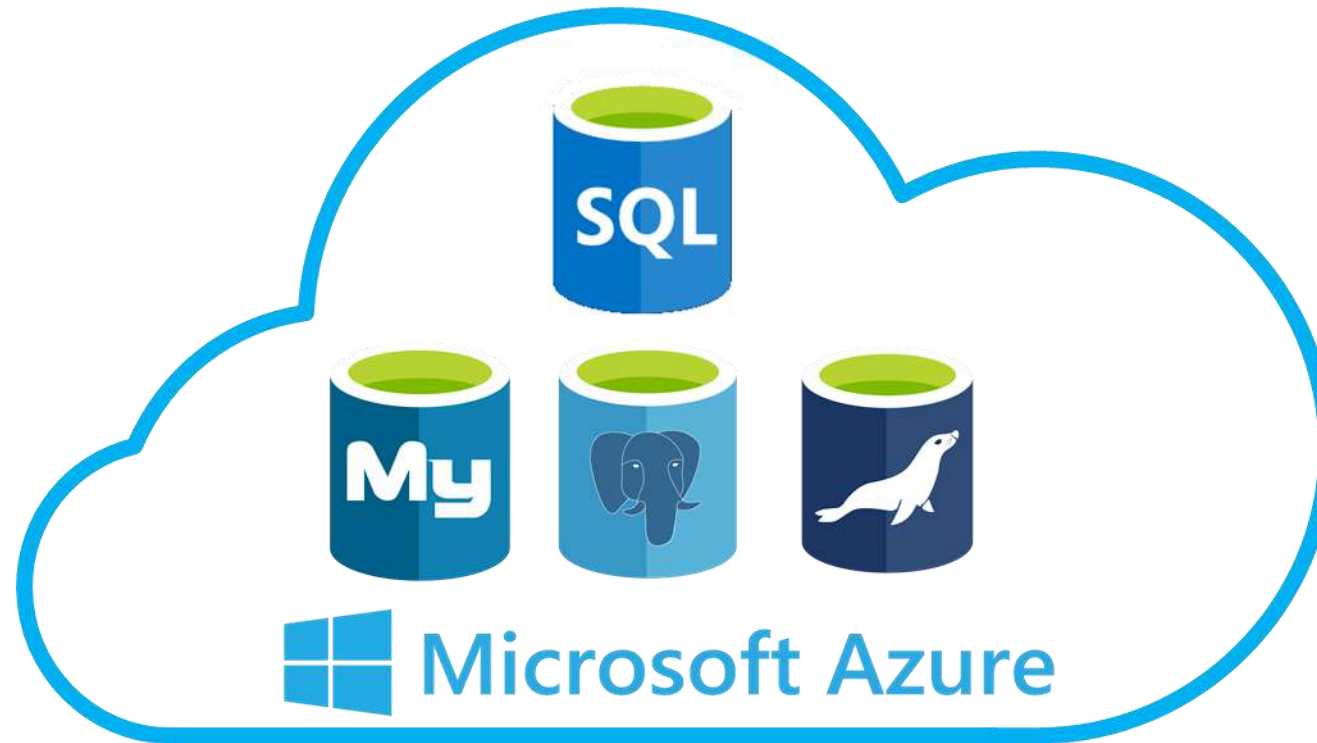


Azure Database for PostgreSQL

@SQLCRESPI



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Esp. em Banco de Dados

Esp. em Filosofia e História

Professor Universitário

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 [SQLCrespi](https://www.youtube.com/SQLCrespi)
 [SQLCrespi](https://github.com/SQLCrespi)

euronews.

How Postgres and Open Source Are Disrupting The Market for Database Management Systems



Ben Kerschberg, CONTRIBUTOR

FULL BI

Opinions expressed by Forbes Contributors are their own.

YOUR READING LIST



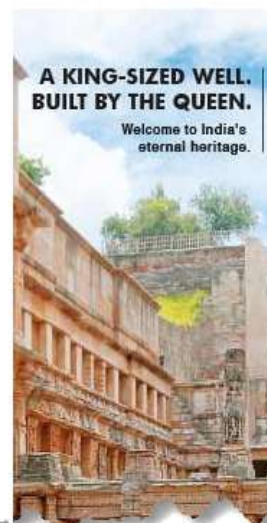
How Postgres and Open Source Are Disrupting The Market for Database Management Systems



UNICEF USA Voice:

Rob... Refuge... Tell... er

Open source database management systems (OSDBMSs) have matured into viable alternatives to proprietary, commercial solutions. It comes as no surprise that OSDBMSs are not-so-subtly pushing proprietary solutions to the periphery. According to Gartner's *The State of Open Source RDBMS, 2015*, the OSDBMS market is worth \$562 million and has grown 31% year over year since 2013. By contrast, the overall market for database management solutions, valued by IDC to be over \$50 billion by 2018, grew by only 5.4% year over year during that same period. In terms of market



Azure Relational Database Platform

Power BI, App Services, Data Factory,
Analytics, ML, Cognitive, Bot...

