Unix: Alive, Well, and Strategic

Data from our 2008/09 Unix Vendor Preference Survey shows that the Unix market is not only alive and well, but that Unix systems are strategic platforms for over 90% of our survey respondents. In this research report, we look at these results – along with others – and discuss the Unix market in depth. We also take a quick look at the vendor vs. vendor results from our survey and touch on how Hewlett-Packard fared this year...

For the past four years, we've been going out into Unix data centers with a survey designed to gauge opinions, track trends, and get a feel for what's going on in this segment of the server market. We do much the same thing with a similar survey aimed at x86 server users. In the past several years, systems based on x86 processors running Windows and Linux have surpassed the (generally) RISC-based servers running Unix in both unit volumes and sales revenue. This isn't too much of a surprise to anyone; x86 system technology has gotten better over time, and these small systems have become commodities for the most part. They've taken over many of the tasks that used to sit on Unix systems, including web serving, file/print serving, and the application layer of many applications. However, Unix systems are the backbone of most mid-sized and larger data centers, and Unix systems run most of the mission-critical workloads where performance, scalability, and availability are of paramount concern. Results from our most recent Unix Vendor Preference Survey confirm that real-world customers are getting solid value from their Unix-based systems, and that this market isn't going anywhere – despite what you may hear from vendors or pundits.

First, let's talk about the survey a bit: we conduct our research exclusively with 'real IT workers' – data center personnel who actually manage and run Unix servers. They are highly qualified to make vendor comparisons: more than 75% of our respondents have systems from multiple vendors on their raised floors. And they represent the whole continuum of Unix customers from SMBs (1,000 employees or less) to large enterprises of 10,000 or more. This latest edition of the GCG Unix Vendor Preference Survey was conducted among 266 participants from 4Q08 through 1Q09. (Complete participant demographics are available in the appendix of this paper.)

The Unix 'sweet spot' is in large and mid-sized companies. The typical workloads are large databases and the applications that run the business. In fact, the typical Unix system isn't running a single workload; it's probably running anywhere from a handful to tens of important workloads. These workloads can range from whole enterprise ERP (Enterprise Resource Planning) packages like SAP or Oracle applications, or they could be more specific packages like CRM (Customer Relationship Management) or accounting/financial management software. Many of these systems host large databases that serve as the memory for the entire organization.

Gabriel
CONSULTING GROUP

The main thing that these Unix systems provide is a platform that can host the largest and most important workloads in the enterprise. If these applications crash, something bad happens – revenue isn't booked, parts aren't ordered, or bills aren't sent out. If these applications can't perform up to par, then there are problems for the business as a whole. The industry is rife with stories about what has happened to companies who have had problems with this class of applications – ranging from not getting the right products to market during a key selling season to not being able to ship products to customers at all. The main difference between a mission-critical system and a non-mission-critical system is that if there is a big problem with a mission-critical system, it might require a financial disclosure in a quarterly SEC filing. These are the types of applications that are hosted on Unix systems.

"Unix platforms are strategic in our organization"

	Disagree	Not Sure	Agree
2008/09	7%	2%	91%
2007	13%	15%	72%
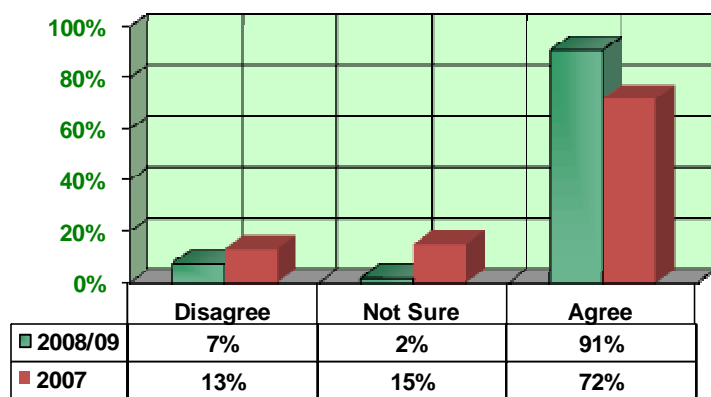
It's easy to see that our survey participants are saying essentially the same thing. As can be seen from the chart at left, more than 90% of them report that Unix systems are strategic in their organization and critical to the functioning of their business.

