Mobile Unified Communications
The Emergence of 4D Convergence

October 2012

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Introduction

Convergence was the buzzword for the first decade of the 21st century. But it was limited to voice, data and IT. In fact, in a column published in September of 2011, we noted

> *"With the advent of 'Anything as a Service' in the cloud, we are coming closer and closer to that reality [of LAN/WAN/Applications becoming indistinguishable and truly converged.]. Indeed, any well-designed application now must account for the fact that the performance must be consistent - or at least acceptable - worldwide. Application delivery and application performance should become a non-issue as we move toward that converged world."*

This definition of convergence left some issues open. The "Fourth Dimension" now includes working independently of time and space in that Unified Communications needs to be independent of connectivity method (wired/wireless), location, and device. "4D Convergence" provides the power to include these additional factors, adding exponentially to the overall effectiveness of the solution.

In August 2012, large enterprise IT professionals[1] responded to our call for information about their deployment status, plans and attitudes concerning Mobile Unified Communications (UC).

The key findings of this study include:

- **Mobile UC is firmly established among "early adopters" and growing toward mainstream adoption. It represents a continuum of adoption, not a single step.**

- **Roughly two-thirds of "knowledge workers" are mobile at least some of the time, and at least 25% of the time spent by workers who are mobile at some point is spent as "mobile hours." This is increasing due to the availability of smartphones**

[1] The database consists of responses from approximately 200 individuals in companies with at least 500 employees of which 57% are US-based.

and tablet[2] computers as an enabling technology.

- **An average of 18% of projects are delayed at some point because the team couldn't collaborate effectively, and 16% are delayed because the team could not reach a decision maker.**

- **There is a huge "Productivity Gap" for mobile workers due to the lack of UC capabilities when working off-site.**

- **This Productivity Gap results in a loss of *at least* 2.5 hours per week (assuming one-third of the 7.5 hours lost is recoverable) that could be reclaimed by implementing a more complete Mobile UC solution. For the company modeled as a composite of the respondents, this represents an annual recovery of over $5,500 (US) per employee.**

In the following pages, we justify and examine these results by looking at "The State of Mobile UC," "The Mobile UC Pain Index and Productivity Gap," and "The Economic Impact of Mobile UC Productivity."[3]

[2] Throughout this report, "tablet" or "tablet computer" refers to the entire genre of tablet and "pad" computers, including Android-based tablets and Apple iPads. These devices generally have a screen size of 7 inches to 10.1 inches.

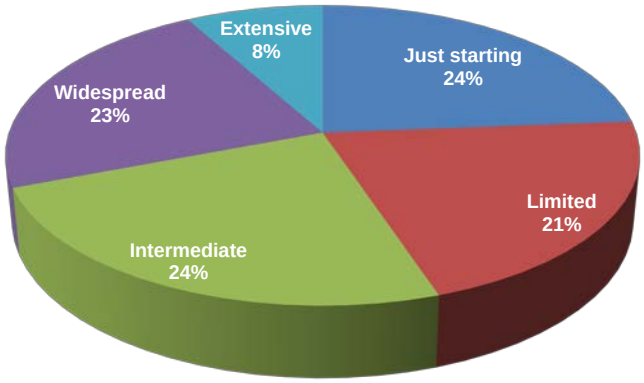
[3] Note that for this report, we define the key terms as:

- ***Mobile*** and ***mobility*** refer to the ability of employees to access various communications capabilities, applications and Internet resources from nearly anywhere using wireless smartphones, tablet computers and other portable devices.
- ***Mobile UC*** refers to the ability to utilize Unified Communications capabilities in a mobile environment. Note also that for the purposes of this survey, a well-integrated telecommuter is not necessarily considered to be "mobile" if the telecommuter has a full complement of "in office" tools at his/her remote workplace. However, even a telecommuter will be "mobile" when away from his/her normal workplace.
- ***"Knowledge workers"*** are employees who rely substantially on telecommunications capabilities (i.e., phone, PC) as an integral part of their duties, as compared to workers in a traditional production facility, construction, etc.