SQL Data
Warehouse

SQL Database

PostgreSQL

MySQL

MariaDB **COMING!**

**Database
Services
Platform**

Intelligent: Advisors, Tuning, Monitoring

Flexible: On-demand scaling, Resource governance

Trusted: HA/DR, Backup/Restore, Security, Audit, Isolation

Azure Compute

Azure Storage

Global Azure with 43 Regions

Azure Database for PostgreSQL Entrega:

- ⦿ Alta-disponibilidade sem custo adicional;
- ⦿ Previsão de desempenho, utilizando o pay-as-you-go;
- ⦿ Escalabilidade on the fly em segundos;
- ⦿ Segurança dos dados sensíveis;
- ⦿ Segurança e conformidade;
- ⦿ Backups automáticos e restore point-in-time de até 35 dias;
- ⦿ Continue utilizando as mesmas ferramentas, drivers e bibliotecas



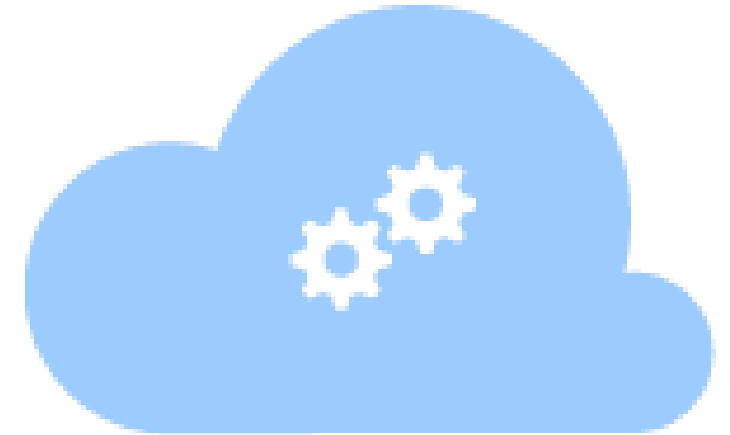
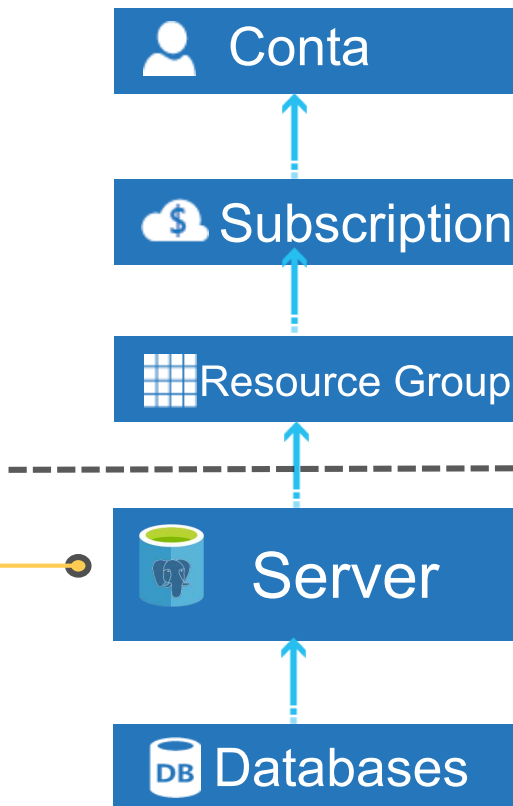
Camada de Preço

	Basic		General Purpose					Memory Optimized				
Intended use case	Workloads requiring light compute and I/O performance.		Most business workloads requiring balanced compute and memory with scalable I/O throughput.					High-performance database workloads requiring in-memory performance for faster transaction processing and higher concurrency.				
vCore	1	2	2	4	8	16	32	2	4	8	16	32 (coming soon)
Compute Generation	Gen 4, Gen 5		Gen 4, Gen 5					Gen 5 only				
Storage	5GB – 1TB Magnetic Media		5GB – 4TB Remote SSD					5GB – 4TB Remote SSD				
IOPS	Variable		100 – 6000 IOPS					100 – 6000 IOPS				
Backup retention	7 – 35 days		7 – 35 days					7 – 35 days				
Backup storage	Locally redundant		Locally or geographically redundant					Locally or geographically redundant				

<https://docs.microsoft.com/en-us/azure/postgresql/concepts-pricing-tiers>

Modelo Conceitual

- **Logica**, sem limites;
- **Conexão endpoint** PostgreSQL server.
- Um ou mais bancos de dados.
- Prentence a uma região;
- **Diretiva de escopo**. Ex.: firewall rules, recovery, monitoring and management.

