

Linux-Related Technical Support Comparative Study Report

April 2007

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INTRODUCTION

Lighthouse Research & Development, Inc., a full-service independent US-based marketing research firm, conducted a research study designed to evaluate customer satisfaction with the Linux-related technical support services provided by Novell, Red Hat, and Oracle.

PROJECT OBJECTIVES

The main purpose of the research was to measure customer satisfaction with the quality of Linux-related technical support, comparing the services provided by Novell, Red Hat, and Oracle in the past twelve months. The research is designed to assist IT professionals, needing Linux-related technical support, to make informed decisions regarding the most effective support services based on actual experiences of current customers. The specific objectives for this research study are as follows:

- Determine the methods companies are using to access the Linux-related technical support provided by each vendor and identify which delivery method is most frequently used
- Determine customer satisfaction with the delivery of each type of support, including online, telephone, onsite, and community forums provided by Novell, Oracle, and Red Hat
- Identify the levels of support or support subscriptions companies are using
- Determine the level of importance of each of the following aspects of service:
 - Ease of access
 - Speed of resolution
 - Effectiveness of resolution
- Evaluate overall customer satisfaction with the quality of services for each of the vendors from which they currently receive Linux-related technical support
- Evaluate customer satisfaction with Linux knowledge and expertise from each vendor
- Evaluate customer satisfaction with several aspects of the Linux-related technical support services provided by Novell, Red Hat, and Oracle
- Compare the level of satisfaction customers have with the Linux-related technical support provided by Novell, Oracle, and Red Hat, identifying statistically significant differences
- Discover the most valuable attributes of the support provided by each of the examined vendors
- Define demographic characteristics of respondents' companies, such as primary industry, number of employees, and geographical location

PROJECT OVERVIEW

The scope of the research project included the completion of 532 online surveys with technical personnel working at companies who had used the Linux-related technical support services from Novell, Oracle, and Red Hat in the past 12 months. These technical personnel were emailed an invitation to participate in the survey. To ensure international participation, respondents were given the opportunity to respond to the survey invitation in one of the four following languages: English, French, Spanish, or Portuguese.

Subsequent to finishing the online survey, 37 in-depth follow-up telephone interviews were conducted, gathering customer perceptions and opinions of the Linux-related technical support services provided by Novell, Red Hat, and Oracle. This research model combining quantitative and qualitative methodologies provides the statistical validity of the online study with the greater understanding, detailed reasons, and verbatim customer comments provided by the in-depth interviews.

PROJECT SCOPE

- Sample development of lists of customers to invite to participate in study
- Consultation regarding the design of the survey instrument
- Programming of the survey instrument
- Hosting of the online survey
- Conducting a pretest ensuring accurate data collection
- Conducting thirty in-depth interviews
- Delivery of incentives to winning participants, or all participants, depending on the recommended incentive structure in proposal
- Analysis of the survey results
- Written report of results

RESEARCH METHODOLOGY

The research methods used to complete the project are outlined in detail below.

Sampling Procedures

Four email sample lists were created, inviting those who receive Linux-related technical support services provided by Novell, Oracle, and Red Hat to participate. The sample lists were created using the following sources and criteria:

- A list of approximately 4,300 Novell customers who are using Linux-related technical support services
- A list of 10,000 individuals from a syndicated CI Technology Database was provided by Harte-Hanks
- A list of 15,000 individuals from the International Hi-Tech Database comprised of subscribers to a variety of technical publications was provided by Edith Roman
- A list of approximately 6,100 individuals who subscribe to Novell technical publications

The samples included the following geographical areas: North America, South and Central America, Europe, Middle East, Asia, and Asia Pacific.

To encourage participation in the survey, respondents' email addresses were entered into a drawing to receive one of ten IPODs. The thirty-seven individuals who participated in the in-depth telephone interview received \$40.00.

Online Hosting

Lighthouse Research was responsible for programming and hosting the online survey. A website address was provided to sample providers and a portal was available to the client to review data as it was being acquired. To allow international participation, email invitations and the survey questionnaires were translated and delivered in the following languages: French, English, Spanish, and Portuguese.

Survey Instrument Pretest

A pretest of 200 emails was sent to respondents in order to determine the validity of the survey instrument, identify programming concerns, and to ensure that the email process was working efficiently. The data collected, as part of the pretest, was examined by Lighthouse personnel to verify the accuracy of the online survey instrument and programming. Revisions were made and the project proceeded.

Data Collection

Each completed reply was automatically given a numeric code upon entry into the system to assist in the data analysis. All data collection for this survey was completed between February 22, 2007 and April 9, 2007. Data was collected from those clients who chose to respond to the email and participate in the online survey. Preliminary data captured after the first email blast was reviewed to ensure data was being collected accurately.

Five hundred and thirty-two individuals who had received Linux-related technical support services provided by Novell, Red Hat, or Oracle participated in the online survey. Of these 532 respondents, 486 had experienced Novell Linux-related technical support, 103 had experienced Oracle Linux-related technical support, and 179 had experienced Red Hat Linux-related technical support. In addition, thirty-seven of these individuals also participated in 15- to 20-minute in-depth telephone interviews.

Regarding the statistical confidence level for the overall research and each of the subsets, the completion of 532 completed surveys provides a 95% confidence level with a $\pm 4.2\%$ margin of error at the midpoint. The 486 responses from individuals receiving Linux-related technical support services from Novell provide a 95% confidence level with a $\pm 4.4\%$ margin of error. The 103 responses from individuals receiving Linux-related technical support services from Oracle provide a 95% confidence level with a $\pm 9.6\%$ margin of error. The 179 responses from individuals receiving Linux-related technical support services from Red Hat provide a 95% confidence level with a $\pm 7.3\%$ margin of error.

Data Analysis

The data analysis provides the following statistics upon which the written interpretative report is based:

- The frequency and valid percent of responses to each of the survey questions
- Responses to open-ended questions, coded for all occurrences of more than five multiple mentions
- Cross-tabular analysis to compare the significant differences in responses based on company demographics and user characteristics

Because of the dominance of Novell users in the dataset, traditional parametric analysis was inappropriate. To take this into account, a non-parametric equivalent of the ANOVA procedure called the Kruskal-Wallis test was used to analyze ordinal data. In this test, traditional response values are replaced with ranks upon which a permutation test is run. The advantage of a permutation test in unbalanced data is that the significance is based upon theoretical replications of the data rather than the actual number of responses.

To analyze the categorical data, a weighted chi-square analysis was conducted. Each set of responses was given a weight to match the smallest response set. For example, if response set 1 had many more respondents than response set 2, response set 1 would receive a smaller weight so that its responses were not diluting the responses of response set 2. Once weighted, a traditional chi-square analysis was run.

- ❖ *Statistically significant differences among vendors are denoted with a bullet point in the main body of the report. The results of other cross-tabular analysis comparing geographical and company size segments are reported in the Significant Differences section.*

LINUX-RELATED TECHNICAL SUPPORT COMPARATIVE STUDY EXECUTIVE SUMMARY

In March 2007, Lighthouse Research & Development, Inc., a full-service independent US-based marketing research firm, conducted a research study designed to evaluate customer satisfaction with the Linux-related technical support services provided by Novell, Red Hat, and Oracle.

PROJECT OBJECTIVES

The research is designed to assist IT professionals needing Linux-related technical support to make informed decisions regarding effective support services based on actual experiences of current customers. The research measures customer perceptions and satisfaction with the quality of Linux-related technical support by examining and comparing the services provided to customers by Novell, Red Hat, and Oracle in the past twelve months. The questionnaire was designed to enable clear, statistically valid comparisons of specific aspects of each vendor's Linux-related support services. Specific objectives for this research study were as follows:

- Determine customer usage levels and satisfaction with the delivery of each type of support, including: online, telephone, onsite, and community forums provided by Novell, Oracle, and Red Hat
- Evaluate customer satisfaction with the overall quality of services, level of Linux knowledge and expertise, ease of access, speed of resolution, and effectiveness of resolution for each vendor
- Compare the level of satisfaction customers have with the Linux-related technical support provided by Novell, Red Hat, and Oracle, identifying statistically significant differences
- Define the valued attributes and the areas of improvement of the technical support provided by each of the examined vendors

PROJECT SCOPE

The scope of the research project included the completion of 532 online surveys as a result of sending out over 35,000 email invitations to technical personnel working at companies who had a high probability of using Linux-related technical support services from Novell, Red Hat, and Oracle in the past twelve months. To ensure international participation, respondents were given the opportunity to respond to the survey invitations in one of the four following languages: English, French, Spanish, and Portuguese. The overall statistical confidence level created by the 532 responses from individuals receiving Linux-related technical support services in the past twelve months provides a 95% confidence level with a $\pm 4.2\%$ margin of error.

The online survey results were supported by conducting 37 in-depth follow-up telephone interviews, gathering customer perceptions and opinions of the Linux-related technical support services provided by Novell, Red Hat, and Oracle. This research model

combining quantitative and qualitative methodologies provides the statistical validity of the online study with the greater understanding, detailed reasons, and verbatim customer comments provided by the in-depth interviews.

In consideration of the large differentiation in the segment sizes of users in the dataset, use of the traditional parametric statistical analysis was inappropriate. In order to ensure a valid statistical comparison of the vendors evaluated in the research, a non-parametric equivalent of the ANOVA procedure called the Kruskal-Wallis test was used to analyze ordinal data, and a weighted Chi-Square analysis was used to analyze the categorical data.

KEY RESEARCH RESULTS

Customer Satisfaction Comparison

In evaluating the satisfaction of responding customers with the Linux-related technical service they received, respondents were asked to first rate the overall quality of service received, and then rate several specific aspects of the support services provided by Novell, Oracle, and Red Hat *using a zero-to-ten point scale*. A statistical analysis comparing the average mean scores of customer satisfaction ratings for each aspect of support provides clear indicators of where a vendor's support is perceived to excel, where vendors are performing at a similar level, and where a vendor's support is perceived as less competent than others.

Customers Satisfaction Scores Indicate Superior Performance by One Vendor

The research identified the following three aspects of Linux-related technical support where one vendor's services were distinctly superior to the other two vendors evaluated.

Overall Quality of Service

When asked to rate their satisfaction with the "overall quality of service" received from the examined vendors, respondents rated Novell (7.09 average mean) significantly higher than Red Hat (6.56) and Oracle (6.34). Those respondents using Novell Linux-related services cited the reasons for their satisfaction as: ease of access; good response time; effective resolution, especially within mixed platforms; and competent technician knowledge.

Time to Reach a Phone-based Support Engineer

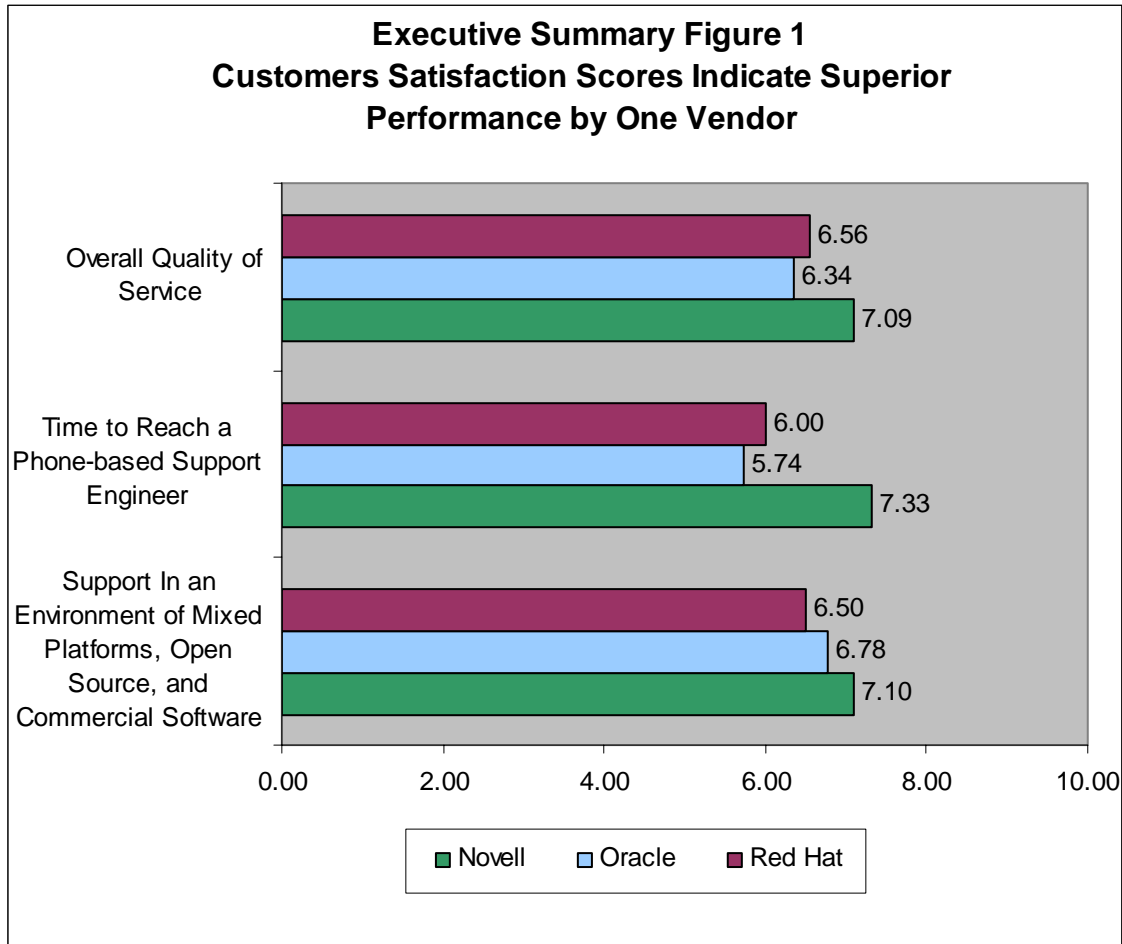
In comparing specific aspects of the various service delivery methods, respondents were asked to rate their satisfaction with telephone-based technical support. Respondents reported being significantly more satisfied with "the time it takes to reach a phone-based Linux support engineer" at Novell (7.33 average mean) than at Red Hat (6.00) or Oracle (5.74). When asked to explain why they rated Novell high in this aspect of support, respondents reported timely responses to their phone requests, with some respondents reporting immediate contact.

Support in an Environment of Mixed Platforms, Open Source, and Commercial Software

In evaluating which vendor best enables the use of mixed platforms, respondents were significantly more satisfied with how Novell (7.10 average mean) supports their Linux-based solutions in an environment of mixed platforms, open source, and commercial software than Red Hat (6.50). Respondents perceive Novell technicians as providing better solutions for mixed platforms and mixed-source environments because their technicians are knowledgeable and are willing to provide assistance on a variety of products.

Customers rated Oracle's support in an environment of mixed platforms, open source, and commercial software at 6.78. This satisfaction rating fell between the ratings of Novell and Red Hat and is not analytically differentiated from the Linux-related support of either of the other vendors.

Please refer to Executive Summary Figure 1 to provide a visual comparison of the distinctions among customer satisfaction of the three evaluated vendors regarding overall quality of service and two other critical aspects of support previously discussed.



Customers Satisfaction Scores Indicate Equivalent Performance among Vendors

The research results indicated customer satisfaction with Novell and Red Hat's Linux-related technical support services were very similar in the following three areas: Linux knowledge and expertise, proactive nature of the vendor in providing support information and updates, and the ability to support and maintain Linux distribution long-term. Oracle's Linux-related technical support for these same three aspects was rated significantly lower than the other two vendors.

In addition, there is no actual analytical difference among the three vendors regarding the effectiveness of their self-help and web-based support and the time they take to resolve issues through phone-based support.

Linux Knowledge and Expertise

Customers rated their satisfaction with the level of Linux knowledge and expertise the same for Red Hat (7.51 average mean) and Novell (7.51). Overall, these satisfaction scores are the second highest ratings for all of the support aspects evaluated. The reasons customers gave for positive satisfaction ratings for Red Hat's Linux knowledge and expertise included the expertise of their staff, the longevity of their Linux support services, and the magnitude of their resources. The reasons customers gave for rating Novell's Linux knowledge and expertise positively were: effective resolution, technical competency, staff experience, and willing technicians.

Although customers were equally satisfied with the Linux knowledge and expertise of Red Hat and Novell, Oracle's Linux knowledge and expertise (6.80) was rated significantly lower.

How Proactive Vendors are in Providing Linux-related Support Alerts, Updates and Patches

Customers rated their satisfaction with Novell (7.40 average mean) and Red Hat (7.01) in providing proactive Linux-related support alerts, updates, and patches significantly higher than Oracle (6.36). Although the average mean scores between Novell and Red Hat demonstrate some difference, there is no decisive analytical differentiation. Respondents reported Novell's email alerts for updates and patches to be frequent and timely, but suggested more attention to the pertinence of such alerts to the products they use. Respondents using Red Hat Linux-related support services also reported regular, thorough patch delivery and newsletter emails.

Ability to Support and Maintain Linux Distribution Long-term

Again, Red Hat (7.90 average mean) and Novell (7.91) are seen by customers as equivalent in their ability to support and maintain Linux distribution long-term. These two ratings were the highest satisfaction ratings in the research. Red Hat has long been seen as the leader in Linux-related support with wide distribution and large resources. Novell is perceived as a strong, well-established company with good infrastructure and quality distribution.

On average, Oracle's ability to support and maintain Linux distribution long-term was rated significantly lower (6.95) than Red Hat's or Novell's.

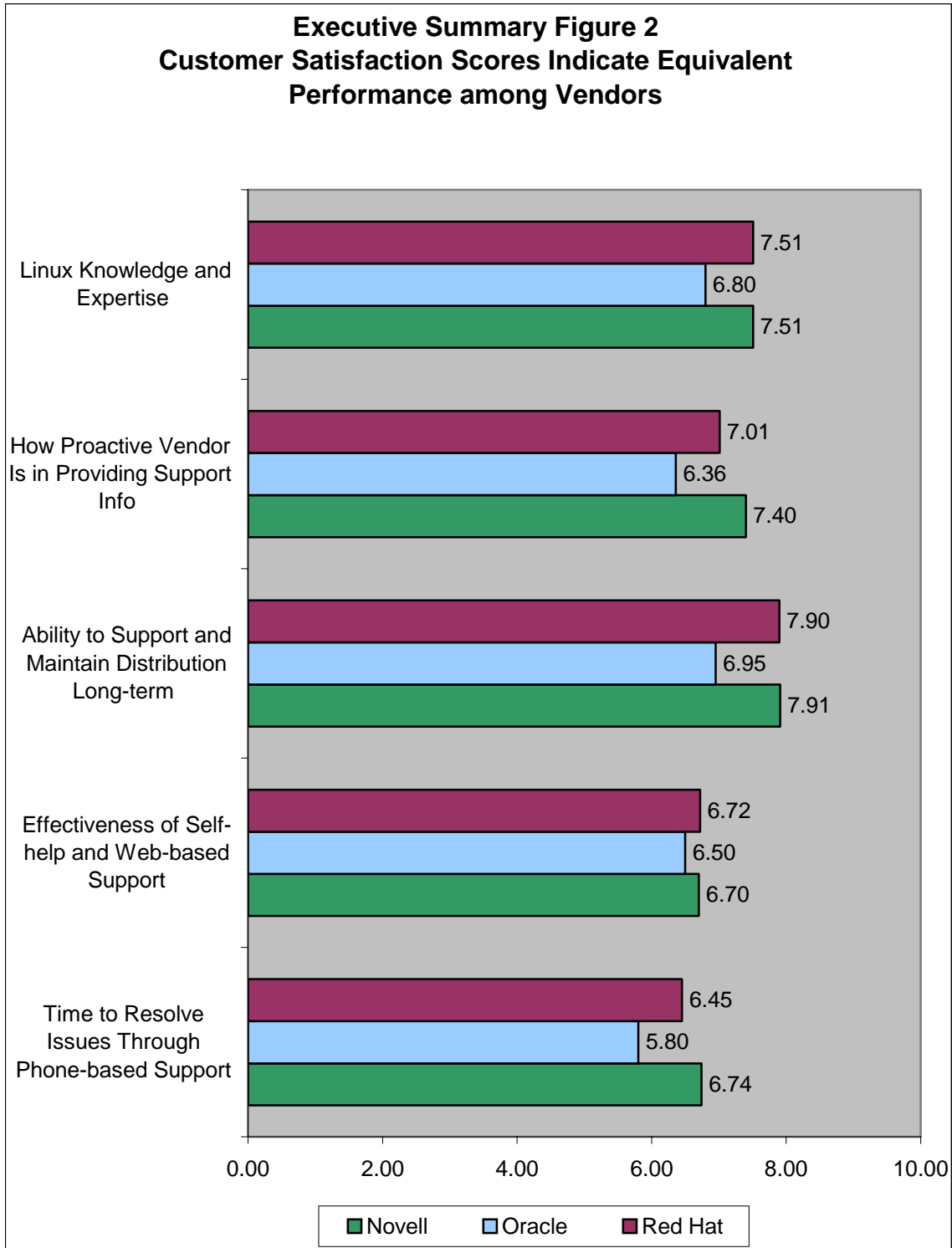
Effectiveness of Self-help and Web-based Support

Based upon the average ratings given by respondents, customers perceive Novell, Red Hat, and Oracle as providing equally effective self-help and web-based support. Customers gave an average mean rating of 6.72 to Red Hat, an average mean rating of 6.70 to Novell, and an average mean rating of 6.50 to Oracle when rating how satisfied they were with the effectiveness of the Linux-related self-help or web-based support they receive from each respective vendor. This illustrates that customers perceive the web-based support of all three vendors as similar, offering no distinction in support.

Time to Resolve Issues through Phone-based Support

In addition, customers have similar satisfaction with the amount of time Novell, Red Hat, and Oracle take to resolve issues through phone-based support. Although there is some apparent difference in satisfaction with the amount of time needed to resolve issues through phone-based support between Novell, Oracle, and Red Hat, this difference is not large enough to indicate actual, reliable higher performance of any one vendor.

Please refer to Executive Summary Figure 2 for a visual illustration of the similarities of customer satisfaction with Linux-related technical support among the vendors examined.



It is important to note that while satisfaction with on-site and dedicated support resources are evaluated within the research, they are not considered key results as the usage of these types of Linux-related technical support across all vendors is low. Therefore, they are not included in the Executive Summary but are available in the Detailed Results.

The Importance of Issue Resolution

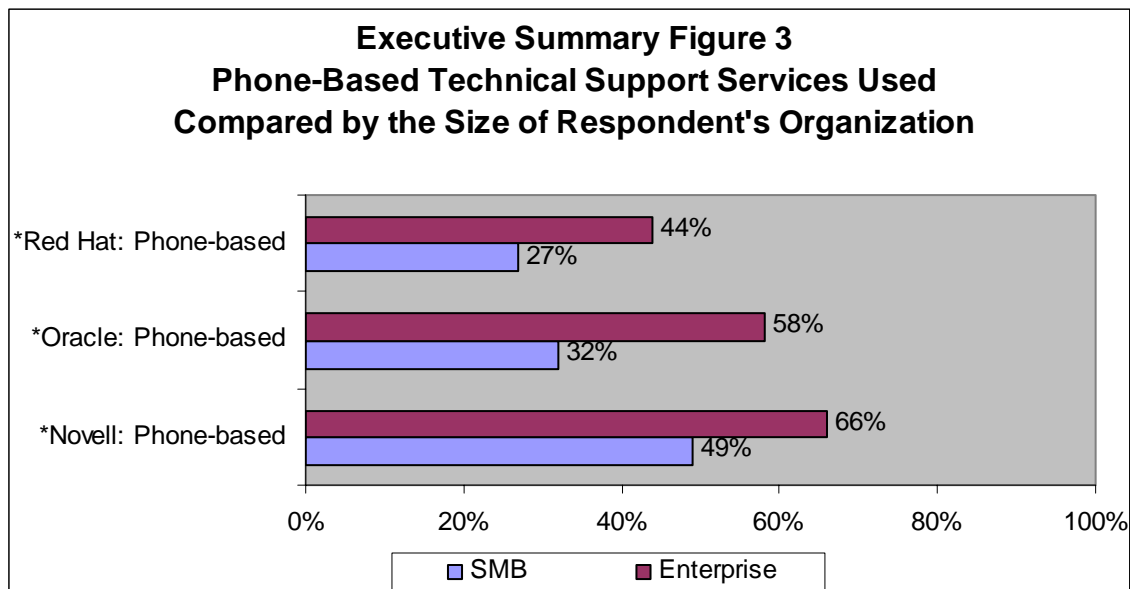
Almost two-thirds of respondents rated the importance of the “effectiveness of resolution” with Linux-related technical support as “10” on a zero-to-ten point scale. This is a clear indication that receivers of Linux-related technical support want their issues and concerns handled accurately and effectively. Respondents rated the importance of the “effectiveness of resolution” (9.26 average mean) significantly higher than either the “ease of access to technical support” (8.62) or the “speed of resolution” (8.55).