The State of Mobile UC

Mobile Unified Communications is clearly the next big issue on the horizon for the enterprise. However, the state of implementation is widely varied. When asked "How would you characterize your stage in the implementation of a mobile UC strategy/solution?" there was a very wide deviation in answers. **Figure 1** shows 47% of respondents indicating "Intermediate" or "Widespread" deployment, with 45% indicating "Just starting" or "Limited." Only 8% claimed "Extensive."

Figure 1: Implementation Stage



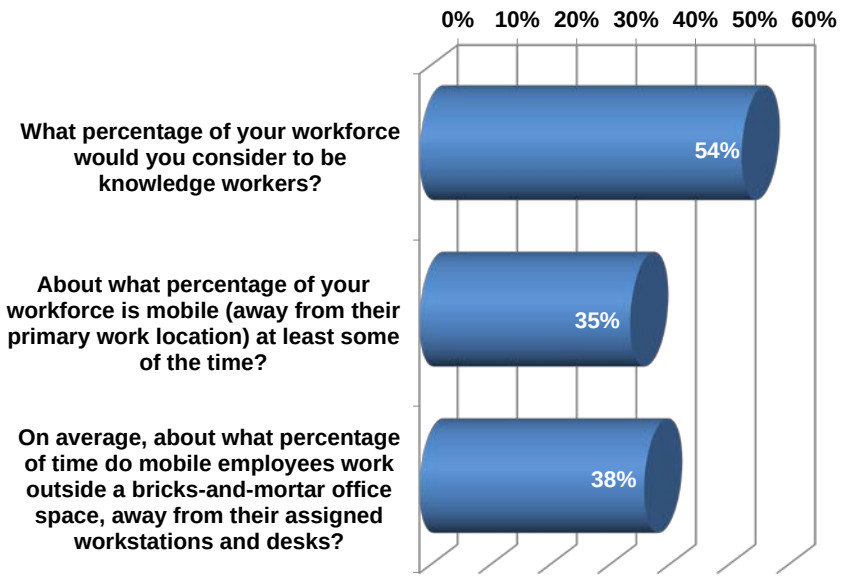
How would you characterize your stage in the implementation of a mobile UC strategy/solution?

It is interesting that when the questions that followed were cross-tabulated against the implementation stage, there were only minor variations in answers. One might expect, for instance, that among those with more extensive implementation, more of the problems have been solved. Our take on this is that the lack of difference is not that the problems will not be solved. Rather, the more extensive the implementation, the higher the recognition of the depth of the challenges.

It is clear that both mobility and UC are firmly *established* in the enterprise, even though they may not yet be fully *integrated*. And, of course, mobility is most prevalent among knowledge workers. In fact, by our definition of knowledge workers, we find it difficult to imagine a case in which a mobile worker is not a knowledge worker.

Figure 2 shows the results for three separate questions. Let's take a look beyond the "raw" numbers indicating that 54% of the employees

Figure 2: Workforce Analysis



Please indicate the best answer for knowledge workers within your organization for each of the questions.

are knowledge workers, one-third (35%) of the employees are mobile, and the mobile employees spend 38% of their time "being mobile." In particular, 65% of the knowledge workers[4] are mobile, and these mobile employees spend 70% of their time working in a mobile environment. Thus the knowledge workforce spends almost half of its time – 46%[5] to be exact – working in a mobile environment.

