Making Leaders Successful Every Day

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Developer Trends and the Cloud

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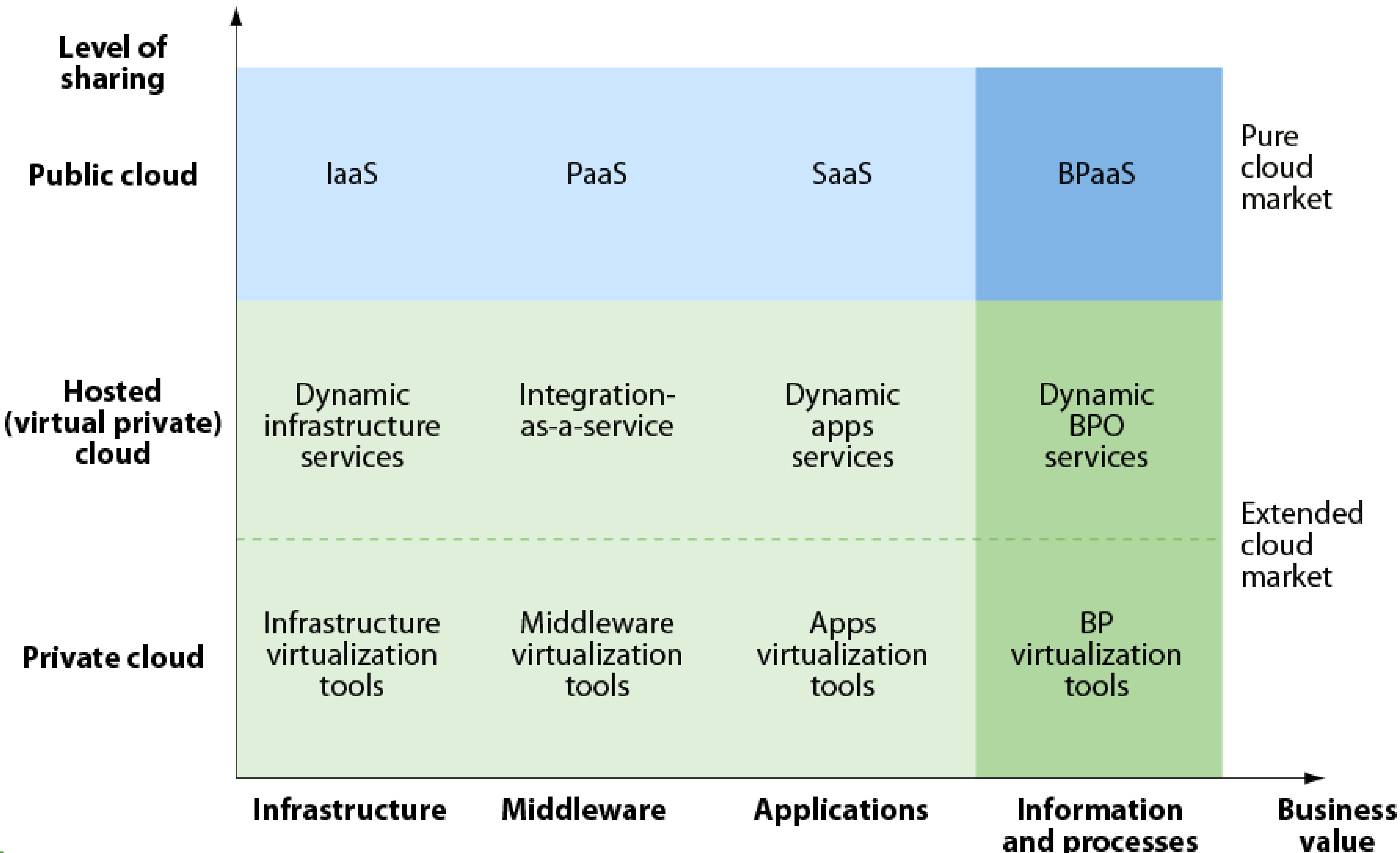
The “cloud” is a confused, fractured market, and many developers are just getting started

July 2010 **"The Evolution Of Cloud Computing Markets"**

Forrester's Full Cloud Computing Taxonomy



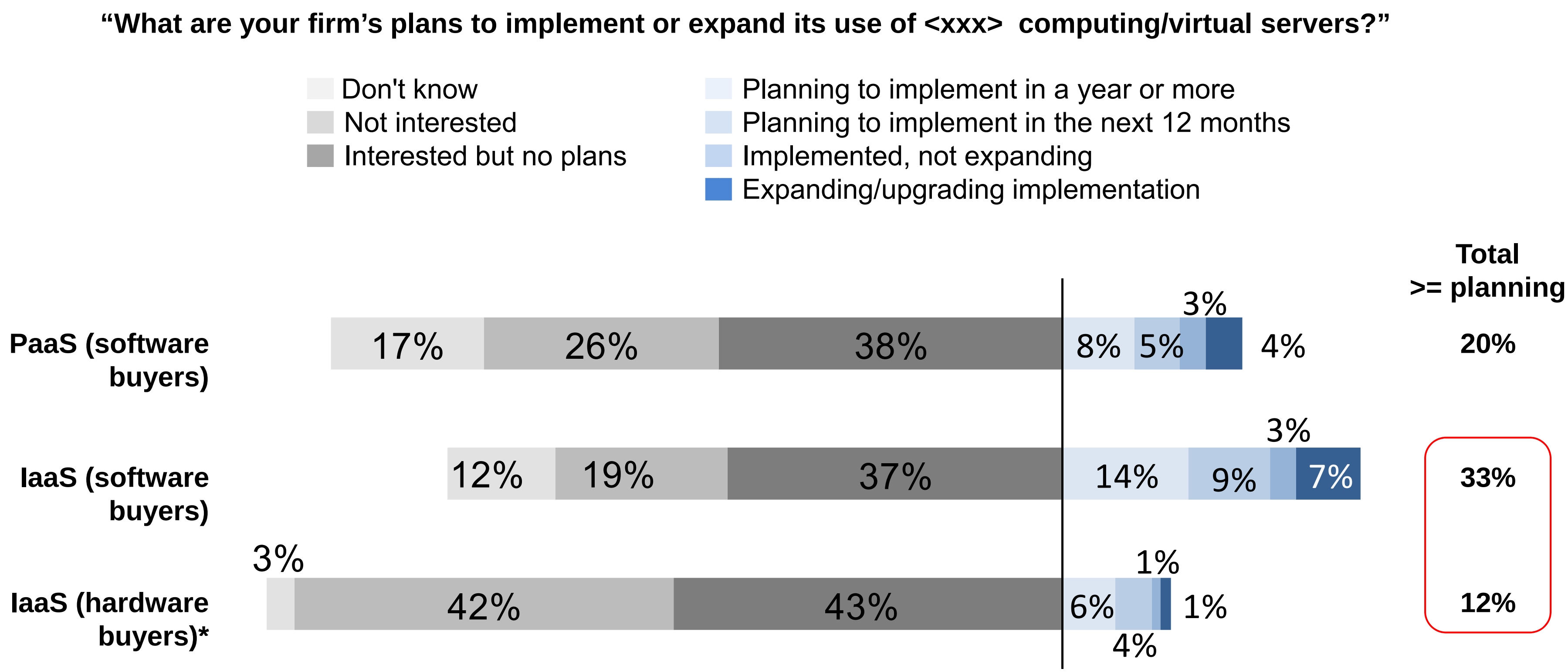
The hype about cloud computing distracts from clear understanding

From our interviews we learned that IaaS cloud buyers:

- Have wide variety of ideas about what cloud computing really is
- Diverge on which service providers they've heard of or want to consider
- Are unclear about who can create cloud computing capabilities and where they are located
- Aren't clear on which of the many attributes of cloud offerings they are focused on
- Come from all over the enterprise, but primarily Developers and IT Operations

?

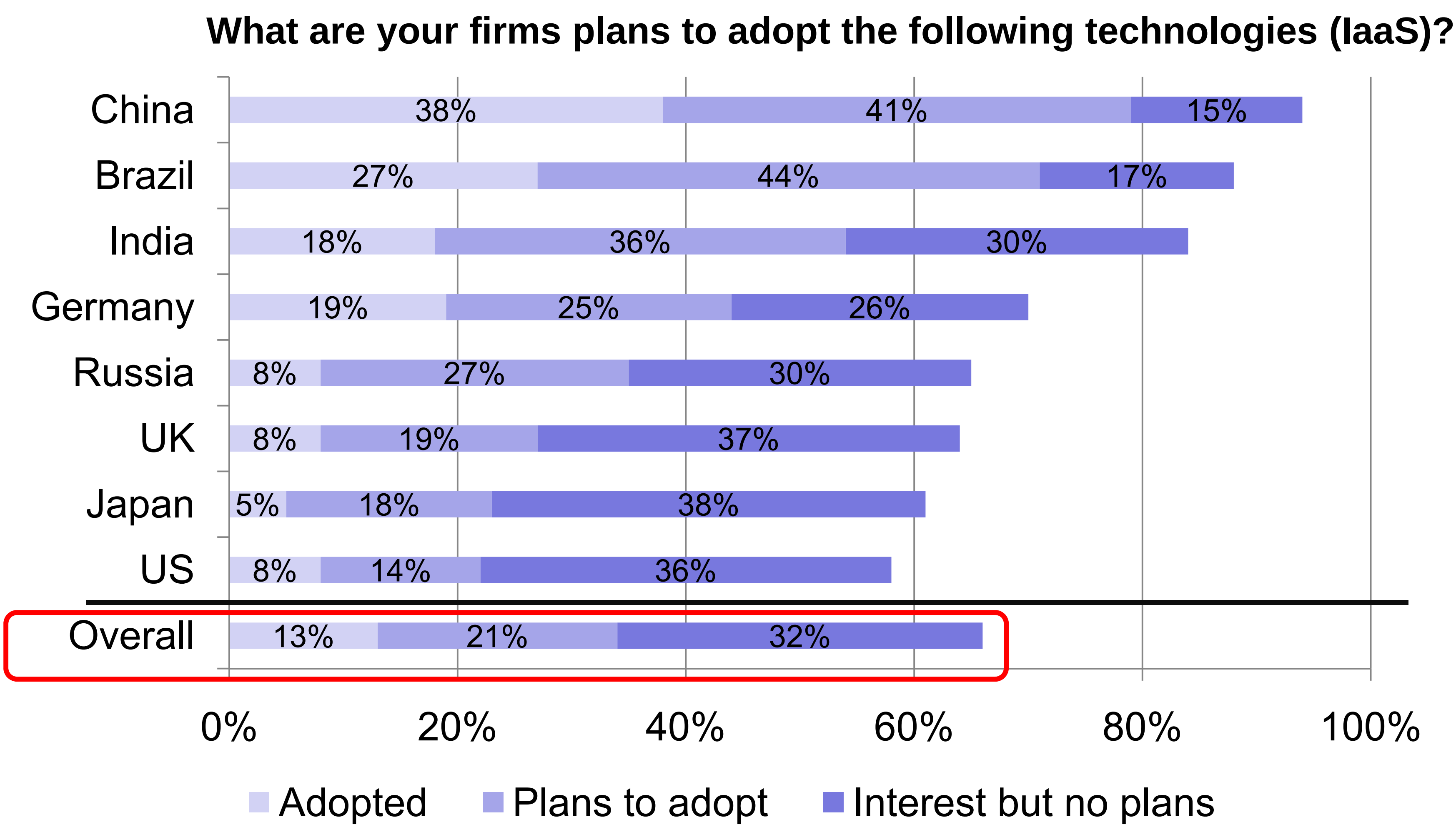
Enterprise Software buyers are 3x more likely to be using or planning for IaaS than IT Ops buyers



(percentages may not total 100 because of rounding)
Base: 1,007 North American and European enterprise IT executives and software decision-makers
Source: Enterprise And SMB Software Survey, North America And Europe, Q4 2009
*Source: Enterprise And SMB Hardware Survey, North America And Europe, Q3 2009

IT Budget holders report higher adoption and vary significantly by country

(Budget holder answers – they also answered for PaaS and SaaS)



Source: Forrester Forrsights, IT Budgets and Priorities Tracker Survey, Q2 2010

Base: Global budget decision makers

Preliminary results

For Budget holders, IaaS motivations are cost, flexibility, scalability & BCDR

"How important were the following in your firm's decision to adopt infrastructure-as-a-service (IaaS)?"