Linux-related Technical Support Needs of SMB Companies Versus Enterprise Companies

When analyzing the needs and satisfaction of SMB companies (fewer than 500 employees) versus the needs and satisfaction of Enterprise companies (500 or more employees), the general results demonstrated no definitive difference.

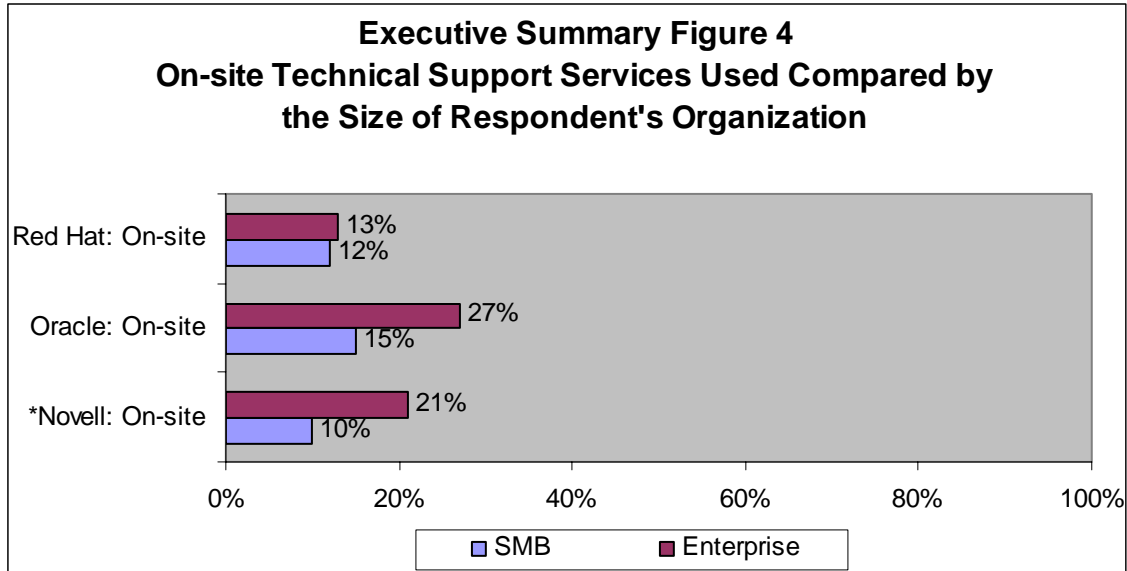
The one notable exception was the level of confidence in the ability of the vendor to support and maintain their Linux distribution long-term. While all respondents had a high level of confidence in Red Hat’s and Novell’s ability to maintain Linux support and distribution, SMB companies had a significantly higher level of confidence in Novell’s ability to support and maintain their Linux distribution long-term (8.17 average mean) than Enterprise companies (7.66).

In general, Enterprise companies were more likely to have used phone-based Linux-related technical support than were SMB companies. As illustrated in Executive Summary Figure 3, Enterprise companies are using significantly more phone-based Linux-related technical support than SMB companies regardless of which vendor they selected for support.



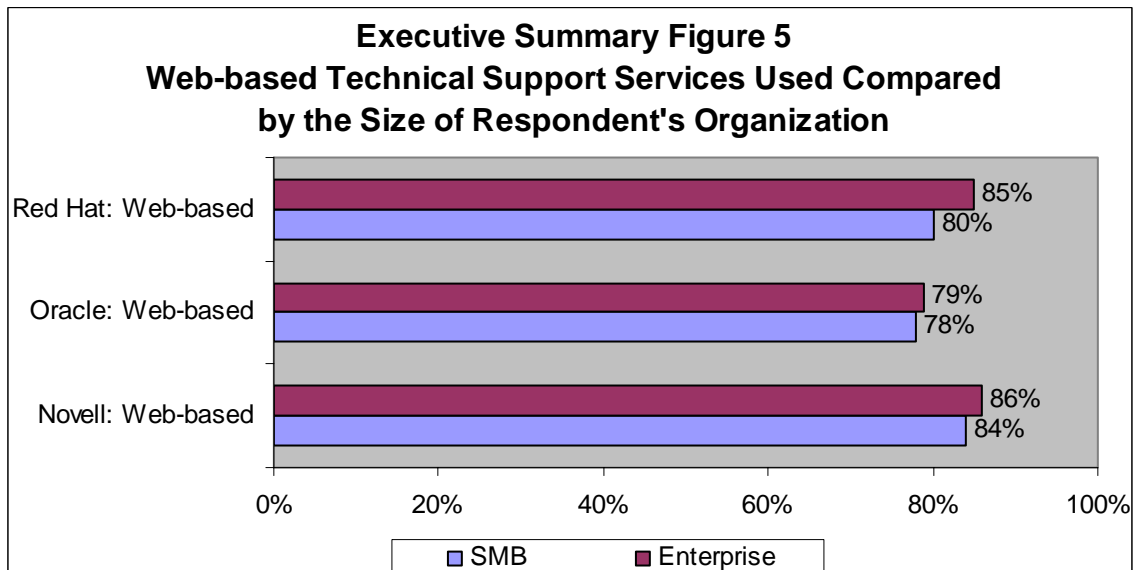
**Denotes a statistically significant difference between the segments being compared.*

In addition, Enterprise companies are using more Novell and Oracle on-site Linux-related technical support than SMB companies. Twenty-one percent of Enterprise companies using Novell support are using significantly more Novell on-site compared to 10% of SMB companies. Please refer to Executive Summary Figure 4 for more information.

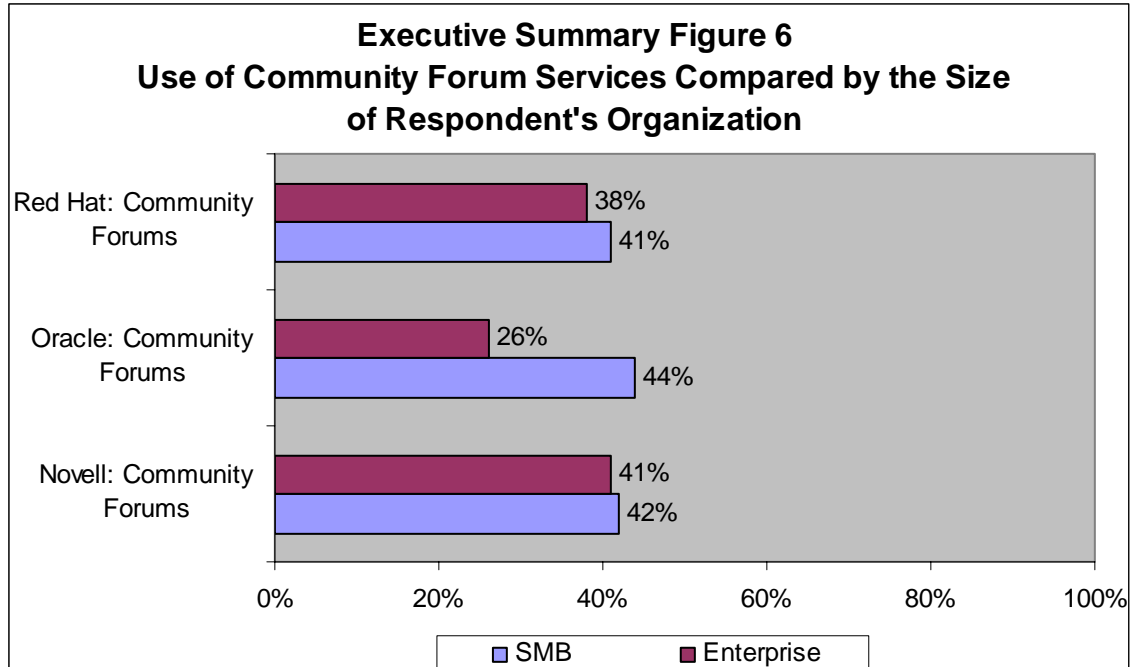


**Denotes a statistically significant difference between the segments being compared.*

Overall, companies of all sizes are using web-based Linux-related technical support more than all other types of support offered. The usage of web-based technical support is similar regardless of whether they are categorized as a SMB or Enterprise company. Please refer to Executive Summary Figure 5 for details.



In general, Enterprise and SMB companies are using Linux-related community forums to the same extent. Although there appears to be some differentiation in usage of community forums provided by Oracle, the number of respondents using Oracle's community forums was insufficient to be conclusive.



Enterprise companies were significantly more likely to subscribe to a premium level of Linux-related technical support, regardless of the vendor, than were SMB companies. Those SMB companies using Novell Linux-related technical support tend to subscribe to basic or standard level Linux-related technical support.

Differences in Satisfaction among Geographical Regions

Respondents from North America and Europe/Middle East/Africa were compared to discover differences in attitude and satisfaction.

Respondents from North America perceived the “ease of access” (8.81 average mean), the “speed of resolution” (8.68), and the “effectiveness of the resolution” (9.38) of Linux-related technical support more important to their organization than respondents from Europe/Middle East/Africa. Comparatively, respondents from Europe/Middle East/Africa rated the “ease of access” 8.24, the “speed of resolution” 8.10, and the “effectiveness of the resolution” 9.09.

North American Customers Report Higher Satisfaction Compared to Customers from Europe/Middle East/Africa

Overall, North American respondents are more satisfied with the Novell and Red Hat Linux-related support they are receiving than their Europe/Middle East/Africa counterparts. North American respondents rated the overall quality of Novell's (7.34 average mean) and Red Hat's (6.81) Linux-related technical support services higher than did respondents located in Europe/Middle East/Africa (6.74, 5.41).

Respondents from North America were also more satisfied than respondents from Europe/Middle East/Africa with the time Novell took to resolve issues using phone-based support, the effectiveness of Novell's web-based support, Novell's overall level of knowledge and expertise, and Novell's support of Linux-based solutions in a mixed environment. Additionally, North American respondents rated Novell as more proactive in sending Linux-related support information.

North American respondents (6.68 average mean) perceived Red Hat as better at supporting Linux-based solutions in mixed environments than European/Middle Eastern/African respondents (4.71).

The distribution of Oracle respondents across geographical regions was not considered robust enough to be conclusive.

North American Customers Indicate Higher Use of Phone-based Linux-related Support Compared to Customers from Europe/Middle East/Africa

In general, North American respondents are more likely to use phone-based Linux-related technical support than respondents from Europe/Middle East/Africa. Specifically, North American respondents (41%) were more likely to use Red Hat's phone-based technical support services than were respondents from Europe/Middle East/Africa (15%). In addition, respondents from North America (69%) were more likely to use Novell's phone-based technical support than respondents from Europe/Middle East/Africa (49%). Thus, it may be concluded that respondents from Europe/Middle East/Africa are more reliant on web-based support and Linux-related support alerts, updates and patches.

Conclusion

In conclusion, let us review the customer-defined strengths and similarities of each vendor's Linux-related technical support services.

Customer Satisfaction Scores Indicate Superior Performance by One Vendor

The research identified three aspects of Linux-related technical support where one vendor's services were distinctly superior to the other two vendors evaluated. Customers clearly demonstrated higher satisfaction with Novell's support compared to satisfaction with Oracle or Red Hat in the following three areas:

- Overall Quality of Service
- Time to Reach a Phone-based Support Engineer
- Support in an Environment of Mixed Platforms, Open Source, and Commercial Software

Customer Satisfaction Scores Indicate Equivalent Performance among Vendors

In contrast, five of the areas of Linux-related technical support that were evaluated in the research, illustrate equivalent or similar performance among vendors.

In the following three areas, Novell's and Red Hat's performance are perceived by customers as equal or very similar to each other:

- Linux Knowledge and Expertise
- How Proactive Vendors Are in Providing Linux-related Support Alerts, Updates and Patches
- Ability to Support and Maintain Linux Distribution Long-term

The performance of all three vendors is perceived as similar in regards to:

- Effectiveness of Self-help and Web-based Support
- Time to Resolve Issues Through Phone-based Support

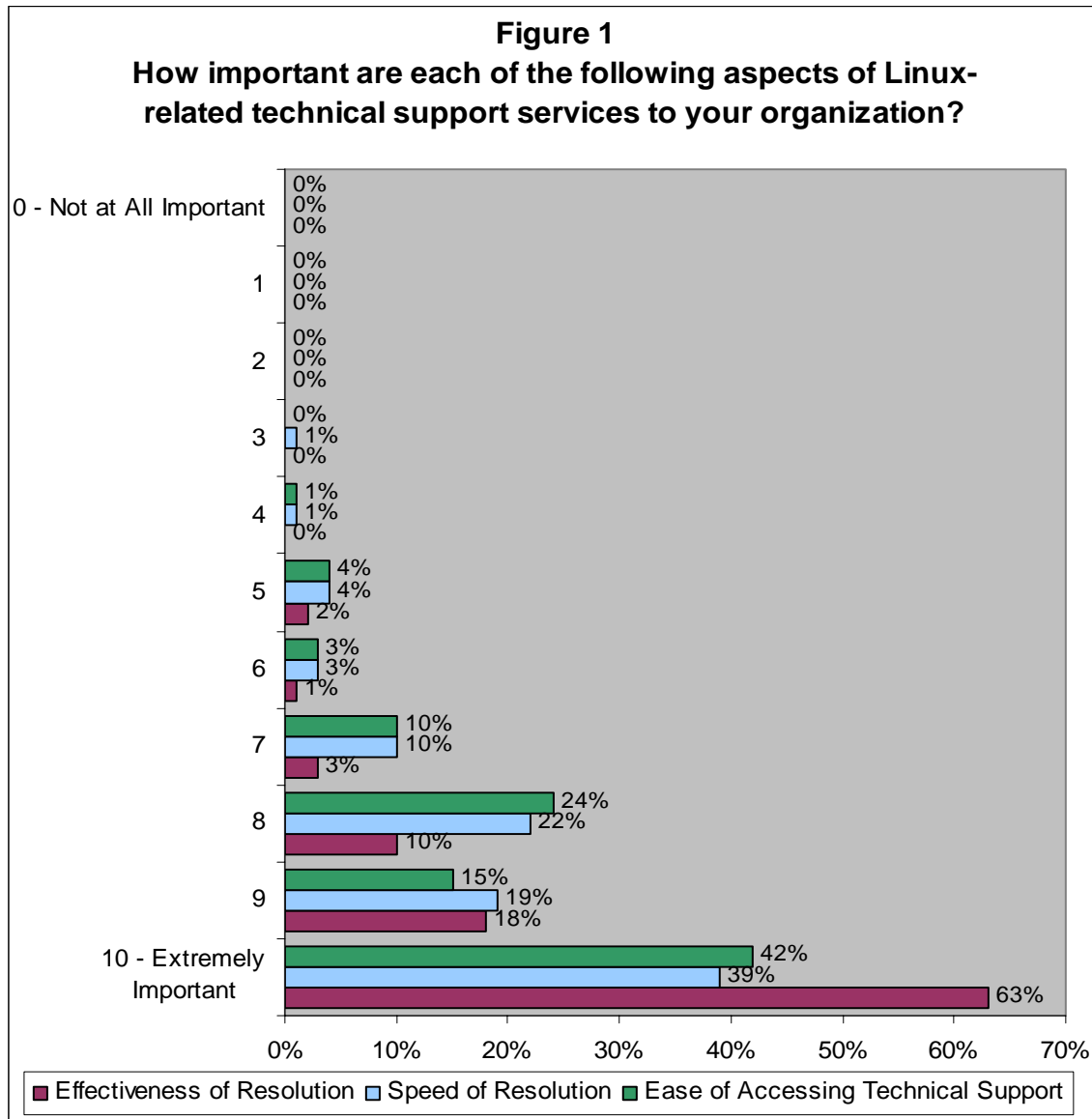
The results of the research will assist those needing Linux-related technical support in the future to identify which vendor would provide the most effective technical support for their organization.

DETAILED RESULTS

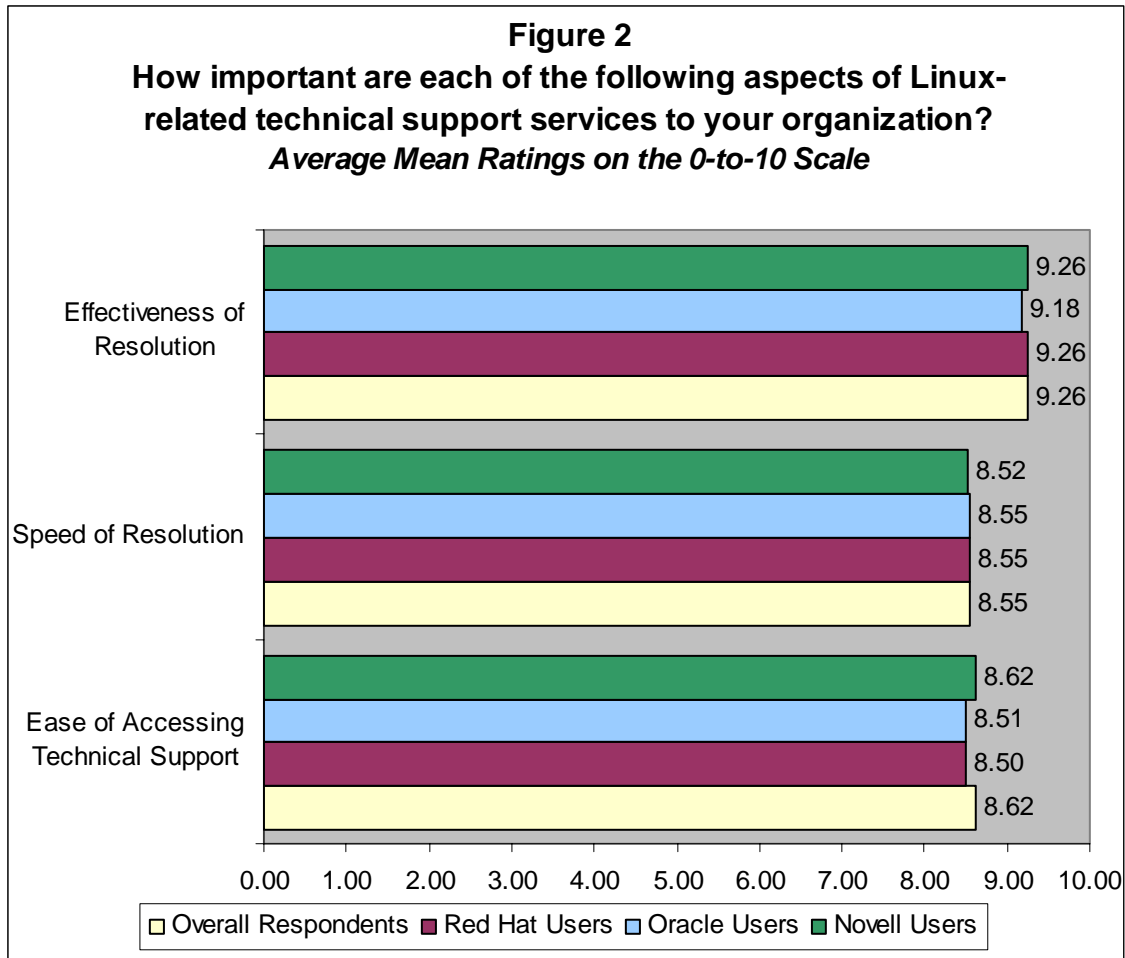
❖ Throughout the Detailed Results statistically significant differences between Novell, Oracle and Red Hat are indented and denoted with the bullet point shown.

IMPORTANCE OF TECHNICAL SUPPORT SERVICES

Respondents were asked to rate how important particular aspects of Linux-related technical support services are to their organizations by using a zero-to-ten scale where zero is “not at all important” and ten is “extremely important.” As Figure 1 illustrates, 63% of respondents gave a rating of “10” when rating the importance of “effectiveness of resolution,” compared to 39% of respondents who gave a rating of “10” when rating the importance of “speed of resolution,” and 42% who gave a rating of “10” when rating the importance of “ease of accessing technical support.”



As Figure 2 illustrates, all users gave the highest average mean rating to the importance of “effectiveness of resolution,” indicating that problem resolution is more important to their companies than quick resolution or easy access to technical support.



- ❖ Respondents rated the effectiveness of resolution as more important to their organization (9.26 average mean) than the ease of technical support (8.62) and the speed of resolution (8.55).

SATISFACTION WITH TECHNICAL SUPPORT

For this section of the results, respondents were asked to rate their satisfaction with various aspects of the Linux-related support they have received from Novell, Oracle, and/or Red Hat by using a scale of zero to ten where zero is “not at all satisfied” and ten is “extremely satisfied.” It is important to note that respondents rated only those vendors from which they have received service.

Satisfaction with Overall Quality of Service

Respondents were asked to rate how satisfied they are with the overall quality of service they have received from Novell, Oracle, and/or Red Hat for Linux-related technical support services. As Figure 3 illustrates, 17% of respondents gave a rating of “10 – extremely satisfied” when rating Novell, while 9% of respondents gave a rating of “10” when rating Red Hat, and 7% of respondents gave a rating of “10” when rating Oracle.