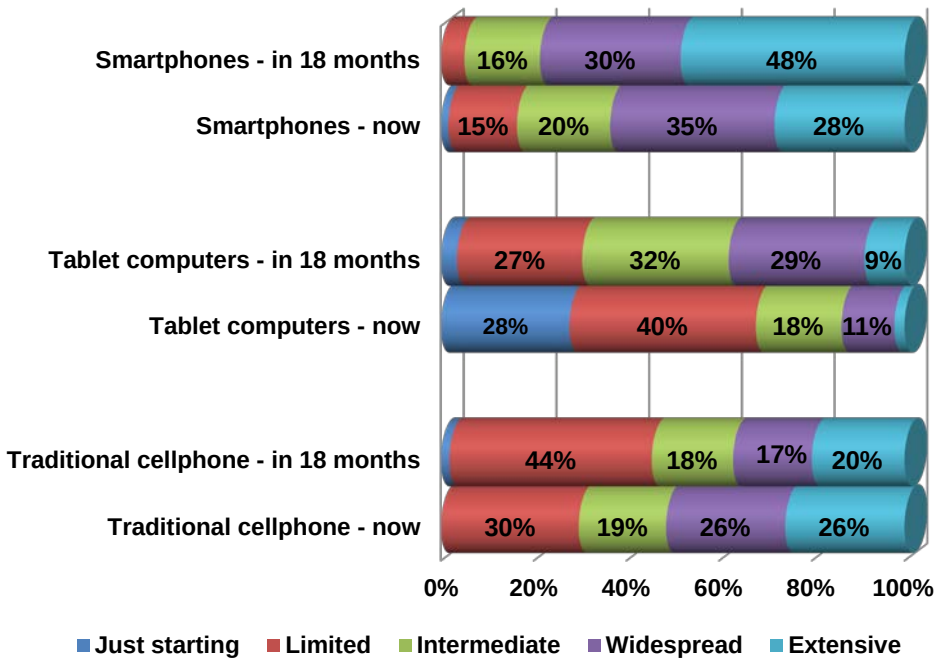
Assume that these assumptions are a bit aggressive. If one disregards the question about knowledge workers in general, 13% of the entire workface hours are spent in a mobile environment. Since the knowledge workers are roughly half of the entire workforce, this would account for 26% of the knowledge worker hours being spent in a mobile environment. ***Thus, we can state with a high degree of confidence that one quarter to one-third of knowledge worker hours are currently spent in a mobile environment***.

However, this is only a part of the story. Mobility is rapidly increasing in importance, so the percentage of hours spent in a mobile environment should be expected to increase dramatically.[6] The reasoning behind this is quite simple. The proliferation of smartphones and tablet computers will increase rapidly over the next 18 months. And the availability of these devices will fundamentally change the way that the knowledge workforce communicates.

Figure 3 provides insight into these trends.

Smartphones are already in extensive use in the enterprise, with 63% of the respondents reporting "Widespread" or "Extensive" use. However, within 18 months, this group will grow to 78% - a 15%

Figure 3: Device Usage



Which of the following devices do your employees use (now and in 18 months)?

[4] Assuming all mobile workers are knowledge workers.
[5] 65% x 70% = 46%
[6] We will leave any speculation as to whether these will be a part of current hours spent or additional hours per worker to the reader.

increase overall. Even more impressive, the "Extensive" usage will almost double from 28% to 48%.

Tablet computers are lagging in overall adoption, which is not at all surprising since the products are just now maturing and being integrated into the overall mobility environment. While these devices currently show a penetration of "Widespread" or "Extensive" use of only 13%, this will essentially triple to 38% in 18 months.

From our perspective, we see this as being a somewhat surprising lack of growth, especially with the pending introduction of collaboration and videoconferencing capabilities for tablet computers. However, there are still significant obstacles involving cross-platform interoperability. If these issues are addressed in a timely manner, the growth could be substantially higher because many knowledge workers already possess these devices. They are simply waiting for support.

What About VoLTE?

VoLTE is poised to have a significant impact on the UC front in the next two years.

Today, even smartphones default to using two separate radio bands: a traditional cellular band for voice and a different band for data. Thus, even though the data services are capable of supporting IP, the *default* support for voice is via traditional service cellular rather than VoIP. This is analogous to trying to support a UC environment with the voice still limited to POTS.

With a transition to VoLTE, which is already supported by some special applications, UC capabilities will be enhanced significantly, especially since the cellular voice can be integrated into an overall SIP infrastructure.