X: Rank
YY: Important or Very Important

	India (N = 82)	Brazil (N = 100)	China (mainland)/ Hong Kong (N = 119)	Russia (N = 53)	Mexico (N = 107)	France (N = 53)	UK (N = 51)	US (N = 231)
Improving disaster recovery and business continuity	1 / 78	6 / 68	2 / 84	1 / 72	4 / 79	3 / 62	3 / 57	4 / 61
Lower total cost of ownership for servers	2 / 74	2 / 78	3 / 80	3 / 68	1 / 84	1 / 68	4 / 53	3 / 64
Improving IT infrastructure manageability and flexibility	3 / 73	1 / 79	1 / 86	1 / 72	3 / 80	2 / 66	2 / 63	2 / 68
On-demand capacity and scalability (available when needed, now and in the future)	4 / 72	3 / 75	5 / 78	2 / 70	5 / 78	3 / 62	1 / 76	1 / 70
Lower capital expenditures by purchasing services instead	5 / 70	4 / 74	3 / 80	1 / 72	2 / 83	5 / 51	5 / 49	5 / 60
Providing developers with fast, easy resources for test and development	6 / 66	3 / 75	3 / 80	5 / 58	3 / 80	4 / 55	6 / 39	6 / 46
Temporary or project-based capacity needs, like special projects	7 / 61	6 / 68	6 / 64	4 / 66	7 / 68	7 / 45	7 / 27	7 / 44
As peak capacity for times of high usage, such as the holiday season	8 / 59	5 / 69	5 / 78	4 / 66	6 / 77	6 / 47	6 / 39	8 / 42
Improving power and cooling efficiency	9 / 50	7 / 66	4 / 79	6 / 53	8 / 67	8 / 30	8 / 22	9 / 32

Base: IT decision-makers whose firms have already adopted IaaS

Source: Forrsights Budgets And Priorities Tracker Survey, Q2 2010

Base: Global budget decision makers

Preliminary results

Security and cost are largest inhibitors to IaaS
(budget respondents)

"Why isn't your firm interested in infrastructure-as-a-service (IaaS)?"

X: Rank
YY: Percentage indicating Yes

	Russia (N = 42)		France (N = 53)		UK (N = 61)		US (N = 388)	
	X	YY	X	YY	X	YY	X	YY
Total cost concerns (i.e., total cost of ownership)	3	29	2	28	5	25	2	39
Security or data privacy concerns	1	50	1	34	2	33	1	48
Regulatory restrictions, compliance issues	4	26	3	23	6	18	5	24
We're locked in financially with our current vendor	8	2	8	4	10	8	10	6
Difficulty integrating with in-house IT	2	36	2	28	1	51	3	37
Difficulty and risk of migration or installation	6	19	4	21	6	23	5	24
Complicated pricing models	7	17	5	15	7	15	7	16
Performance or availability (i.e., downtime, speed)	5	24	5	15	3	26	4	26
Lack of customization	6	19	4	21	7	15	6	19
Other reason	9	0	7	11	8	13	8	11
Don't know	7	17	6	13	9	10	9	10

Base: IT decision-makers whose firms have already adopted IaaS

Source: Forrsights Budgets And Priorities Tracker Survey, Q2 2010

Base: Global budget decision makers

Preliminary results

There are two distinct IaaS buyer types, with very different needs

Buyer's split into two broad types:

- A *Majority* are Opportunistic buyers outside of IT Operations and often outside any IT organization. These make up the bulk of early adopters and today's revenue and will continue to grow.
  - Technically proficient and self-reliant, not rule bound
  - Have authority to make purchases, entrepreneurial
  - Want to bypass IT Operations
  - New kinds of apps – Web, content, data, compute

← Type I Developers

- A *Minority* are Strategic buyers in IT Operations who follow the formal procurement/sourcing process. These buyers have little presence in the market today. They'll grow over time, as they chose to put new workloads on cloud services – it will be harder, and slower, for them to migrate existing apps and workloads to cloud services.
  - Treat cloud like outsourcing, not a casual thing
  - Hierarchical focus, process oriented, by the book approach
  - Want full menu of managed services
  - Traditional/existing IT back office workloads

What are the use cases and justifications?

- Most are workloads outside of typical IT back office apps and workloads – Web, compute, temporary
- For most, they're seeking an alternative to their in house IT Operations (if they even have that option)
- They value speed of deployment, dynamic capacity, better service experience, lower costs (CapEx, OpEx or both), ease of access for external partners, and avoiding IT's tight requirements
- Use cases:
  - Opportunistic Buyers
    - Web site operations
    - Test/dev, training, demonstrations
    - Compute intensive batch apps – business unit compute
    - Extranet
  - Strategic Buyers
    - IT Operations back office apps
    - Good enough disaster recovery capabilities

The Opportunistic Buyer

What are the buyer's requirements by use case? Opportunistic Buyers:

- Often look for the provider to offer standard deployment images they can build on:
  - For compute apps and Web sites, they use Linux
  - For extranets and test/dev, they may use Windows
- Are primarily do-it-yourself types
- Plan to do their own systems management
- Are technically proficient
- Don't care about the hypervisor technology – VMware doesn't matter
- Want monthly or hourly pricing, without contract
- Are less relationship and more transactional
- Often don't value the combination of network and CaaS services

There Are Two Types Of Dev Professionals

Type X Dev Pro

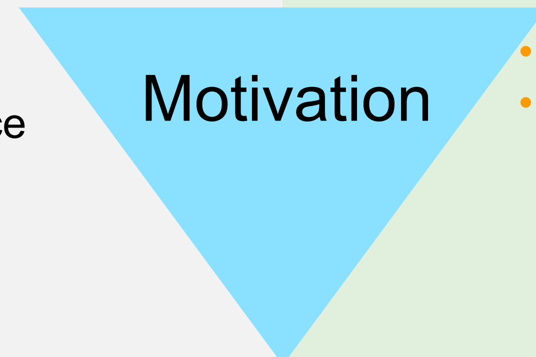
- Does development (It's a job)
- Works 9-5, overtime if rewarded
- Doesn't invest in self improvement

Type I Dev Pro

- Self identifies (Is a developer)
- Gets involved in side projects
- Self invests in learning new skills

Extrinsic

- Expected rewards
- Defined performance



Intrinsic

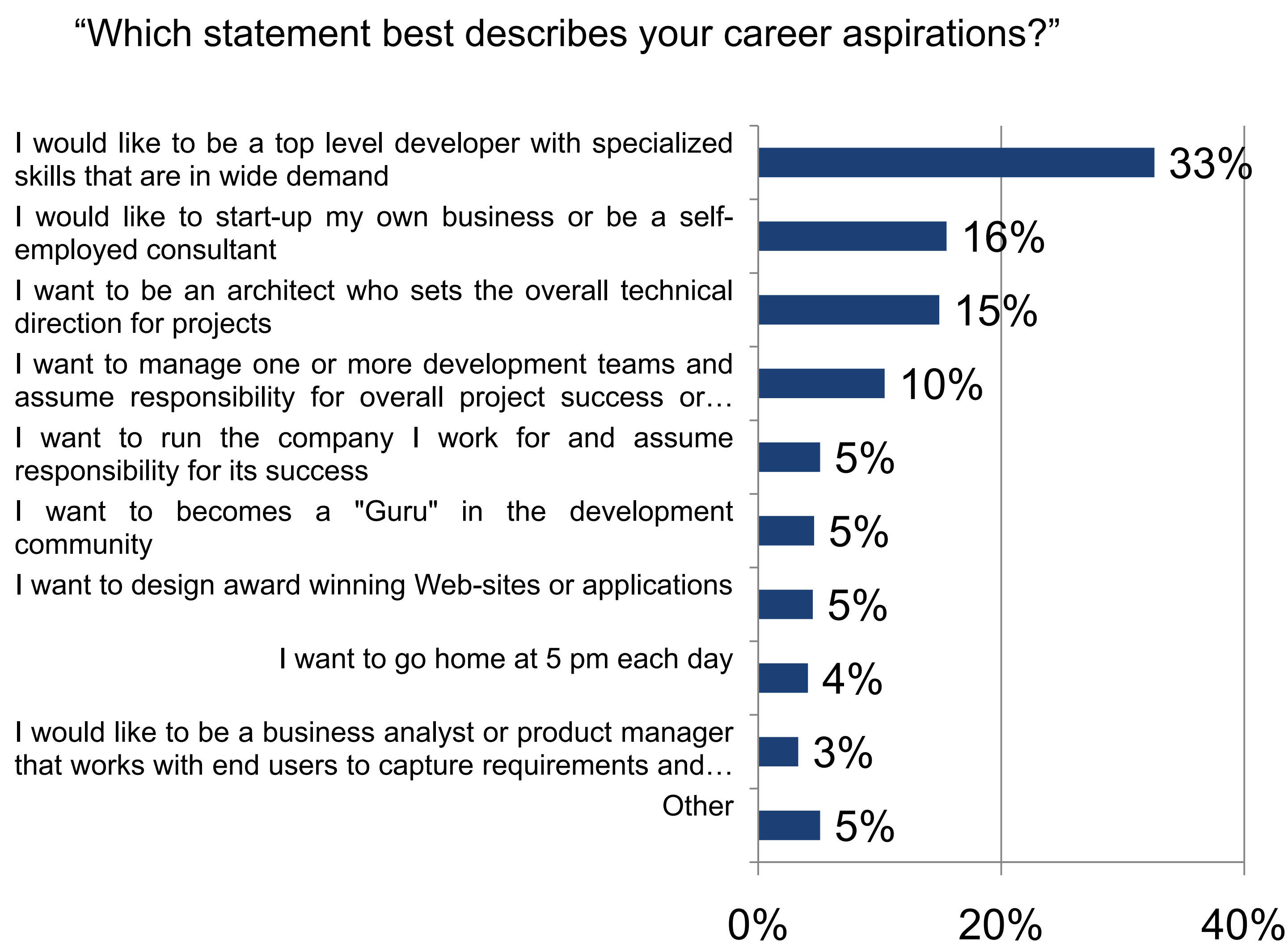
- Internally driven
- Self-motivated

Biologic

- Put food on table.
- Pay mortgage.
- Send kids to college.