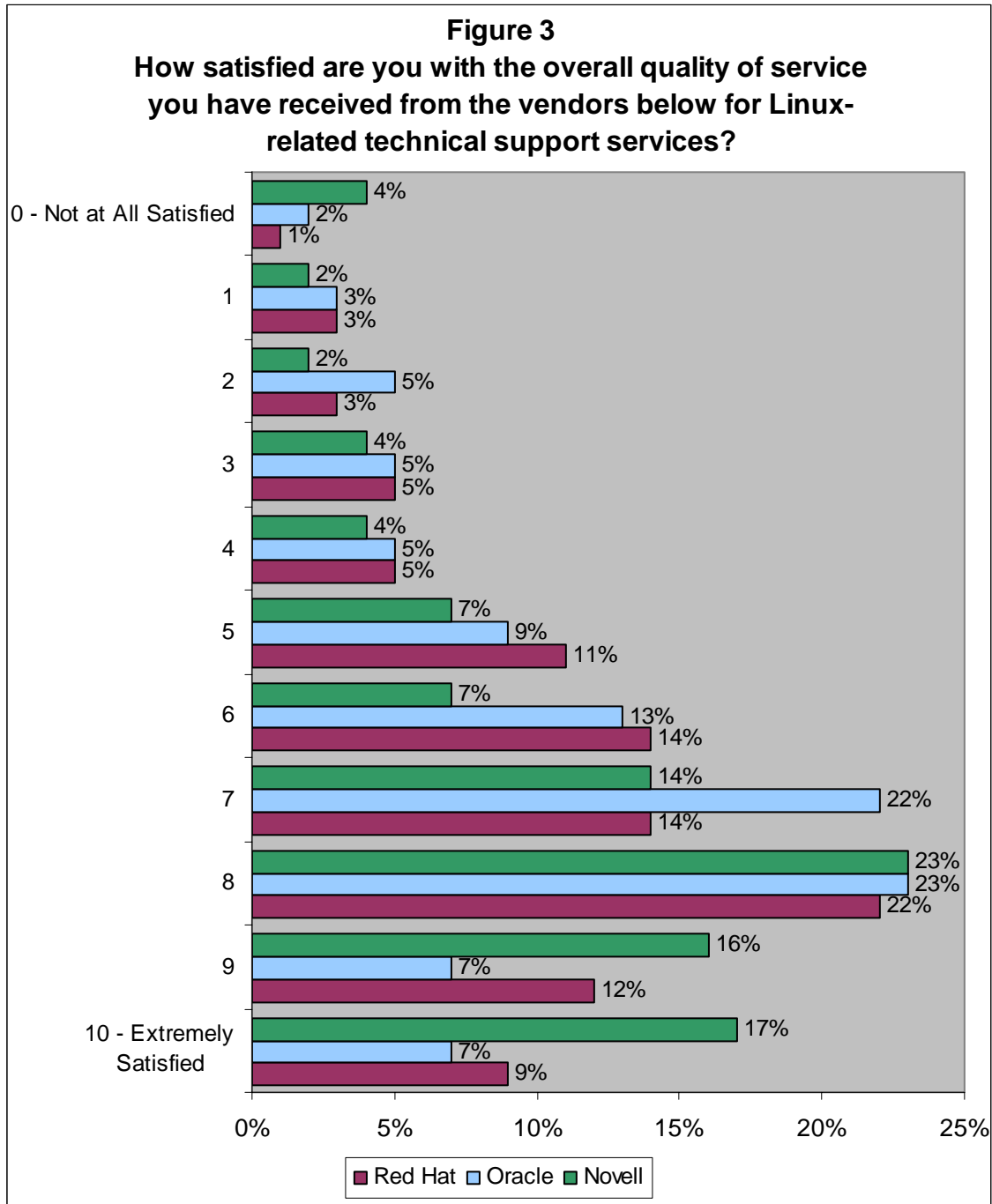
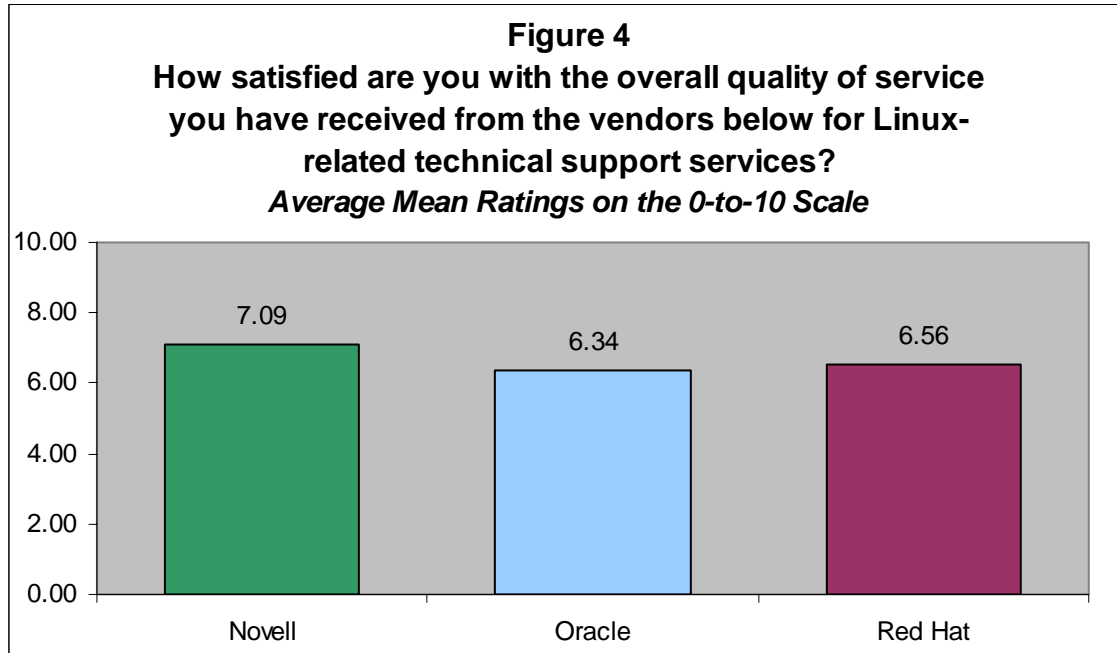


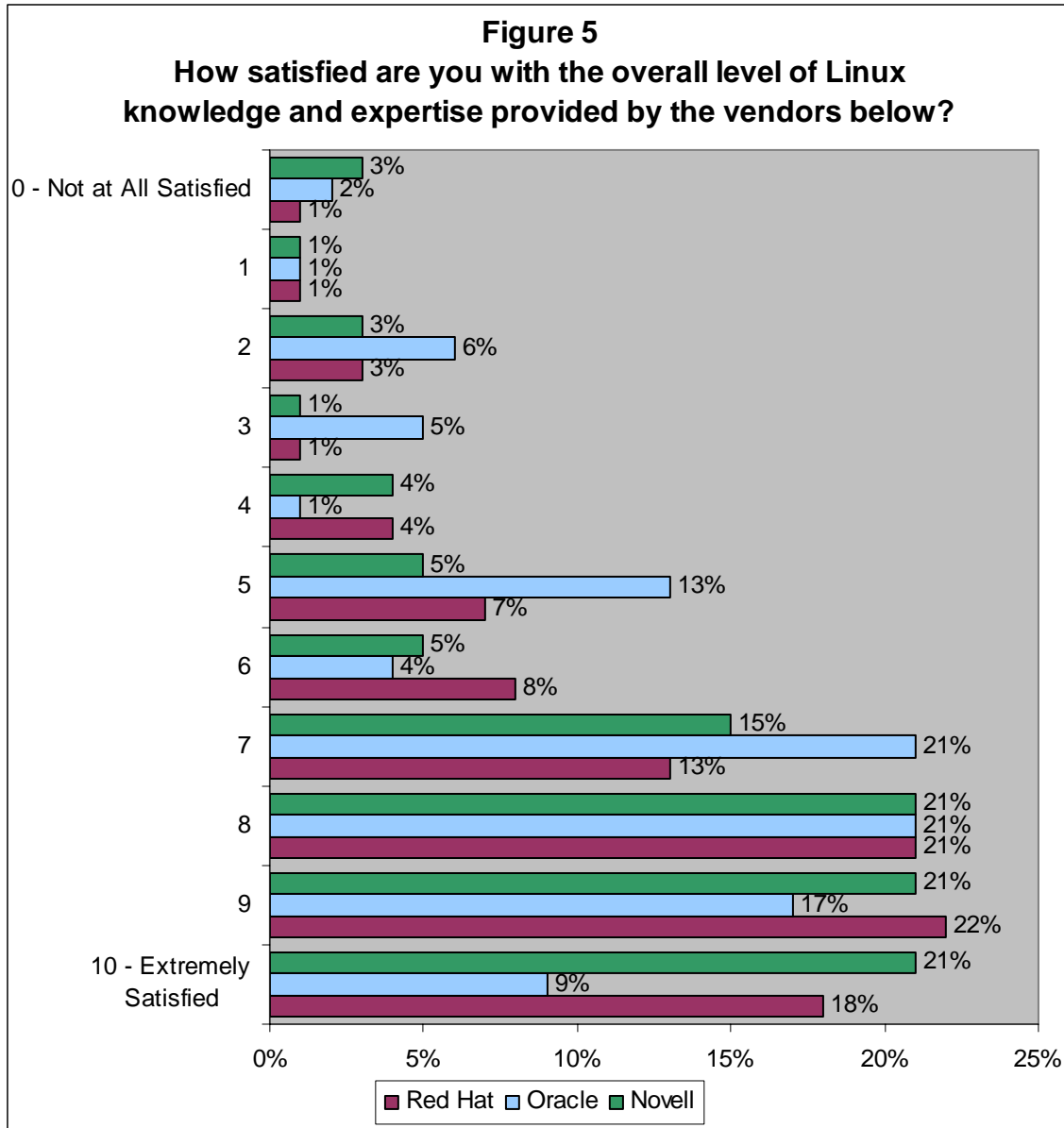
Figure 4 illustrates the average mean ratings each vendor received when respondents rated the quality of service they have received from each vendor. As illustrated, Novell received the highest average mean rating (7.09), in terms of overall satisfaction, while Oracle received the lowest average mean rating (6.34).



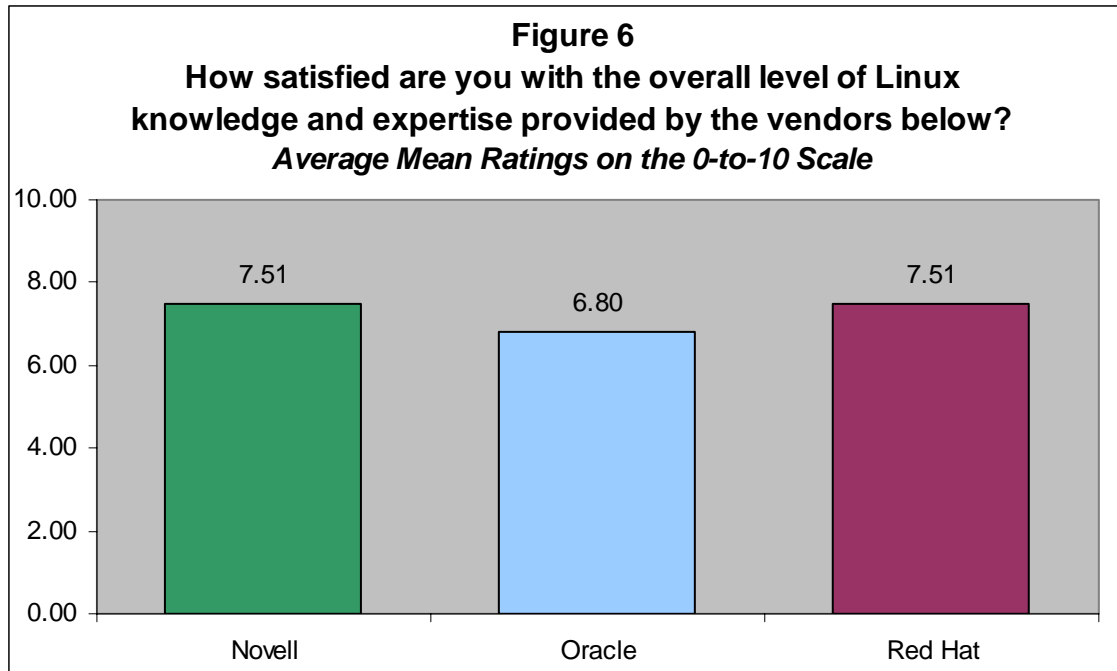
- ❖ When asked to rate their satisfaction with the overall quality of service received from the specified vendors, respondents rated Novell (7.09 average mean) significantly higher than Oracle (6.34) and Red Hat (6.56).

Satisfaction with Linux Knowledge & Expertise

When asked to rate how satisfied they were with the overall level of Linux knowledge and expertise provided by Novell, Oracle, and/or Red Hat, 21% of respondents gave a rating of “10” when rating their satisfaction with Novell’s Linux knowledge and expertise, and 18% of respondents gave a rating of “10” when rating their satisfaction with Red Hat’s Linux knowledge and expertise. Only 9% of respondents gave a rating of “10” when rating their satisfaction with Oracle’s Linux knowledge and expertise. Please see Figure 5 for complete details.



As Figure 6 illustrates, respondents gave an average mean satisfaction rating of 7.51 on the zero-to-ten scale when rating their satisfaction with the Linux knowledge and expertise provided by both Novell and Red Hat, but a rating of 6.80 when rating Oracle.

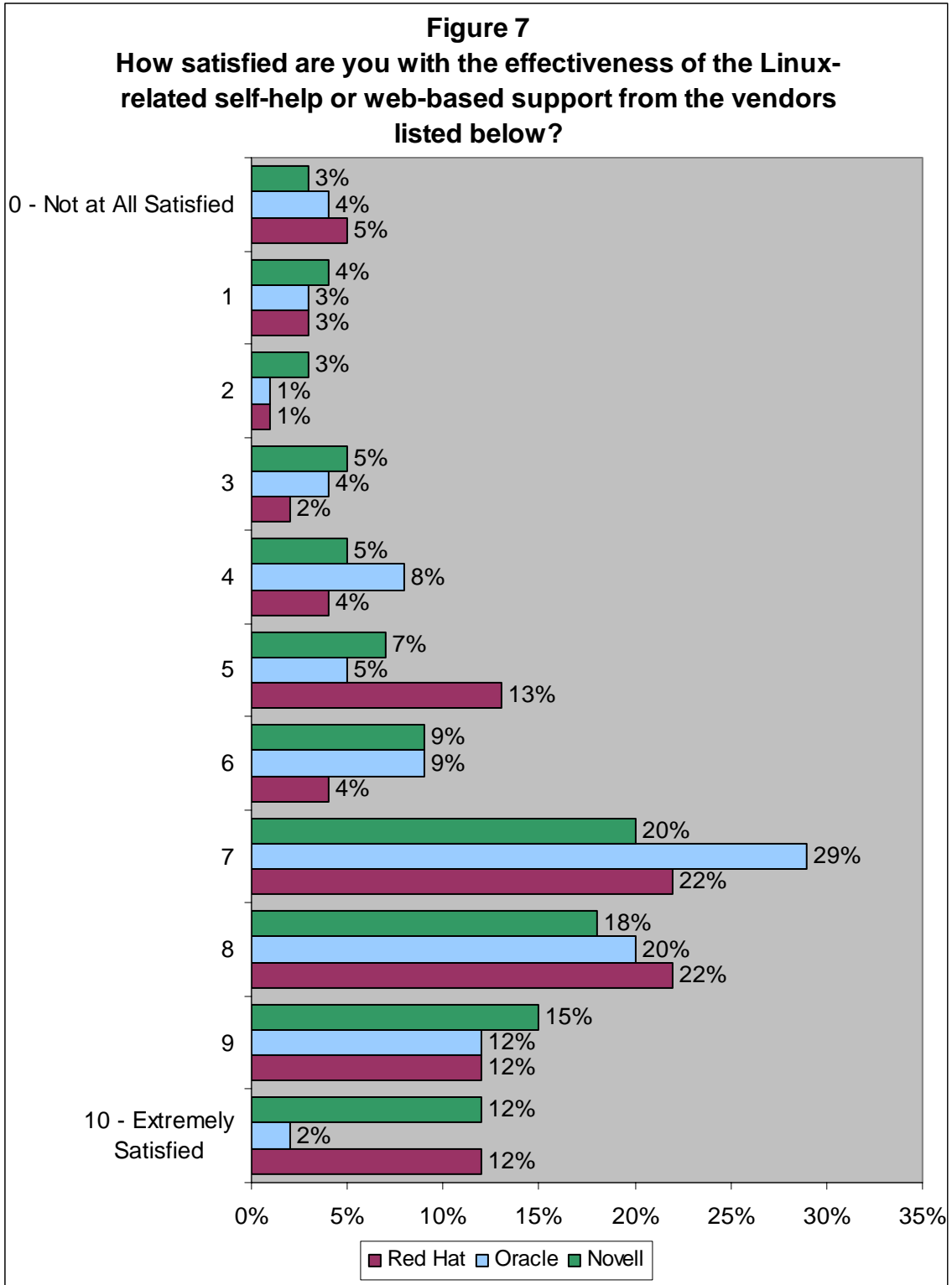


❖ *Respondents rated their satisfaction with the Linux knowledge and expertise of Novell (7.51 average mean) and Red Hat (7.51) higher than Oracle (6.80).*

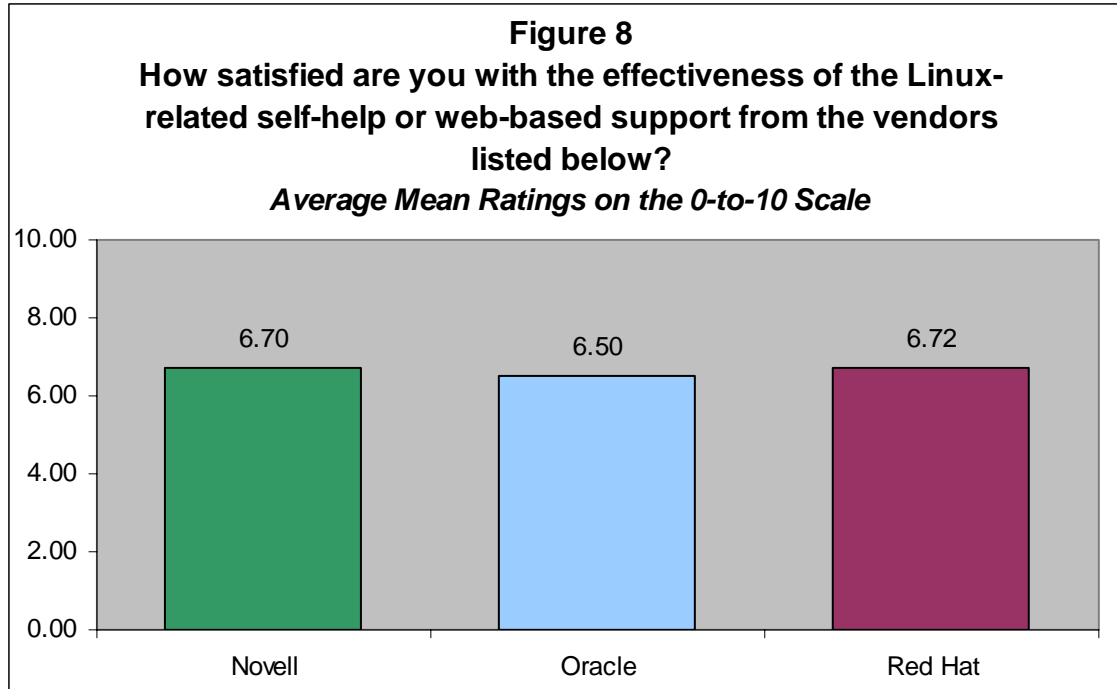
Satisfaction with the Effectiveness of Linux-related Self-help or Web-based Support

Note: The following results were gathered only from those respondents who reported using web-based support from one or more vendor.

Twelve percent of respondents *each* gave a rating of “10 – extremely satisfied” when rating how satisfied they are with the effectiveness of the Linux-related self-help or web-based support they receive from Novell and/or Red Hat; only 2% of respondents gave a satisfaction rating of “10 – extremely satisfied” when rating their satisfaction with Oracle. Please see Figure 7 on the following page for further details.



Respondents gave an average mean rating of 6.70 to Novell, an average mean rating of 6.72 to Red Hat, and an average mean rating of 6.50 to Oracle when rating how satisfied they were with the effectiveness of the Linux-related self-help or web-based support they receive from each respective vendor. For further details, please refer to Figure 8.

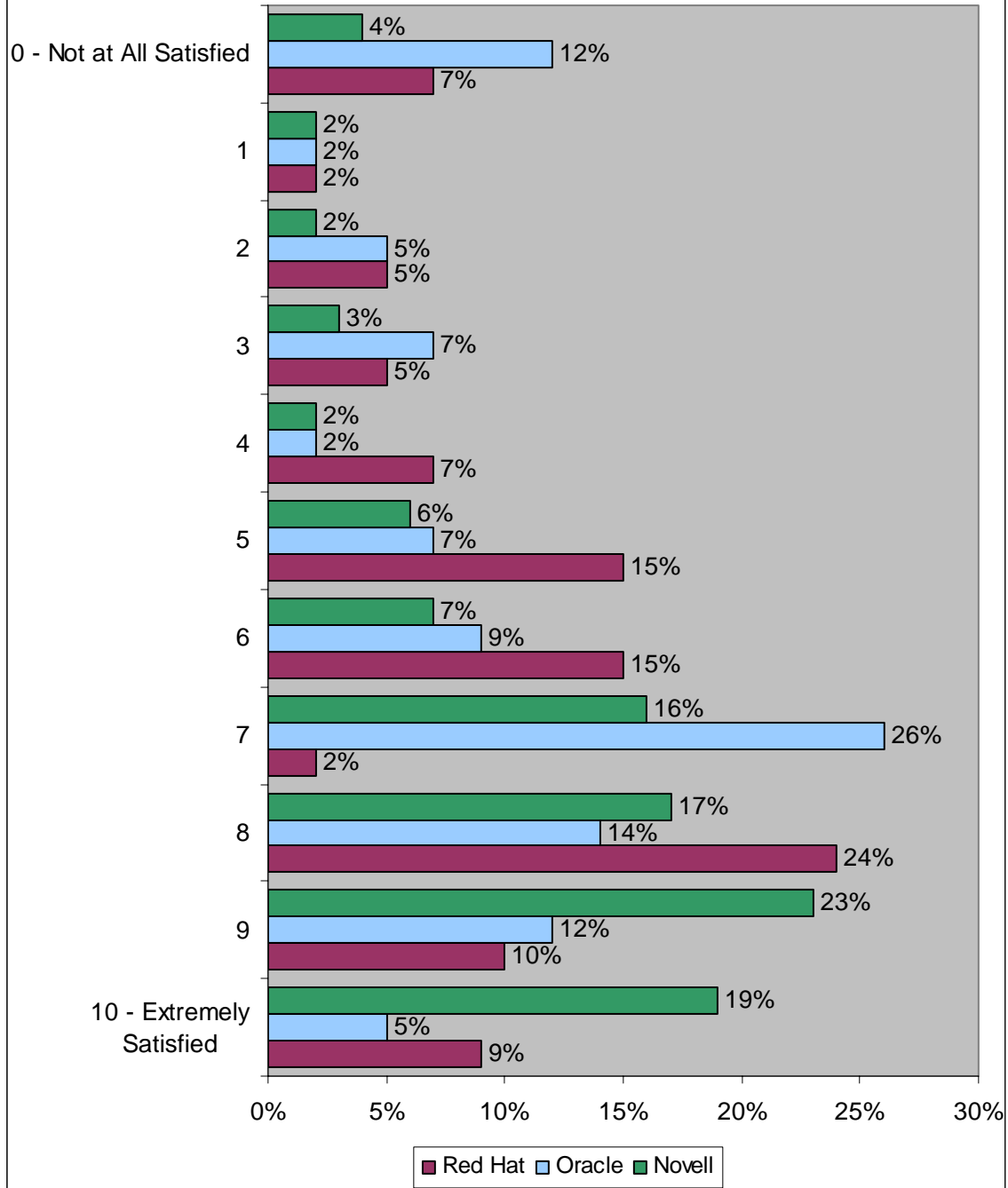


Satisfaction with the Time Taken to Reach a Phone-based Linux Support Engineer

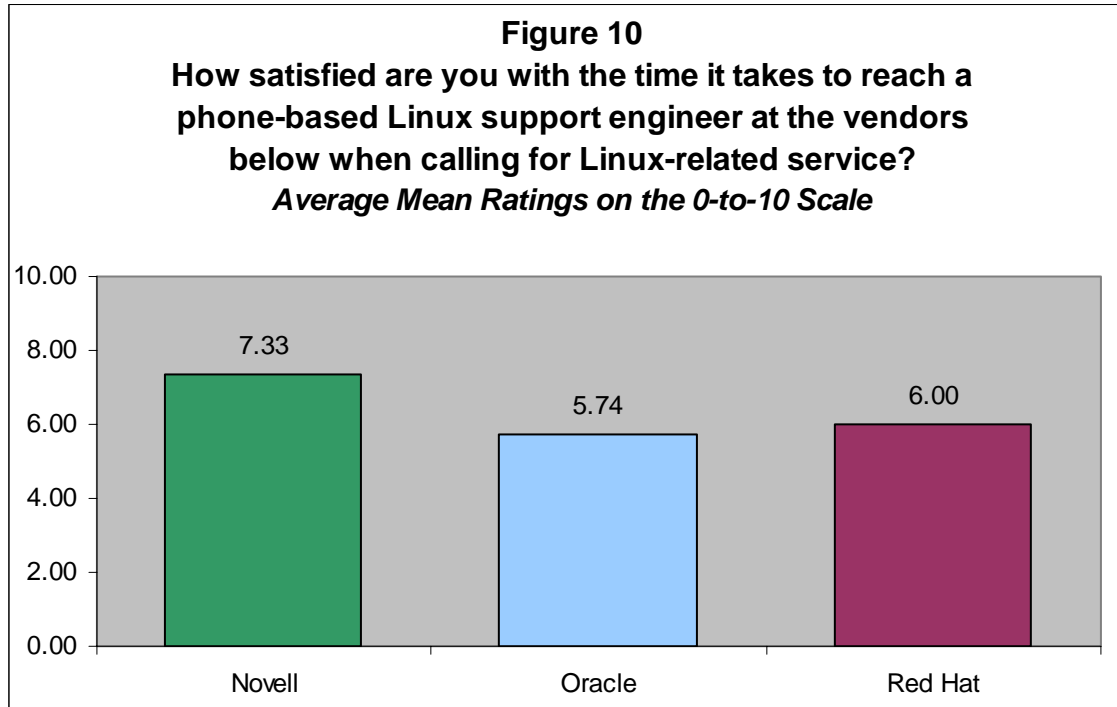
Note: The following results were gathered only from those respondents who reported using phone-based support from one or more vendor.

Nearly one-fifth of respondents (19%) gave a rating of “10 – extremely satisfied” when rating how satisfied they were with the time taken to reach a phone-based Linux support engineer at Novell when calling for Linux-related service. In contrast, only 5% of respondents gave a rating of “10 – extremely satisfied” when rating how satisfied they were with the time taken to reach a phone-based Linux support engineer at Oracle when calling for Linux-related service. Please refer to Figure 9 on the following page for details.

Figure 9
How satisfied are you with the time it takes to reach a phone-based Linux support engineer at the vendors below when calling for Linux-related service?



When rating their satisfaction with the time taken to reach a phone-based Linux support engineer at each vendor, respondents gave the highest average mean rating (7.33) to Novell, and the lowest average mean rating (5.74) to Oracle. Respondents gave an average mean rating of 6.00 on the zero-to-ten scale when rating their satisfaction with the time it takes to reach a phone-based Linux support engineer at Red Hat. Please see Figure 10.

