



Quantbot

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CEO, Co-founder

“When Data is Everything”

June 15, 2021

Neudata Alt Data Summit - June 15, 2021



- Quantbot:
 - Registered Investment Adviser, servicing one large, institutional, client: Schonfeld
 - Global statistical arbitrage and quantitative futures
 - Offices in New York, London, Hong Kong and New Orleans
- Founding partners worked together for over 20 years
 - Morgan Stanley late 90s created Equity Trading Lab (ETL) business
 - Electronic and Algo trading - VWAP, SORT etc.
 - Proprietary trading - global statistical arbitrage
 - Moved to Merrill Lynch in early 2000s
 - Oversaw revamp of Electronic/Algo trading
 - Created new global proprietary trading business QSA
 - Created Quantbot in 2009 after the financial crisis hit

How Does our Business Work?



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- It's basically data, data and more data:
 - If you don't love data don't join a quantitative investment firm
 - Petabytes of data:
 - Traditional market data
 - Proprietary data
 - New alt data coming up on a daily basis
- How do we evaluate 100+ data sets per year ?

Evolution of Data Analysis: The Old Days



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- Back to the late 90s when we were doing data analysis ...
- I remember only having enough space to store 2 weeks of tick data and then having to roll off the files (yes we really used to delete data back in the day)
- We had fewer data sets to process:
 - Perl scripts + Emacs/Vi
 - SAS
 - Cluster was a couple of servers
- Overall it was Slow, Painful and Hard

Evolution of Data Analysis: Now => Data Science

- Fast forward to now and we're all suddenly doing Data Science :)
- Multi petabytes in multiple locations, deleting data is a firing offense
- Ever increasing number of potential data sets to evaluate:
 - Perl scripts + Emacs/Vi => Python/Jupyter
 - SAS => Python/R - Machine Learning
 - Cluster was a couple of servers => limitless capacity in "The Cloud"
- Overall it is Fast, Easy and Expensive




New Problem: How Do We Manage Research Costs?



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- We need to support the ever changing needs of a diverse team of researchers whilst also controlling the costs
- Back to our quant trading roots:
 - Resources available for use - cores, memory, I/O, disk etc.
 - Restrictions on sharing/privacy
 - Data availability - not all data available everywhere compute is
 - Resource costs
- Now for a given research task we can look at the options for completing it and weigh the time to complete the task versus cost



- Partnering up with  CODE WILLING® and options we put the following tools together:
- Budget Controls:
 - CIO/Mgmt can set group and/or individual level budgets
 - Researchers can only utilize resources up to their allocated budgets
 - Tools use budget information for task controls
 - CIO/Mgmt team get detailed reports on spending and allocations
- Make adaptive compute resources available:
 - Dedicated on-prem cluster
 - Shared on-prem cluster for on-demand compute tasks
 - Public cloud for massive scalability jobs
- A smart task router 'CASTR' to help researchers get maximal value for their budget

Research Cost Control: Budget Tool



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- Average Quant is an addict and cloud services from AWS, GCP, Azure is the drug of choice ...
- Budget Controls ensure quants cannot overspend => happy CEO/CFO
- CIO/Mgmt can set group and/or individual level budgets based on expected return on research:
 - Long term groups, with proven history and delivery get high \$ budgets
 - New teams can start with low \$ budgets until they prove themselves
 - Exploratory projects can be run using arms length cloud resources at low \$ budgets
 - Student/intern projects work very well with this model
 - Global teams can safely use resources 24x7 as the budget tools are always watching

