

Postgres in Amazon RDS



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Who am I ?

- Database Architect with **OmniTI** for last 7+ years
- Expertise in PostgreSQL , Oracle, MySQL, NoSQL
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- Blog: <http://www.pateldenish.com>
- Providing Solutions for business problems to deliver
 - Scalability
 - Reliability
 - High Availability
 - Consistency
 - Security

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Agenda

- What is Amazon RDS?
- Amazon RDS Service Highlights
- Setting up Postgres RDS Instance
- Postgres RDS Features
- Administration and Limitation
- Q & A



Amazon Relational Database Services

RDS is a **managed RDBMS Service** in the cloud that is simple to deploy, easy to scale and cost effective.



Service Highlights



- Managed
- Compatible
- Scalable Database in the Cloud
- Designed for use with other Amazon Web Services
- Inexpensive

Getting Started with Postgres RDS (Beta)












Services ▾ Edit ▾

Step 1: Engine Selection
...

Engine Selection

To get started, choose the DB Instance details below and click Select

	mysql MySQL Community Edition	Select ▶
	postgres PostgreSQL	Select ▶
	oracle-se1 Oracle Database Standard Edition One	Select ▶
	oracle-se Oracle Database Standard Edition	Select ▶
	oracle-ee Oracle Database Enterprise Edition	Select ▶
	sqlserver-ex Microsoft SQL Server Express Edition <i>Note that SQL Server Express Edition limits the storage of per database to a maximum of 10GB. Refer to this link for more details.</i>	Select ▶
	sqlserver-web Microsoft SQL Server Web Edition <i>Note that in accordance with Microsofts licensing policies, SQL Server Web Edition can only be used to support public and internet accessible Web pages, Websites, Web applications and Web services. Refer to the AWS Service Terms for more details.</i>	Select ▶
	sqlserver-se Microsoft SQL Server Standard Edition	Select ▶
	sqlserver-ee Microsoft SQL Server Enterprise Edition	Select ▶

Cancel

Production?



Services ▾ Edit ▾

Step 1: Engine Selection

Step 2: Production?

Step 3: DB Instance Details

Step 4: Additional Config

Step 5: Management Options

Step 6: Review

Do you plan to use this database for production purposes?



For databases used in production or pre-production we recommend:

- **Multi-AZ Deployment** for high availability (99.95% monthly up time **SLA**)
- **Provisioned IOPS Storage** for fast, consistent performance

Billing is based upon the **RDS pricing** table.

An instance which uses these features is not eligible for the **RDS Free Usage Tier**.

- Yes, use **Multi-AZ Deployment** and **Provisioned IOPS Storage** as defaults while creating this instance
- No, this instance is intended for use outside of production or under the **RDS Free Usage Tier**

Cancel

Previous

Next Step

Select Instance Type and Space



Services ▾ Edit ▾

- Step 1: Engine Selection
- Step 2: Production?
- Step 3: DB Instance Details**
- Step 4: Additional Config
- Step 5: Management Options
- Step 6: Review

DB Instance Details

To get started, choose a DB engine below and click Next Step

DB Engine: postgres
License Model: postgresql-license ▾
DB Engine Version: 9.3.3 ▾
DB Instance Class: db.m1.large ▾
Multi-AZ Deployment: Yes ▾
Auto Minor Version Upgrade: Yes No

Provide the details for your RDS Database Instance.

Allocated Storage:* GB (Minimum: 100 GB, Maximum: 3072 GB)
Use Provisioned IOPS: Use m1.large or [larger](#) instances for best results.
Provisioned IOPS: postgres supports IOPS / GB ratios between 3 and 10
DB Instance Identifier:* (e.g. mydbinstance)
Master Username:* (e.g. awsuser)
Master Password:* (e.g. mypassword)

Cancel

Previous

Next Step

Choose VPC and Postgres config



Services ▾ Edit ▾

- Step 1: Engine Selection
- Step 2: Production?
- Step 3: DB Instance Details
- Step 4: Additional Config**
- Step 5: Management Options
- Step 6: Review

Additional Config

Provide the optional additional configuration details below.