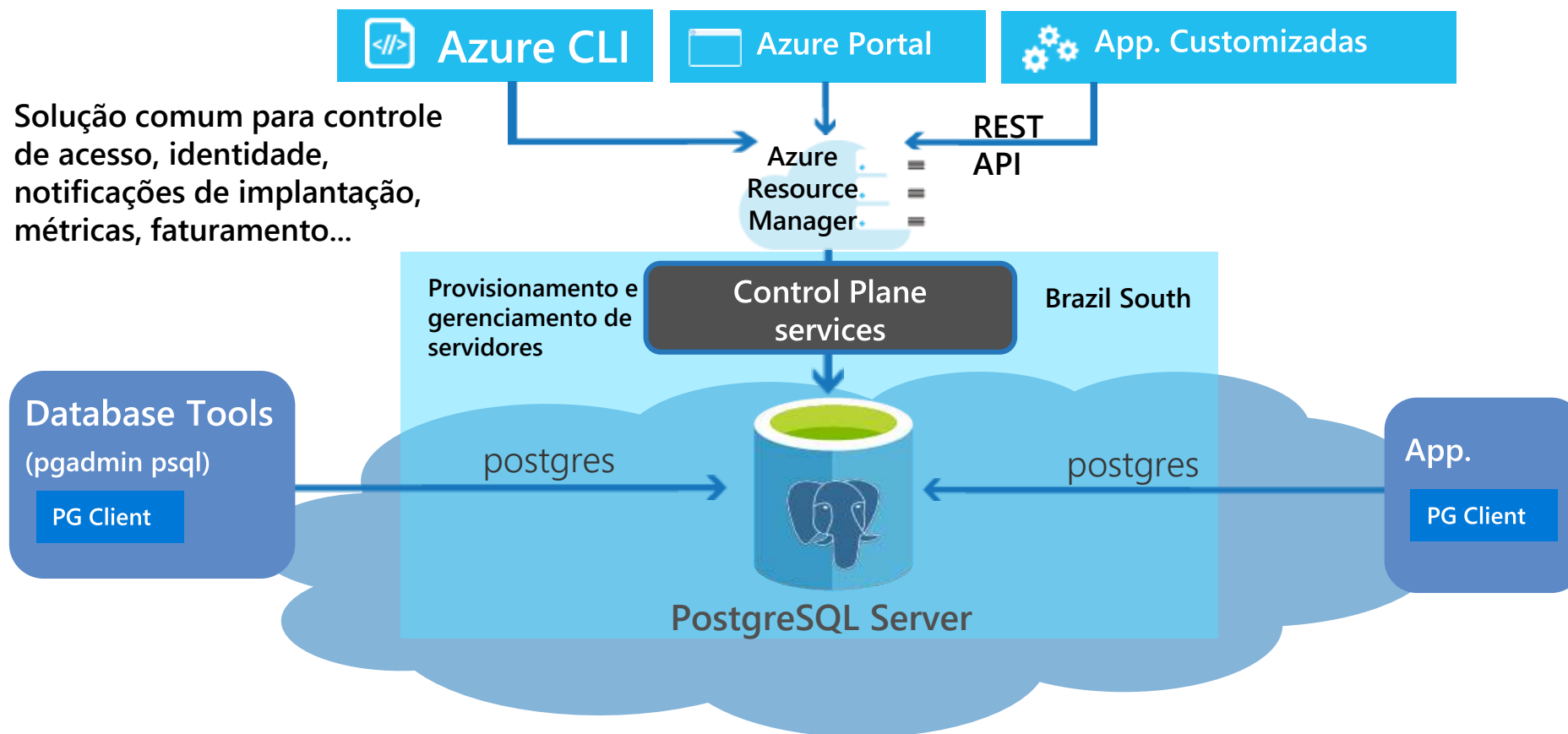


Azure

Azure Database for PostgreSQL

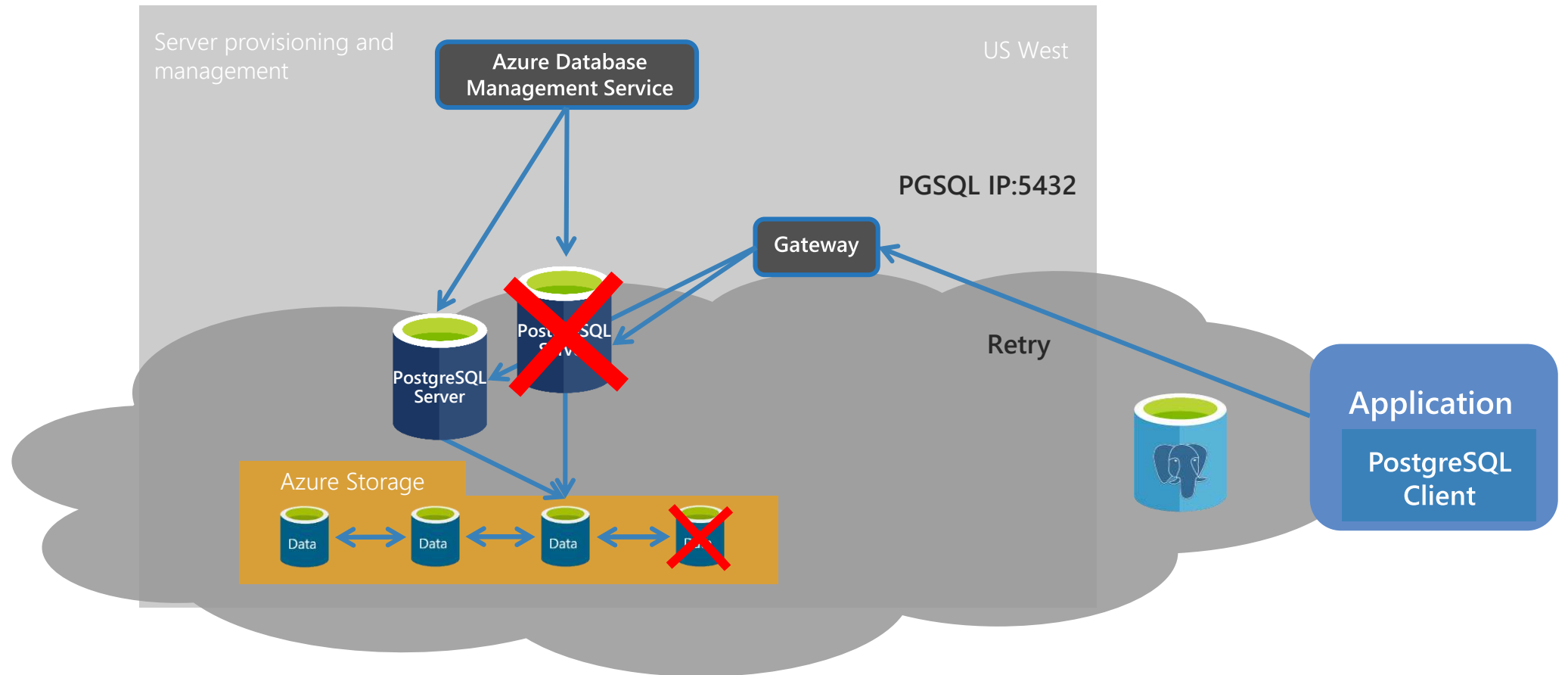


Cria, Conecta e Gerencia



```
postgres=> \echo '01-criacao.ps1'
```

Alta Disponibilidade



High-Availability & Scale

High-Availability

D4S_V3 Standard ★	D4S_V3 Standard ★
4 vCPUs	4 vCPUs
16 GB	16 GB
8 Data disks	8 Data disks
8000 Max IOPS	8000 Max IOPS
32 GB Local SSD	32 GB Local SSD
Premium disk support	Premium disk support
Load balancing	Load balancing
142.85 USD/MONTH (ESTIMATED)	142.85 USD/MONTH (ESTIMATED)