It's interesting to note that the proportion of respondents who agreed that Unix is critical changed significantly between this survey and the 2007 survey. The reason for this is rooted in the survey demographics. In our latest edition of the survey, we polled many more people in large data centers. In fact, almost half of our respondents worked in organizations with more than 10,000 employees. In the 2007 version, these folks made up only 11% of the overall survey base. Still, even with a much larger representation of smaller companies in the 2007 edition, the overwhelming majority of respondents said that Unix-based computing was vital to their organization.

Is there a Unix Future?

So we've determined that almost everyone in our survey sees Unix systems as very important to their organization. It's hard to argue with a 91% result. But since this is a survey about Unix computing, we certainly have to ask whether respondents intend to keep on using Unix-based systems. One of the trends that has been bandied about in the industry press by vendors and pundits alike is how workloads have been moving from 'proprietary' (read: bad) Unix systems and onto 'standard' x86-based Windows or Linux systems. Naturally, the vendors who talk about this trend are those who offer only x86-based products. It's harder to explain why the pundits say what they say – could be they don't talk to a lot of real-world customers.
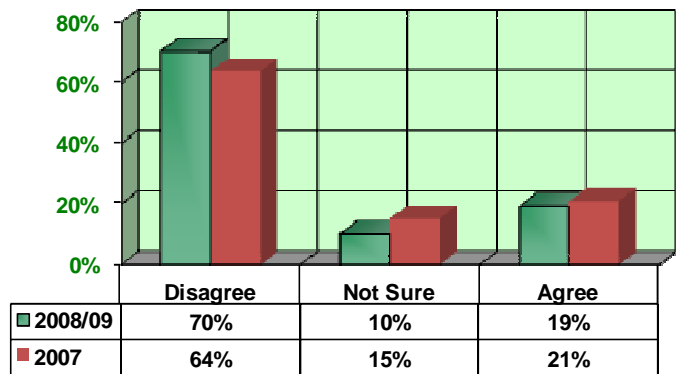
It is certainly true that there has been a lot of Unix to Windows/Linux migration over the past several years as the x86 offerings have become more suitable for data center use. But many of these workloads are, as we discussed above, things like web servers, application servers, and other workloads where single system availability, performance, and scalability aren't all that important. These are also workloads where, in most cases, the business will not be hurt if they have an outage. So there has definitely been sizeable migration between the two opposing camps. But this doesn't mean that Unix systems aren't still being used, or are less important (as

we've seen above); it also doesn't mean that customers aren't planning to add more Unix to their IT infrastructures. As evidenced by the charts below, a large majority of our respondents are planning to buy even more Unix systems.

"Unix usage increasing overall"

	Disagree	Not Sure	Agree
2008/09	23%	9%	68%
2007	28%	6%	66%
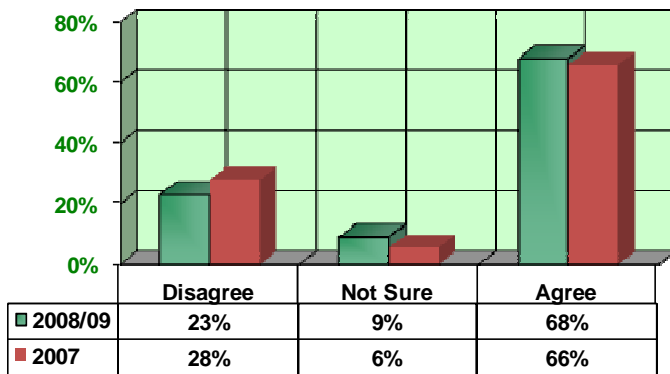
"Unix usage is declining overall"