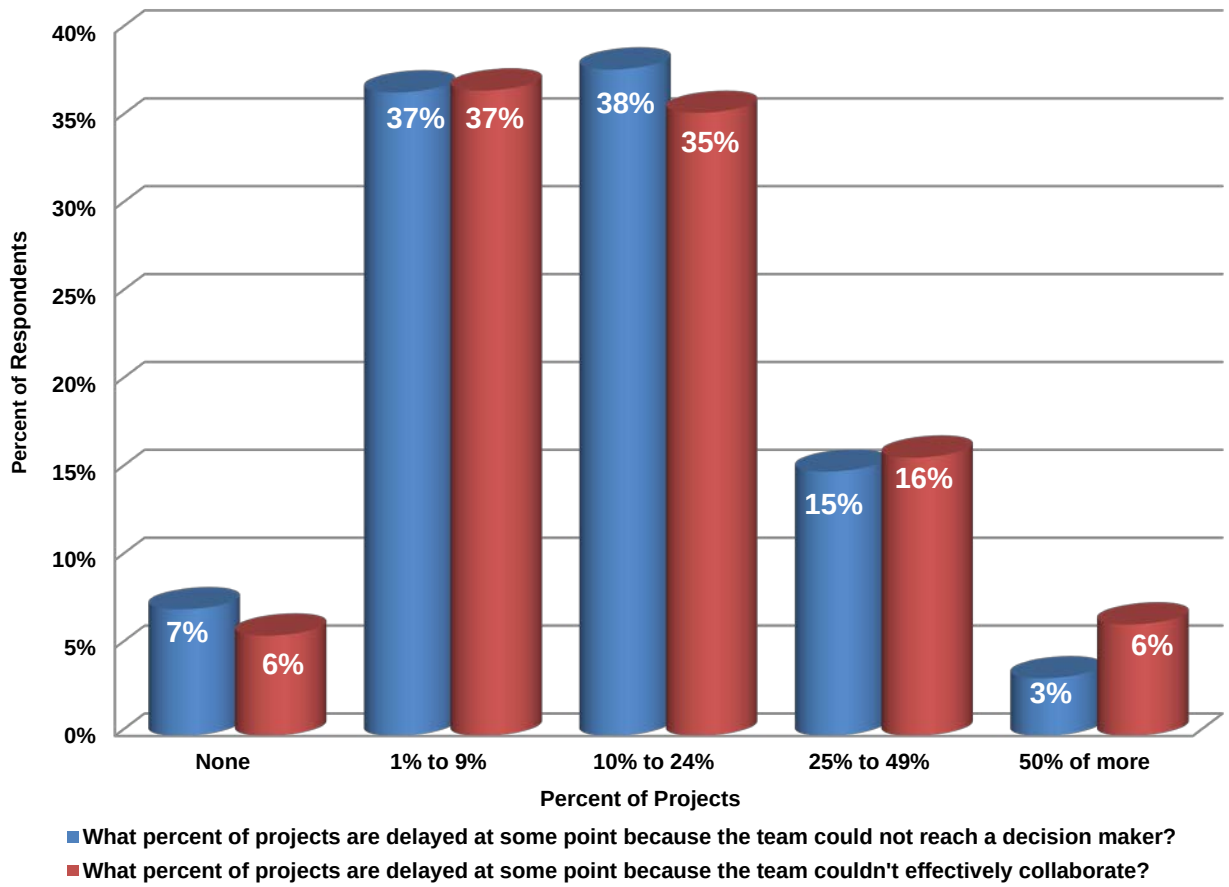
The only surprising part about the use of traditional cellphones is that they will continue to exist to the extent that they do, especially considering that it is almost impossible to purchase a traditional cellphone today. For instance, a quick count at the Verizon Wireless web site indicates that there are 55 smartphone models available for purchase, as compared with 11 traditional cellphones. This will be especially important as enterprises – especially in support of UC applications – transition to voice over 4G LTE, or VoLTE.

One of the reasons that we see for the extensive moves in the Mobile UC market is that it solves real problems that are impeding progress today. **Figure 4** speaks for itself. The respondents noted that an average of 18% of projects are delayed at some point because the team couldn't collaborate effectively, and 16% are delayed because the team could not reach a decision maker.

The complete integration of Mobility and Unified Communications presents an opportunity for a sea change in the way the tasks are accomplished. The emergence of smartphones and

tablet/pad computers will essentially free the worker from spatial and temporal constraints, especially since the connectivity issues are removed with the convergence of wired and wireless connectivity of all types. Aggressive and forward-thinking enterprises therefore have the opportunity to exploit this change to gain significant competitive advantages.

Figure 4: Project Delays



Please indicate the best answer for knowledge workers within your organization for each of the questions.

The Mobile UC Pain Index and Productivity Gap

Given the drastic present and coming shifts to a mobile workforce, the next step is to examine the extent to which mobile workers are able to be productive. The simple availability of mobile devices does not mean that they are smoothly and tightly integrated into the overall IT infrastructure in general and the UC infrastructure in particular.