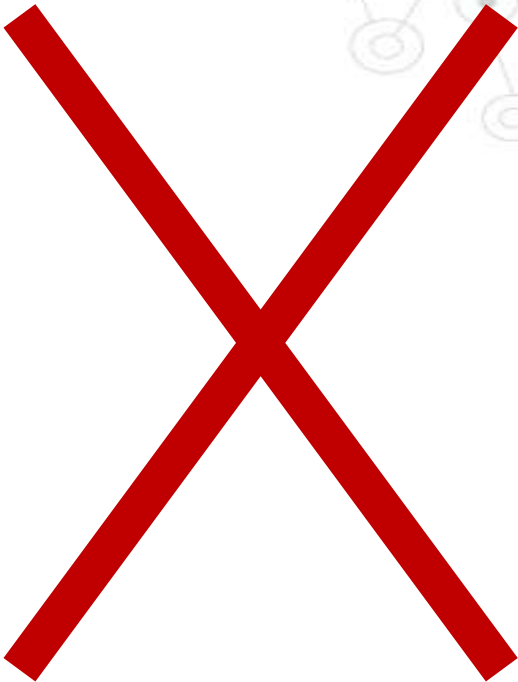
= \$285

vs

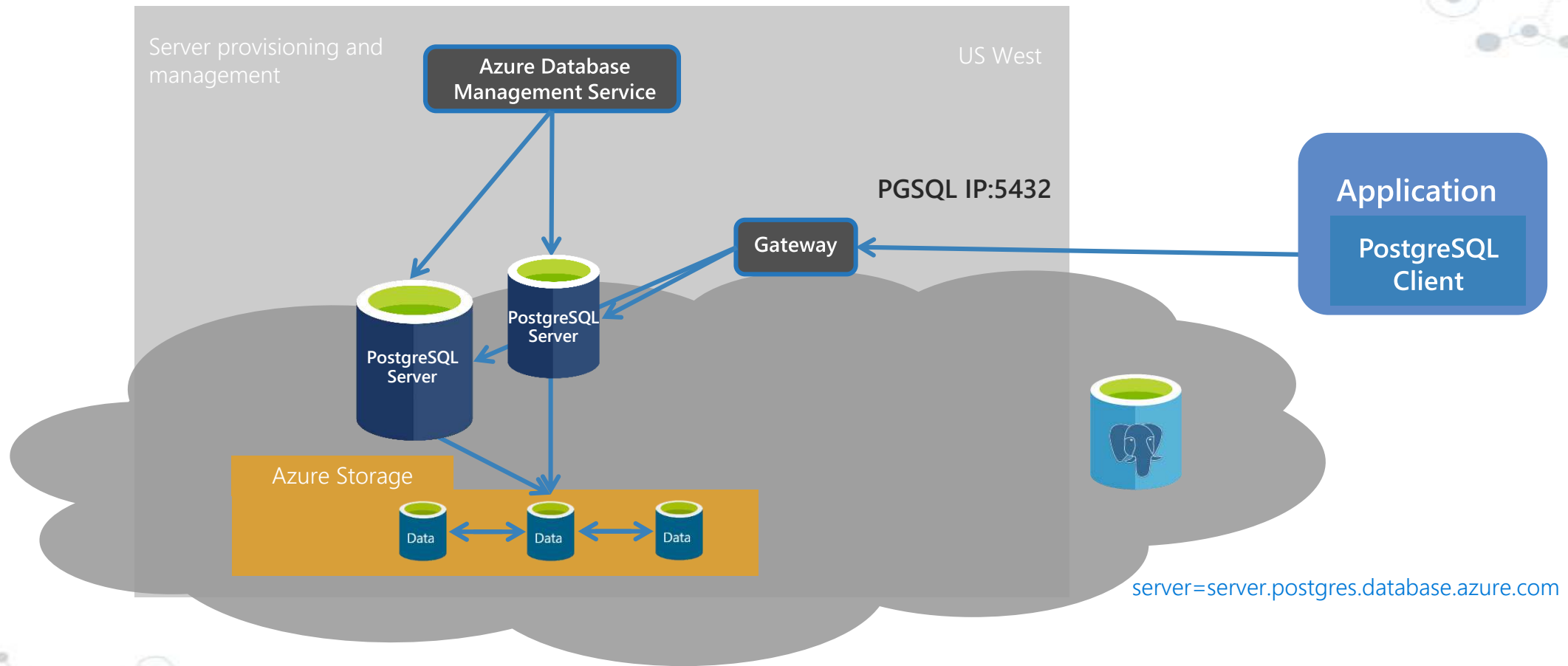
\$262 =

High-Availability

	
PRICE SUMMARY	
Gen 5 server type	
Cost per vCore (in USD)	65.00
vCores selected	x 4
+	
Basic Storage	
Cost per GB (in USD)	.058
Storage amount selected (in GB)	x 32
EST. MONTHLY COST	261.84 USD
ADDITIONAL CHARGE PER USAGE	
0.05 USD / GB - backup storage -first 500 GB are free	
Standard outbound data transfer charges apply	