	Disagree	Not Sure	Agree
2008/09	70%	10%	19%
2007	64%	15%	21%

In order to really find out what our respondents are thinking, we've asked the same question two different ways. The first question asks if their Unix usage is increasing; the second question asks if their Unix usage is declining. We see consistent responses to both questions, with roughly the same number of respondents agreeing that Unix use in their organization is growing and also disagreeing that their Unix usage is shrinking. It's a bit of a tricky technique, but it serves to ensure that respondents really mean what they're saying. In this case, it's very clear that more than two out of three respondents are not only *not* moving away from Unix computing – they're continuing to embrace it.

"Unix usage is increasing at the mid-range/high-end"

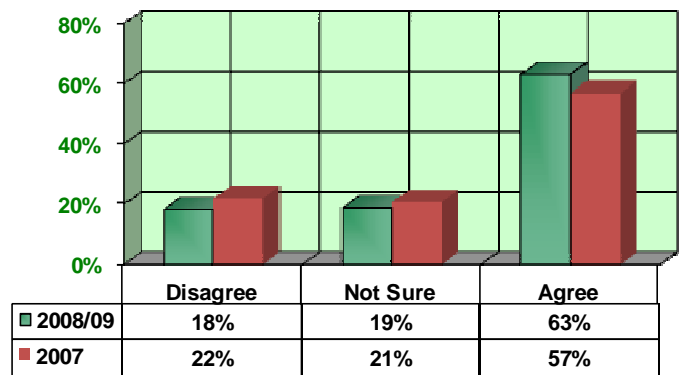|	Disagree	Not Sure	Agree
2008/09	25%	22%	54%
2007	29%	26%	45%
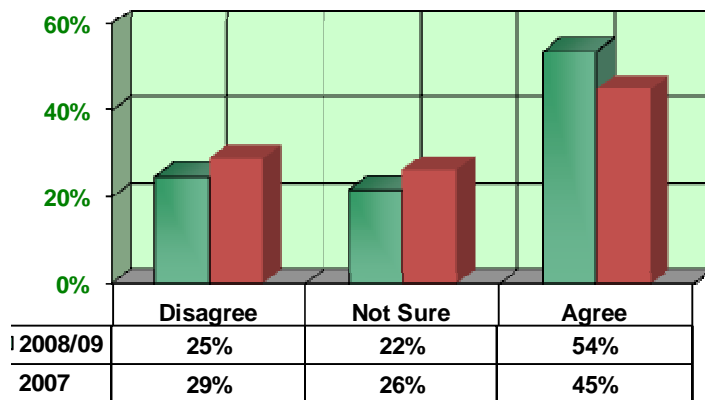
With approximately 70% of our respondents saying that their use of Unix systems is growing, the next logical question is: what are they going to grow? Big systems? Small servers? Mid-range boxes? We found that most of them see themselves adding systems at the higher end of the scale. This trend is a bit more pronounced in this year's survey, which makes sense given that this survey population is more skewed towards larger companies who presumably have large workloads that are getting larger over time.

One significant finding is that most customers do not see their Unix usage growing on the low end. For purposes of the survey, we defined 'low-end' as single- or dual-socket systems, with quad-socket being in the mid-range. Most of our respondents said that their use of low-end Unix systems would either remain static or shrink in the future. What's interesting is that this doesn't necessarily mean that they don't plan to (or need to) run smaller instances of Unix. As we can see on the chart (below left), solid majorities say that they either already own or are looking to buy blades that can run Unix-based operating systems. Using our definition, any RISC-based blade would be a small Unix system at two sockets. So a reasonable conclusion is that standalone Unix servers might be going out of style in favor of the more space- and energy-efficient blade form factor. Discussions with major Unix system vendors seem to confirm that