Source: Adapted from Daniel H. Pink, *Drive: The Surprising Truth About What Motivates Us*, Riverhead Hardcover, 2009

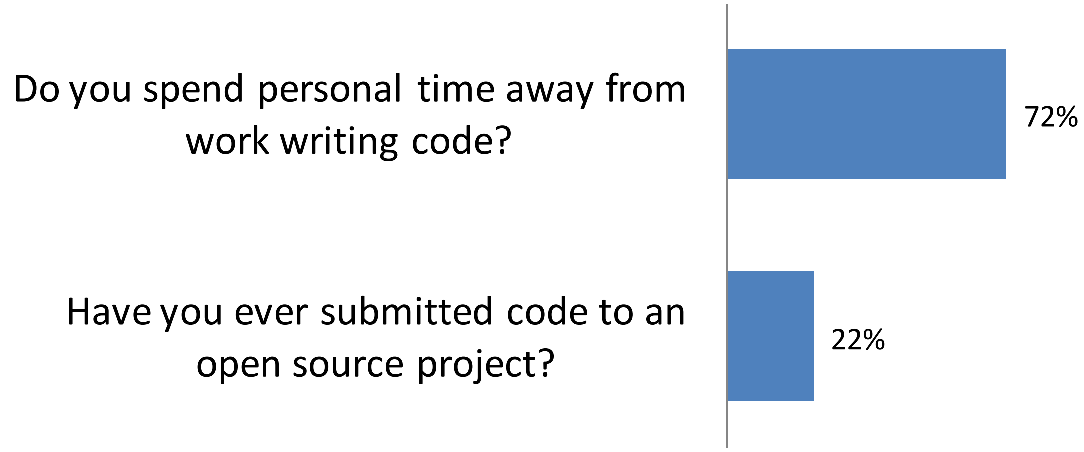
We can actually measure this…



Base: 1023 App dev professionals Forrester – Dr. Dobbs Developer Technographics Q3 10

Q: How are developers like Transformers?

A: There’s more to them than meets the eye.



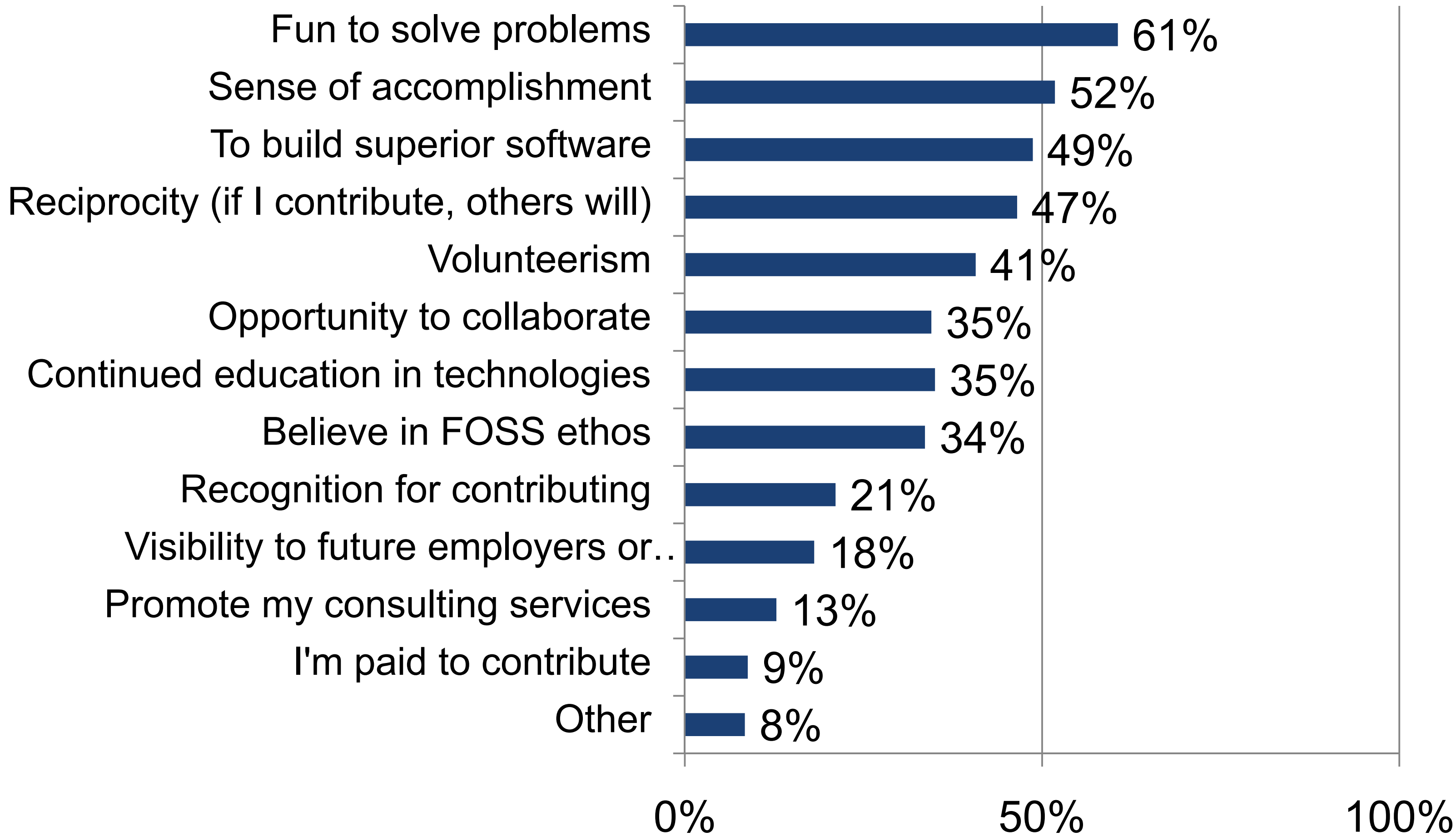
Base: 1023 Application Development Professionals

What drives this behavior?

Source: Forrester- Dr. Dobbs Developer Technographics Survey Q3 2010

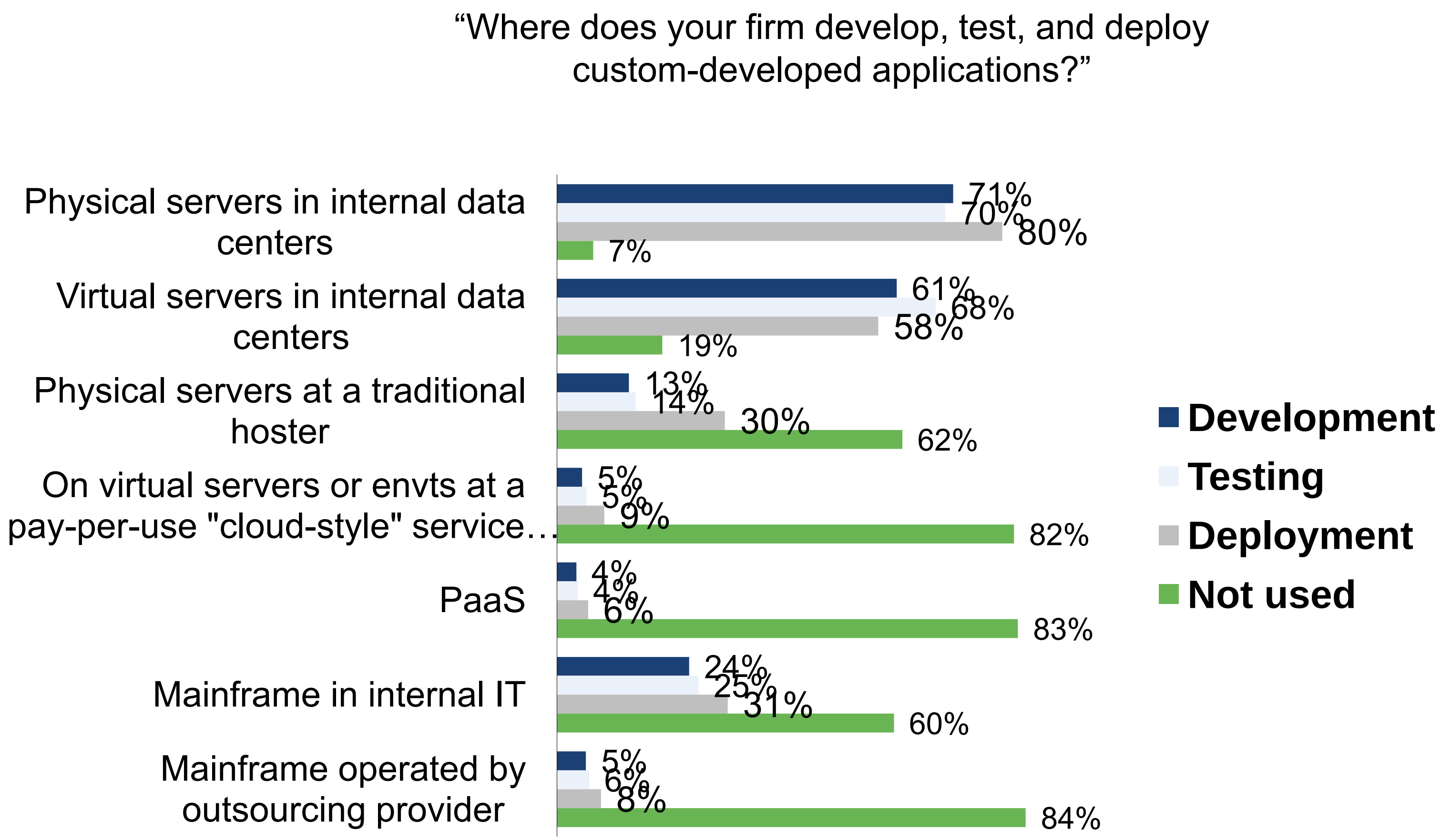
OSS contributions are intrinsically motivated

"Why have you contributed to an open source project? (Choose all that apply)"



Base: 226 App dev professionals Forrester – Dr. Dobbs Developer Technographics Q3 10

Trends in deployment

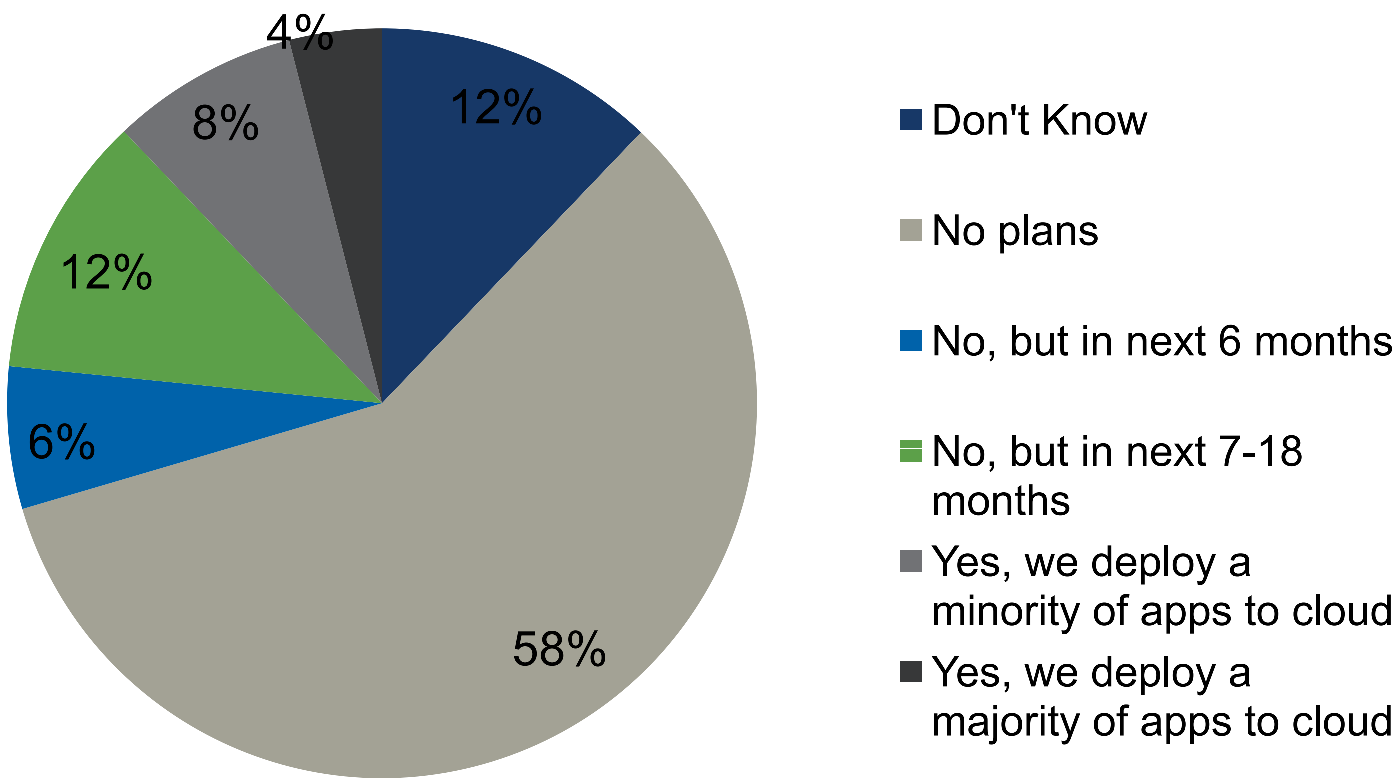


(multiple responses accepted)