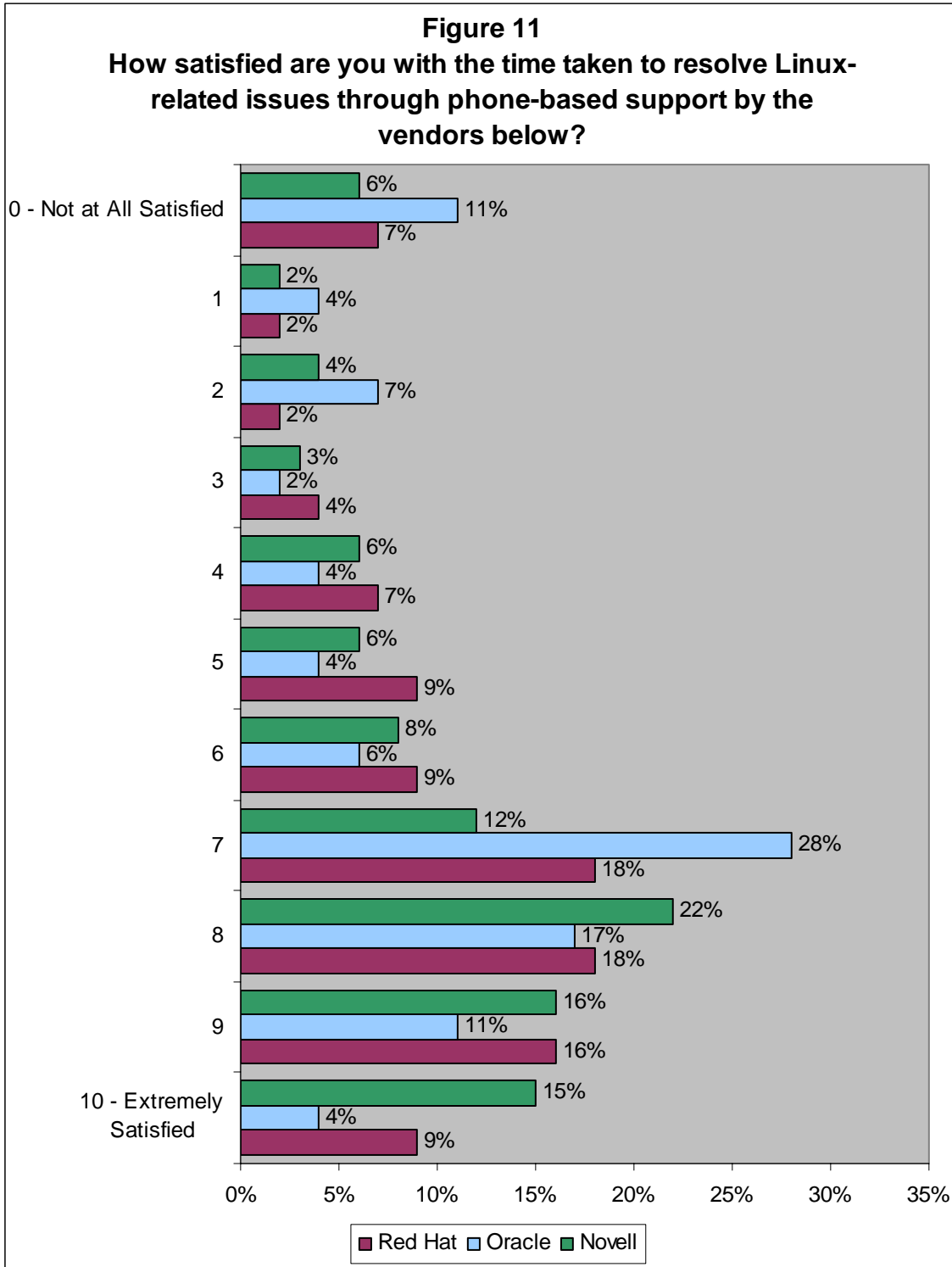


- ❖ Respondents reported being significantly more satisfied with the time it takes to reach a phone-based Linux support engineer at Novell (7.33 average mean) than at Oracle (5.74) and Red Hat (6.00).

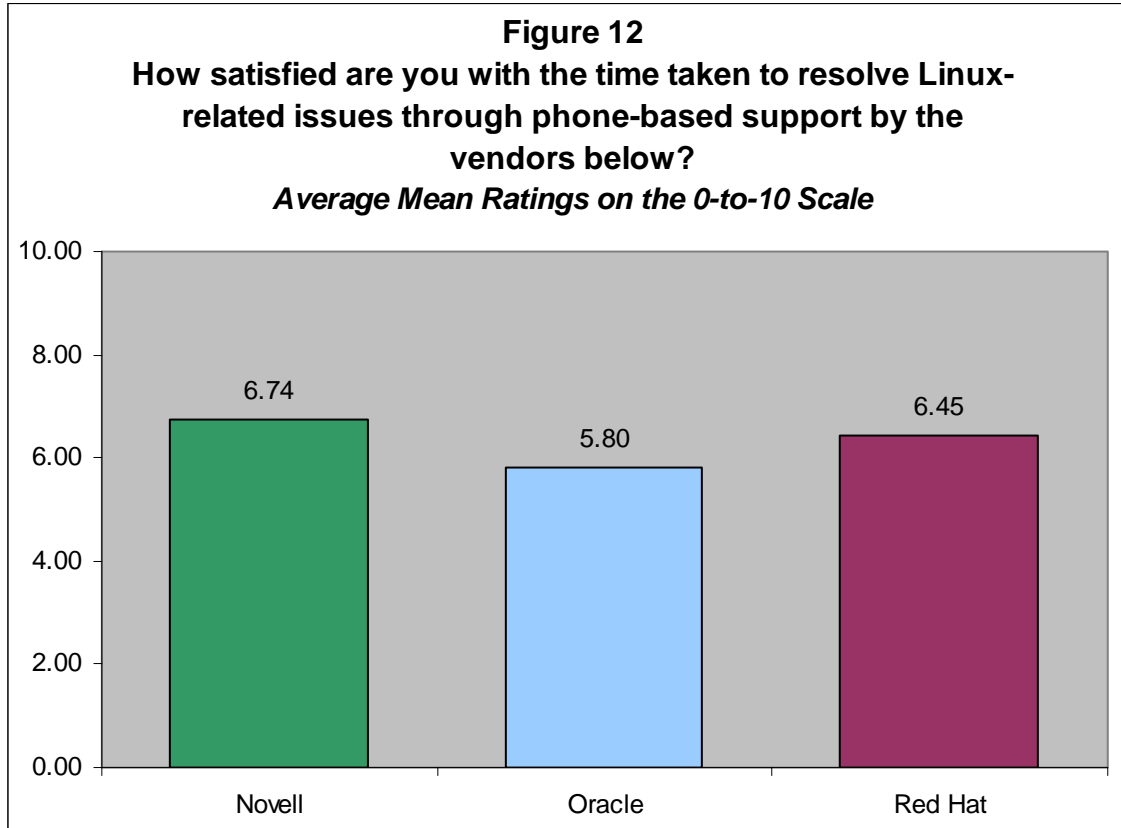
Satisfaction with the Time Taken to Resolve Linux-related Issues through Phone-Based Support

Note: The following results were gathered only from those respondents who reported using phone-based support from one or more vendor.

When asked to rate how satisfied they were with the time taken to resolve Linux-related issues through phone-based support by Novell, Oracle, and/or Red Hat, 15% of respondents gave a rating of “10 – extremely satisfied” when rating Novell; in contrast, only 4% of respondents gave a rating of “10 – extremely satisfied” when rating Oracle. Please see Figure 11 on the following page for details.



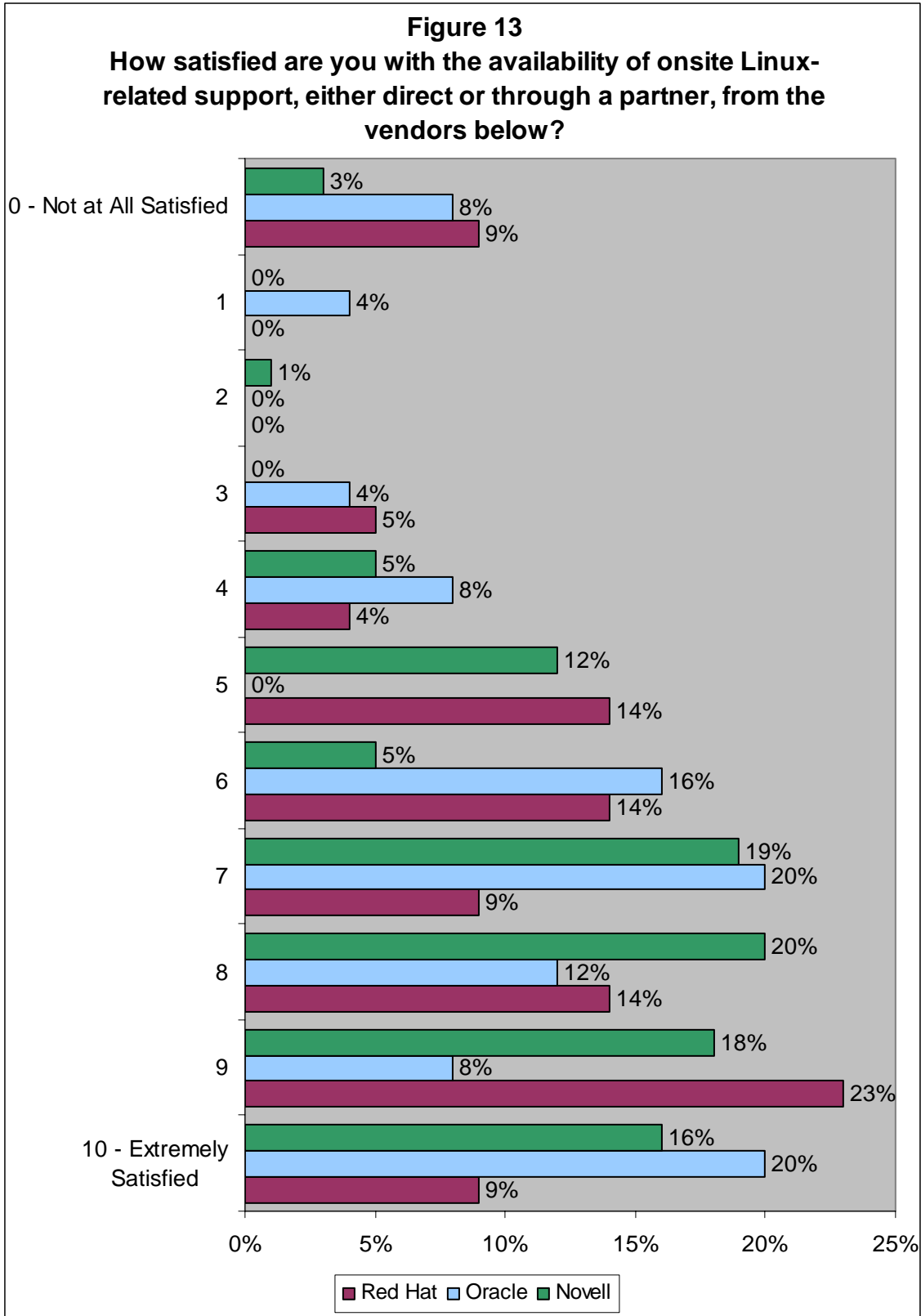
As Figure 12 illustrated, respondents gave the highest average mean rating (6.74) when rating their satisfaction with the time taken to resolve Linux-related issues through phone-based support by Novell; they gave their lowest average mean rating (5.80) when rating their satisfaction with the time taken to resolve Linux-related issues through phone-based support by Oracle.



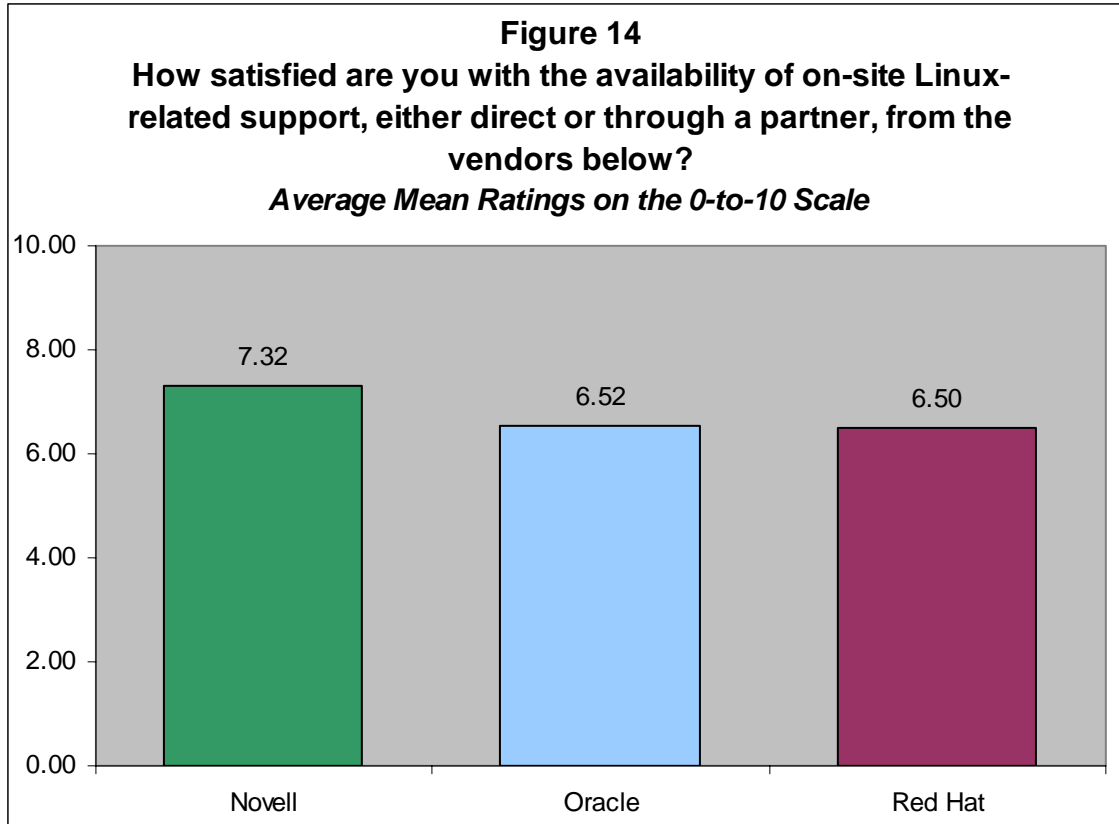
Satisfaction with the Availability of On-site Linux-related Support

Note: The following results were gathered only from those respondents who reported using on-site support from one or more vendor.

One-fifth of respondents (20%) indicated they were extremely satisfied with the availability of on-site Linux-related support they receive from Oracle, while 16% of respondents indicated they were extremely satisfied with the availability of on-site Linux-related support they receive from Novell, and 9% of respondents indicated they were extremely satisfied with the availability of on-site Linux-related support provided by Red Hat. For details, please see Figure 13 on the following page.



As Figure 14 illustrates, respondents gave the highest average mean rating (7.32) to the availability of on-site Linux-related support provided by Novell. Respondents gave an average mean rating of 6.52 to the availability of on-site Linux-related support provided by Oracle and an average mean rating of 6.50 to Red Hat.

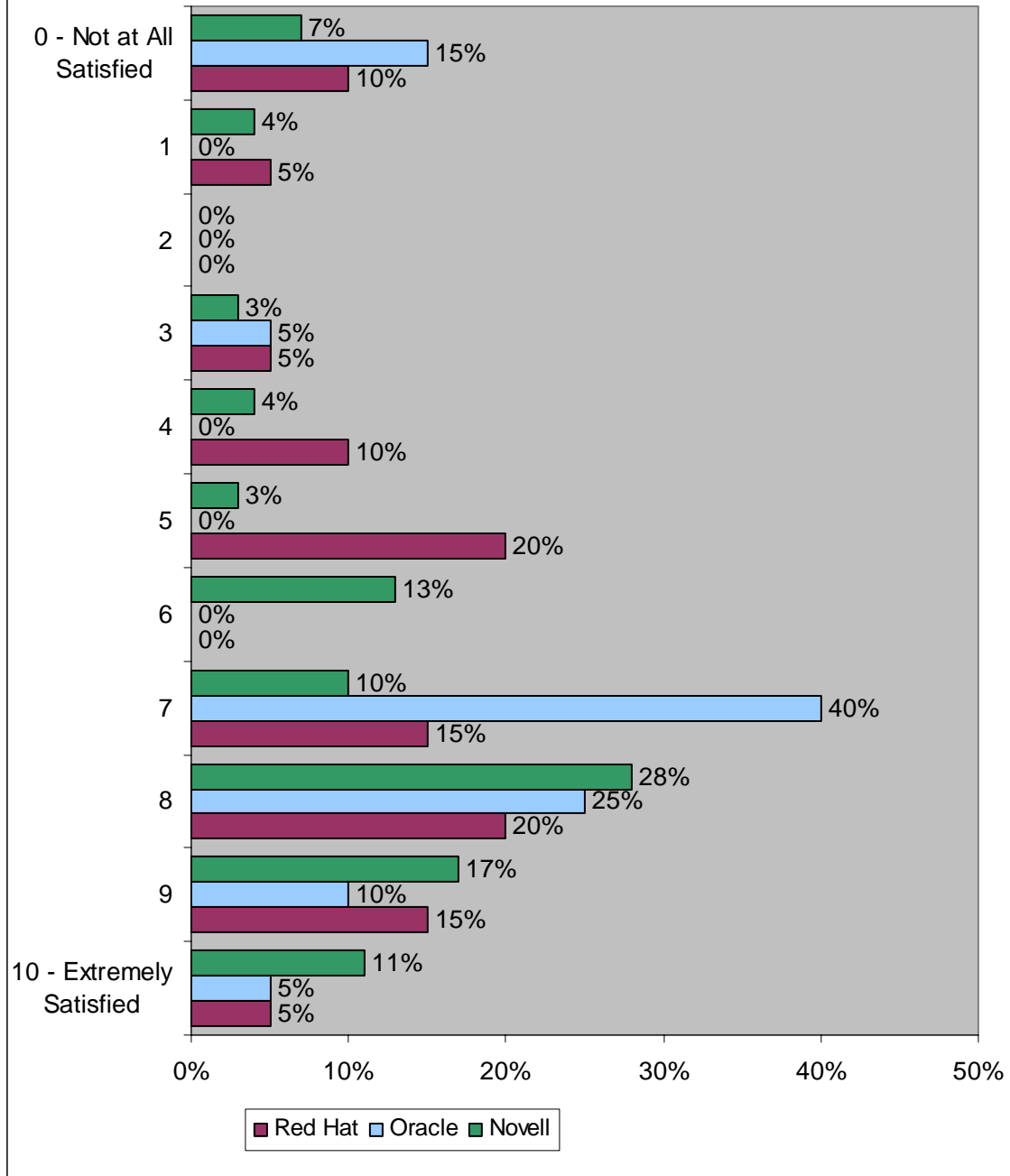


Satisfaction with the Time Taken to Resolve Linux-related Issues through On-site Support

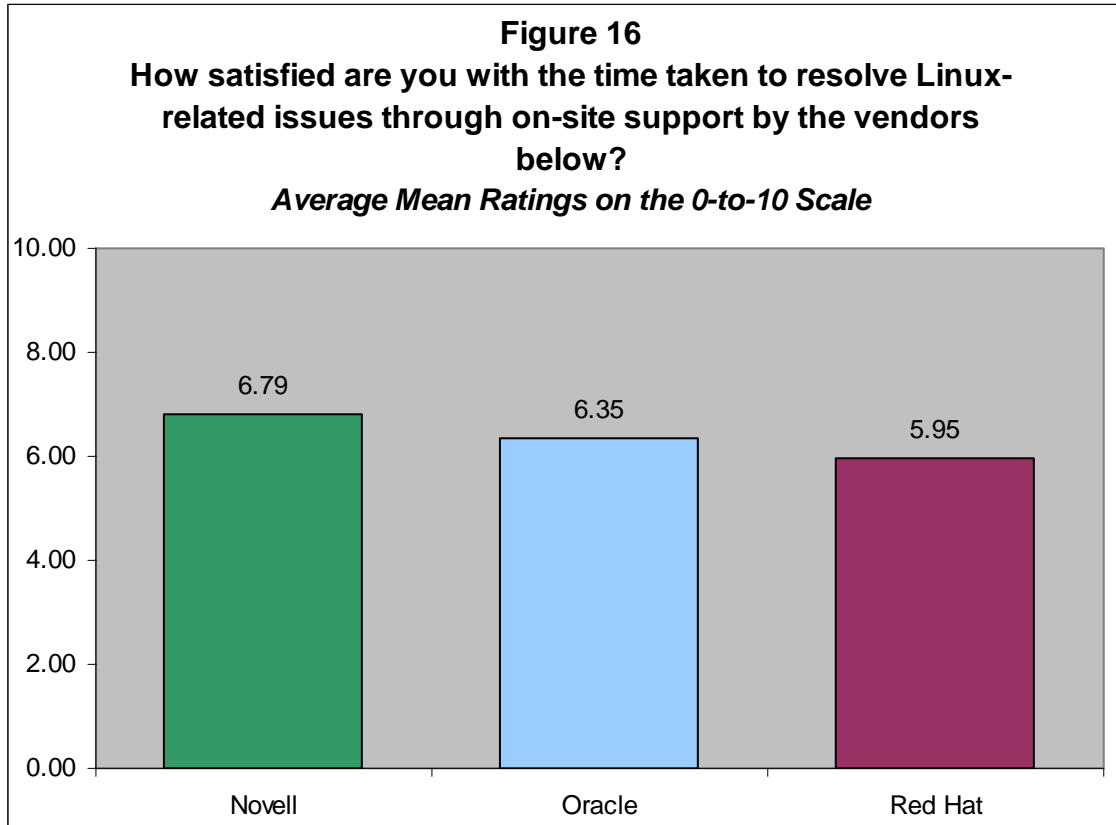
Note: The following results were gathered only from those respondents who reported using on-site support from one or more vendor.

As Figure 15, on the following page, illustrates, 11% of respondents indicated they were extremely satisfied with the time taken to resolve Linux-related issues through on-site support provided by Novell, while 5% of respondent *each* indicated they were extremely satisfied with the time taken to resolve Linux-related issues through on-site support provided by both Oracle and Red Hat.

Figure 15
How satisfied are you with the time taken to resolve Linux-related issues through on-site support by the vendors below?



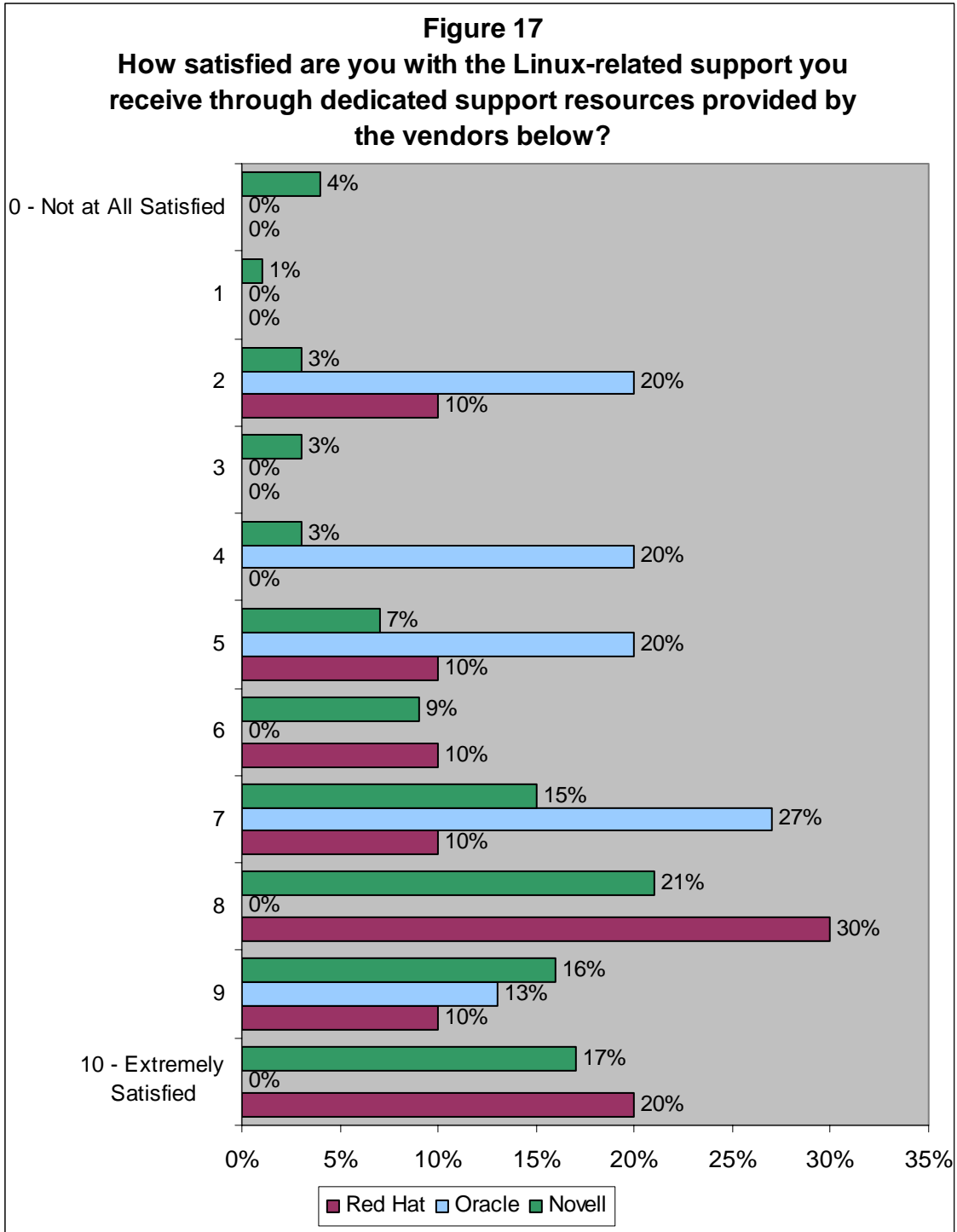
As Figure 16 illustrates, respondents gave a rating of 6.79 when rating how satisfied they were with the time taken to resolve Linux-related issues through on-site support provided by Novell, a rating of 6.35 when rating how satisfied they were with the time taken to resolve Linux-related issues through on-site support provided by Oracle, and a rating of 5.95 when rating how satisfied they were with the time taken to resolve Linux-related issues through on-site support provided by Red Hat.