**"We either own or are purchasing Unix-based blades"**

	Disagree	Not Sure	Agree
■ 2008/09	23%	16%	61%
■ 2007	21%	21%	57%
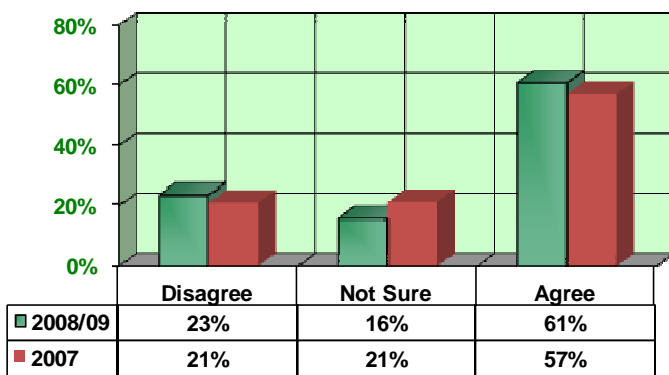
"We expect to buy larger Unix systems"

	Disagree	Not Sure	Agree
■ 2008/09	18%	19%	63%
■ 2007	22%	21%	57%

this is the case for commercial markets, although there should continue to be a strong market for these systems in scientific and technical computing.

We also see a definite tendency towards customers purchasing larger Unix systems over time. How large is a 'larger' Unix system? We intentionally kept that vague, as a mid-sized company might see an 8-socket system as 'larger,' while a large company might see only a 32-socket system as a big box. What's important is the trend, and respondents are definitely saying that they will be buying larger systems in the future.

"We are running multiple workloads on more than half our Unix systems"

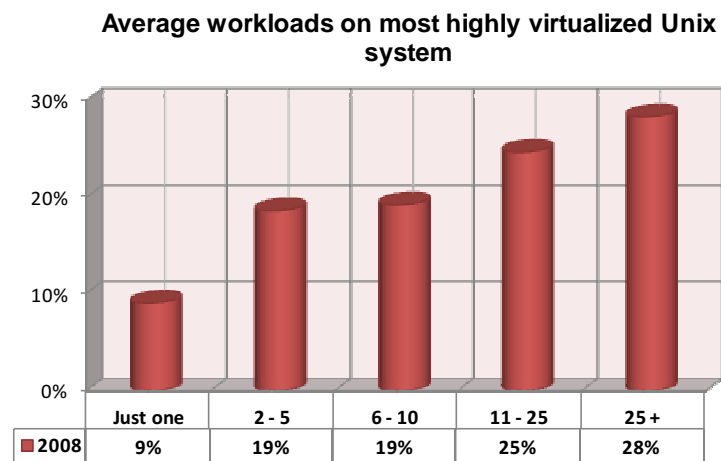|	Disagree	Not Sure	Agree
■ 2008	30%	7%	63%
■ 2007	23%	10%	67%
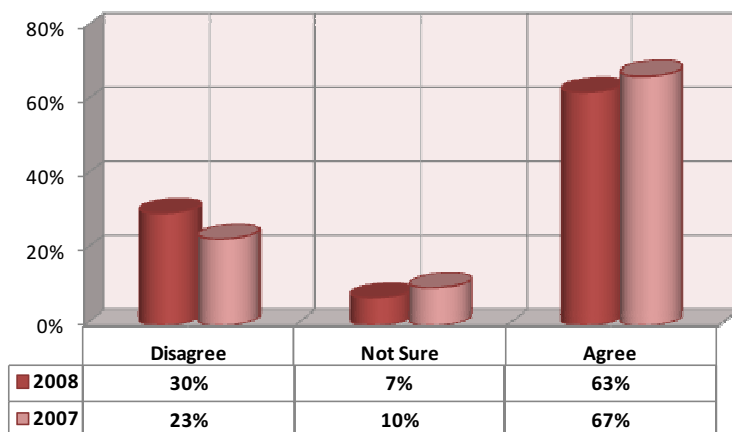
One of the reasons that customers are opting for larger Unix systems is, of course, because their mission-critical workloads are growing larger. But another reason is because these systems are increasingly being used to host multiple applications. As can be seen on the chart at left, 63% of our respondents have virtualized more than half of their Unix-based systems.