Scale Performance on the Fly



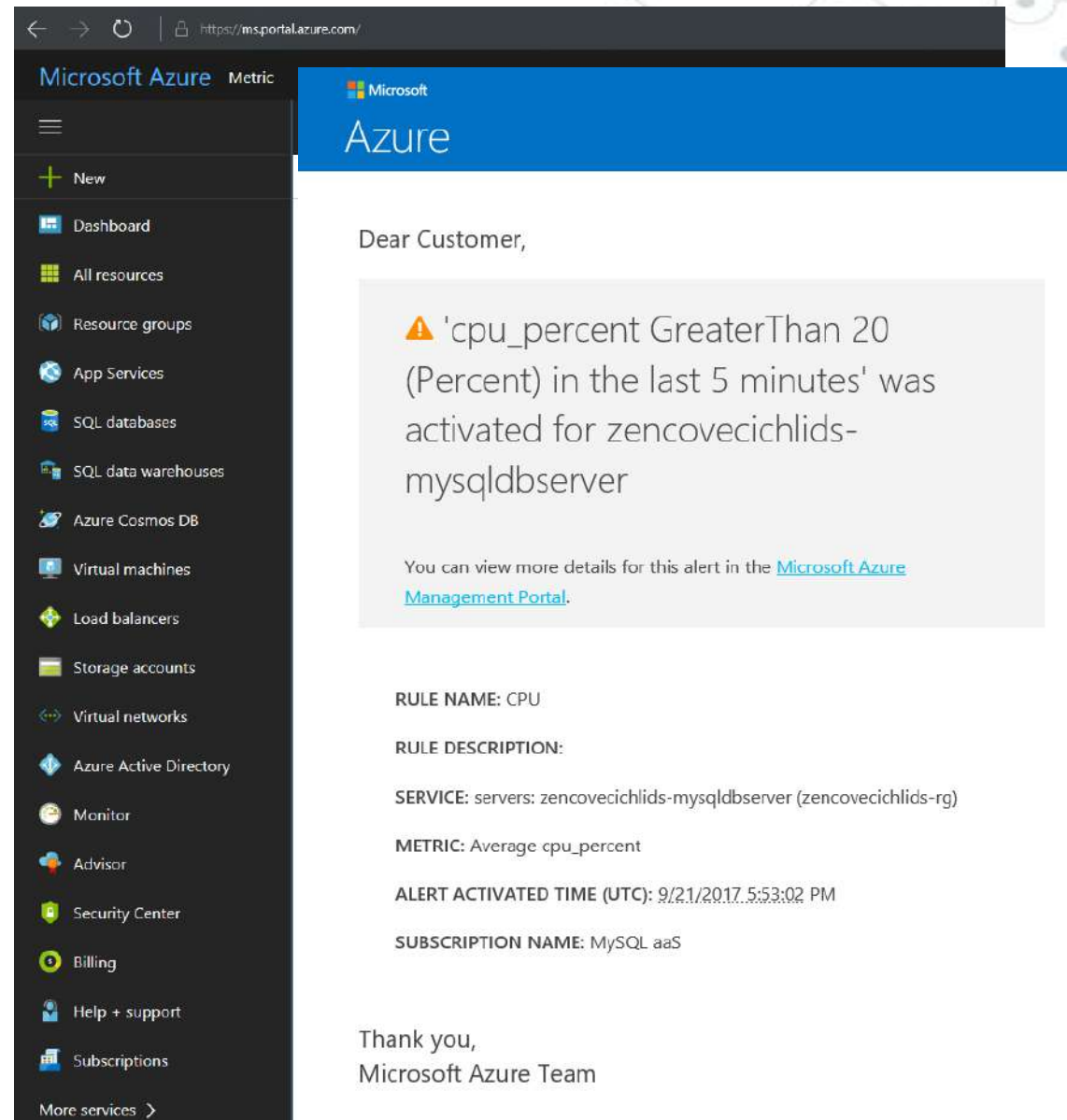
Backup & Restore

- Backups nativos
- Escolha LRS or GRS
- Restore geo-redundant backups para disaster recovery (RPO $\leq$ 1 hr)
- 1x Backup storage incluso
- PITR up to 35 days (min. 7 days)

The screenshot displays the Microsoft Azure portal interface for an Azure Database for MySQL server named 'africancichlids-mysqldbserver'. The top navigation bar shows the server name and a 'Restore' button highlighted with a red box. Below the navigation bar, the 'Backup Retention Period' is set to 14 days, with a slider ranging from 7 to 35 days. The 'Backup Redundancy Options' section shows two options: 'Locally Redundant' (selected with a blue checkmark) and 'Geographically Redundant'. The 'Restore point (UTC)' is set to 2017-06-13 at 12:17:17 AM. The 'Restore to new server' option is selected, and the target server is 'africancichlids-restored-server', which is highlighted with a red box. The 'Location' is set to 'West US' and the 'Pricing tier' is 'Basic, 100 Compute Units, 50 GB'. On the right side, the 'Subscriptions: MySQLaaS' list shows the restored server 'africancichlids-restored-server' highlighted with a red box.

Monitoring & Alerting

- Monitoramento nativo
- Alertas configuraveis
- Notificações automáticas
- A engine é monitorada por default



The screenshot displays the Microsoft Azure Management Portal interface. On the left is a dark sidebar with a navigation menu including options like Dashboard, All resources, Resource groups, App Services, SQL databases, SQL data warehouses, Azure Cosmos DB, Virtual machines, Load balancers, Storage accounts, Virtual networks, Azure Active Directory, Monitor, Advisor, Security Center, Billing, Help + support, and Subscriptions. The main content area has a blue header with the 'Azure' logo. Below the header, it says 'Dear Customer,' followed by an alert notification box. The alert contains an orange warning icon and the text: 'cpu_percent GreaterThan 20 (Percent) in the last 5 minutes' was activated for zencovecichlids-mysqldbserver. Below this, it provides a link to view more details in the Microsoft Azure Management Portal. Further down, the alert details are listed: RULE NAME: CPU, RULE DESCRIPTION:, SERVICE: servers: zencovecichlids-mysqldbserver (zencovecichlids-rg), METRIC: Average cpu_percent, ALERT ACTIVATED TIME (UTC): 9/21/2017 5:53:02 PM, and SUBSCRIPTION NAME: MySQLaaS. At the bottom right, it says 'Thank you, Microsoft Azure Team'.