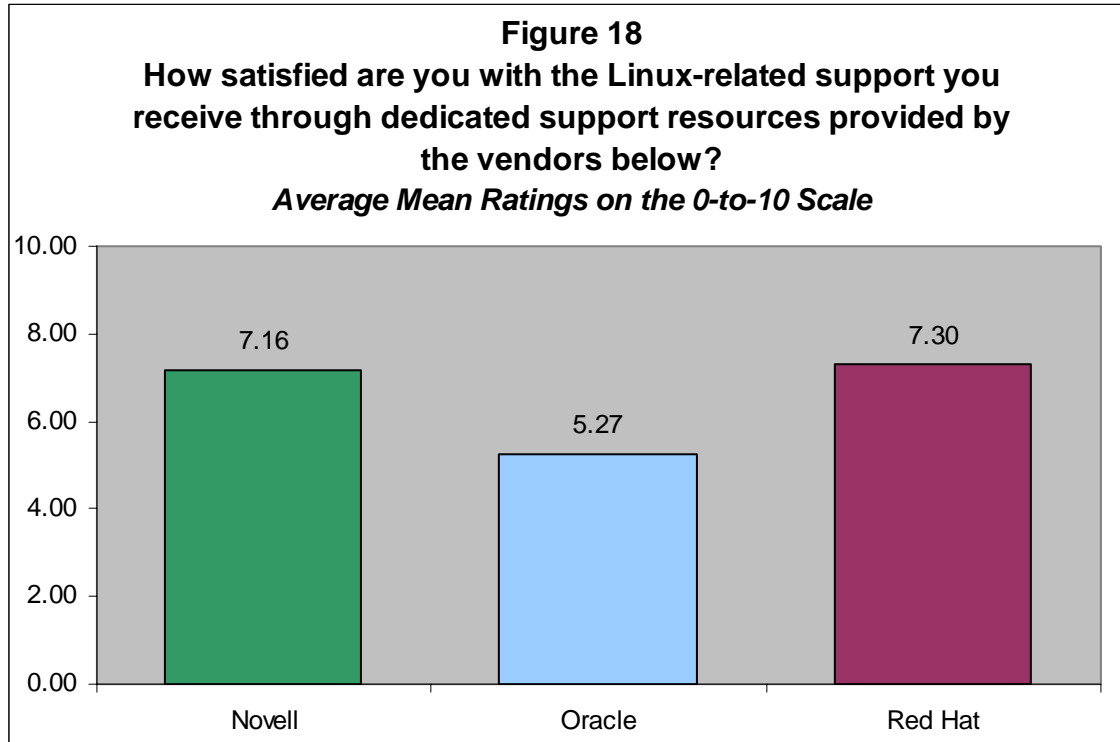
Satisfaction with the Linux-related Support Received through Dedicated Support Resources

Note: The following results were gathered only from those respondents who reported using dedicated support resources from Novell, Oracle, and/or Red Hat.

As Figure 17 illustrates, 20% of respondents indicated they were extremely satisfied with the Linux-related support they receive through dedicated support resources provided by Novell, while 17% of respondents indicated they were extremely satisfied with Linux-related support they receive through dedicated support resources provided by Red Hat. No respondent indicated they were extremely satisfied with the dedicated support resources provided by Oracle.



As Figure 18 illustrates, respondents gave a rating of 7.30 to their satisfaction with the Linux-related support they receive through dedicated support resources provided by Red Hat and a rating of 7.16 to their satisfaction with the Linux-related support they receive through dedicated support resources provided by Novell. Respondents gave the lowest average mean rating (5.27) to their satisfaction with the Linux-related support they receive through dedicated support resources provided by Oracle.



- ❖ When asked how satisfied they were with the Linux-related technical support received through dedicated support resources, respondents rated Red Hat (7.30 average mean) and Novell (7.16) significantly higher than Oracle (6.36).

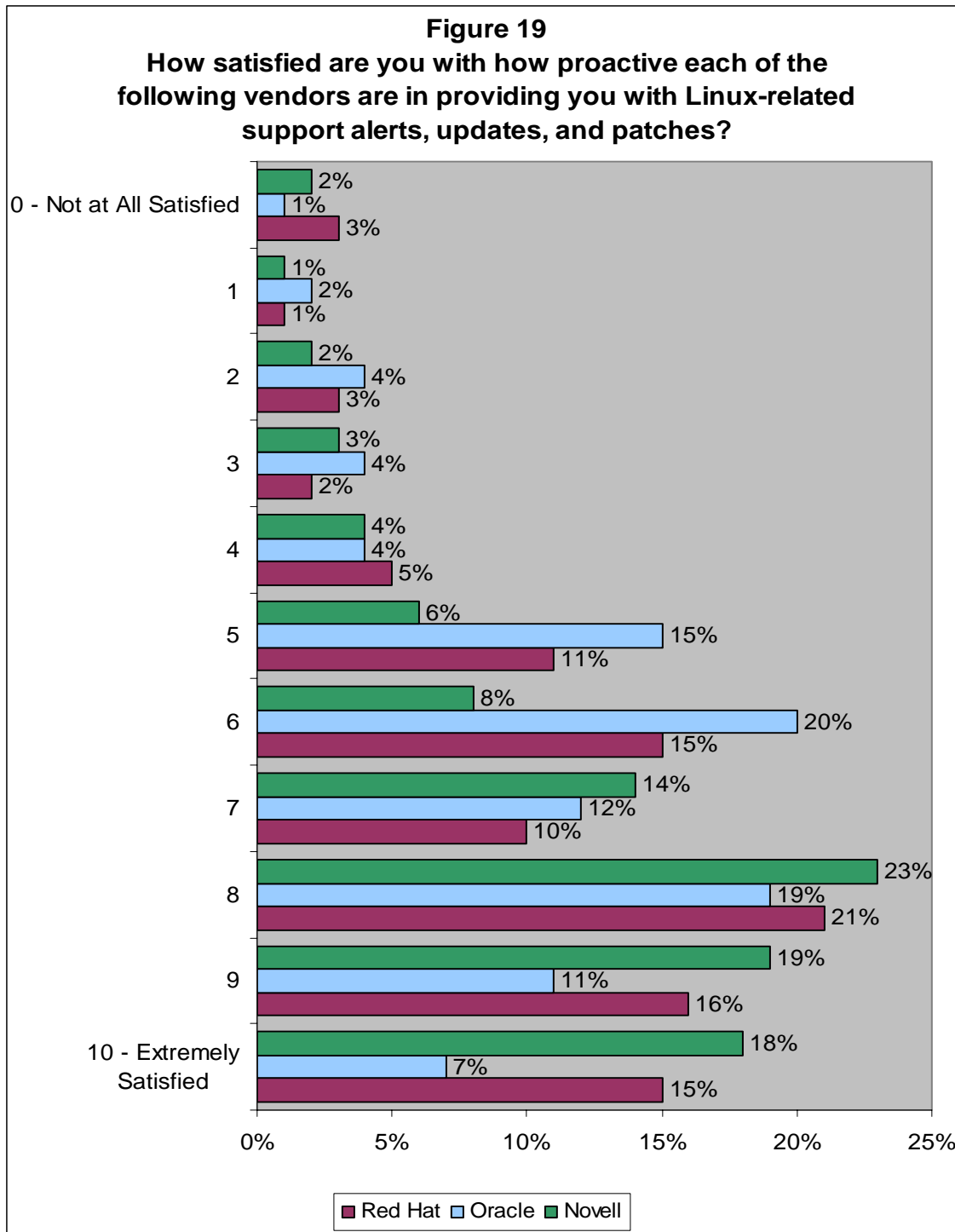
Satisfaction with How Proactive Vendors Are in Providing Alerts, Updates, & Patches

All respondents were then asked:

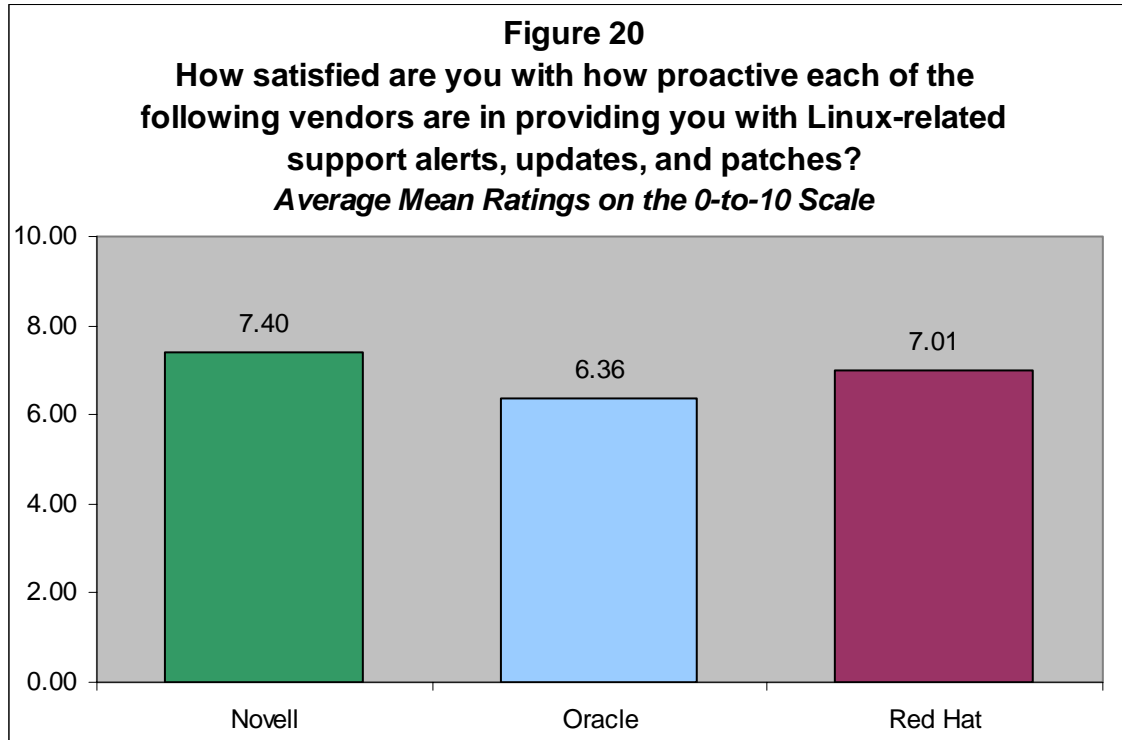
“How satisfied are you with how proactive each of the following vendors are in providing you with Linux-related support alerts, updates, and patches?”

In response to this question, 18% of respondents gave a rating of “10 – extremely satisfied” when rating how satisfied they are with how proactive Novell is about providing Linux-related support alerts, and 15% of respondents gave a rating of “10” when rating how satisfied they are with how proactive Red Hat is about providing Linux-related support alerts. In contrast, only 7% of respondents gave a rating of “10” when

rating how satisfied they are with how proactive Oracle is about providing Linux-related support alerts. Please see Figure 19 on the following page for details.



As Figure 20 illustrates, respondents gave an average mean satisfaction rating of 7.40 when rating their satisfaction with how proactive Novell is in providing Linux-related support. Respondents gave an average mean satisfaction rating of 7.01 when rating their satisfaction with how proactive Red Hat is in providing Linux-related support, and a rating of 6.36 when rating their satisfaction with how proactive Oracle is in providing Linux-related support.

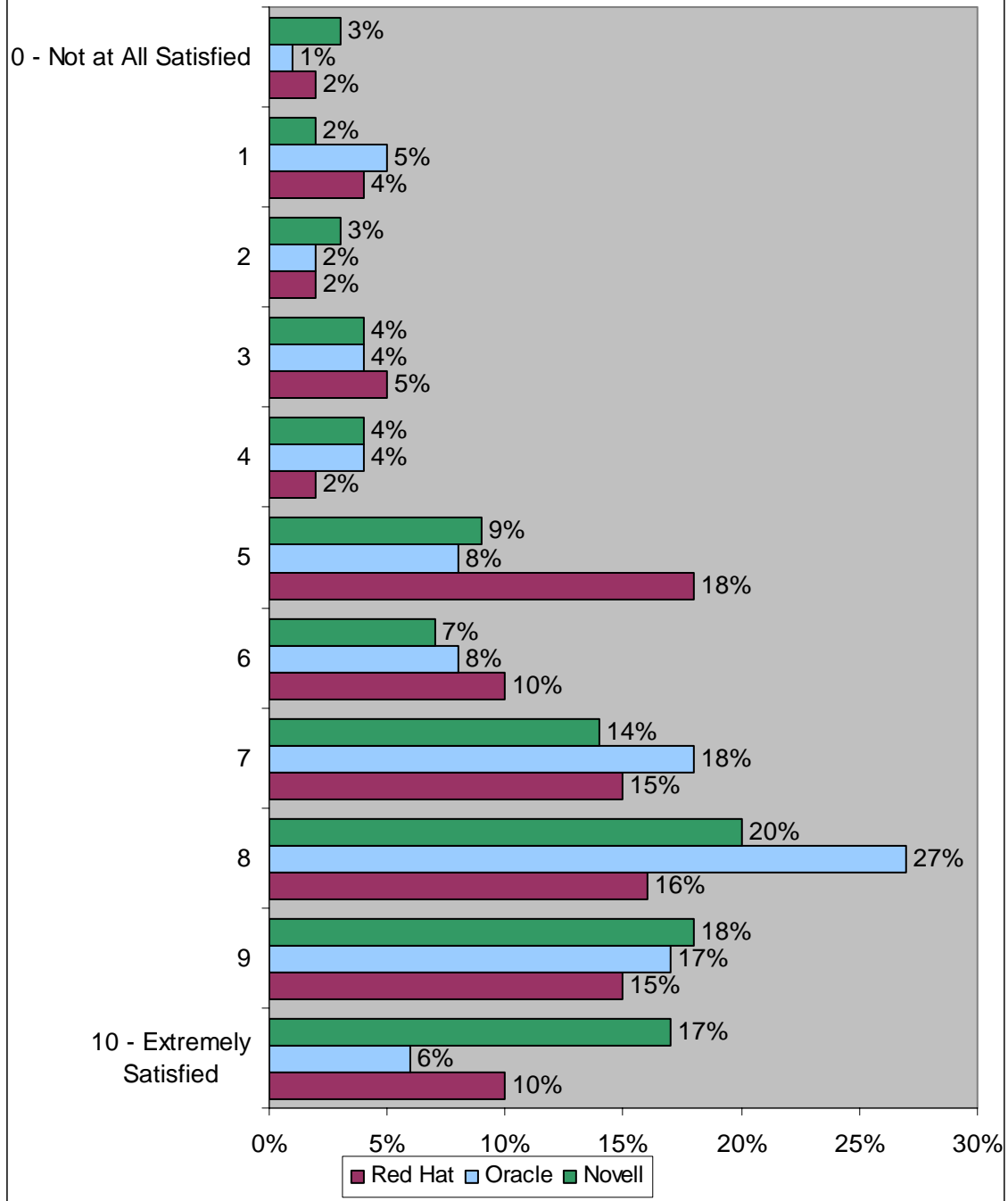


- ❖ Respondents rated their satisfaction with how proactive Novell (7.40 average mean) and Red Hat (7.01) were in providing Linux-related support alerts, updates, and patches higher than Oracle (6.36).

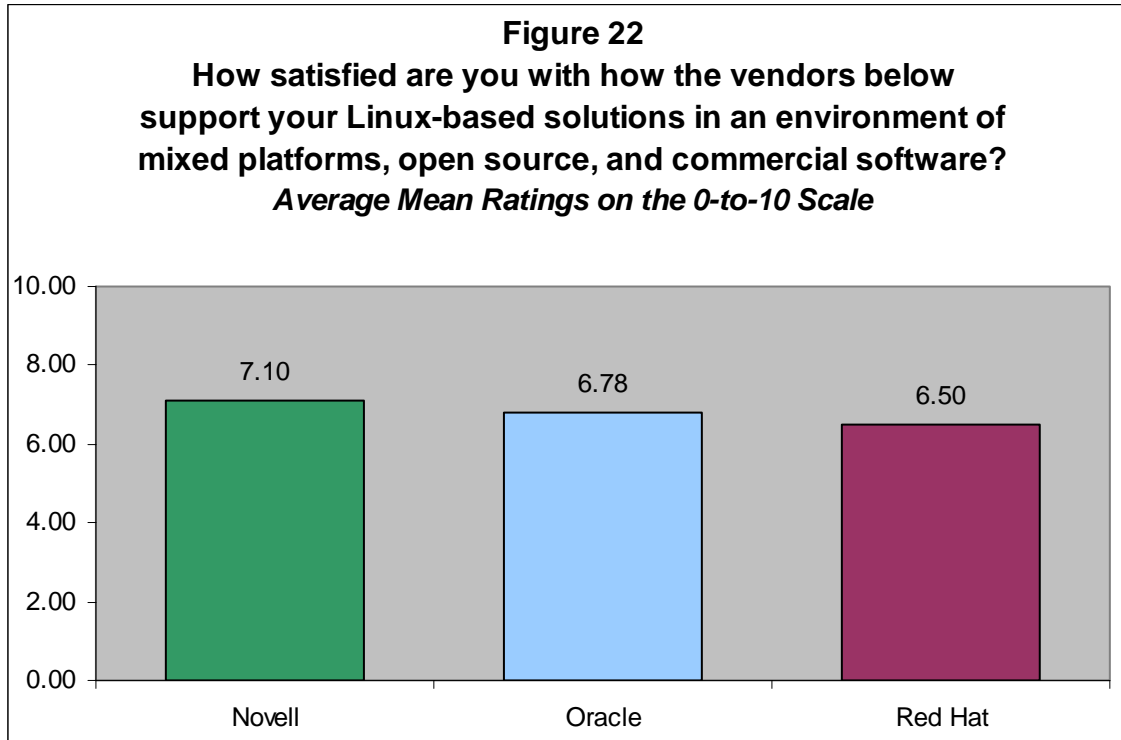
Satisfaction with How Well Vendors Support Respondents' Linux-based Solutions in an Environment of Mixed Platforms, Open Source, and Commercial Software

When asked to rate how satisfied they are with how well Novell, Oracle, and/or Red Hat support their Linux-based solutions in an environment of mixed platforms, open source, and commercial software, 17% of respondents indicated they were extremely satisfied with Novell, while 10% indicated they were extremely satisfied with Red Hat, and 6% indicated they were extremely satisfied with Oracle. Please refer to Figure 21 on the following page for further details.

Figure 21
How satisfied are you with how the vendors below support your Linux-based solutions in an environment of mixed platforms, open source, and commercial software?



As Figure 22 illustrates, respondents gave an average mean rating of 7.10 when rating how well Novell supports Linux-based solutions in an environment of mixed platforms, open source, and commercial software; respondents also gave average mean ratings of 6.78 to Oracle and 6.50 to Red Hat.



- ❖ Respondents were significantly more satisfied with how Novell (7.10 average mean) supports their Linux-based solutions in an environment of mixed platforms, open source, and commercial software than Red Hat (6.50).

IMPORTANCE OF TECHNICAL SUPPORT SERVICES COMPARED TO SATISFACTION WITH TECHNICAL SUPPORT SERVICES

In this section of the results, importance ratings respondents gave to Linux-related technical support services will be examined alongside customer satisfaction ratings.

Ease of Access

As Table 1 illustrates, Novell users gave an average mean importance rating of 8.62 on the zero-to-ten scale when rating how important “ease of accessing technical support” is to their companies. However, Novell users only gave a satisfaction rating of 7.33 when rating how satisfied they are with the time it takes to reach a phone-based Linux support engineer. Similarly, Red Hat users gave an average mean importance rating of 8.50, but an average mean satisfaction rating of 6.00. Oracle users reported the largest variance between importance of technical support access and satisfaction with the time it takes to reach a Linux support engineer, as these users gave an average mean importance rating of 8.51, but a satisfaction rating of 5.74.

TABLE 1
Importance of “Ease of Access to Technical Support” Compared to Satisfaction with “Time it Takes to Reach a Phone-Based Linux Support Engineer”

	Novell Users	Oracle Users	Red Hat Users
<i>Importance of</i> “Ease of Accessing Technical Support”	8.62	8.51	8.50
<i>Satisfaction with</i> “Time it Takes to Reach a Phone-Based Linux Support Engineer”	7.33	5.74	6.00

Speed of Resolution

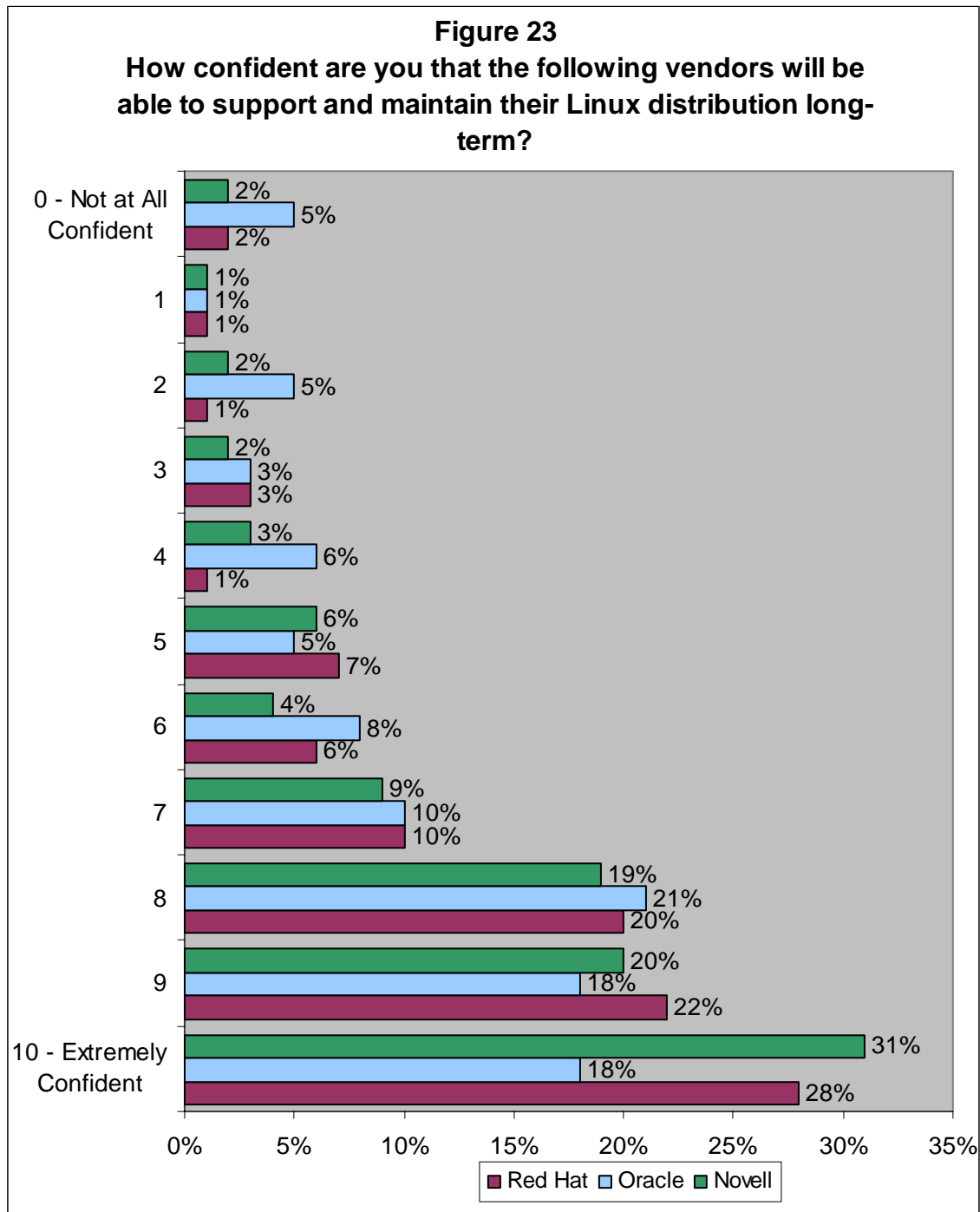
There is a definite discrepancy between how important it is for customers to receive prompt problem resolution and how satisfied they are with the speed of problem resolution provided by Novell, Oracle, and/or Red Hat. Novell users gave an importance rating of 8.52 to “speed of resolution,” but when rating their satisfaction with the time taken to resolve Linux-related issues through phone-based support or onsite support, they gave respective ratings of 6.74 and 6.79. Similarly, Red Hat users gave an importance rating of 8.55 to “speed of resolution,” but satisfaction ratings of 6.45 to the time taken to resolve Linux-related issues through phone-based support and 5.95 to the time taken to resolve Linux-related issues through on-site support. Oracle users gave an importance rating of 8.55 to “speed of resolution,” but satisfaction ratings of 5.80 and 6.35, respectively, to the time taken to resolve Linux-related issues through phone based or onsite support. Please refer to Table 2 for complete details.