Database Name: (e.g. mydb)

Database Port:

Choose a VPC: Only VPCs with a DB Subnet Group(s) are allowed

Availability Zone:

Option Group:

If you have custom DB Parameter Groups or DB Security Groups you would like to associate with this DB Instance, select them below, otherwise proceed with default settings.

Parameter Group:

DB Security Group(s):

Cancel

Previous

Next Step

Backups & Maintenance Window



 Services ▾ Edit ▾

- Step 1: Engine Selection
- Step 2: Production?
- Step 3: DB Instance Details
- Step 4: Additional Config
- Step 5: Management Options**
- Step 6: Review

Management Options

Enabled Automatic Backups: Yes No

The number of days for which automated backups are retained.

Backup Retention Period: days

The daily time range during which automated backups are created if automated backups are enabled

Backup Window: Select Window No Preference

Start Time : UTC

Duration hours

The weekly time range (in UTC) during which system maintenance can occur.

Maintenance Window: Select Window No Preference

Start Day

Start Time : UTC

Duration hours

Cancel

Previous

Next Step

Postgres Instance is Ready 😊

RDS Dashboard

Database

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Snapshots

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Option Groups

Subnet Groups

Events

Event Subscriptions

Launch DB Instance Show Monitoring Instance Actions

Filter: All Instances Search DB Instances... X Viewing 1 of 1 DB Instances

DB Instance Identifier	VPC ID	Multi-AZ	Class	Status	Storage	Security Groups	Engine	Zone
omniti		Yes	db.m1.large	available	100 GB	omniti (active)	postgres	us-east-1

Endpoint: omniti.cqrcyb3h2bq2.us-east-1.rds.amazonaws.com:5432 (available)

Configuration Details	Security and Network	Instance and IOPS	Availability and Durability
DB Name: omniti Engine: postgres(9.3.3) Username: omniti Option Group(s): default:postgres-9-3 (in-sync) Character Set: Parameter Group: default.postgres9.3 (in-sync)	Availability Zone: us-east-1d VPC ID: Subnet Group: Subnets: None Security Groups: omniti (active)	Storage: 100GB Instance Class: db.m1.large IOPS: 1000	Replication State: - Replication Error: - Multi AZ: Yes Secondary Zone: us-east-1e Automated Backups: Enabled (1 Day) Latest Restore Time: April 16, 2014 3:56:27 PM UTC-4

Maintenance Details

Auto Minor Version Upgrade: **Yes**
Maintenance Window: **sun:05:00-sun:05:30**
Backup Window: **04:00-04:30**

Instance Actions Events Tags Logs

Let's test it out!

```
localhost:~ denish$ psql -h omniti.cqrcyb3h2bq2.us-east-1.rds.amazonaws.com -d omniti -p 5432 -U omniti
Password for user omniti:
psql (9.1.9, server 9.3.3)
WARNING: psql version 9.1, server version 9.3.
         Some psql features might not work.
SSL connection (cipher: DHE-RSA-AES256-SHA, bits: 256)
Type "help" for help.
```

```
omniti=> \l
```

```
                List of databases
  Name  | Owner  | Encoding | Collate  | Ctype    | Access privileges
-----+-----+-----+-----+-----+-----
omniti  | omniti | UTF8     | en_US.UTF-8 | en_US.UTF-8 |
postgres | omniti | UTF8     | en_US.UTF-8 | en_US.UTF-8 |
rdsadmin | rdsadmin | UTF8     | en_US.UTF-8 | en_US.UTF-8 | rdsadmin=CTc/rdsadmin
template0 | rdsadmin | UTF8     | en_US.UTF-8 | en_US.UTF-8 | =c/rdsadmin          +
         |         |         |         |         | rdsadmin=CTc/rdsadmin
template1 | omniti | UTF8     | en_US.UTF-8 | en_US.UTF-8 | =c/omniti            +
         |         |         |         |         | omniti=CTc/omniti
```

```
(5 rows)
```

