Process-as-a-Service: Unifying Elastic and Stateful Clouds with Serverless Processes

Summary

They propose a new abrstraction called a cloud process. It contains all the benefits of the FaaS modole. But it does not have the draw backs of being disagreted. It offer benefits over FaaS by leveleaging data locality, fast invocations, and efficient communication. There are application that are hard to make with the FaaS module like online map services, web-based editors such as LaTeX editors, and social networks.

IaaS CaaS PraaS FaaS

	IaaS	CaaS	PraaS [This Paper]	FaaS
Computation Unit	Virtual machine	Container	Process	Function
External Interface	SSH, TCP, HTTP, RPC, RDMA	SSH, TCP, HTTP, RPC	HTTP, TCP	HTTP
Lifetime	Months	Days, hours	Minutes, hours	Seconds
State Duration	Persistent	Persistent	Persistent	Ephemeral
State Location	Local disk, memory	Memory, cloud storage	Memory, cloud storage	Cloud storage
Provisioning	Manual, minutes	Semi-automatic, secs	Automatic, msecs	Automatic, msecs
Compute Resources	Persistent	Persistent	Ephemeral	Ephemeral
Billing	Provisioned	Provisioned	Pay-as-you-go	Pay-as-you-go
Scaling Down To Zero	No	No	Yes	Yes

Pros

- 17× faster and reduces communication overhead by up to 99%

Cons

Further Developments

Other Comments

Microservices and FaaS are not same thing. I think the microservices are small servers but have storage but FaaS is no storage. I am not sure of the difference but they seem similar to me. Microservices are more like a small server the