TABLE 2
Importance of “Speed of Resolution” Compared to Satisfaction with “Time Taken to Resolve Linux-Related Issues through Phone-based Support” and Satisfaction with “Time Taken to Resolve Linux-Related Issues through On-site Support”

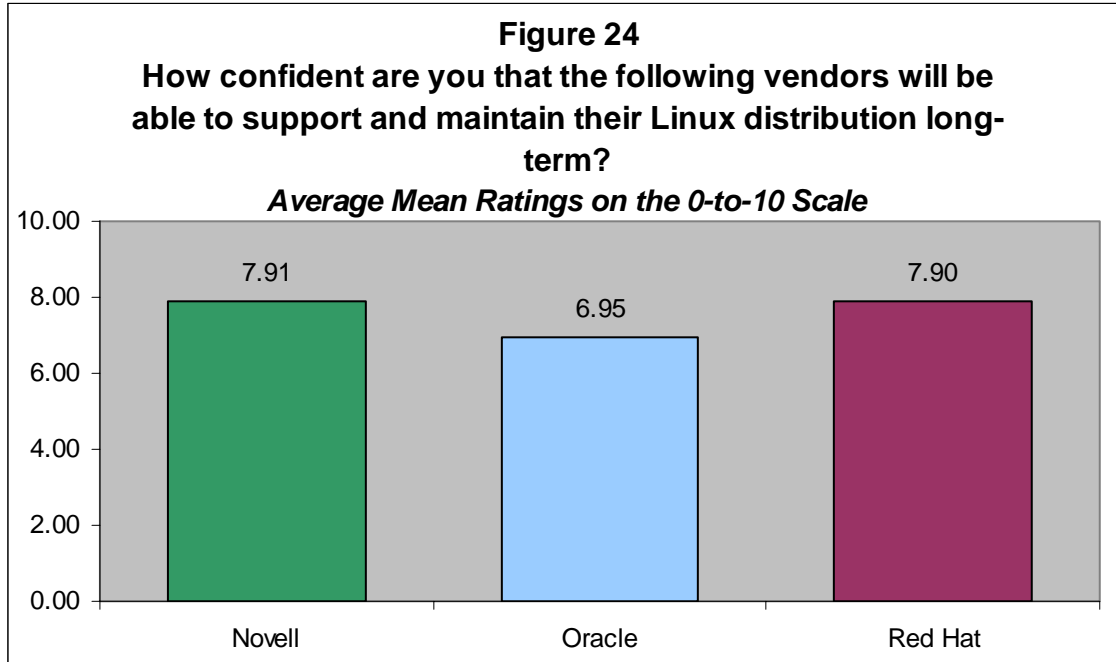
	Novell Users	Oracle Users	Red Hat Users
<i>Importance of</i> “Speed of Resolution”	8.52	8.55	8.55
<i>Satisfaction with</i> “Time Taken to Resolve Linux-Related Issues through <i>Phone-based Support</i> ”	6.74	5.80	6.45
<i>Satisfaction with</i> “Time Taken to Resolve Linux-Related Issues through <i>On-site Support</i> ”	6.79	6.35	5.95

CONFIDENCE IN VENDOR ABILITY

When asked to rate how confident they are that Novell, Oracle, and/or Red Hat be able to support and maintain their Linux distribution long-term, nearly one-third of respondents (31%) gave a confidence rating of “10” to Novell, while 28% gave a confidence rating of “10” to Red Hat, and 18% gave a confidence rating of “10” to Oracle. For details, please see Figure 23.



As Figure 24 illustrates, respondents gave an average mean rating of 7.91 and 7.90 respectively to their confidence with Novell's and Red Hat's ability to support and maintain their Linux distributing long-term. Respondents gave an average mean rating of 6.95 to their confidence with Oracle's ability to support and maintain their Linux distributing long-term.



- ❖ When asked to rate their confidence that the specified vendors will be able to support and maintain their Linux distribution long-term, respondents rated Novell (7.91 average mean) and Red Hat (7.90) higher than Oracle (6.95).

VISUAL COMPARISON OF VENDOR SATISFACTION

The following two figures are provided for the reader to view differences in satisfaction for Novell, Oracle, and Red Hat at once. Figure 24A illustrates the specific areas where customer satisfaction ratings indicate one vendor's performance was higher compared to the other vendors. Novell scored significantly higher on "overall quality of service" and "time to reach a phone-based support engineer" than Oracle or Red Hat. In comparing the satisfaction scores for "support in an environment of mixed platforms, open source and commercial software," Novell scored significantly higher than Red Hat.

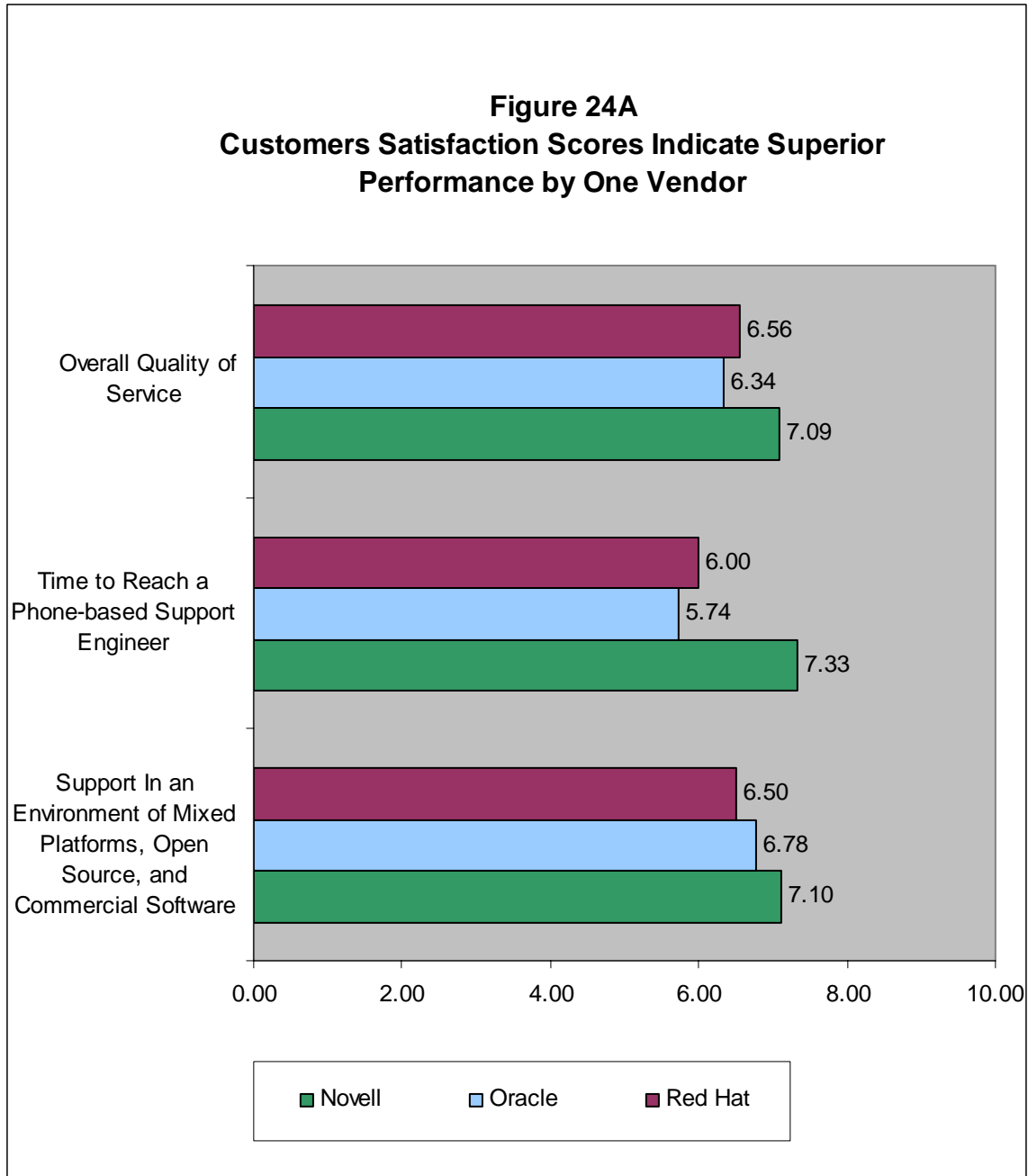
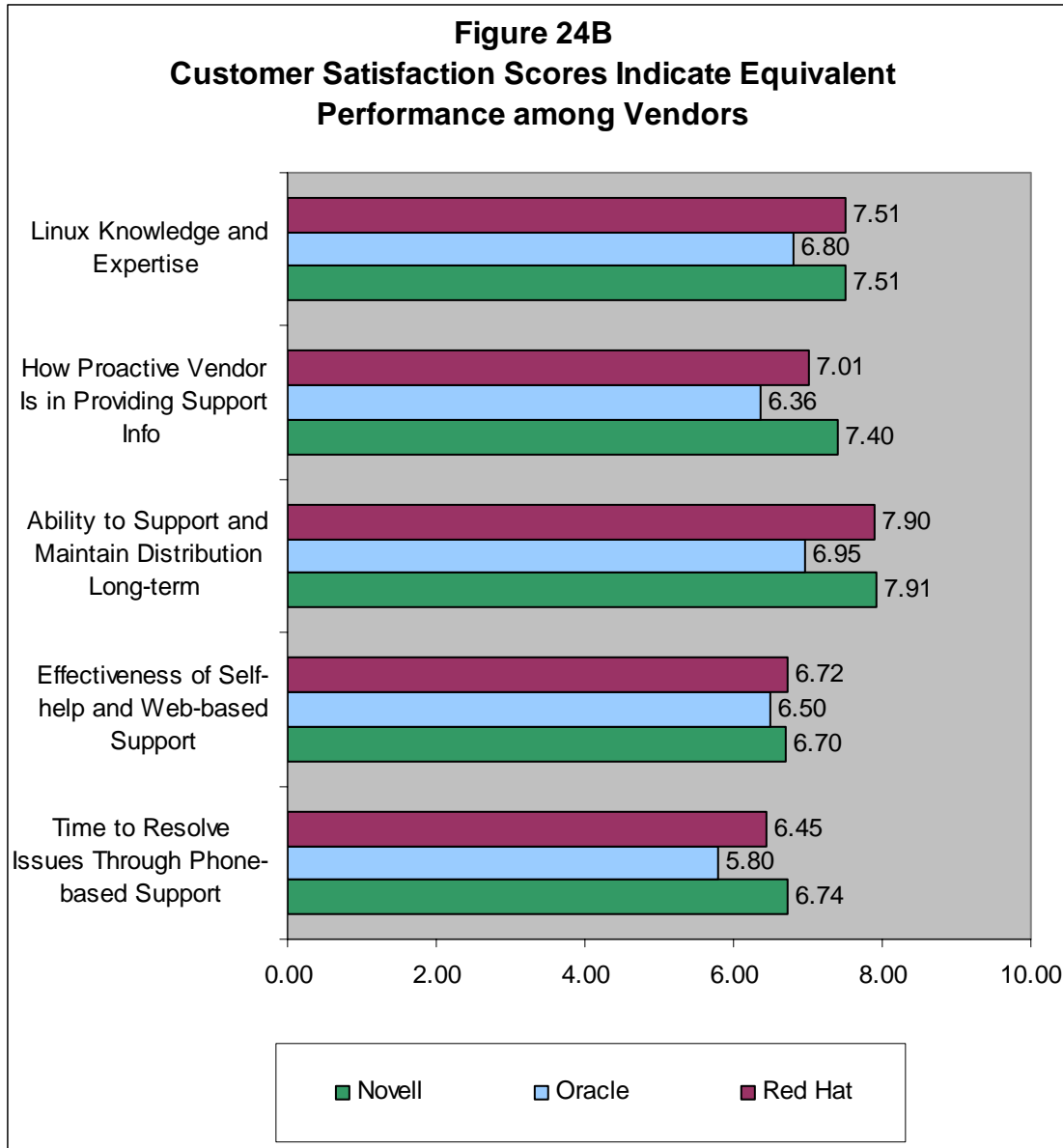


Figure 24B illustrates the areas of Linux-related technical support where customer satisfaction indicated similar performance among vendors. On average, Novell and Red Hat received equivalent scores for “Linux knowledge and expertise,” and “ability to support and maintain Linux distribution long-term,” and similar scores for “how proactive the vendor is in providing support information.” In all three of these areas Oracle was rated significantly lower. There is no statistical significance in the differences in the rating for all three vendors in the areas of “effectiveness of self-help and web-based support” and “time to resolve issues through phone-based support.”



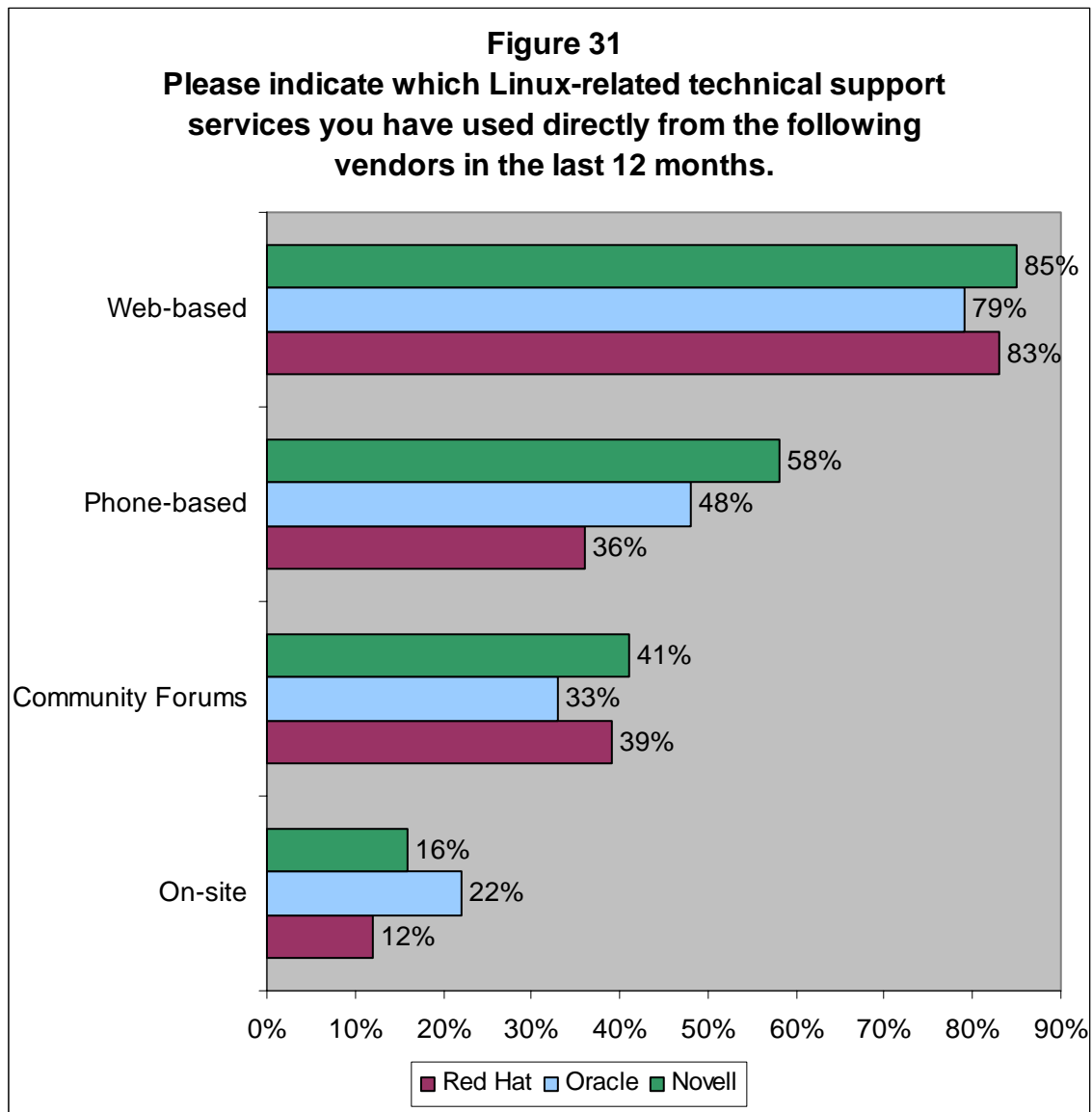
It is important to note that while satisfaction with on-site and dedicated support resources are evaluated within the research, they are not considered key results as the usage of these types of Linux-related technical support across all vendors is low. Therefore, they are not included in this visual comparison but are described earlier in the report.

LINUX-RELATED TECHNICAL SUPPORT USAGE

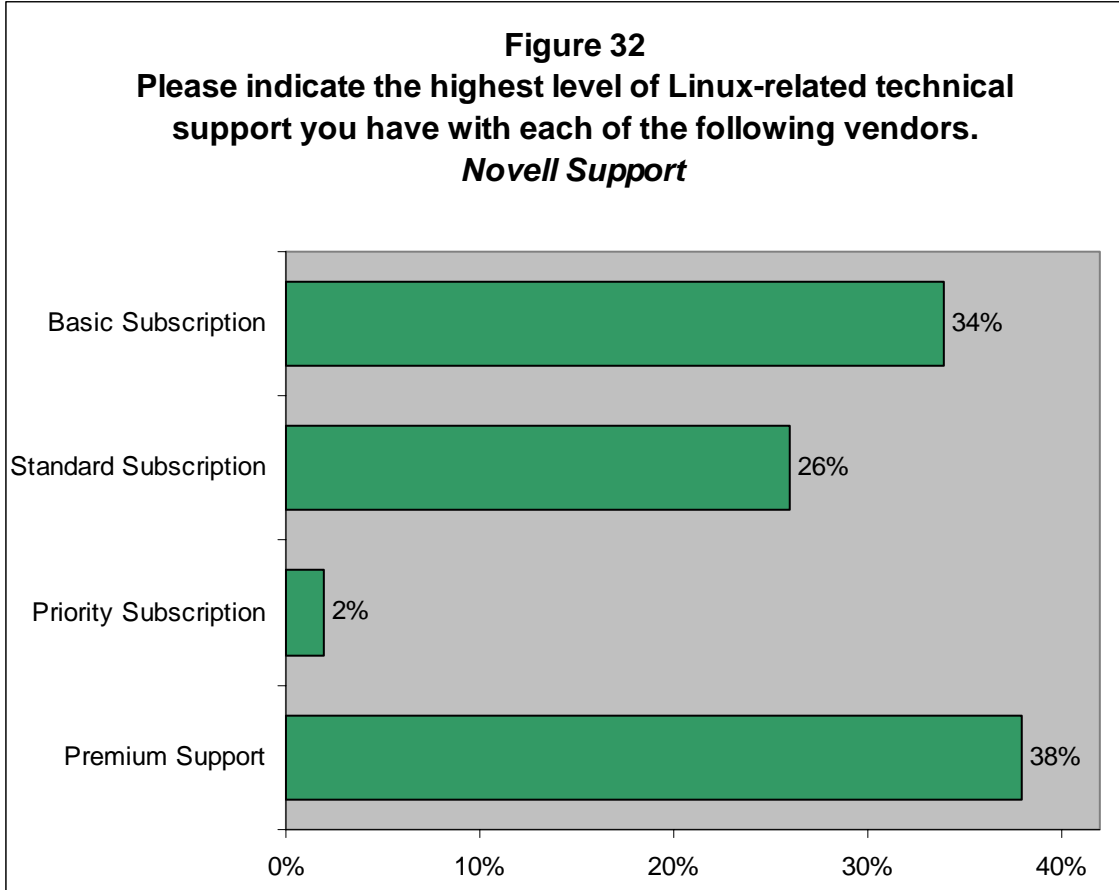
Eighty-five percent of Novell users reported they have used Novell's web-based Linux-related technical support services, while 58% reported that they have used Novell's phone-based Linux-related technical support services.

Seventy-nine percent of Oracle users reported using Oracle's web-based technical support, while 48% reported using Oracle's phone-based Linux-related technical support.

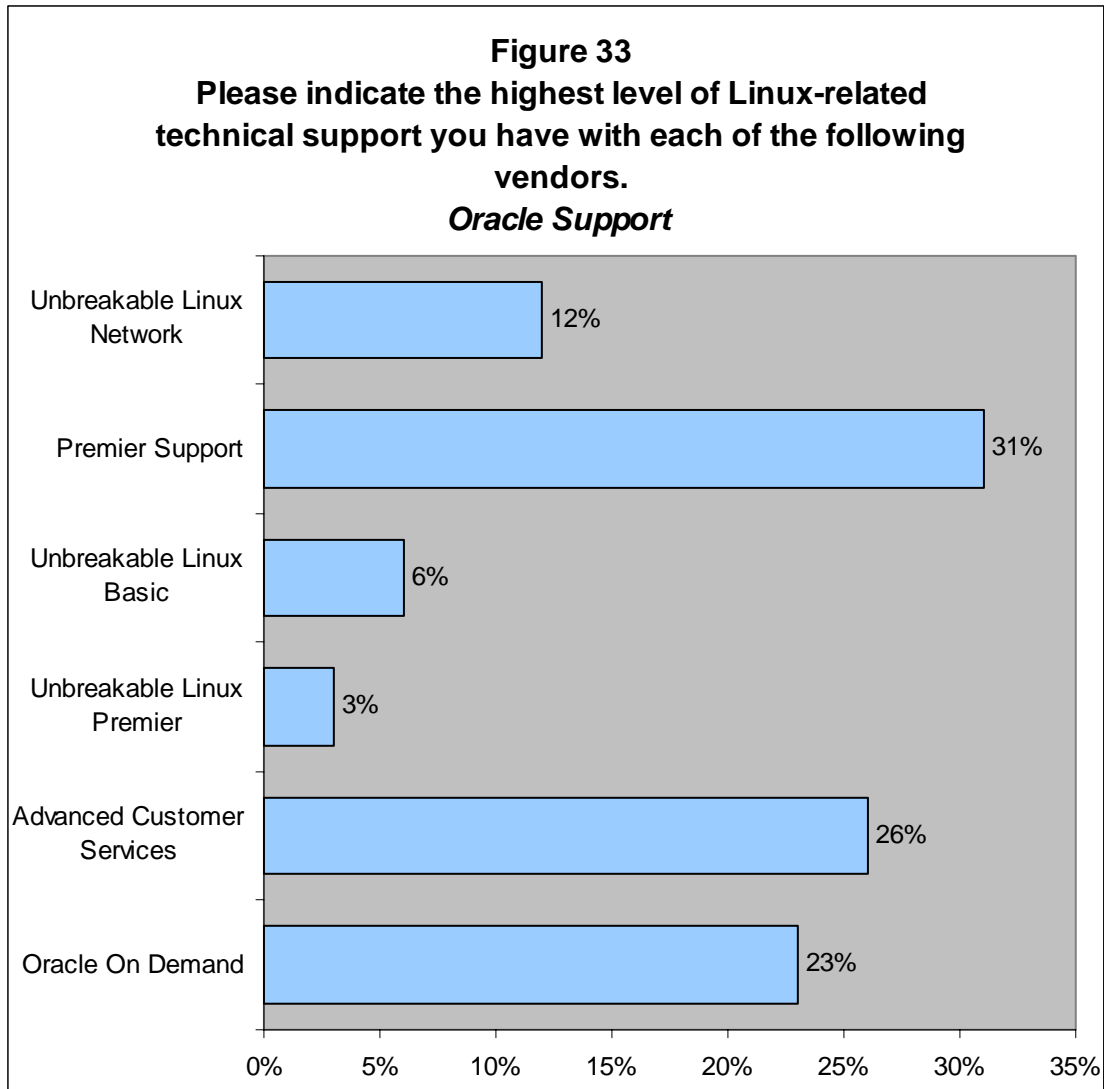
Eighty-three percent of Red Hat users reported using Red Hat's web-based Linux-related technical support, while 39% reported using Red Hat's community forum Linux-related technical support. Please refer to Figure 31 for more details.