Pre-configured Parameters



- `max_connections = {DBInstanceClassMemory/12582880} ; 604`
- `effective_cache_size = {DBInstanceClassMemory/16384} ; 3.6GB`
- `shared_buffers = {DBInstanceClassMemory/32768} ; 1.8GB`
- `maintenance_work_mem = default ; 16MB (Can be changed)`
- `work_mem = default ; 1MB (Can be changed)`
- `log_line_prefix = '%t:%r:%u@%d:[%p]:' (cannot be changed)`
- `log_min_duration_statement (disabled by default, enable it)`

Pre-configured Parameters

- Pros:
 - Easy to create Parameter Groups and apply it to specific instance
 - i.e apply to dev instance vs prod
 - Allow dynamic calculation based on DBInstanceClassMemory
- Cons:
 - Can not change some parameters

Automatic Software Patching

- As of now, Postgres 9.3.1, 9.3.2 and 9.3.3 versions are available
- You can control upgrade time
- You have to wait till the new version is available
- Postgres RDS doesn't support anything older than 9.3
 - Postgres 9.3 replication bugs
 - Delay in upgrade

Point-in-Time Restore

RDS Dashboard

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Restore DB Instance

X

You are creating a new DB Instance from a source DB Instance at a specified time. This new DB Instance will have the default DB Security Group and DB Parameter Groups.

Use Latest Restorable Time: April 16, 2014 4:30:40 PM UTC-4

Use Custom Restore Time: April 16, 2014 03 : 00 : 00 UTC-4

Source DB Instance: omniti

DB Instance Identifier:* (e.g. mydbinstance)

DB Engine: postgres

License Model: PostgreSQL License

DB Instance Class: db.m1.large

Multi-AZ Deployment: No

Auto Minor Version: Yes No

Upgrade:

Database Port: 5432

Storage Type: Standard

Choose a VPC: Not in VPC Only VPCs with a DB Subnet Group(s) are allowed

Availability Zone: No Preference

Option Group: default:postgres-9-3

Note that Restore to Point in Time operation can take several hours to complete depending on the volume of transaction logs to be applied on a given database backup.

Cancel

Launch DB Instance

Point-in-Time Restore

[Launch DB Instance](#)
[Show Monitoring](#)
[Instance Actions](#)

[Refresh](#)
[Menu](#)
[Grid](#)
[Home](#)
[Settings](#)
[Help](#)

Filter: **All Instances** X Viewing 2 of 2 DB Instances

DB Instance Identifier	VPC ID	Multi-AZ	Class	Status	Storage	Security Groups	Engine	Zone
omniti		Yes	db.m1.large	backing-up	100 GB	omniti (active)	postgres	us-east-1
Endpoint: omniti.oqrcyb3h2bq2.us-east-1.rds.amazonaws.com:5432 (backing-up)								
Configuration Details DB Name: omniti Engine: postgres(9.3.3) Username: omniti Option Group(s): default:postgres-9-3 (in-sync) Character Set: Parameter Group: default.postgres9.3 (in-sync)		Security and Network Availability Zone: us-east-1d VPC ID: Subnet Group: Subnets: None Security Groups: omniti (active)		Instance and IOPS Storage: 100GB Instance Class: db.m1.large IOPS: 1000		Availability and Durability Replication State: - Replication Error: - Multi AZ: Yes Secondary Zone: us-east-1e Automated Backups: Enabled (1 Day) Latest Restore Time: April 16, 2014 4:35:40 PM UTC-4		
Maintenance Details Auto Minor Version Upgrade: Yes Maintenance Window: sun:05:00-sun:05:30 Backup Window: 04:00-04:30								
Instance Actions Events Tags Logs								
omnitirestored		No	db.m1.large	creating	100 GB	default (active)	postgres	us-east-1
Endpoint: Not available yet (creating)								
Configuration Details DB Name: omniti Engine: postgres(9.3.3) Username: omniti Option Group(s): default:postgres-9-3 (pending-apply) Character Set: Parameter Group: default.postgres9.3 (in-sync)		Security and Network Availability Zone: us-east-1d VPC ID: Subnet Group: Subnets: None Security Groups: default (active)		Instance and IOPS Storage: 100GB Instance Class: db.m1.large IOPS: 1000		Availability and Durability Replication State: - Replication Error: - Multi AZ: No Secondary Zone: Automated Backups: Enabled (1 Day) Latest Restore Time:		Maintenance Details Auto Minor Version Upgrade: Yes Maintenance Window: sun:05:00-sun:05:30 Backup Window: 04:00-04:30 Pending Modifications: Allocated Storage: 100
Instance Actions Events Tags Logs								