Base: 851 platform software decision-makers at North American and European enterprises and SMBs

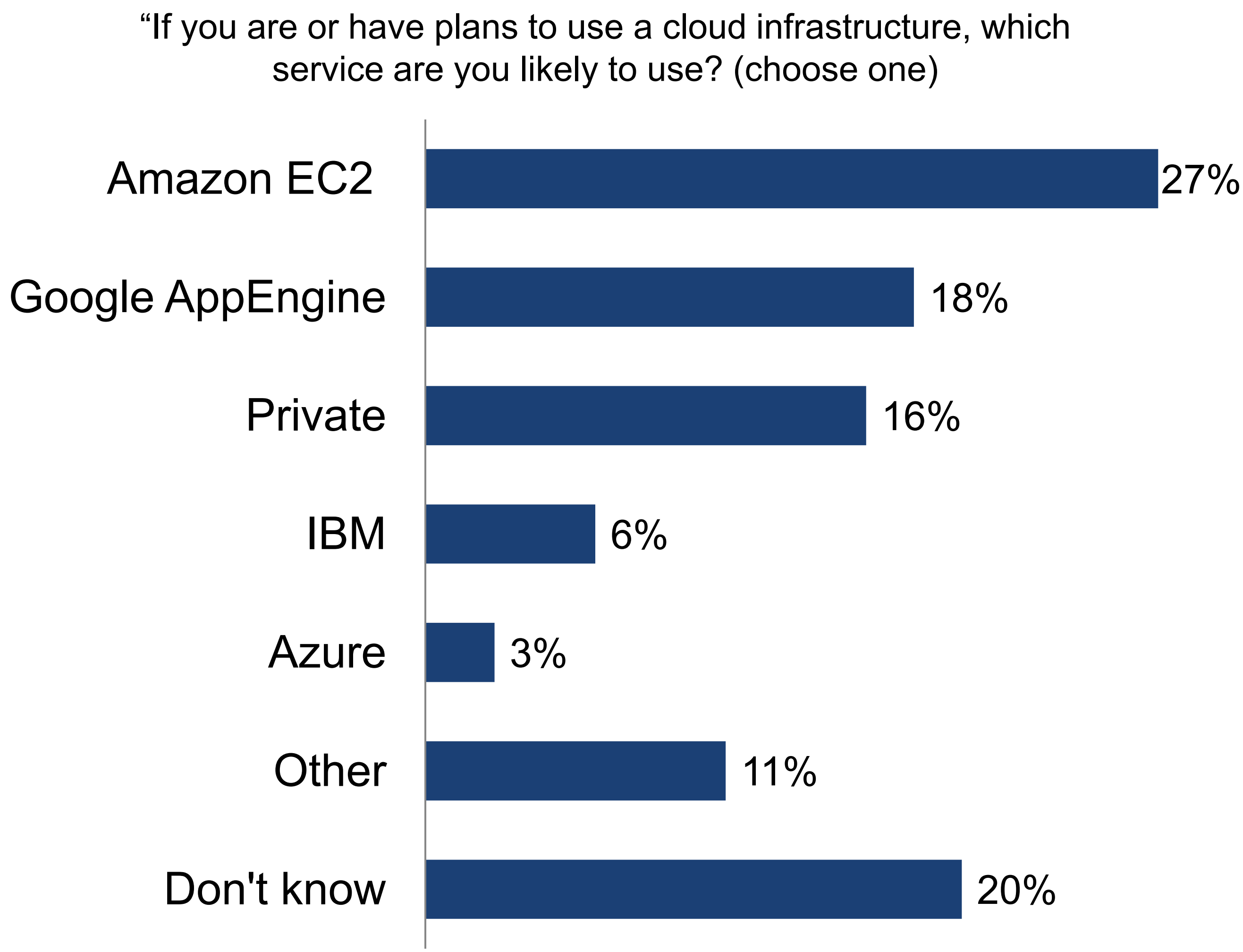
Cloud Adoption – Eclipse Developers

“Are you or your organization deploying applications to a cloud infrastructure? (choose one)



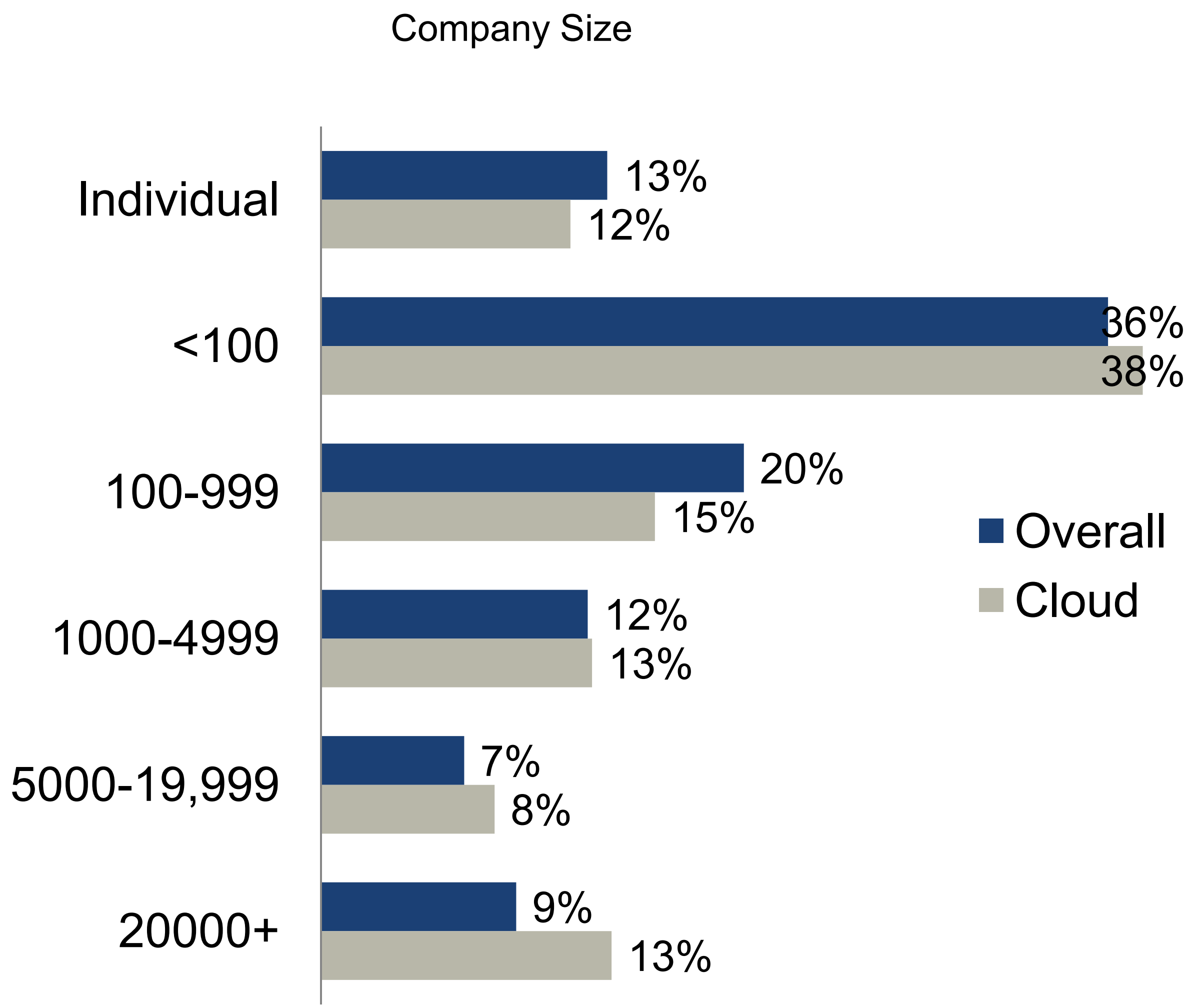
Base:1948 App dev professionals Forrester – Eclipse Developer Survey Q2 10

Cloud Usage – Eclipse Developers



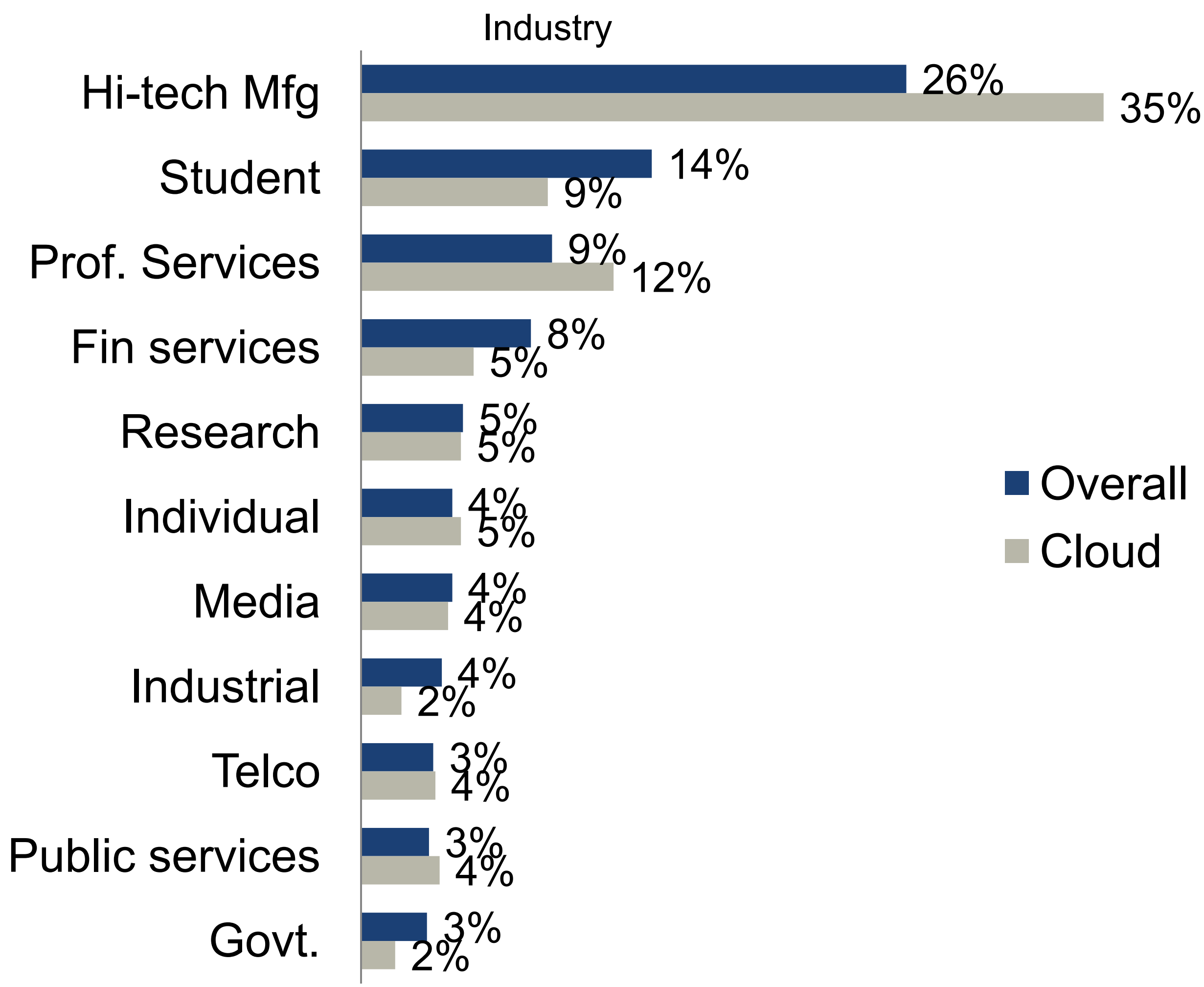
Base:514 App dev pros using/intending to use cloud Forrester – Eclipse Developer Survey Q2 10