Microsoft Azure Metric

Azure

Dear Customer,

⚠ 'cpu_percent GreaterThan 20 (Percent) in the last 5 minutes' was activated for zencovecichlids-mysqldbserver

You can view more details for this alert in the [Microsoft Azure Management Portal](#).

RULE NAME: CPU

RULE DESCRIPTION:

SERVICE: servers: zencovecichlids-mysqldbserver (zencovecichlids-rg)

METRIC: Average cpu_percent

ALERT ACTIVATED TIME (UTC): 9/21/2017 5:53:02 PM

SUBSCRIPTION NAME: MySQLaaS

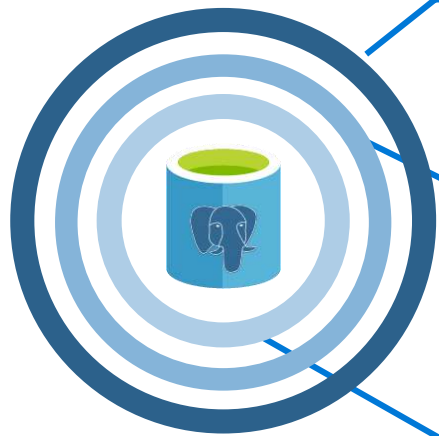
Thank you,
Microsoft Azure Team

postgres=> \echo '02-EscalabilidadEHA.ps1'

```
postgres=> \ds
```

List of relations			
Schema	Name	Type	Owner
pg_catalog	pg_aggregate	table	azure_superuser
pg_catalog	pg_am	table	azure_superuser
pg_catalog	pg_amop	table	azure_superuser
pg_catalog	pg_amproc	table	azure_superuser
pg_catalog	pg_attrdef	table	azure_superuser
pg_catalog	pg_attribute	table	azure_superuser
pg_catalog	pg_auth_members	table	azure_superuser
pg_catalog	pg_authid	table	azure_superuser
pg_catalog	pg_available_	table	azure_superuser
pg_catalog	pg_available_	table	azure_superuser
pg_catalog	pg_cast	table	azure_superuser
pg_catalog	pg_class	table	azure_superuser
pg_catalog	pg_collatio	table	azure_superuser
pg_catalog	pg_config	view	azure_superuser
pg_catalog	pg_constraint	table	azure_superuser
pg_catalog	pg_conversion	table	azure_superuser
pg_catalog	pg_cursors	view	azure_superuser
pg_catalog	pg_database	table	azure_superuser
pg_catalog	pg_db_role_setting	table	azure_superuser

Segurança ...



Identity

Native authentication
AAD integration
Threat detection



Control access

Secure SSL connectivity
Server firewall rules
Virtual Networks



Protect data

Built-in encryption at-rest
for data and backups

Certifications and Standards

Protect your data with up-to-date security and compliance features with the Azure IP Advantage