DB Snapshots – Manual or Automated

RDS Dashboard

Create Snapshot

Restore Snapshot

Copy Snapshot

Delete Snapshot

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Filter: Automated Snapshot

Search DB Snapshots...

Viewing 1 of 1 DB Snapshots

<input type="checkbox"/>	DB Snapshot Identifier	DB Instance Identifier	VPC ID	Snapshot Type	Status	Progress	Engine	Storage	Zone
<input type="checkbox"/>	rds:omniti-2014-04-16-19-56	omniti		automated	available	Completed	postgres	100 GB	us-east-1d

DB Snapshot Name: rds:omniti-2014-04-16-19-56

DB Instance Name: omniti

VPC ID:

Snapshot Type: automated

DB Engine: postgres

DB Engine Version: 9.3.3

License Model: postgresql-license

Master Username: omniti

Status: available

Zone: us-east-1d

DB Storage: 100GiB

Port: 5432

Snapshot Creation Time: April 16, 2014 3:56:27 PM UTC-4

Instance Creation Time: April 16, 2014 3:49:25 PM UTC-4

Time:

Time:

Source Region: N/A

DB Events

Services ▾ Edit ▾

denish

RDS Dashboard

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Identifier	Type	Date	Event
omnitirestored	db-instance	April 16, 2014 4:39:04 PM UTC-4	Applying modification to allocated storage
omniti	db-instance	April 16, 2014 4:38:13 PM UTC-4	Finished DB Instance backup
snapshot	db-snapshot	April 16, 2014 4:38:12 PM UTC-4	Manual snapshot created
snapshot	db-snapshot	April 16, 2014 4:30:36 PM UTC-4	Creating manual snapshot
omniti	db-instance	April 16, 2014 4:30:36 PM UTC-4	Backing up DB instance
omniti	db-instance	April 16, 2014 3:58:40 PM UTC-4	Finished DB Instance backup
omniti	db-instance	April 16, 2014 3:56:26 PM UTC-4	Backing up DB instance
omniti	db-instance	April 16, 2014 3:56:22 PM UTC-4	Finished applying modification to convert to a Multi-AZ DB Instance
omniti	db-instance	April 16, 2014 3:49:27 PM UTC-4	Applying modification to convert to a Multi-AZ DB Instance
omniti	db-instance	April 16, 2014 3:49:26 PM UTC-4	DB instance created

DB Event Notifications

RDS Dashboard

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Event Subscriptions

Create Event Subscription

X

Name:

Send notifications to: [create topic](#)

Source Type:

Enabled: Yes No

Event Categories

- Select All
 Select specific

- availability
- backup
- configuration change
- creation
- deletion
- failover
- failure
- low storage
- maintenance
- notification
- recovery
- restoration