Research Cost Control: Budget Tool



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CASFS+ test_user's Profile

DISABLE SAVE DISCARD CHANGES

EMAIL ADDRESS * test_user@test.com % BUDGET REMINDER ? 50

TEAM MANAGED BUDGET ? * 80 MAX NODES ? * 10

% BUDGET CUTOFF ? * 130 USER LEVEL ? * User

MAX DB INSTANCES ? * 1

CASFS+ Edit Team test_team

ADD MEMBER SAVE DISCARD CHANGES

TEAM NAME test_team

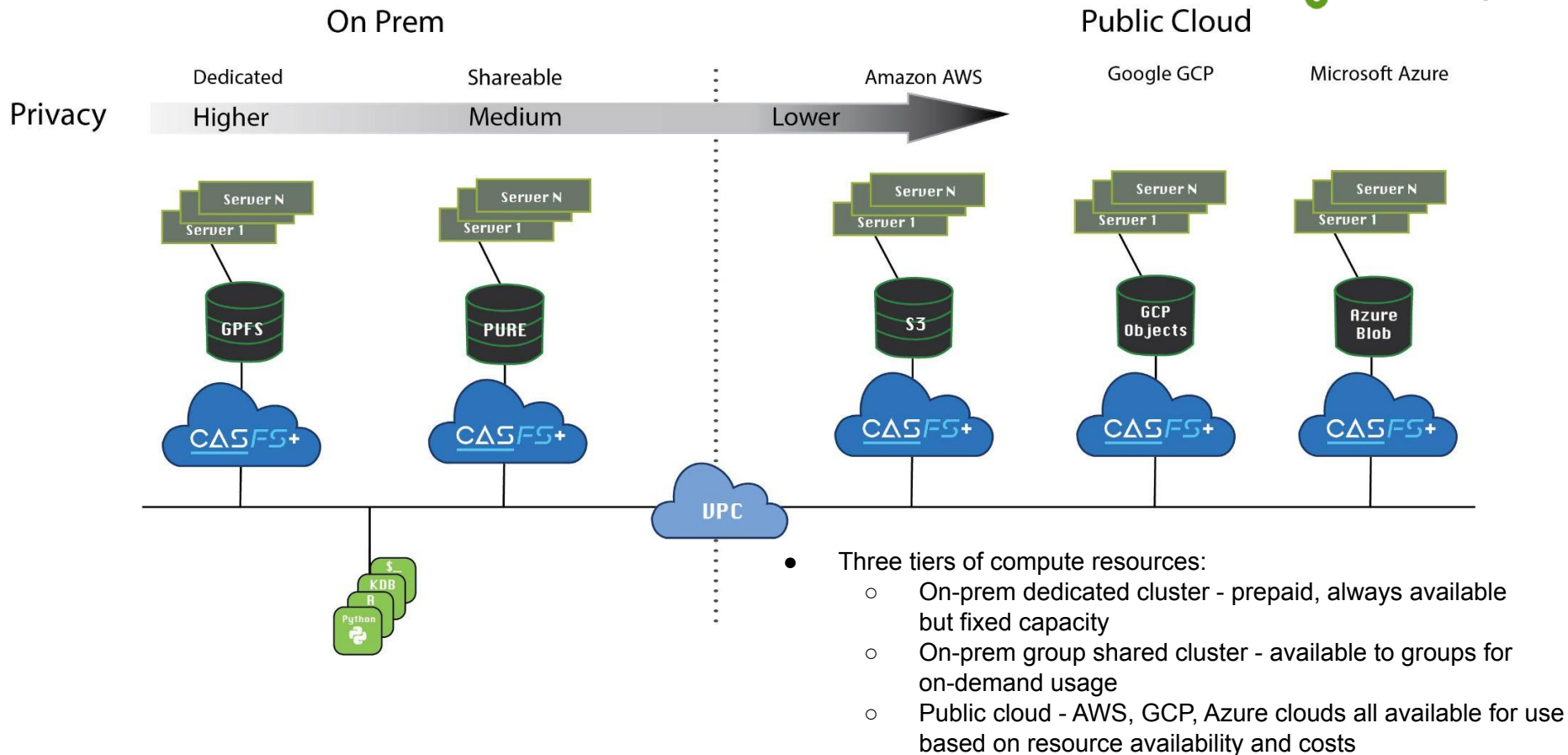
MONTHLY BUDGET 300 \$300/month

MEMBERS	BUDGET USED	TEAM LEADER	ACTIONS
test_user	\$0.00 / \$80.00		
test_leader	\$0.00 / \$80.00	Team Leader	

