of the product!**
  - We would love the opportunity to show you more about zPRO and how it can help you and your organization be successful with Linux on z/VM

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