Company Size – Eclipse Developers



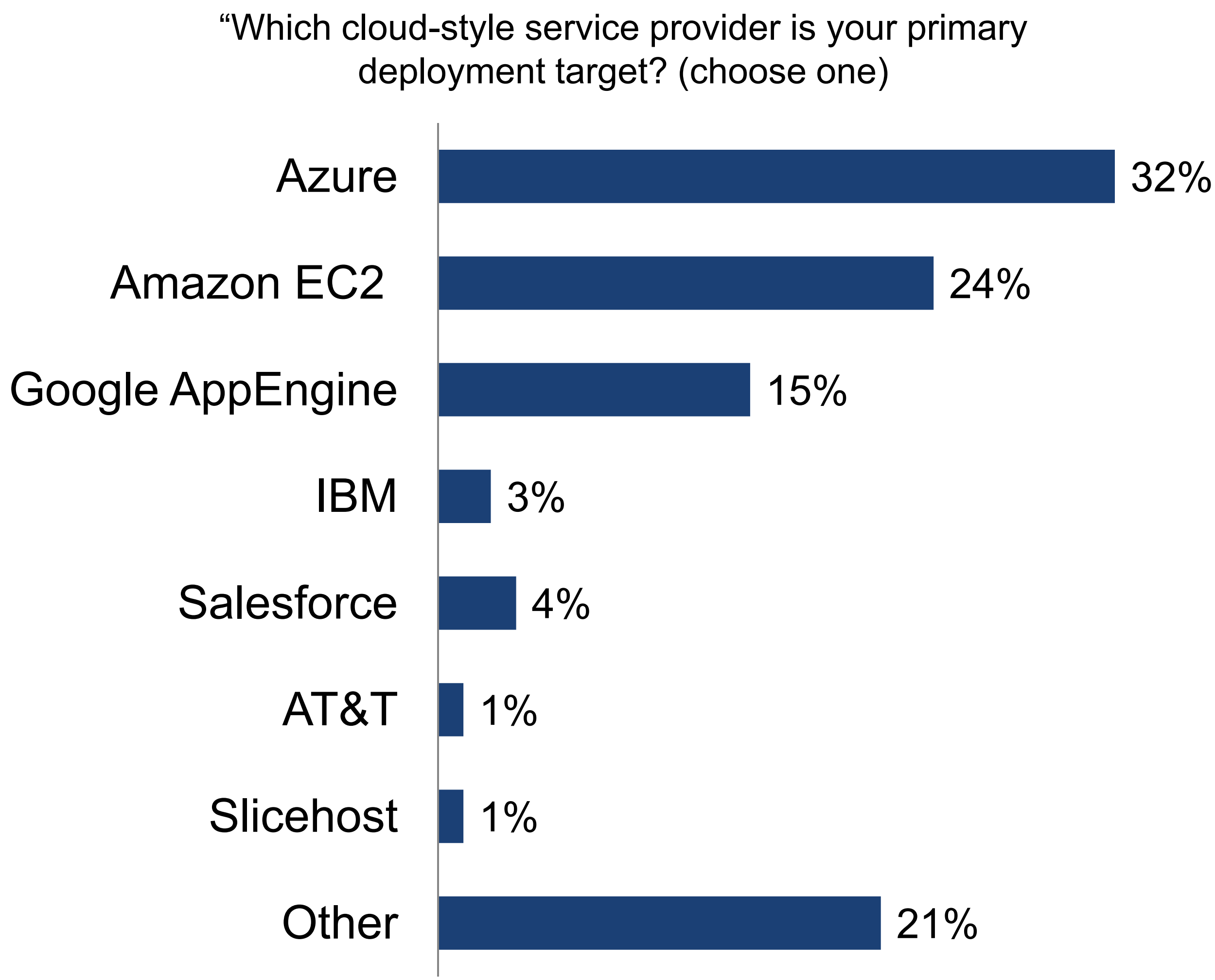
Base:514 App dev pros using/intending to use cloud Forrester – Eclipse Developer Survey Q2 10

Hi-tech, Professional services leads the way



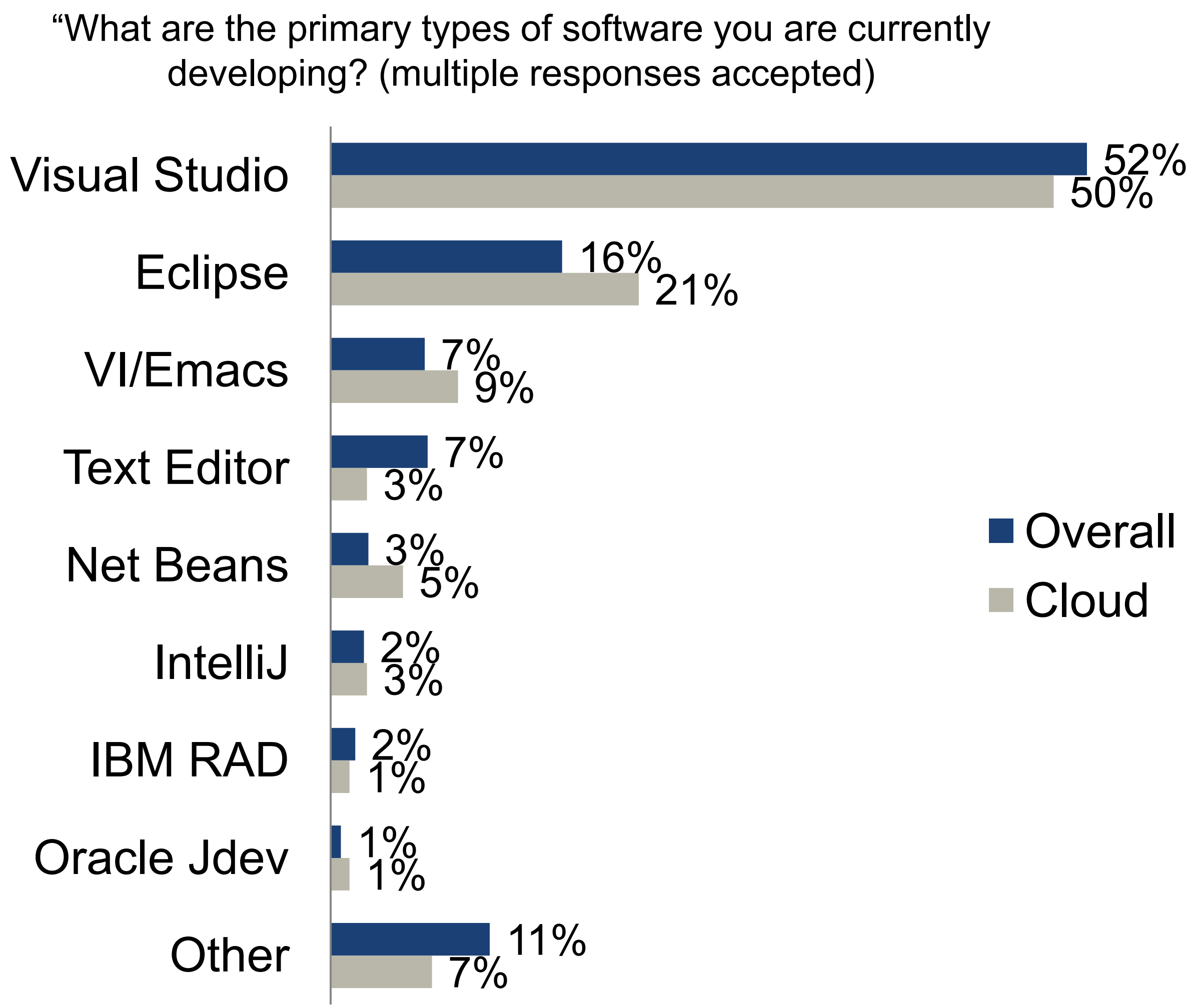
Base:514 App dev pros using/intending to use cloud Forrester – Eclipse Developer Survey Q2 10

Cloud demographics – Dobbs Developer Survey



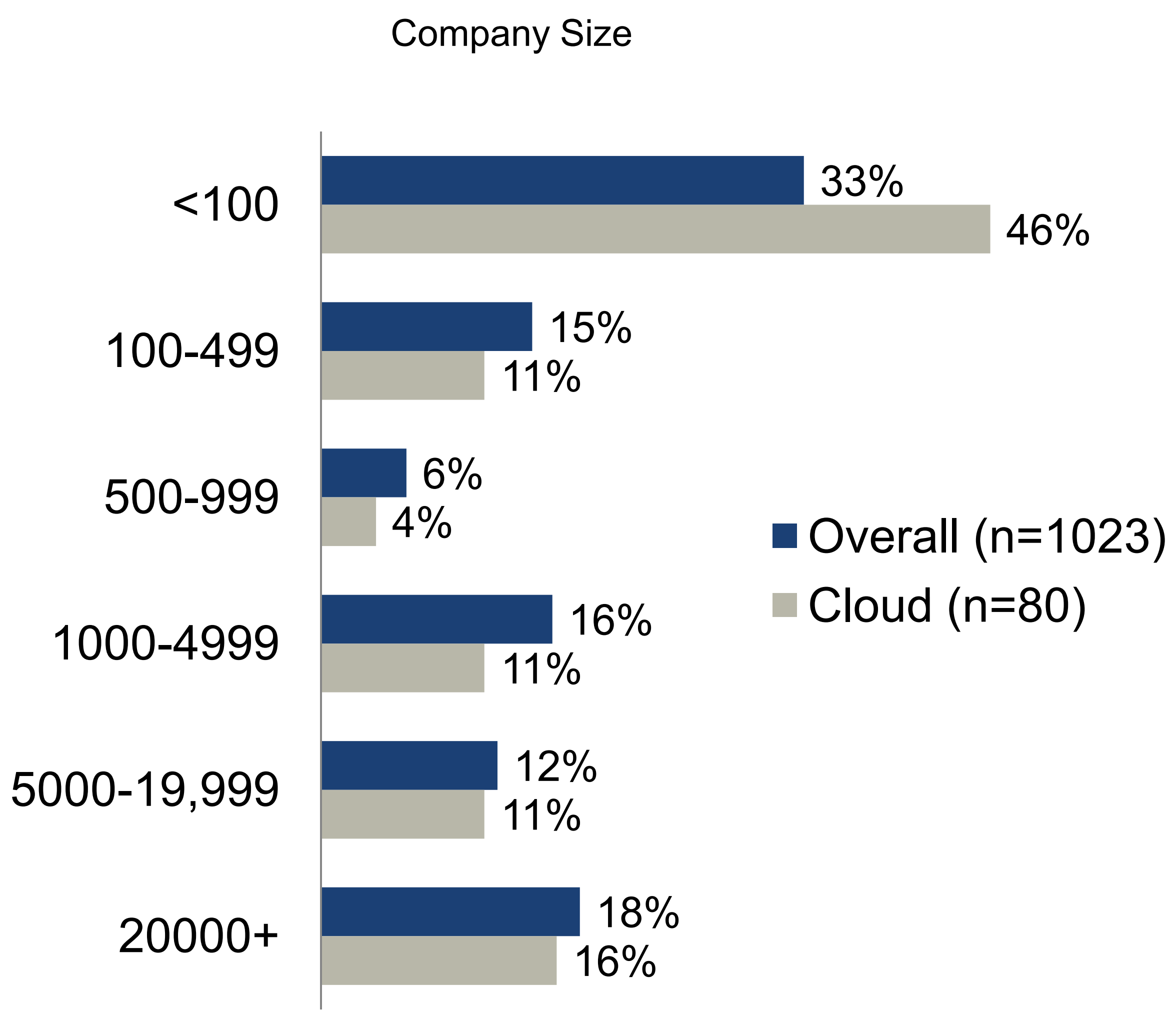
Base:81 App dev pros using/intending to use cloud Forrester – Eclipse Developer Survey Q2 10