In fact, the opposite is true. There are a number of significant steps between having a consumer-oriented mobile device (which most are) and having a tightly integrated Mobile UC implementation. For instance, there are issues with the user interface and "presentation layer" for a consistent look and feel, connectivity challenges (which most likely need to be SIP-based), security (since the mobile device will have access to and/or contain company-proprietary information), support for various operating systems, and a host of other non-trivial concerns.

As a starting point, we define a "Pain Index" as a weighted measurement for how easy or difficult it is to accomplishing a task. The results are presented for both an office environment and a mobile environment. In calculating the Pain Index, we assign a base weight to an answer of "Easy," and then double, triple, quadruple, and quintuple the weighting for "Not too hard," "Somewhat difficult," "Complex," and "Nearly impossible."[7]

Figure 5 demonstrates this Pain Index, with the most difficult remote tasks at the top. Many of the factors here are self-explanatory, but they do deserve brief discussion.

- The finding that impromptu video chat participation is the most difficult is not at all surprising. We are still dealing with a current infrastructure where Skype can't talk to FaceTime can't talk to GoogleChat. The difficulty in participating in a multimedia conference has basically the same set of core problems.

- The difficulty with determining a colleague's presence when mobile is amazingly difficult, but, again, the major issue here is the incompatibility among various operating systems and platforms. The major need here is for cross-platform compatibility, and some of the foundations for this might be coming with SIP and SIP-based extensions.

- The "file sharing" issue is critical, and it should be easy to address. However, there is a major concern here with security.

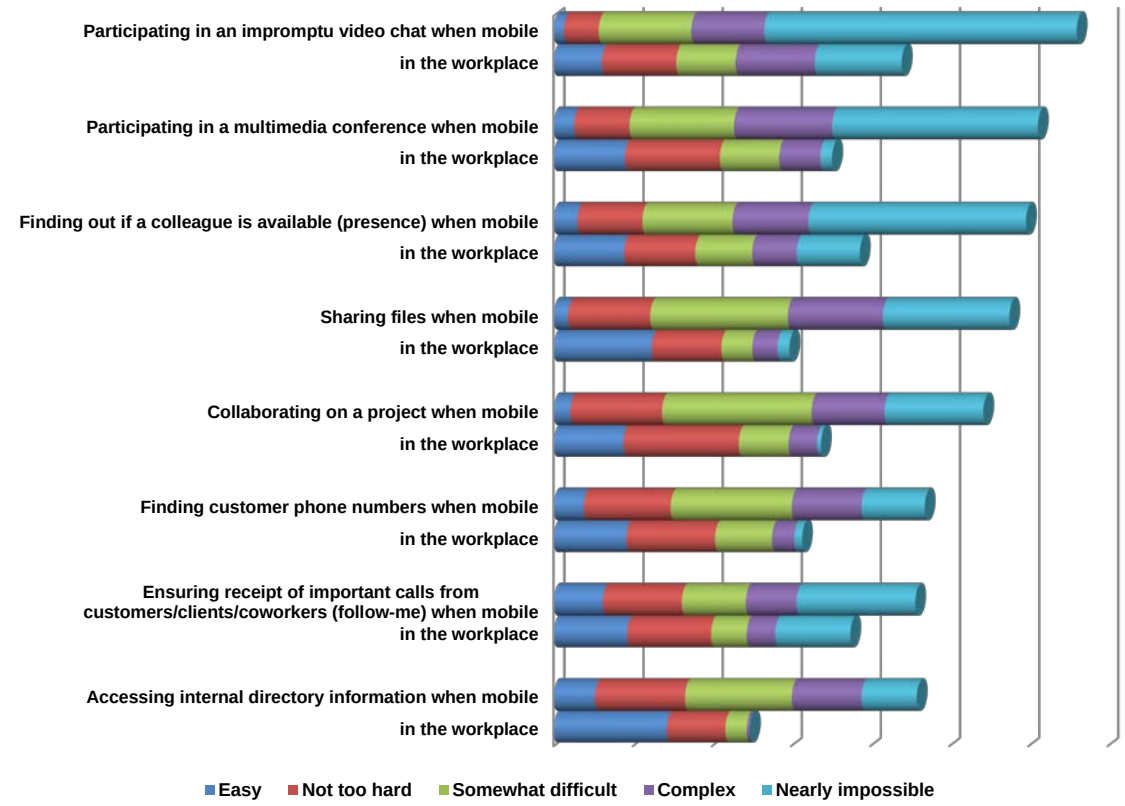
- Collaboration is one of the most powerful tools to be implemented as part of a UC solution. Again, though, some of the tools are still difficult to use on mobile devices. However, the major tools, such as GoToMeeting, do now have mobile (yet sometimes reduced function) versions.