That number is marginally lower in this year's survey than on the same question in 2007. Based on qualitative data from our
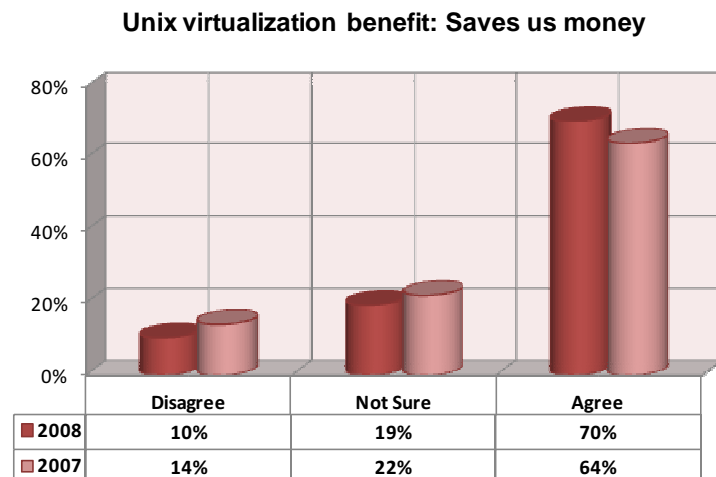
respondents, it seems that the larger companies still have more dedicated single-application servers than we saw in smaller companies. This is partially because some of the large enterprise mission-critical workloads were large enough to almost entirely fill up their host system at peak times; it's also because of a natural reluctance for companies to try a newish usage model with their most critical applications.

While it may seem like x86 system virtualization gets most of the attention these days, virtualization came to Unix systems back in the late 1990s with both hard and soft partitioning. Now, all of the major Unix operating systems (Solaris, AIX, and HP-UX) each have a full slate of virtualization mechanisms, including virtual machines on soft partitions (like VMware), workload partitions (multiple apps on a single o/s instance – something VMware doesn't offer), and even hard physical partitions (again, not available in x86 land). The Unix world is a bit ahead of the game in virtualization adoption, and some of their virtualization technology is ahead of the x86 world as well.

Average workloads on most highly virtualized Unix system

	Just one	2 - 5	6 - 10	11 - 25	25 +
2008	9%	19%	19%	25%	28%

Unix customers are virtualizing in a big way. Almost a third are hosting more than 25 separate workloads on their most highly virtualized system. These could be an unrelated collection of important applications that are co-located on a large single system for the sake of efficiency, and to reduce both footprints and cost. Or it could also be a multi-tier application with a large database layer and multiple application instances all housed in their own virtual machines on the same system. We have also had vendors tell us that customers are using virtual machines in large Unix systems as hosts for distributed databases like Oracle RAC, where each node runs in its own partition. Running a distributed database in an SMP architecture may seem counterintuitive to some (it does to us), but we're assured that there are solid business and technical reasons for doing this. They also report that both performance and scalability of the database are enhanced due to the SMP architecture.

Unix virtualization benefit: Saves us money

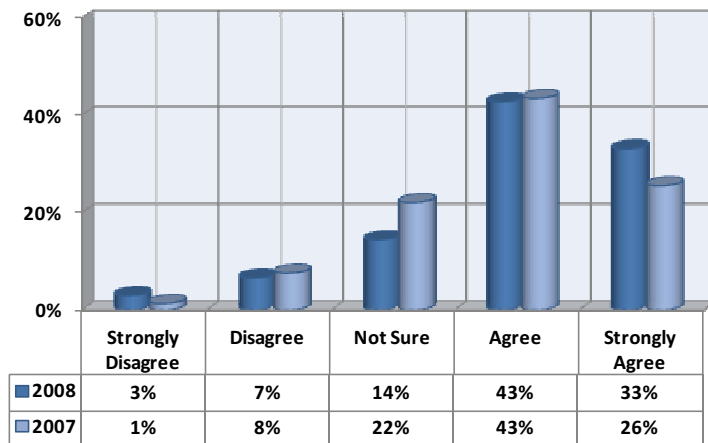|	Disagree	Not Sure	Agree
2008	10%	19%	70%
2007	14%	22%	64%