Cloud/IDE propensity – Dobbs Developer Survey



Base: 1298 App dev professionals Forrester – Dr. Dobbs Developer Survey Q3 09
Base:1023 App dev professionals Forrester – Dr. Dobbs Developer Survey Q3 10

Company Size – Dobbs Developer Survey

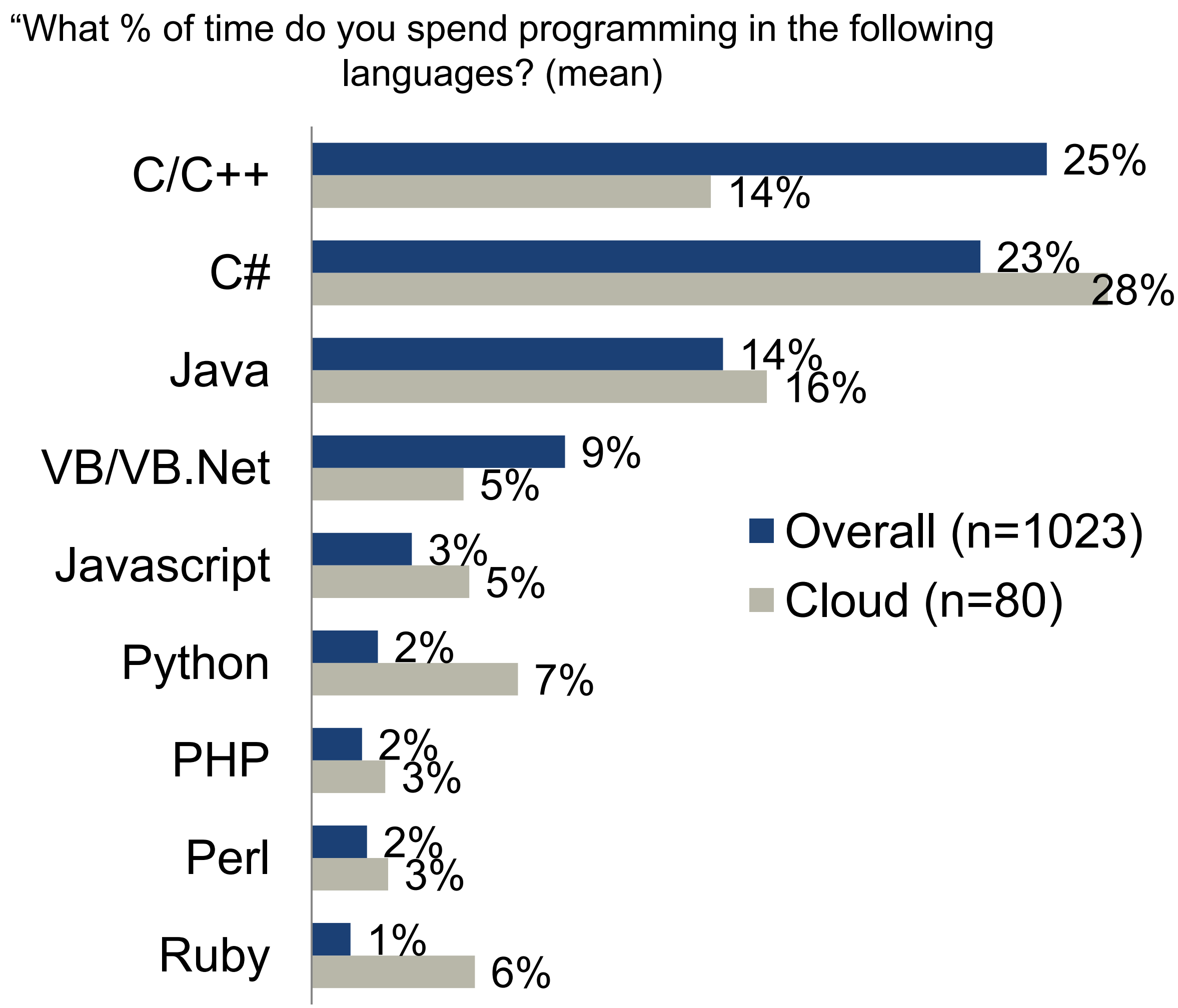


Base:1023 App dev professionals Forrester – Dr. Dobbs Developer Survey Q3 10

IDE/Cloud Provider Co-incidence – Dobbs Survey

Cloud Provider	Visual Studio	Eclipse	Netbeans	VI/Emacs	Other
Amazon EC 2	26%	26%	11%	16%	21%
Google AppEngine	25%	17%	8%	25%	25%
IBM	0%	100%	0%	0%	0%
Azure	93%	4%	0%	0%	4%

Primary Language – Dobbs Developers



Base:1023 App dev professionals Forrester – Dr. Dobbs Developer Survey Q3 10

What it means

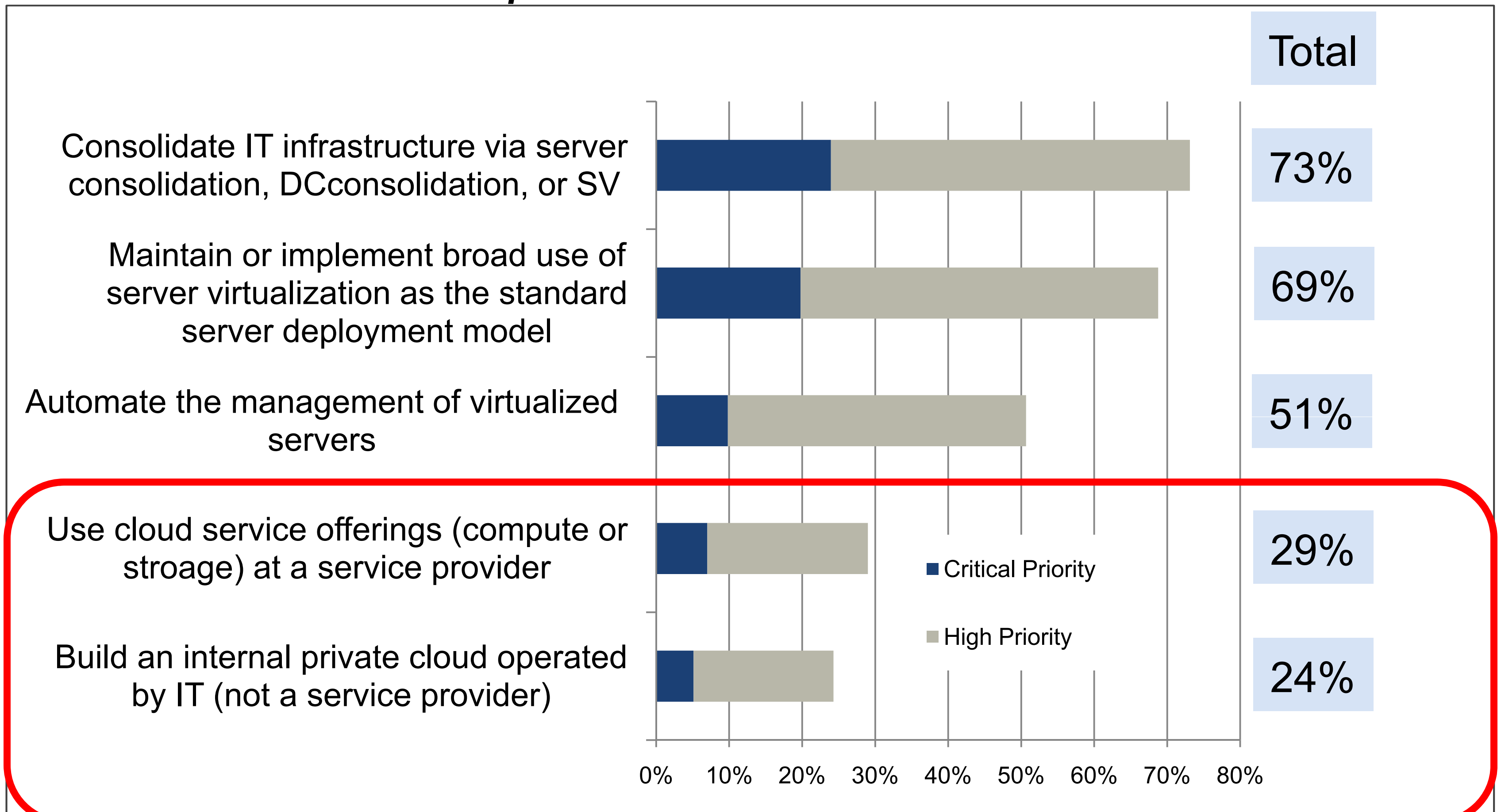
- ~10% of developers are using (or about to use) public cloud services
- IaaS used for "stage 1" cloud deployments, PaaS coming on for "stage 2" deployments
- Python, Ruby, C# and Java are emerging languages of choice
- Cloud developers are more likely to use Eclipse, but EC2 devs also use Visual Studio
- Amazon has a clear lead in IaaS, but AppEngine, Azure coming on
- Scale-out frameworks will become more important, especially in hybrid scenarios
- Cloud is still nascent inside the firewall, led by Type I developers

The Strategic Buyer

Hardware buyers are focused on premise over IaaS

(Hardware purchase decision respondents – only slight change from 2009 results).

Which of the following initiatives are likely to be your firm's/organization's top hardware/IT infrastructure priorities over the next 12 months?