[7] For instance, the answers for each category could be multiplied by a weighting factor of 1 through 5, or a factor of 20 to 100. The shape of the graph would be the same. For that reason, Figure 5 does not have "numbers" assigned to it.

- Finding customer phone numbers and accessing internal directory information are again problems that should have relatively easy solutions, but the major stumbling blocks include platforms in use and security issues.

- "Follow me" is a capability specifically designed for mobility, so it is surprising that it is viewed as being as difficult as it is. However, the difference between the 'Pain Index" in the office and out of the office is smallest for this capability.

Figure 5: Productivity Gap: When Mobile compared to in the Workplace



What is your Pain Index in each of the following situations?

This last point – the difference in the Pain Index when in the office and when out of the office – defines our second major metric, the "Productivity Gap." Clearly, mobile users are losing hours in productivity because of the lack of UC capabilities that they have in the office. This Productivity Gap, as shown in **Figure 6** is simply the difference between the Mobile Pain Index and the In-Office Pain Index.

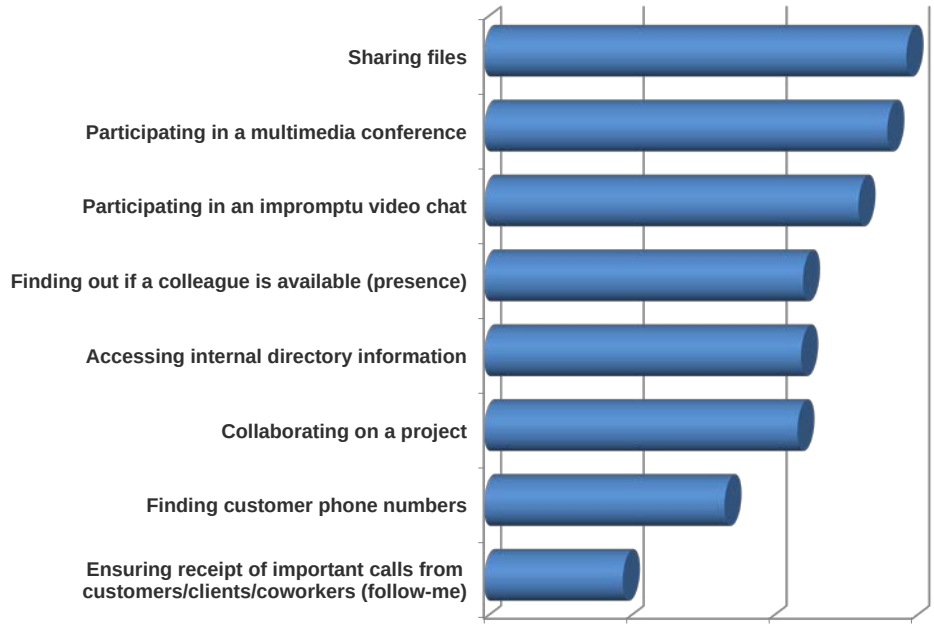
As with the Pain Index, the absolute value of the index is arbitrary. However, it is quite useful to see which tasks are significantly more difficult when working in a mobile environment.

The most difficult, not surprisingly, are sharing files and participating in multimedia and video conferences. Likewise, as mentioned above, there is the least gap with "follow me" capabilities since this is exactly what this capability is designed to accomplish.

Still there is an additional perspective that must be considered: How important is each of the items being compared here? The fact that a task has a high Productivity Gap does not necessarily mean that it is something worth trying to fix.

Figure 7 identifies five areas for cross-referencing the importance, the time lost because of the task, and the Productivity Gap. The percentages shown on the "critical" bars are a reflection of the percentage of respondents who indicated that the task was critical when presented with the options of "Critical," "Somewhat Important (Nice-to-have)" and "Not Important at all.") "Time Lost" and Productivity Gap are scaled to show the relative values, but do not have quantitative values shown.