SOC2 - Compliant

ISO 27001:2013 - Compliant

ISO 27018:2014 - Compliant

CSA STAR Certification - Compliant

HIPAA / HITECH Act – Compliant

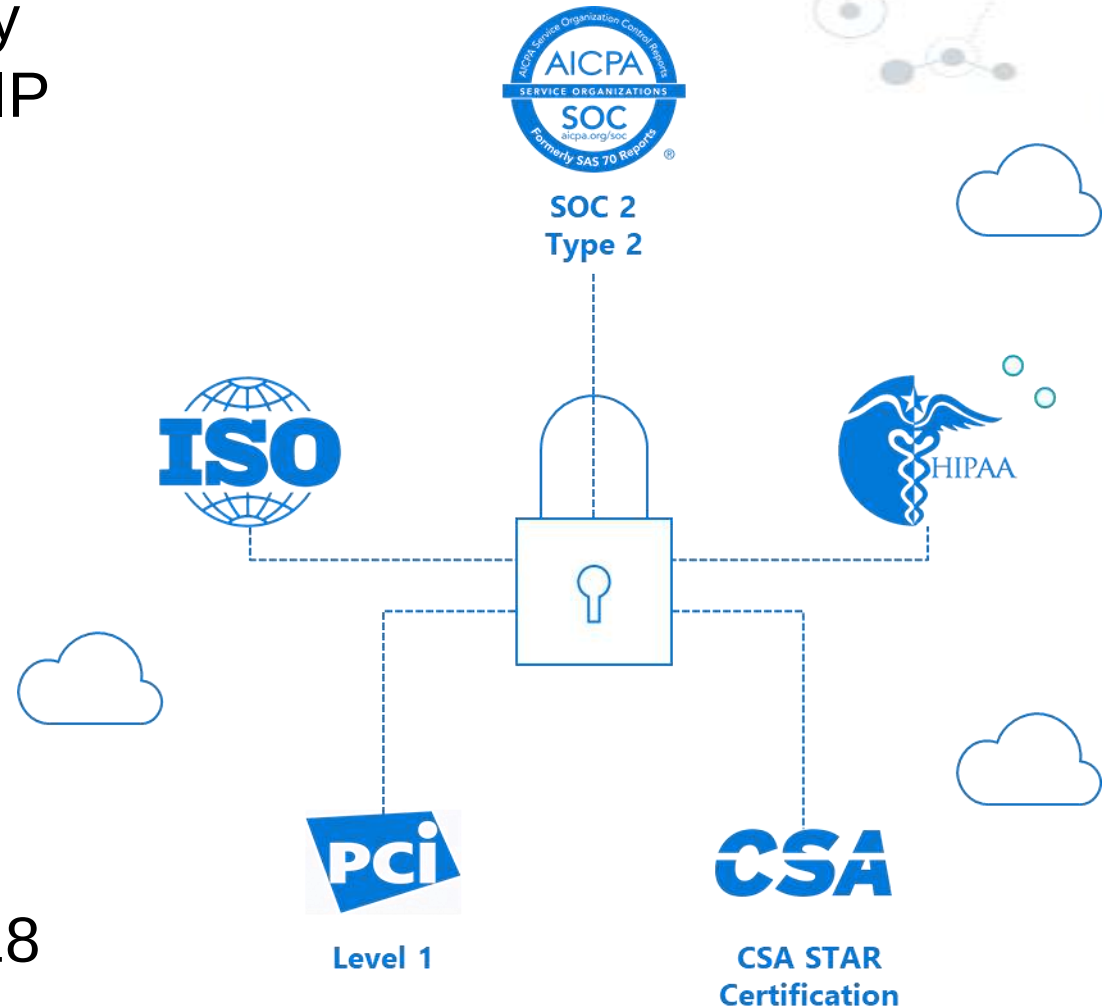
PCI DSS Level 1

ISO 27017:2015 – September 2018

ISO 9001:2015 – September 2018

ISO 22301:2012 – September 2018

ISO/IEC 20000-1:2011 – September 2018



Monitoramento e Alerta

- Integrado com o Azure Monitor Service;
- Frequência de 1 min;
- 30 dias de histórico armazenado grátis;
- Configurar regras baseados nas métricas;
- Consultas as métricas através do portal, REST APIs ou Azure Cli;

Available metrics

Filter metrics...

- ☐ CPU percent
- ☐ Compute Unit limit
- ☐ Compute Unit percentage
- ☐ IO percent
- ☐ Memory percent
- ☐ Storage limit
- ☐ Storage percentage
- ☐ Storage used
- ☐ Total active connections
- ☐ Total failed connections

postgres=> \echo '03-Monitoramento.ps1'

postgres=> \ds

List of relations			
Schema	Name	Type	Owner
pg_catalog	pg_aggregate	table	azure_superuser
pg_catalog	pg_am	table	azure_superuser
pg_catalog	pg_amop	table	azure_superuser
pg_catalog	pg_amproc	table	azure_superuser
pg_catalog	pg_attrdef	table	azure_superuser
pg_catalog	pg_attribute	table	azure_superuser
pg_catalog	pg_auth_members	table	azure_superuser
pg_catalog	pg_authid	table	azure_superuser
pg_catalog	pg_available_	table	azure_superuser
pg_catalog	pg_available_	table	azure_superuser
pg_catalog	pg_cast	table	azure_superuser
pg_catalog	pg_class	table	azure_superuser
pg_catalog	pg_collatio	table	azure_superuser
pg_catalog	pg_config	view	azure_superuser
pg_catalog	pg_constraint	table	azure_superuser
pg_catalog	pg_conversion	table	azure_superuser
pg_catalog	pg_cursors	view	azure_superuser
pg_catalog	pg_database	table	azure_superuser
pg_catalog	pg_db_role_setting	table	azure_superuser

Extensões

Mais de 23 extensões do PostgreSQL são suportadas e haverão mais ...

address_standardizer	pg_prewarm
address_standardizer_data_us	pg_stat_statements
btree_gin	pg_trgm
btree_gist	plpgsql
citext	postgis
fuzzystrmatch	postgis_sfcgal
hstore	postgis_tiger_geocoder
intarray	postgis_topology
pgcrypto	postgres_fdw
pgrouting	unaccent
pg_buffercache	uuid-oss
pg_partman	



Dúvidas???





Obrigado!



Microsoft Azure



-  sqlcrespi@outlook.com
-  sqlcrespi.com
-  [rodrigocrespi](https://www.facebook.com/rodrigocrespi)
-  [@SQLCrespi](https://twitter.com/SQLCrespi)
-  [SQLCrespi](https://www.youtube.com/SQLCrespi)
-  [SQLCrespi](https://github.com/SQLCrespi)