DB Instances

- Select All
 Select specific

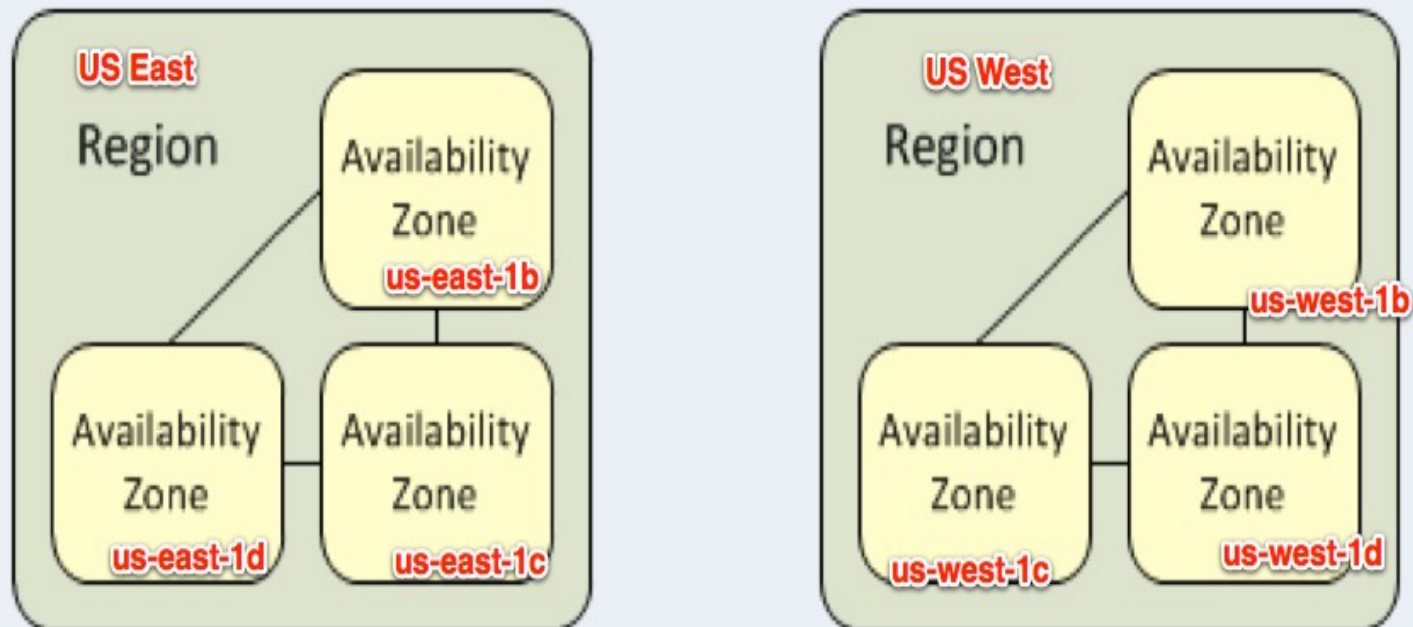
- omniti
- omnitirestored

Cancel

Yes, Create

Multi-Availability Zone (Multi-AZ) Deployments

Amazon Web Services



Multi AZ , not Multi Region

omniti Yes db.m1.large available 100 GB omniti (active) postgres

Endpoint: omniti.cqrcyb3h2bq2.us-east-1.rds.amazonaws.com:5432 (available)

Configuration Details	Security and Network	Instance and IOPS	Availability and Durability
DB Name: omniti	Availability Zone: us-east-1d	Storage: 100GB	Replication State: -
Engine: postgres(9.3.3)	VPC ID: 	Instance Class: db.m1.large	Replication Error: -
Username: omniti	Subnet Group: 	IOPS: 1000	Multi AZ: Yes
Option Group(s): default:postgres-9-3 (in-sync)	Subnets: None		Secondary Zone: us-east-1e
Character Set: 	Security Groups: omniti (active)		Automated Backups: Enabled (1 Day)
Parameter Group: default.postgres9.3 (in-sync)			Latest Restore Time: April 16, 2014 4:40:40 PM UTC-4

Maintenance Details

Auto Minor Version Upgrade: **Yes**

Maintenance Window: **sun:05:00-sun:05:30**

Backup Window: **04:00-04:30**

Instance Actions ▾ Events Tags Logs

Provisioned IOPS

- IOPS Ranges : 1000 - 30,000
- Storage Ranges : 100 GB - 3 TB
- Range of IOPS to Storage (GB) Ratio : 3:1 – 10:1
- For Example,
 - you could start by provisioning an Postgres DB instance with 1000 IOPS and 200 GB storage (a ratio of 5:1).
 - You could then scale up to 2000 IOPS with 200 GB of storage (a ratio of 10:1), 3000 IOPS with 300 GB of storage
 - Up to the maximum for Postgres DB instance of 30,000 IOPS with 3 TB (3000 GB) of storage.