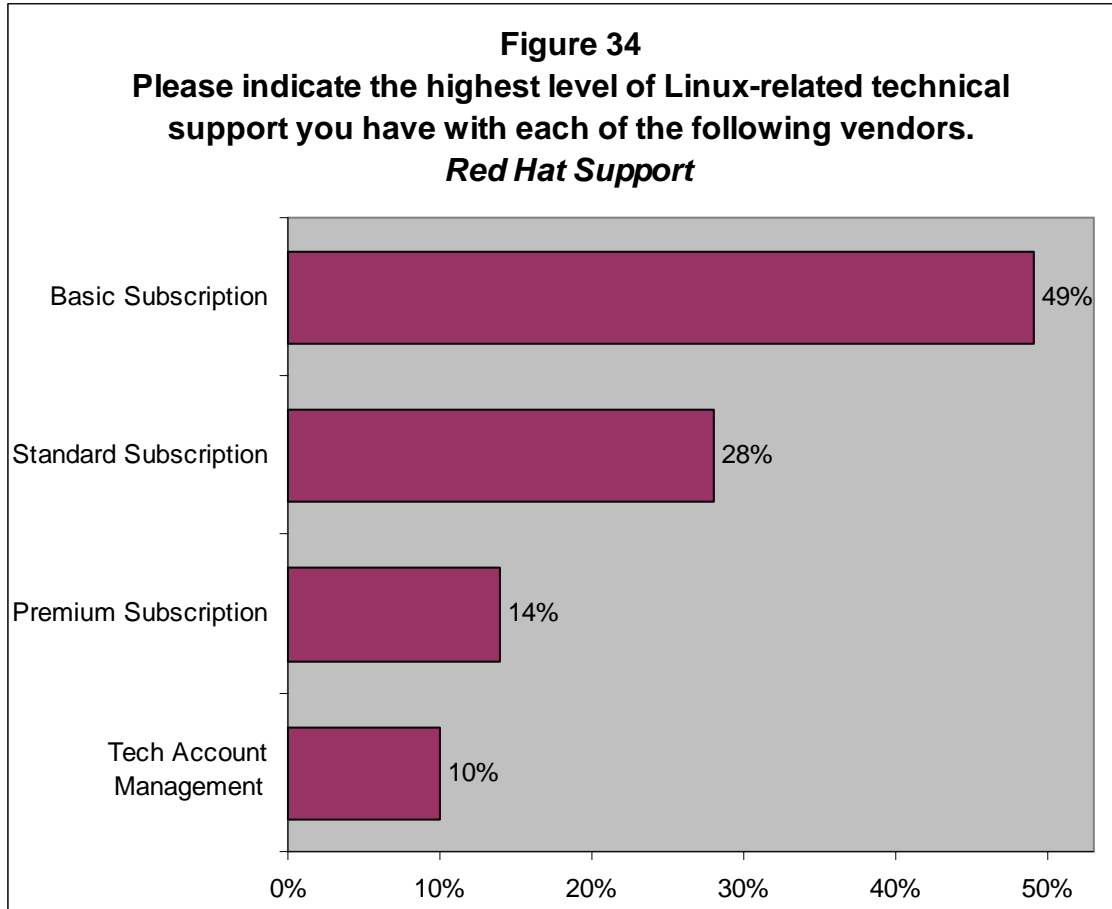
As Figure 32 illustrates, 38% of Novell users identified “Premium Support” as the highest level of Linux-related technical support they have with Novell, while 34% of Novell users identified “Basic Subscription” as the highest level of Linux-related technical support they have with Novell.



As Figure 33 illustrates, 31% of Oracle users identified “Premier Support” as the highest level of Linux-related technical support they have with Oracle, and 26% identified “Advanced Customer Services” as the highest level of Linux-related technical support they have with Oracle.

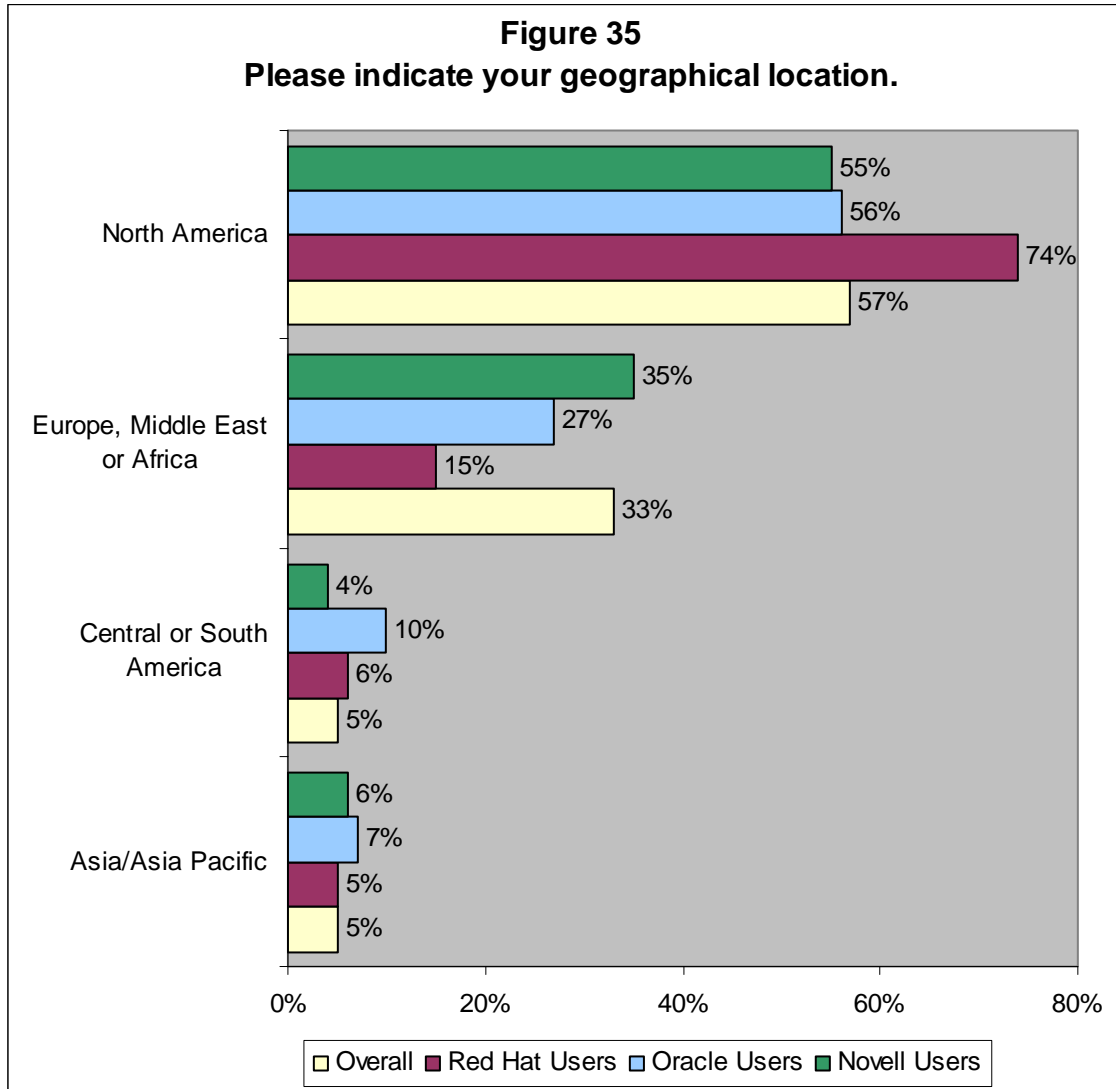


As Figure 34 illustrates, 49% of Red Hat users identified “Basic Subscription” as the highest level of Linux-related technical support they have with Red Hat. Over one-quarter of Red Hat users (28%) identified “Standard Subscription” as the highest level of Linux-related technical support they have with Red Hat.

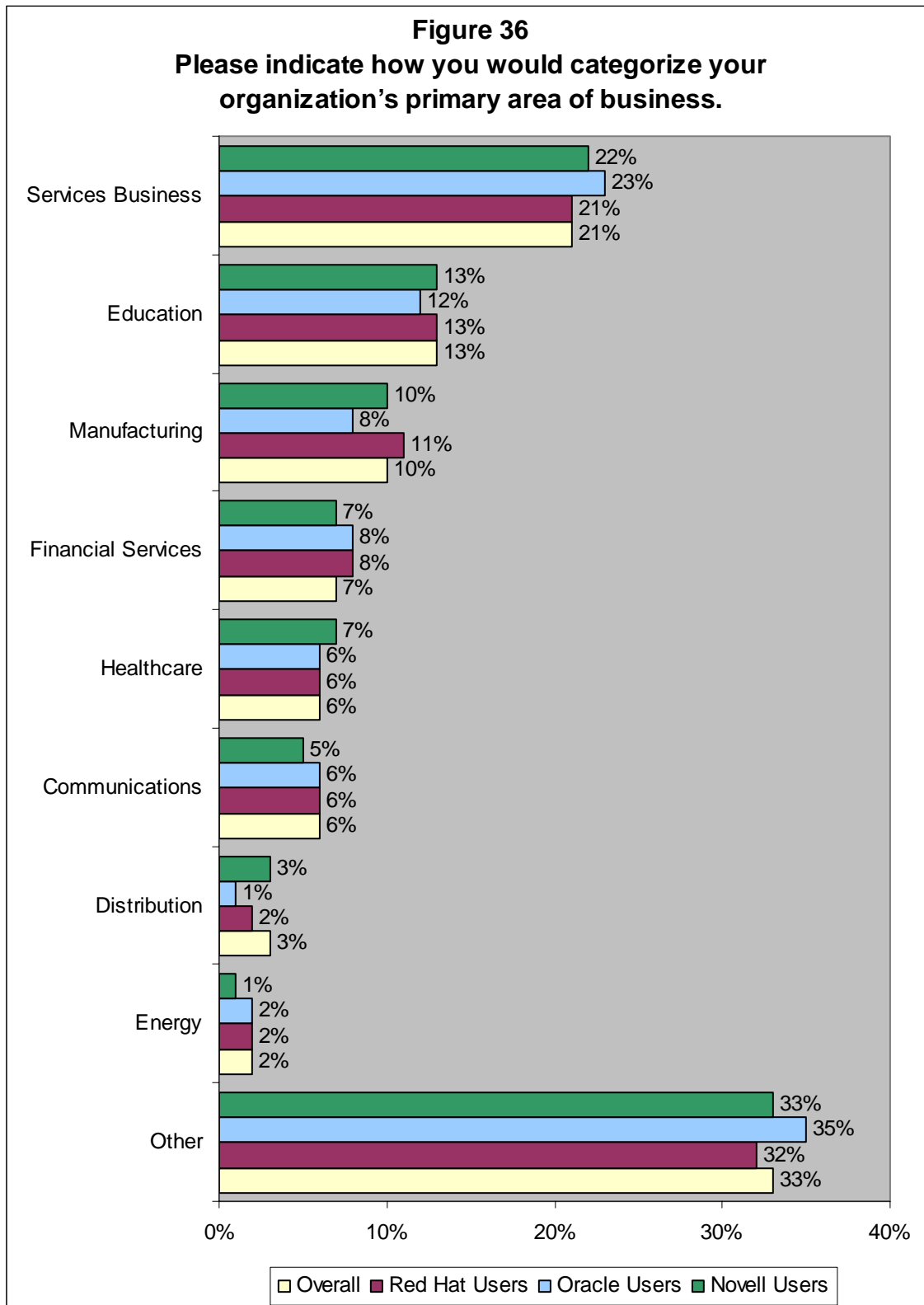


DEMOGRAPHICS

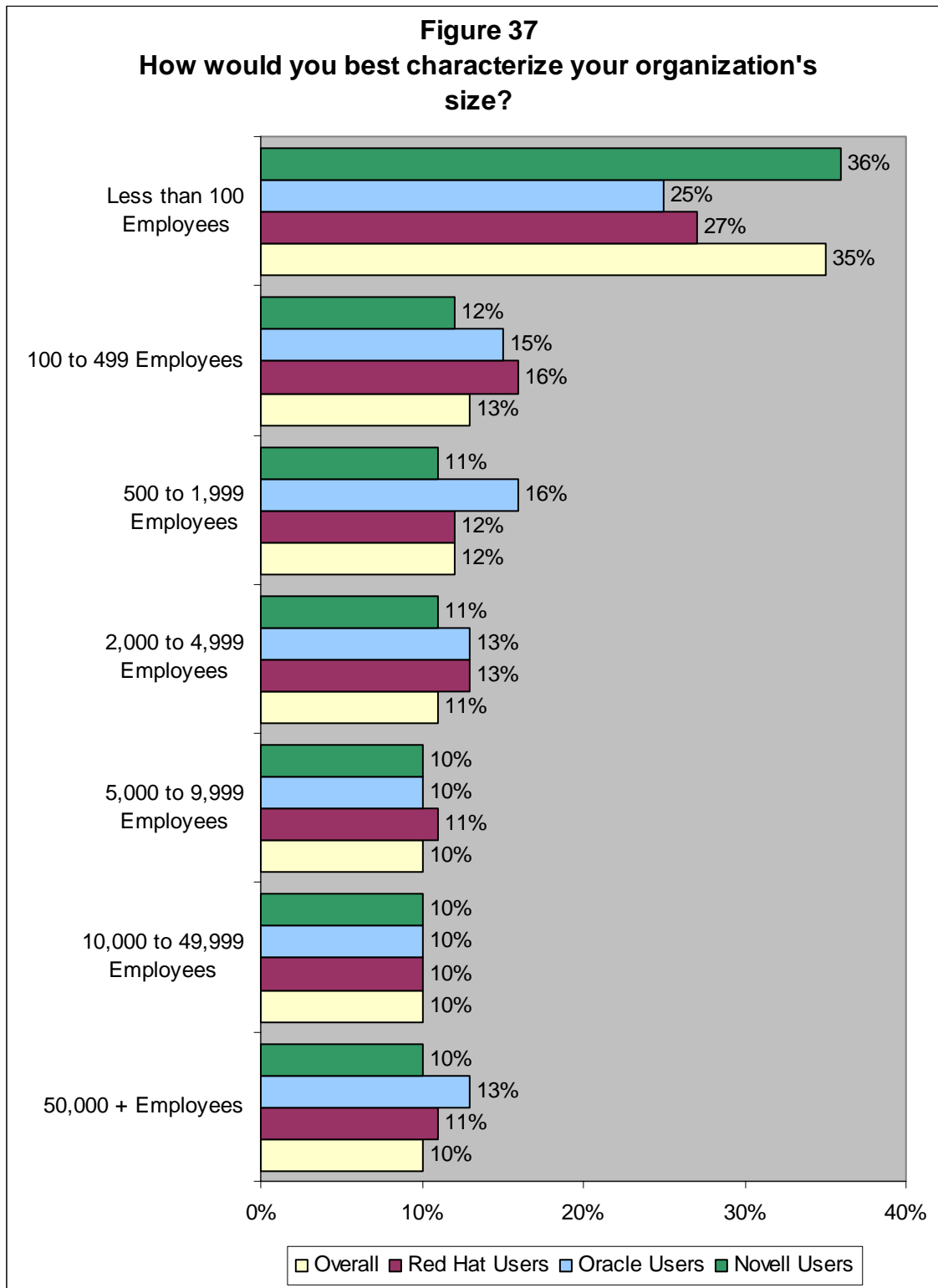
Overall, 57% of respondents reported residing in North America. Approximately three-quarters of Red Hat users reside in North America. One-tenth of Oracle users reside in South or Central America. Please see Figure 35 for further details.



Overall, one-fifth of respondents (21%) categorized their organizations' primary business as "services business." Please refer to Figure 36 for details.



Overall, 35% of respondents indicated they employ fewer than 100 employees. Please see Figure 37 for details.



SIGNIFICANT DIFFERENCES

Significant Differences by the Size of Respondent's Company

For this portion of the analysis, respondents were divided into five groups based, upon the size of respondents' companies: fewer than 100 employees, 100 to 499 employees, 500 to 1,999 employees, 2,000 to 9,999 employees, and more than 10,000 employees.

Respondents whose companies have 100 to 499 employees (8.69 average mean), 2,000 to 9,999 employees (8.94), and more than 10,000 employees (8.81) rated the importance of the "speed of the resolution" higher to their organizations than did respondents whose companies has fewer than 100 employees (8.12).

Respondents whose companies have 100 to 499 employees rated Novell's overall quality of service (8.00 average mean) higher than did respondents whose companies have fewer than 100 employees (7.03), 500 to 1,999 employees (6.77), and more than 10,000 employees (6.71).

Respondents whose companies have fewer than 100 employees (6.89 average mean), 2,000 to 9,999 employees (6.87), and more than 10,000 employees (7.24) were more satisfied with the effectiveness of the Linux-related self-help or web-based support from Oracle than were respondents whose companies have 500 to 1,999 employees (4.69).

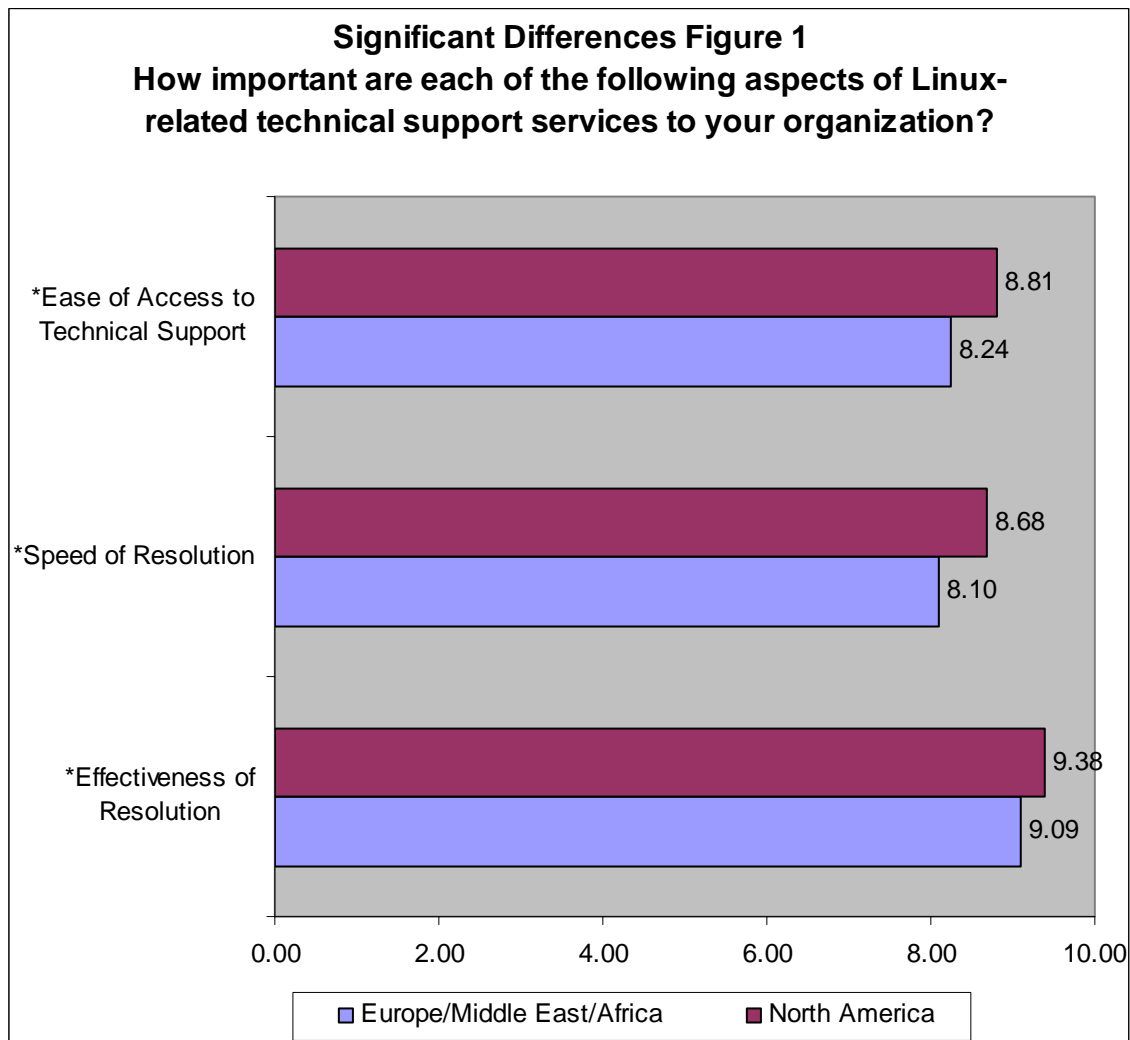
Respondents whose companies have 100 to 499 employees (8.67 average mean) and 2,000 to 9,999 employees (7.00) rated Red Hat higher on the time taken to resolve Linux-related issues through on-site support than did respondents whose companies have more than 10,000 employees (2.75).

Respondents whose companies have 500 to 1,999 employees (65%) were more likely to have used phone-based support from Novell than were respondents whose companies have fewer than 100 employees (47%) and 100 to 499 employees (41%). Also, respondents whose companies have 500 to 1,999 employees (15%) were more likely to have used phone-based support from Oracle than were respondents whose companies have fewer than 100 employees (5%). In addition, respondents whose companies have 500 to 1,999 employees (22%) were more likely to have used phone-based support from Red Hat than were respondents whose companies have fewer than 100 employees (7%).