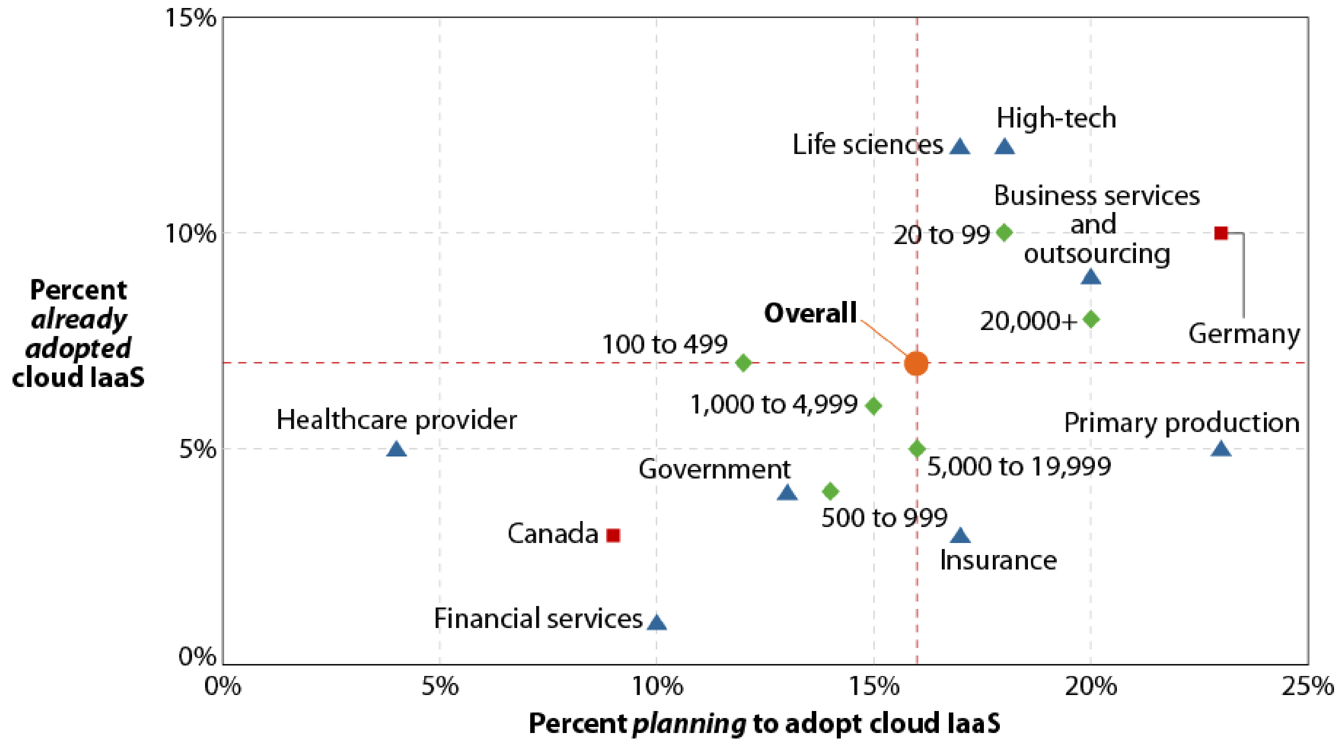
Base: 2321 NA and European Enterprise and SMB IT HW decision makers

Source: Enterprise and SMB Forrsight Hardware Survey, Q3 2010

Preliminary results

Cloud Interest Map

"What are your firm's plans to adopt pay-per-use hosting of virtual servers (also known as cloud computing infrastructure-as-a-service or IaaS) at service providers such as Amazon Web Services, Terremark, Savvis, or Rackspace/Mosso?"



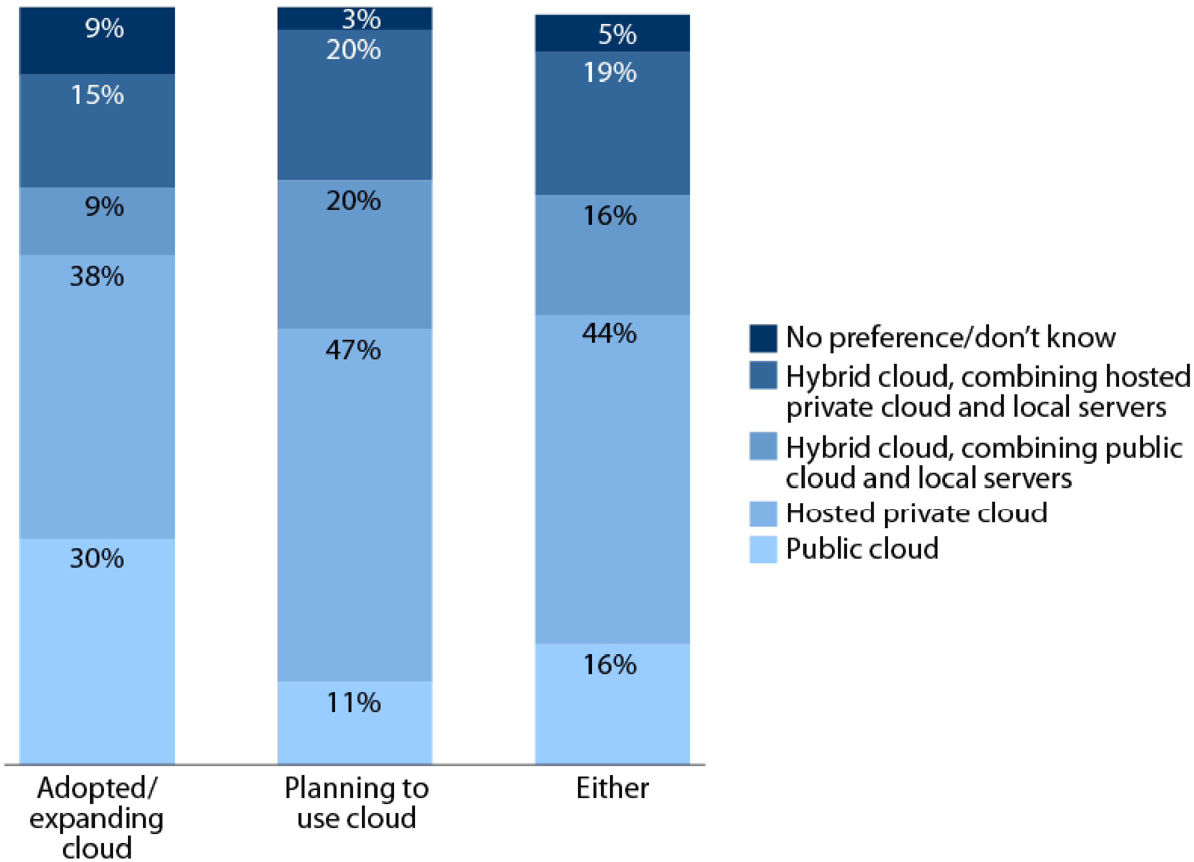
Base: 1,252 server and storage IT decision-makers

Source: Forrester's Forrsights Hardware Survey, Q3 2010
Note: This graphic shows respondents by certain industries, company sizes, and countries to show the range of this market. We have illustrated only a portion of the survey results. For more information, see the Supplemental Material section.

February 2011 **"2011 Top 10 IaaS Cloud Predictions For I&O Leaders"**

Hosted Private Clouds Are The Most Appealing Option

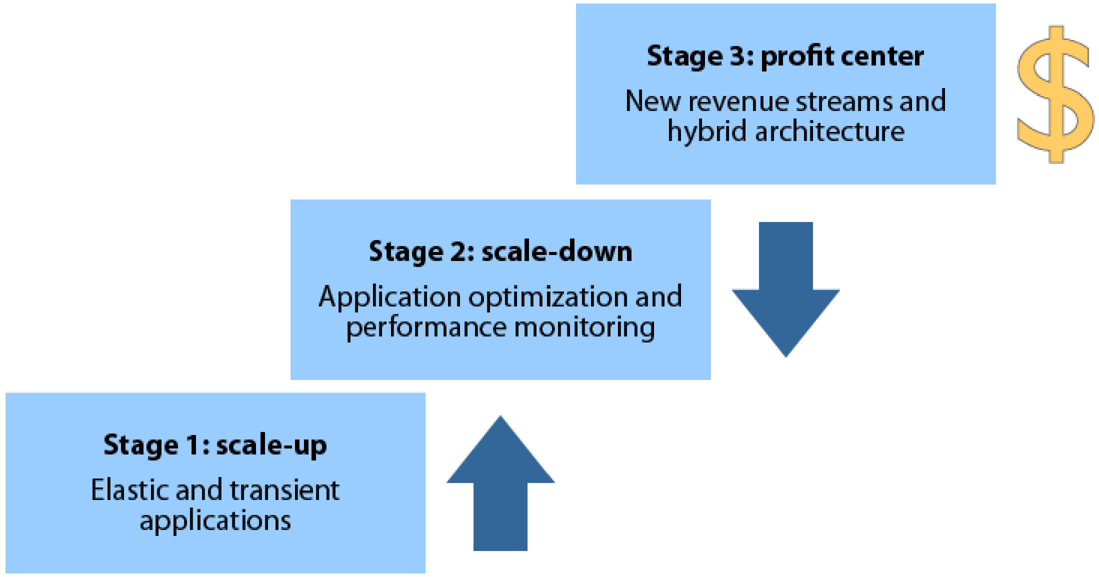
"Which type of cloud computing IaaS deployment approach are your users most interested in?"



Base: 269 server and storage IT decision-makers that are planning to or have already adopted cloud IaaS (percentages may not total 100 because of rounding)

Source: Forrsights Hardware Survey, Q3 2010

The Stages Of Cloud Economics



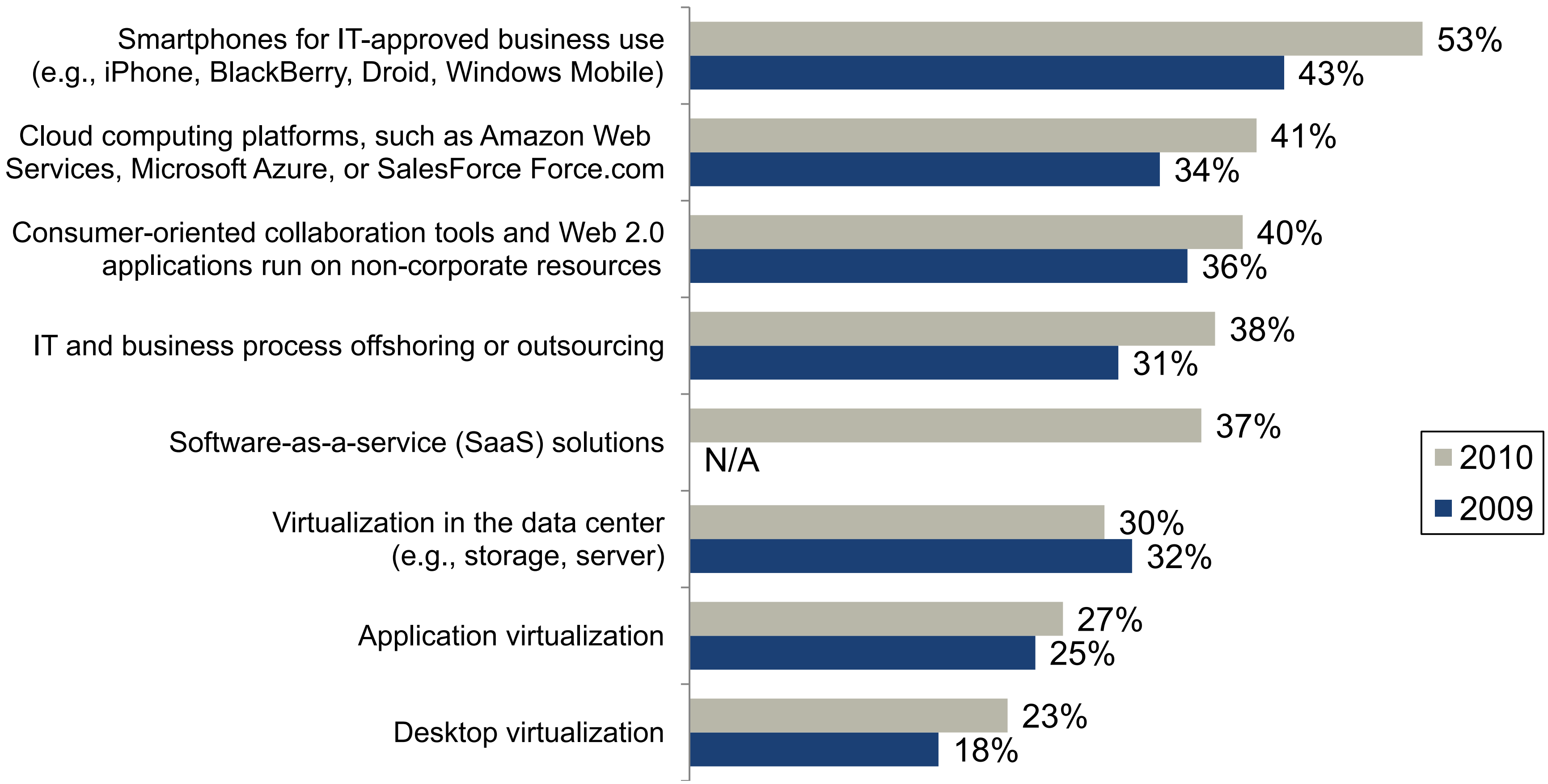
- **Stage 1: scale-up**
  - Leveraging elastic applications that grow with traffic loads
  - Deploying transient applications that come and go based on need, business cycles, or other on-demand bases
- **Stage 2: scale-down**
  - Using performance monitoring and consumption thresholds to reduce application scale as soon as traffic subsides
  - Optimizing application designs and architectures to finely control application scale and shrink baseline footprint
- **Stage 3: profit center**
  - Designing or re-architecting services around cloud economics that deliver new profit potential for the company
  - Deploying service over a hybrid architecture that matches the economics of each application component