Push-Button Scaling

RDS Dashboard

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Modify DB Instance: omniti

DB Instance Identifier:

omniti

DB Engine Version:

PostgreSQL 9.3.3-R1 (defa...

DB Instance Class:

db.m1.large

Multi-AZ Deployment:

Yes

Auto Minor Version Upgrade:

Yes No

Allocated Storage:*

200 GB (Minimum: 100 GB, Maximum: 3072 GB)

Use Provisioned IOPS:

Provisioned IOPS:

2000 postgres supports IOPS / GB ratios between 3 and 10

Parameter Group:

default.postgres9.3

Security Group:

default
omniti

Option Group:

default:postgres-9-3

New Master Password:

Backup Retention Period:

1 days

Backup Window:

Start Time 04 : 00 UTC

Duration 0.5 hours

Maintenance Window:

Start Day Sunday

Start Time 05 : 00 UTC

Duration 0.5 hours

Apply Immediately:

Continue

Push-Button Scaling



Identifier	Type	Date	Event
omniti	db-instance	April 16, 2014 6:00:58 PM UTC-4	Finished applying modification to allocated storage
omniti	db-instance	April 16, 2014 5:05:56 PM UTC-4	Applying modification to allocated storage
omnitirestored	db-instance	April 16, 2014 4:39:04 PM UTC-4	Applying modification to allocated storage
omniti	db-instance	April 16, 2014 3:56:22 PM UTC-4	Finished applying modification to convert to a Multi-AZ DB Instance
omniti	db-instance	April 16, 2014 3:49:27 PM UTC-4	Applying modification to convert to a Multi-AZ DB Instance

Increased IOPs

Multi AZ

- Took about an hour to increase IOPs and Disk space from 1000 IOPs (100GB) to 2000 IOPs(200GB)
- Multi AZ was quick because it was applied during instance creation

Isolation and Security

Access from specific CIDR/IP

[DB Security Groups](#) > omniti

DB Security Group

Connection Type	Details	Status	Actions
CIDR/IP	CIDR/IP: 108.48.124.82/32	authorized	<button>Remove</button>

Access from specific EC2 security group

[DB Security Groups](#) > omnitirds

DB Security Group

Connection Type	Details	Status	Actions
EC2 Security Group	AWS Account ID: 182711560792 EC2 Security Group: ssh	authorized	<button>Remove</button>

Limited Default Roles

```
omniti=> \du
```

```
          List of roles
Role name | Attributes | Member of
-----+-----+-----
omniti    | Create role, Create DB | {rds_superuser}
rds_superuser | Cannot login | {}
rdsadmin  | Superuser, Create role, Create DB, Replication | {}
```

SSL is ON

```
omniti=> show ssl;
ssl
----
on
(1 row)
```

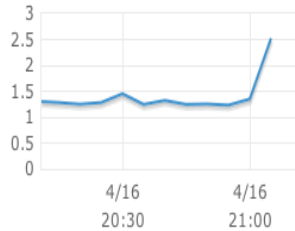
Monitoring & Metrics



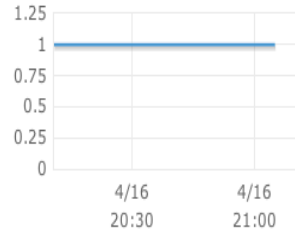
Time Range: Last Hour ▾

Below are your CloudWatch metrics for the selected resources. Click on a graph to see an expanded view. [View all CloudWatch metrics](#)