The benefits from virtualization are pretty well known by now. Running multiple applications on single systems increases server utilization and thus reduces the need for more hardware. It can also reduce management chores and make it easier to hit SLAs and to manage capacity. Our survey respondents agree that virtualization does all of the above and more in their organizations. The bottom line is that virtualization increases efficiency, and increased efficiency means cost savings. Not

surprisingly, a large majority of our respondents say that Unix virtualization has reduced their costs. We believe that the fact that Unix vendors had virtualization before it become prevalent in x86 is one of the reasons that the Unix market is still hale and healthy. If Unix systems were still mired in the 'single application per server' usage model, we doubt the market would be as large as it is today.

"Power, cooling, floor space requirements will be much more important to us in the future"

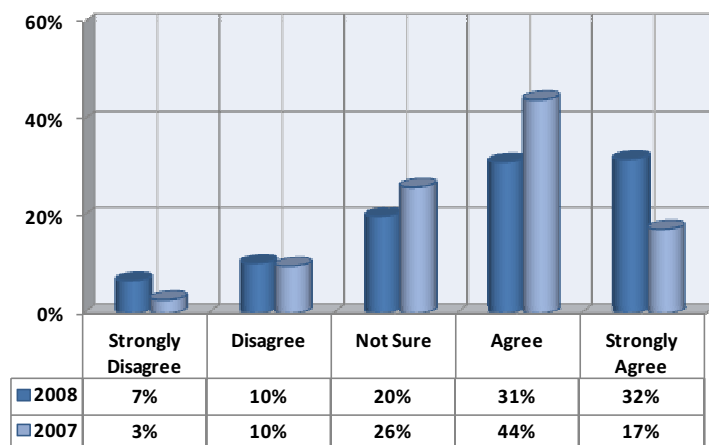|	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
2008	3%	7%	14%	43%	33%
2007	1%	8%	22%	43%	26%

A topic that is currently top of mind in the industry is the high and rising demand for data center facilities. This isn't just floor space, but also power and cooling capacity. It's hard to find an industry publication that isn't talking about finding ways to reduce the physical size or energy appetite of data center gear.

Customers are certainly feeling the same way. As can be seen on the chart, a large majority of customers say that power, cooling, and floor space requirements will be a much larger factor in their future server purchases. The obvious next question for us was: how do these customers view Unix servers in terms of facilities usage? Do they see their large Unix systems as space and energy hogs?

"Unix systems are more energy efficient than x86 systems"

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
2008	7%	10%	20%	31%	32%
2007	3%	10%	26%	44%	17%

We were a bit surprised to see that not only did our survey respondents *not* think that their Unix systems were data center gluttons – 63% of them believe that these systems are actually more energy efficient than their x86 cousins.

This year we see a much larger number of respondents who 'strongly agree' that their Unix boxes sip less power per workload than x86 servers. We're not sure, but we believe that the composition of this survey base – many more larger organizations – may have had some bearing on this result. Over the past few years, we've found that large organizations are doing rigorous energy audits that attempt to quantify the actual power usage of various data center components. While we can't say for sure, some of the 'strongly agree' respondents may have evidence based on their own self-generated data to back up their belief. It bears further investigation in future surveys.

