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		Introduction	
	PART 01	Background	









Team 5: Relational Cloud: A Database-as-a-Service for the Cloud

Background

A DBaaS promises to move much of the operational burden of provisioning, configuration, scaling, performance tuning, backup, privacy, and access control from the database users to the service operator, offering lower overall costs to users. Early DBaaS efforts include Amazon RDS and Microsoft SQL Azure which are promising in terms of establishing the market need for such a service, but which do not address three important challenges: efficient multi-tenancy, elastic scalability, and database privacy. We argue that these three challenges must be overcome before outsourcing database software and management becomes attractive to many users, and costeffective for service providers.





Summary of technology

What is Relational Cloud?

- A large scale and multi-node DBaaS
- ♦ Access all features of a SQL relational DBMS Without worrying about provisioning the hardware
- resource
- ♦ Configuring software
- Achieving desired security
- Providing access control and data privacy
- Tuning performance

Three challenges:

- Efficient multi-tenancy to minimize the hardware footprint required for given(or predicted) workload
- Elastic scale-out to handle growing workloads
- Database privacy

Key contribution

♦ Efficient multi-tenancy:

- ✓ Use a single database server on each machine
- ✓ Use a novel non-linear optimization formulation
- ✓ Introduce lightweight mechanism to perform live migration
 - · Monitoring the resource requirements of each workload
 - · Predicting the load multiple workloads will generate when run together on a server
 - · Assigning workloads to physical servers
 - · Migrating them between physical nodes

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