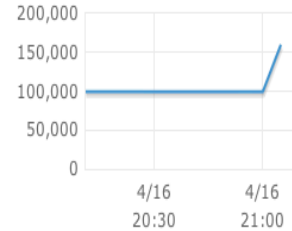
CPU Utilization (Percent)



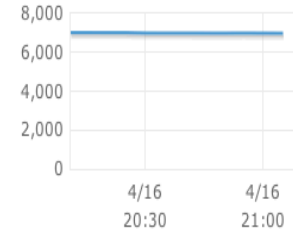
DB Connections (Count)



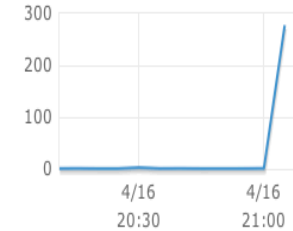
Freeable Space (MB)



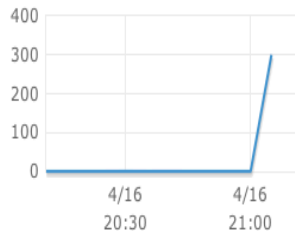
Freeable Memory (MB)



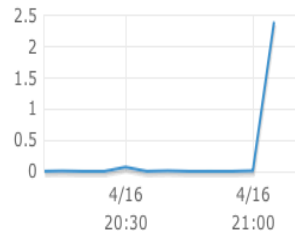
Write IOPS (Count/Second)



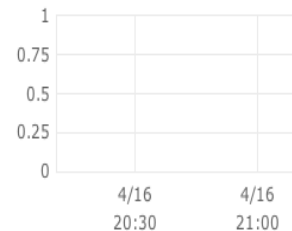
Read IOPS (Count/Second)



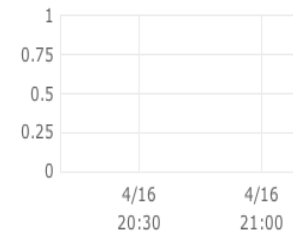
Queue Depth (Count)



Replica Lag (Seconds)



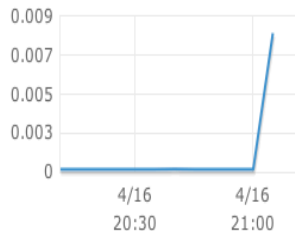
Binary Log Disk Usage (MB)



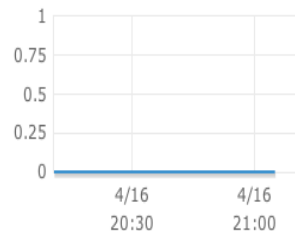
Write Throughput (MB/Second)



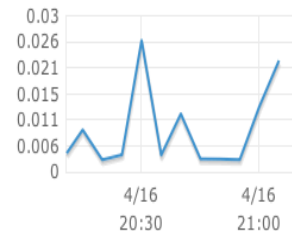
Read Throughput (MB/Second)



Swap Usage (MB)



Write Latency (Seconds)



Read Latency (Seconds)



Other Features

- Automatic Host replacement in case of hardware failure
- Replication and automated failover
- Synchronous replication is used for failover

Postgres Logs Monitoring

- Possible to download postgres logs for analyze with **PgBadger**
 - Install Amazon RDS Command Line Toolkit
 - **rds-watch-db-logfile** omniti --log-file-name error/postgresql.log.2014-04-16-22
 - **rds-download-db-logfile** DBInstanceIdentifier --log-file-name \$filename

Viewing Log: error/postgresql.log.2014-04-16-21 (3.9 kB)

text: background:

```
omniti: [6697]:ERROR: must be
omniti: [6697]:STATEMENT:
starting: time
wrote 4
removed: 1
syncd: 1
files=4,
```

Displaying ~ 1000 lines of error/postgresql.log.2014-04-16-21

[Refresh Log](#) [Close](#)