Handicapping the Unix Market

The market for Unix systems has always been competitive – even way back in the 1990s when there were more than a dozen vendors, each with their own hardware and unique operating systems. However, since the turn of the century, the market has consolidated down to three major vendors: Hewlett-Packard, IBM, and Sun Microsystems. This Darwinian survival of the fittest has paid dividends to customers. Each of the survivors has solid products that offer good performance, scalability, and availability. This wasn't the case back when there were a dozen Unix vendors. Each of the surviving operating systems also has a wide and deep variety of ISV software ported and optimized for it – again, not so true back in the olden days.

However, there are still significant differences between the various Unix brands from both a technical and business perspective. Sun Microsystems rode their Unix systems and the tech bubble to prominence in the 1990s. When the bubble burst in 2001, it took a huge toll on Sun. Their system sales, revenue, and momentum never recovered. Sun missed major industry shifts and failed to deliver on promised technology, and management lost track of what earned the company their customers in the first place. This led Sun into a downward spiral that resulted in their upcoming purchase by Oracle (still up in the air at this time). Sun still has a decent, but mostly declining, share of the Unix market, and they have a massive installed base. But both IBM and HP are making inroads into Sun's most loyal customers. It will be interesting to see if Oracle can resurrect Sun's hardware business.

Right now, the two most competitive players in the Unix space are IBM and HP. IBM is leading in the sales revenue race and has been for the last couple of years, with either Sun or HP in a tight race for second place. But in our survey, we're looking at how satisfied customers are with their various Unix platforms, how they are using them, and what their plans for the future hold.

In our "Vendor Face-Off" section, we ask Unix customers to rate the major vendors on 33 individual technical and customer support topics. These questions cover system issues (performance, availability, management, etc.), customer support, and how much faith the customer has in the technical abilities of the vendors. As the survey has evolved, we've discovered a few things. First, we've found that data center people see a lot of differentiation in both vendor offerings and vendor support. Second, there really aren't overall winners or losers. Obviously, some categories are more important than others, and the importance of a particular category win or loss will greatly depend on how important that topic is for a particular customer. It's also important to understand that these surveys are snapshots in time. The ratings can and do change (sometimes radically) from year to year. It really depends on what's happening in the market, which vendors are making waves (in either a positive or negative way), and how well the vendors are doing in their primary task of solving business problems with sophisticated and cost-effective technology.

In our first Unix surveys, IBM tended to dominate the results on the technical side of the ledger vs. Sun and HP. By the same token, HP's best scores were on customer service and support topics. Over the past few years, we've seen some changes, with HP surging in many of the technical categories. HP won a number of these categories outright, including:

- *Availability & Reliability Features*
- *Observed Availability*
- *Operating System Quality*
- *Best Initial Quality – No DOAs*

- *Operating System Features*
- *System Management Suite*
- *Real World Manageability*
- *Observed Performance*

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This is a much stronger showing for HP than we've seen in recent years, and it looks like they are well-positioned to mount a challenge to IBM for Unix hearts and minds. Whether they can pull it off is an open question; but, judging by what we see in our 2008/09 survey results, they're headed in the right direction. In the near future, we will be issuing research reports providing detailed results and discussion of how our survey respondents rated the major vendors.

Summary and GCG Recommendations

The bottom line is that the Unix market is healthy, and the platform isn't going away. In fact, we expect Unix system sales to provide modest growth once we climb out of the current economic recession. Some of this growth will be masked by the constantly reduced prices of the gear. In general, the price/performance for Unix gear has been on a steep downward slope in the customers' favor; Unix systems provide large-scale value for the dollar which, on a cost-per-workload basis, often tops what large x86 systems can provide. This strong performance, coupled with sophisticated virtualization that allows higher utilization rates than x86 substitutes, results in a cost differential between the two platforms that has never been lower. Add availability and manageability to the equation, and it becomes even more obvious why enterprise Unix customers are staying with the platform for the long haul.