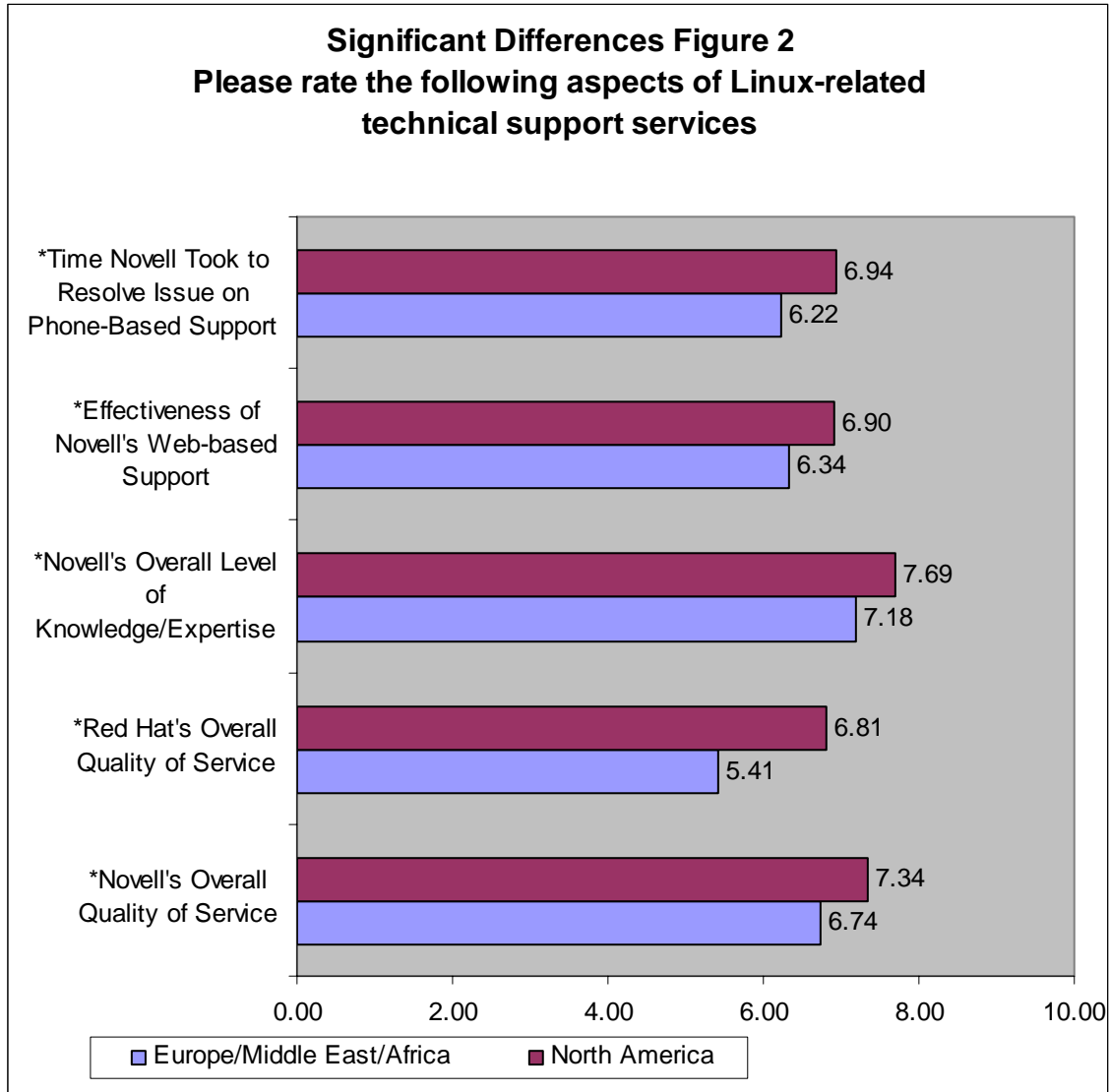
Significant Differences by Geographical Area

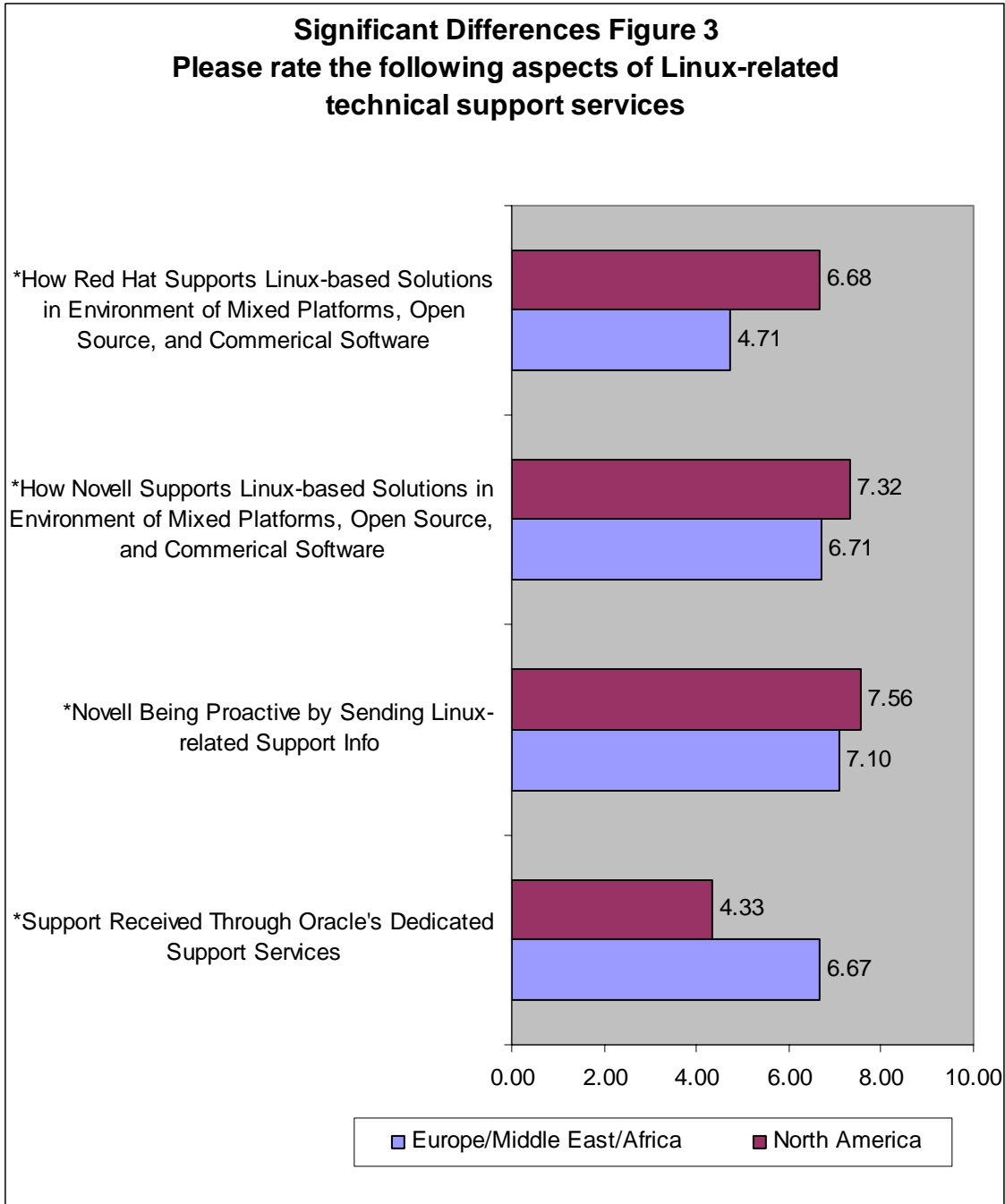
For this portion of the analysis, respondents from North America and Europe/Middle East/Africa were compared to discover differences in attitude and satisfaction. Note that respondents from Asia/Asia Pacific and Central America were not included in the analysis due to the small number of respondents from these geographical regions.

Respondents from North America rated various aspects of Linux-related technical support attributes more important to their organizations than did respondents from Europe/Middle East/Africa. For more detailed information, please see Significant Differences Figure 1. An asterisk (*) denotes statistical significance.



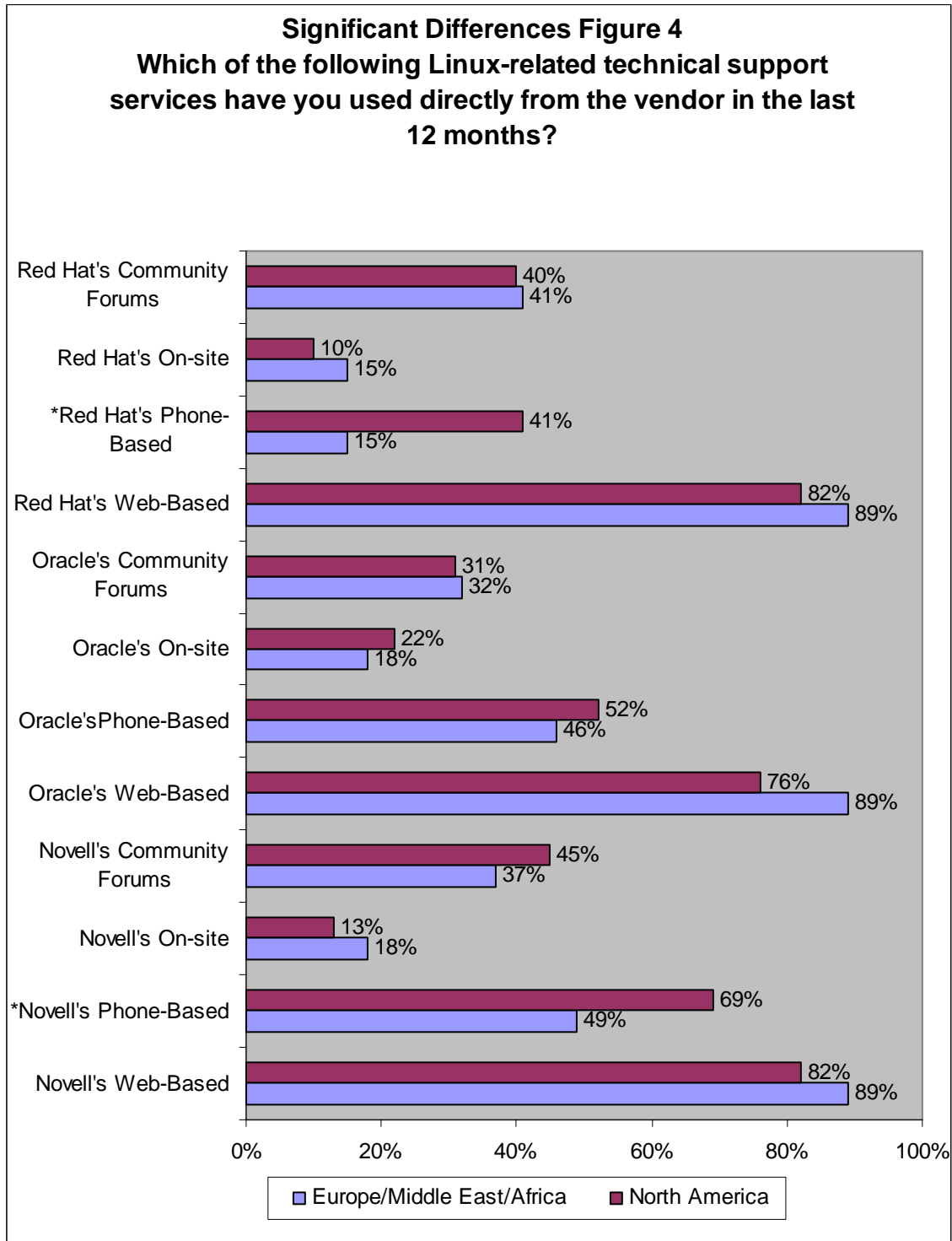
In addition, respondents from North America were more satisfied with various aspects of Linux-related technical support services than were respondents from Europe/Middle East/Africa, except in one case: satisfaction with Linux-related support received through Oracle's dedicated support services. For more detailed information, please see Significant Differences Figures 2 and 3. Note that all of the following differences are significant and are marked with an asterisk (*).





**An asterisk (*) denotes statistical significance.*

Respondents from North America and respondents from Europe/Middle East/Africa tend to use different technical support services. Respondents from Europe/Middle East/Africa were significantly less likely to have used Red Hat or Novell phone-based Linux-related technical support services. For more detailed information, please see Significant Differences Figure 4. An asterisk (*) denotes statistical significance.



Significant Differences Based Upon Whether Respondents' Companies are a SMB or an Enterprise Company

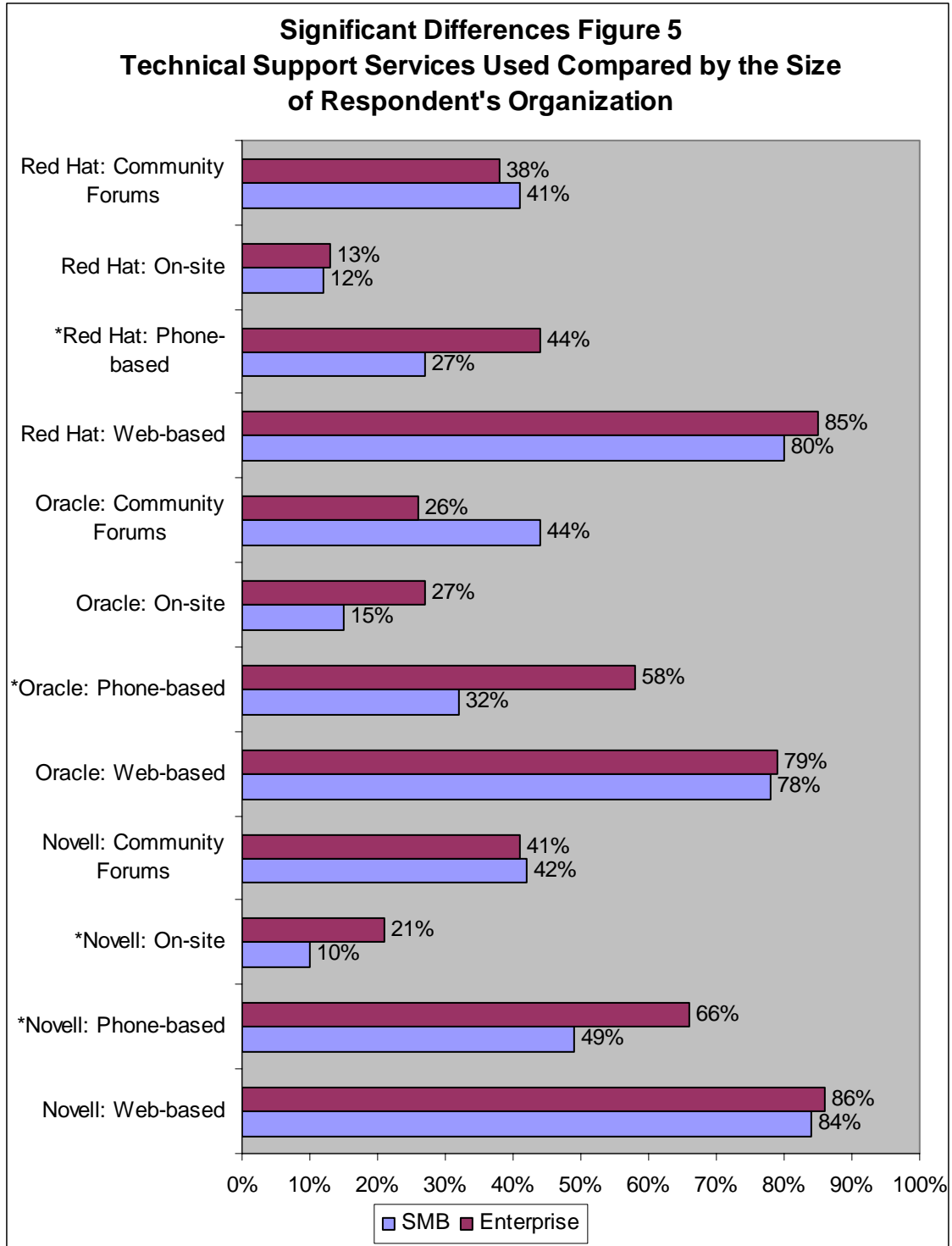
For this portion of the analysis, respondents were divided into two groups based on their organizations' size: less than 500 employees (SMB) and 500 employees or more (Enterprise).

Enterprise companies (8.80 average mean) rated the importance of the "speed of resolution" higher than did SMB companies (8.27).

SMB companies (8.17 average mean) were more confident that Novell would be able to support and maintain their Linux distribution long-term than were Enterprise companies (7.66).

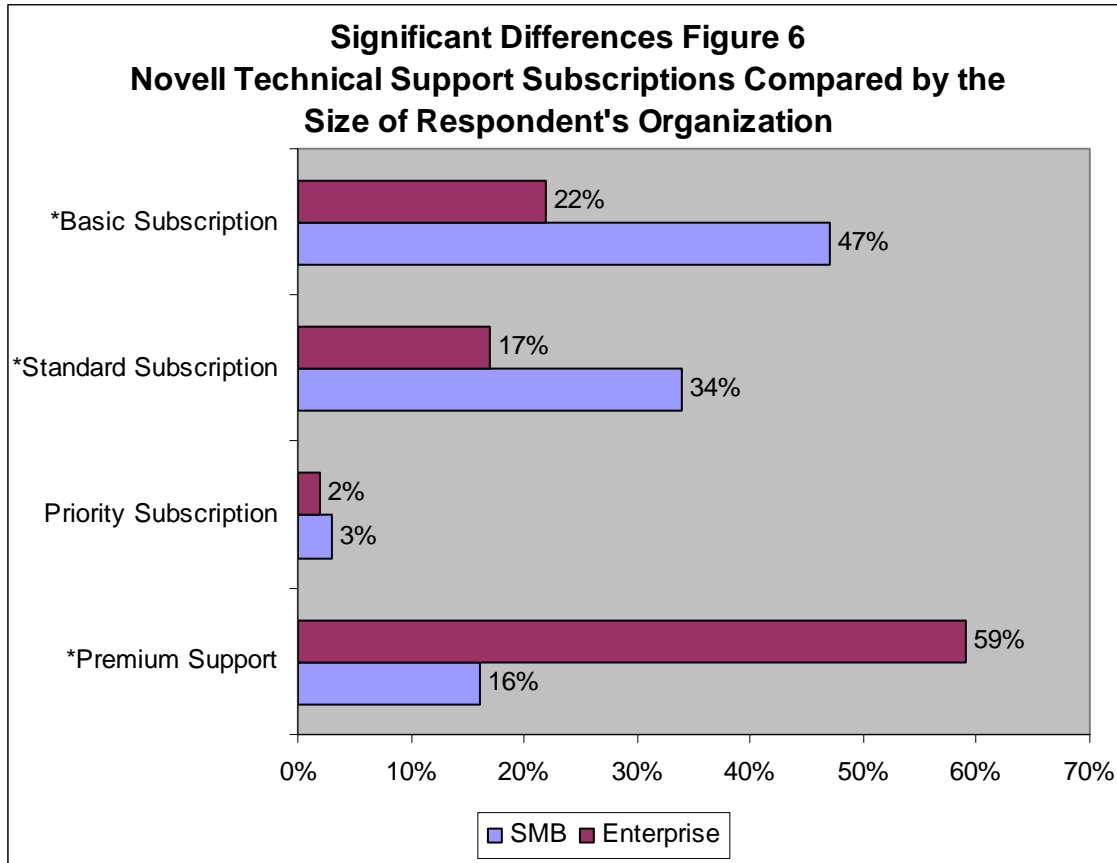
Enterprise companies were more likely to have used various Linux-related technical support services than were SMB companies.

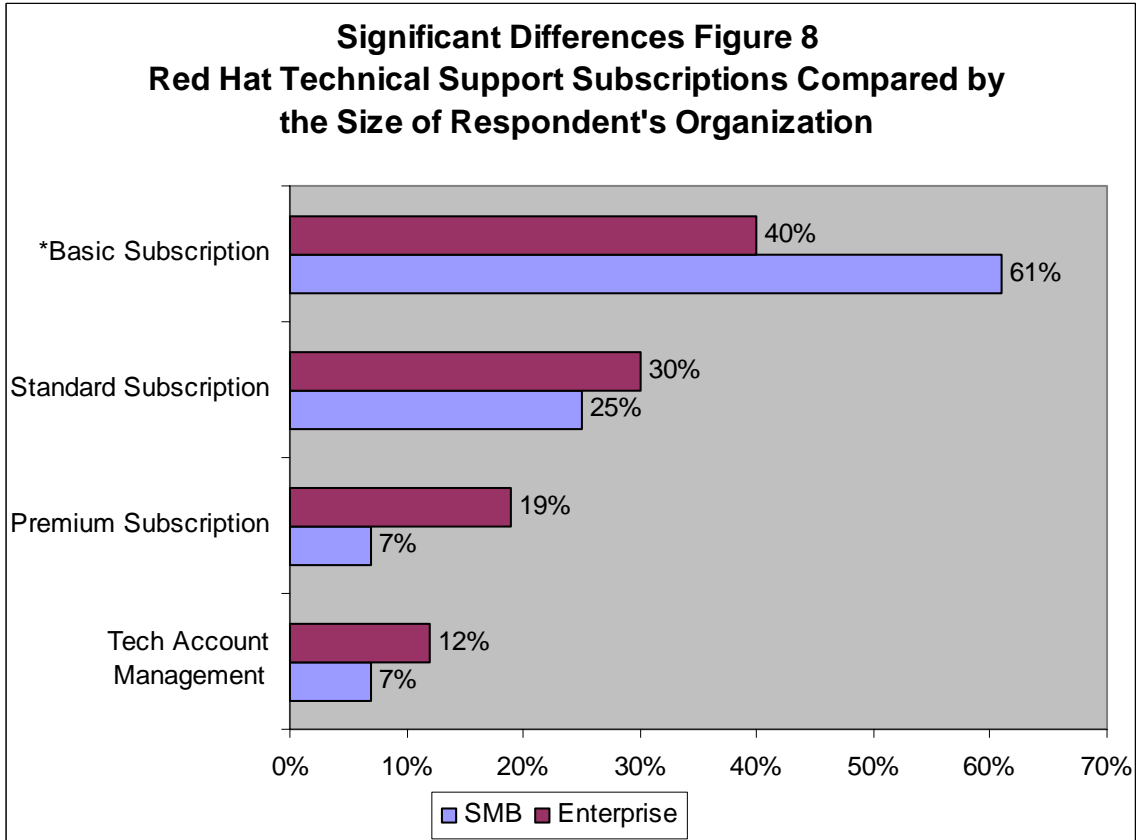
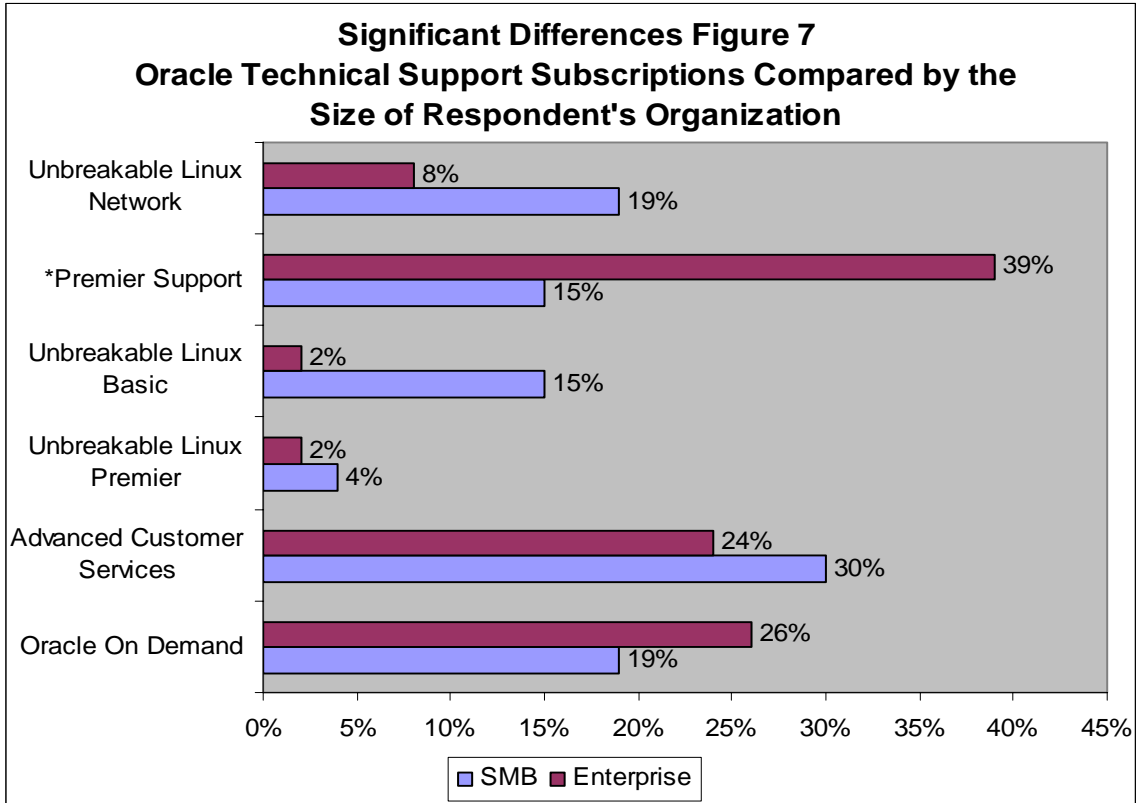
For more detailed information, please see Significant Differences Figure 5 on the following page. An asterisk (*) denotes statistical significance.



**An asterisk (*) denotes statistical significance.*

Enterprise and SMB companies tend to have different levels of technical support with Novell, Red Hat, and Oracle. Enterprise companies were more likely to have premium subscriptions while SMB companies were more likely to have basic subscriptions. For more detailed information, see Significant Differences Figures 6, 7, and 8. An asterisk (*) denotes statistical significance.





Enterprise companies are more likely to be in the “education,” “financial services,” and “healthcare” industries than were SMB companies. SMB companies are more likely than Enterprise companies to be in the “services business.” For more information, see Significant Differences Figure 9. An asterisk (*) denotes statistical significance.