PostgreSQL Supported Extensions

```
omniti=> select * from pg_available_extensions;
```

name	default_version	installed_version	comment
chkpass	1.0		data type for auto-encrypted passwords
xml2	1.0		XPath querying and XSLT
plpgsql ✓	1.0	1.0	PL/pgSQL procedural language
pgcrypto ✓	1.0		cryptographic functions
postgres_fdw ✓	1.0		foreign-data wrapper for remote PostgreSQL servers
fuzzystrmatch	1.0		determine similarities and distance between strings
ltree	1.0		data type for hierarchical tree-like structures
dict_xsyn	1.0		text search dictionary template for extended synonym processing
postgis_tiger_geocoder	2.1.0		PostGIS tiger geocoder and reverse geocoder
hstore ✓	1.2		data type for storing sets of (key, value) pairs
pgrowlocks	1.1		show row-level locking information
postgis ✓	2.1.0		PostGIS geometry, geography, and raster spatial types and functions
dblink ✓	1.1		connect to other PostgreSQL databases from within a database
earthdistance	1.0		calculate great-circle distances on the surface of the Earth
unaccent	1.0		text search dictionary that removes accents
pg_stat_statements ✓	1.1		track execution statistics of all SQL statements executed
postgis_topology	2.1.0		PostGIS topology spatial types and functions
pg_buffercache	1.0		examine the shared buffer cache
isn	1.0		data types for international product numbering standards
tablefunc	1.0		functions that manipulate whole tables, including crosstab
pgstattuple	1.1		show tuple-level statistics
intagg	1.0		integer aggregator and enumerator (obsolete)
pltcl ✓	1.0		PL/Tcl procedural language
pg_freespacemap	1.0		examine the free space map (FSM)
tsearch2 ✓	1.0		compatibility package for pre-8.3 text search functions
uuid-oss	1.0		generate universally unique identifiers (UUIDs)
dict_int	1.0		text search dictionary template for integers
btree_gin	1.0		support for indexing common datatypes in GIN
cube	1.0		data type for multidimensional cubes
pg_trgm	1.1		text similarity measurement and index searching based on trigrams
intarray	1.0		functions, operators, and index support for 1-D arrays of integers
btree_gist ✓	1.0		support for indexing common datatypes in GiST
sslinfo	1.0		information about SSL certificates
plperl ✓	1.0		PL/Perl procedural language
citext	1.0		data type for case-insensitive character strings

(35 rows)

PgBench results



- m1.large
 - Provisioned iops = 1000
 - Number of clients: 100
 - Number of threads: 1
 - Duration: 600 s

	Single AZ	Multi AZ
# of transaction processed	117611	112009
tps (including connections establishing)	195.729775	186.482602
tps (excluding connections establishing)	209.247055	199.764921

Limitations

- Replica feature is missing
 - Streaming replication (Coming up?)
- Limited migration/upgrade options
 - pg_dump/restore
 - What about major upgrade?
- pgbouncer can not be installed on DB server
- Can not install custom extensions
 - mimeo, pg_partman etc.

Pricing

m1.large 2000 IOPs 200GB	On Demand	Reserved (3 yr)
Single AZ	\$400/month	\$368/month
Multi AZ	\$800/month	\$636/month

Reserved instance can be 10-20% cheaper
Price doesn't include bandwidth

References

- http://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/CHAP_GettingStarted.html
- http://docs.aws.amazon.com/AmazonRDS/latest/UserGuide/CHAP_PostgreSQL.html
- Quick Reference CLI Commands: <http://awsdocs.s3.amazonaws.com/RDS/latest/rds-qrc.pdf>
- <http://www.postgresql.org/docs/9.2/static/pgbench.html>
- <https://console.aws.amazon.com/rds/home>

Further Reading

- Accessing PostgreSQL from Amazon RDS article on Database Trends and Applications
- <http://www.dbta.com/Editorial/Trends-and-Applications/Accessing-PostgreSQL-from-Amazon-RDS-96507.aspx>



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Questions?

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