What are the buyer's requirements by use case? Strategic Buyers:

- Act like they are outsourcing
- Expect contracts, with monthly pricing
- Want lots of security policy documentation
- Are relationship-oriented
- Value established providers like AT&T
- Look for a menu of managed services, patching, monitoring, auditing, backup, and archiving services
- Are looking for VMware capabilities and integration with familiar enterprise management tools
- See value in the provider offering both CaaS and network services

Security decision maker concerns escalated from 2009-2010
- From the #3 to the #2 new technology of most concern
- From 34% to 41% of organizations expressing high levels of concern

"How concerned is your firm about the level of security or IT risk in adopting the following technologies or technology initiatives?"
(respondents answering 4 or 5 on a 1 to 5 scale)

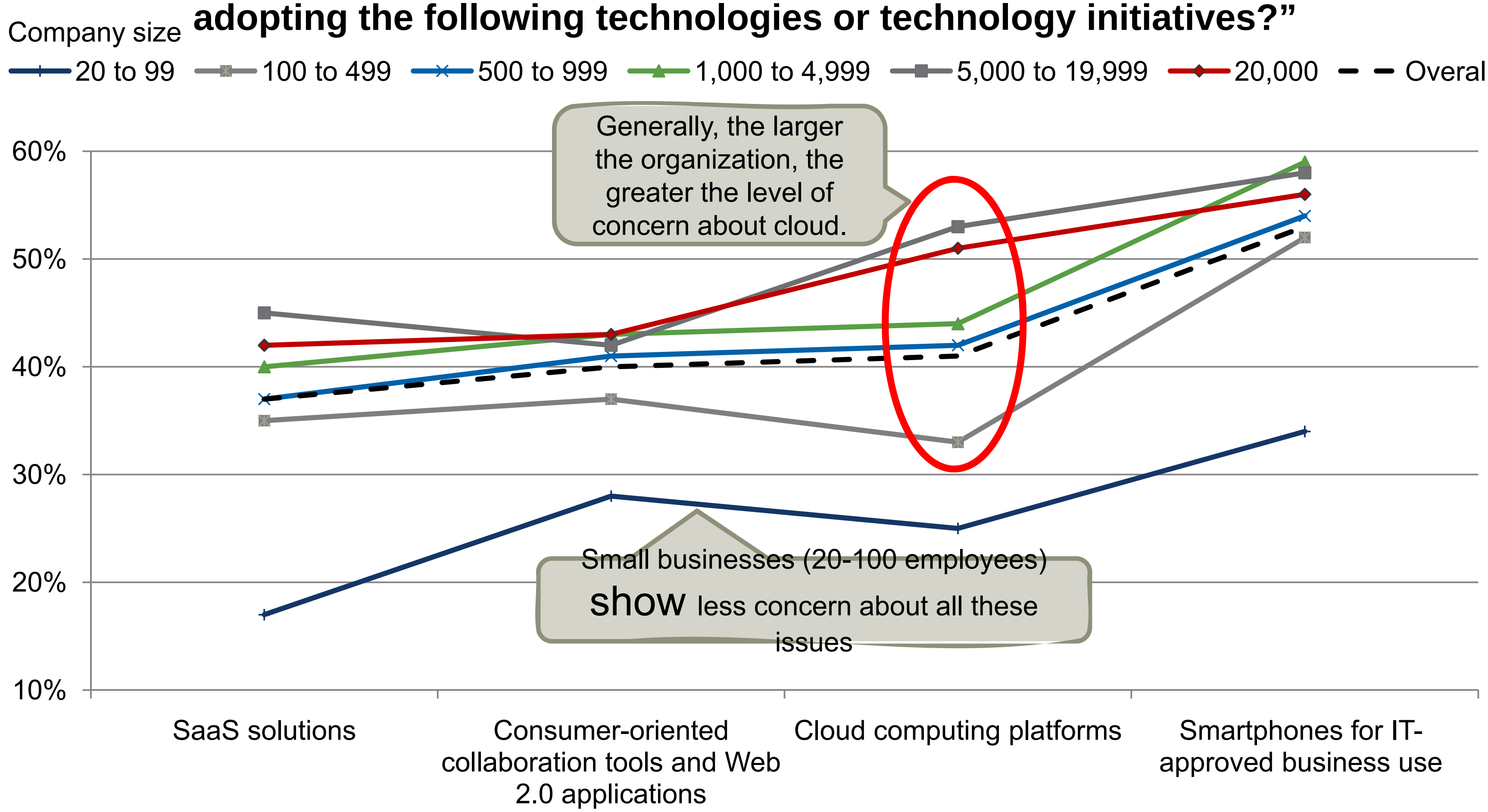


Base: 1,025 SMB & enterprise IT security decision makers

Source: Forrester Forrsights Security Survey, Q3 2010

Unlike with other new technologies, the level of concern about cloud depends on the organization's size

"How concerned is your firm about the level of security or IT risk in adopting the following technologies or technology initiatives?"



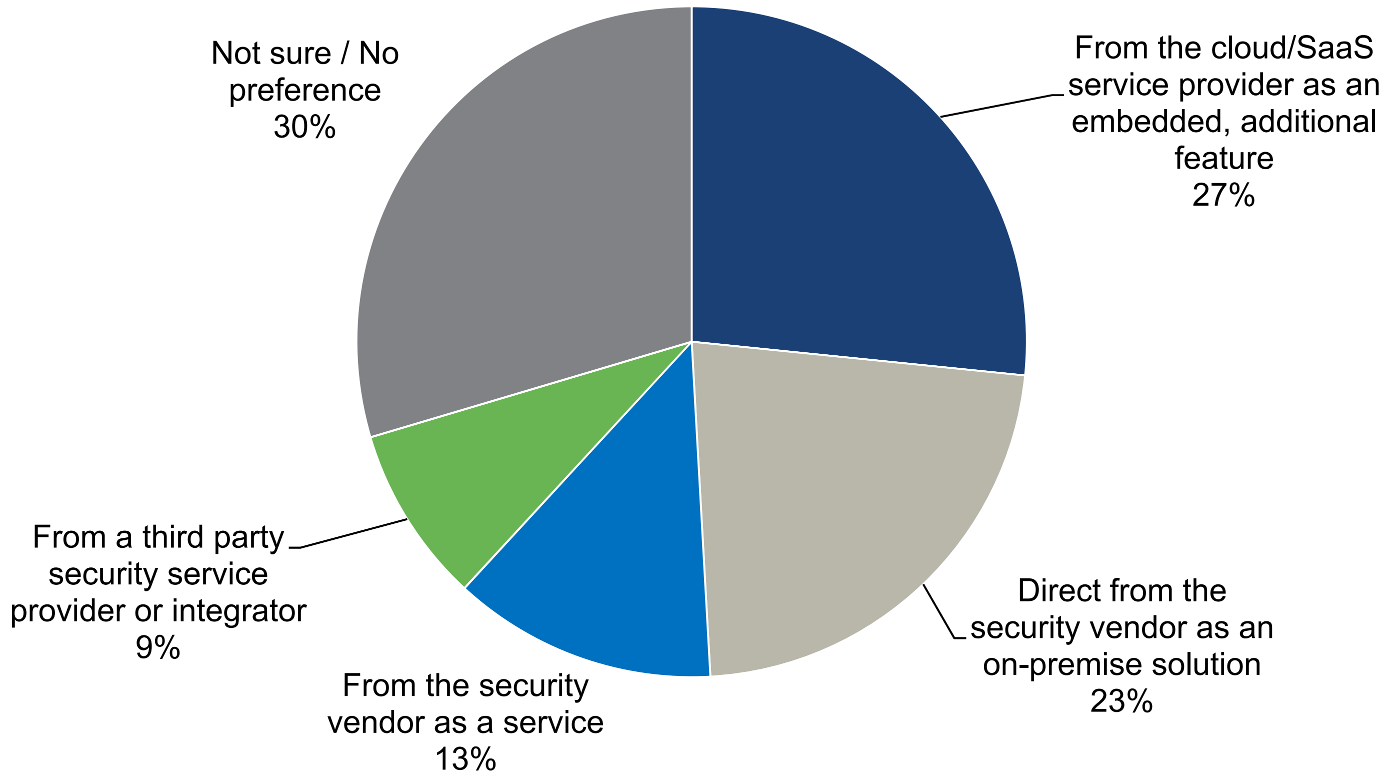
Base: 1,025 SMB & enterprise IT security decision makers

Source: Forrester Forrsights Security Survey, Q3 2010

Many buyers want cloud security from their cloud provider

- Forrester expects buyers to gravitate towards cloud providers for security

"How would your firm prefer to implement solutions that secure cloud computing or software-as-a-service?"



Base: 902 SMB & enterprise IT security decision makers

Source: Forrester Forrsights Security Survey, Q3 2010

What it will take to win the enterprise

What it will take differs from what they want

What they want

- Enterprise-grade SLAs
  - 99.995% on the service with penalties (not rebates)
  - Ability to get 99.95% on a given deployment
- QoS guarantees on bandwidth, latency and resource commit
- License support from the top 20 ISVs (bring their own licenses)
- Dedicated and shared options
- Ability to audit security and operational practices
- Built in HA and BCDR services
- 4 hour service response; PS

What it will take

- Trusted peer to say “good enough”
- Top 10 enterprise ISVs to certify and endorse
  - Bring your license is a nice to have
- Enterprise-credible PS and support ecosystem
- Security certifications and audits
- Uplifts to SLA, QoS, dedicated, other enterprise services

Recommendations

- For developer success
  - While IaaS wins round 1. PaaS will fare much better in round 2.
  - Support for Mobile deployment will accelerate transition to cloud
  - Low on-ramps are critical – clouds that cost too much, aren't
  - Self provisioning is critical to devs – cloud doesn't work without it
- For enterprise success
  - Mainstream buyers rule – enterprise case studies are critical
  - Deliver QoS for VPC clients – a critical need
  - Help mainstream understand the value of cloud economics
  - Segment and address specific customers and scenarios
- For partner success
  - Key on must-win enterprise ISVs
  - Actively drive extended ecosystems with focus on elasticity

Thank you

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