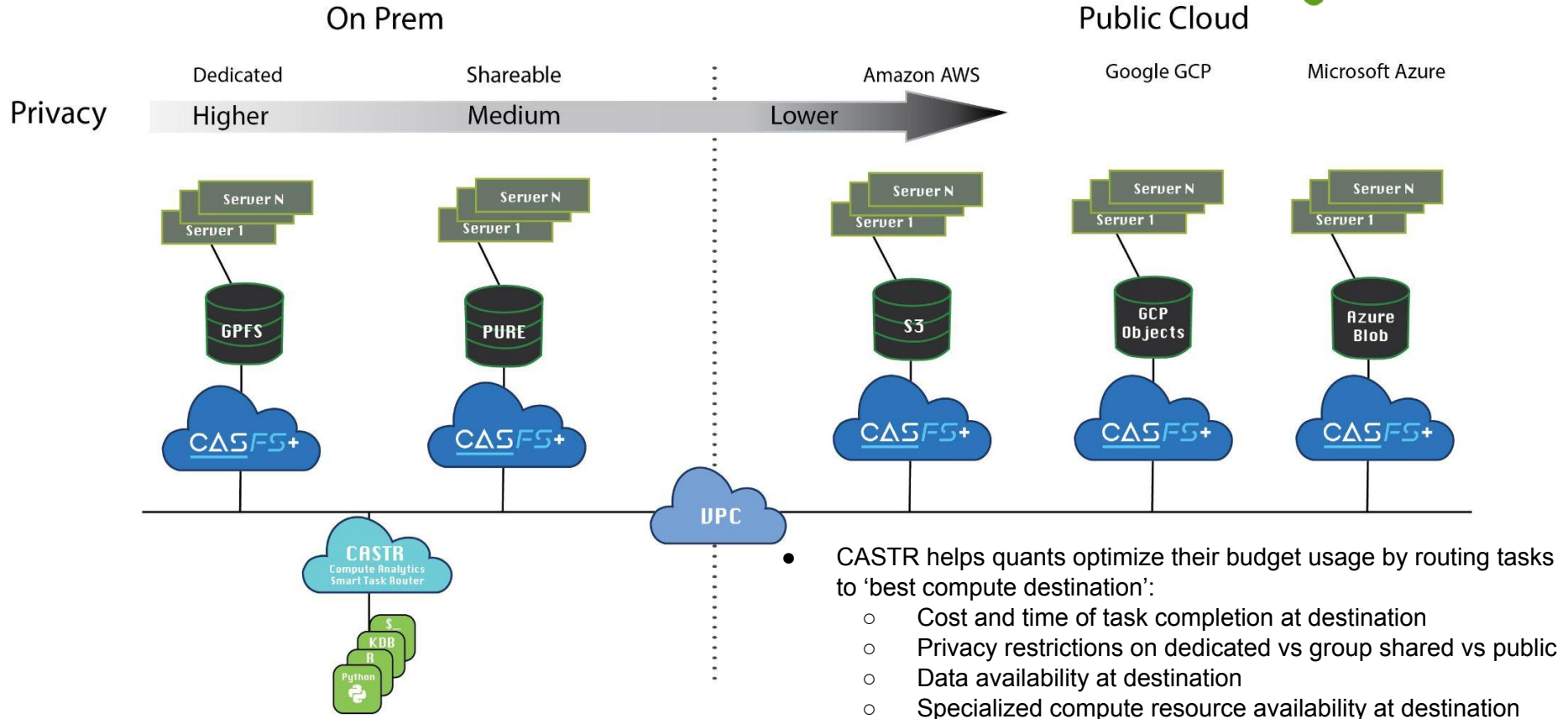
Research Cost Control: Compute Options



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Smart Task Router: CASTR



Data is Everything: Wait there's more ...



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- Fast, Easy but Expensive:
 - Data science tools are constantly getting better, easier and faster
 - Massive amount of compute on-demand in the clouds
 - Talent to drive research is hard to find

“Smart tools mean we can take low cost chances on diverse, distributed research teams wherever we can find them and protect ourselves with 24x7 budget enforcement.”

- The tools we discussed have some other benefits ... data :
 - Dataset r/w access when, by whom, how often etc.
 - Compute time for tasks, individuals, teams
 - Compute costs
 - etc.