Gabriel
CONSULTING GROUP

phone / 503.372.9389
gcginfo@gabrielconsultinggroup.com
www.gabrielconsultinggroup.com

APPENDIX

2008/09 Unix Vendor Preference Survey Demographics

Organization Size (employees)

	Under 1,000	1,000 to 4,000	4,000 to 10,000	10,000 +
2008	32%	13%	7%	48%
2007	43%	28%	18%	11%
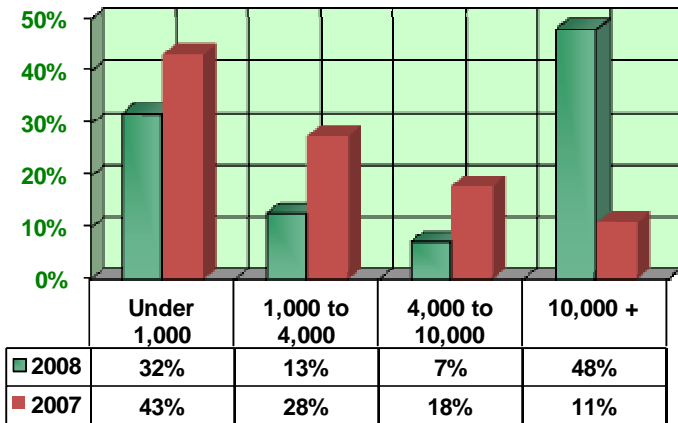
Unix Servers Controlled by Respondent

	10 or under	10 to 25	25 to 50	50 to 100	100 to 250	250 +
2008	25%	16%	9%	11%	13%	26%
2007	30%	29%	19%	12%	6%	5%
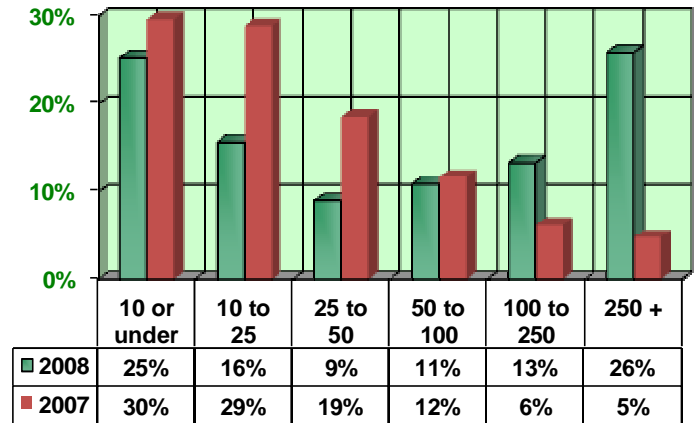
A total of 266 enterprise Unix customers responded to our most recent survey. This customer base includes both GCG's 'certified' participants and readers of *The Register*. While organizations of all sizes are represented – about 1/3 hail from SMBs – nearly half of our participants are part of large enterprises of 10,000 or more. This enhanced view into organizations of this size is likely due to the inclusion of *Register* readers.

The number of servers for which each participant is responsible mirrors the shift in organization size; clearly the '250+' response is a departure from the previous year's demographic. But here too, all segments are represented. A quarter of all respondents control 10 or fewer servers, and 20% fall into the median ranges of 25 – 100 systems managed.

Number of Unix vendors

- Single Unix Vendor 23%
- Three Unix vendors 41%
- Two Unix vendors 36%
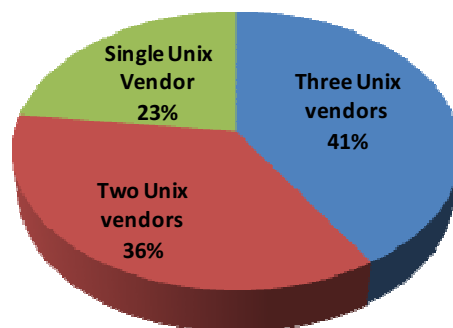
The Unix world is still a heterogeneous place: the majority of respondents have servers from all three vendors on the data center floor. More than a third report running systems from two of the major Unix vendors, and less than a quarter say they have standardized on just one.