Figure 6: Productivity Gap: Pain Differential (mobile / workplace)



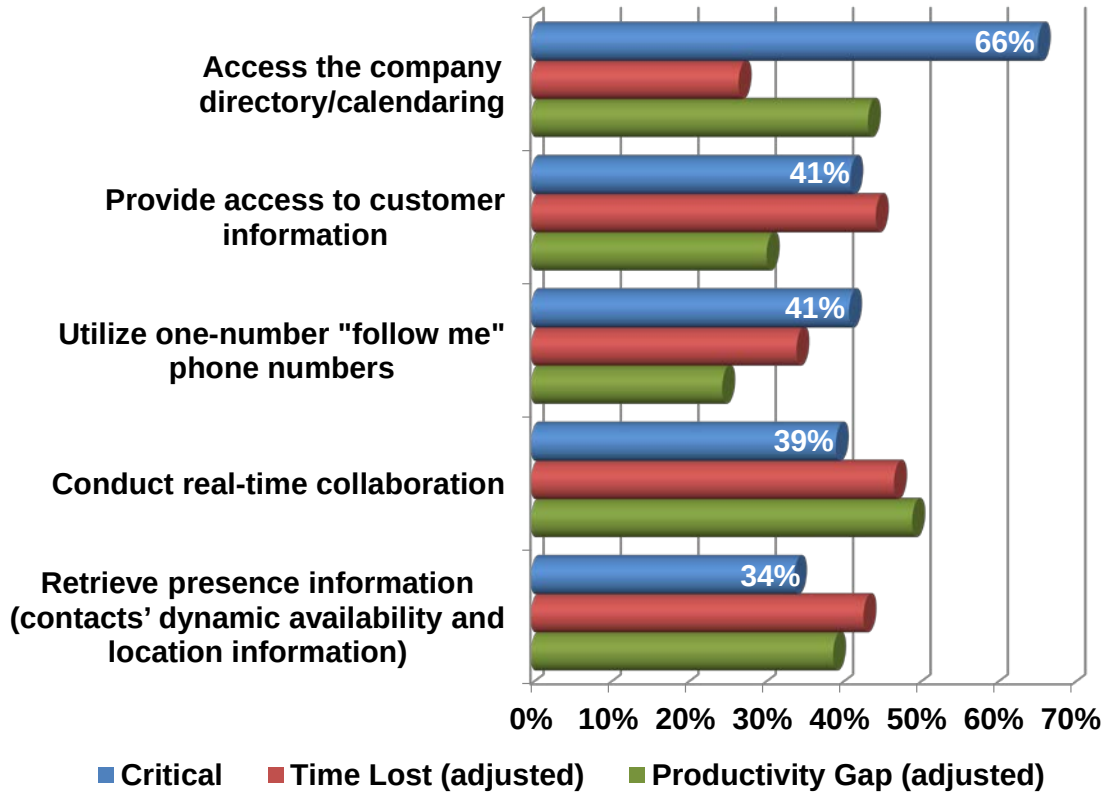
What is your Pain Index in each of the following situations?

Accessing the company directory / calendar had the most critical responses, but also showed the least time lost in a mobile environment, while also showing a large Productivity Gap.

Accessing customer information, using "follow me" numbers and the ability to conduct real-time collaboration scored about equally in terms of importance. Perhaps the most interesting among

this group is collaboration, in that it shows high importance, a lot of time lost, and a high Productivity Gap. If one examines the composite of these factors, presence information is also an area that deserves significant attention.

Figure 7: Productivity Gap / Time Lost / Importance



Cross Reference: Productivity Gap / Time Lost / Critical to Enterprise

The Economic Impact of Mobile UC Productivity

In the final analysis, the imperative is to "Show me the money." What is the real cost-benefit of implementing a robust Mobile UC solution?

Unfortunately, this is a quite difficult – indeed almost impossible – question to answer with great precision. This is a very different situation from, for instance, replacing leased "dedicated transmission service" communications with frame relay or an IP-VPN. In these cases, it's possible to start with a given set of capabilities at a certain price and then to calculate the cost of implementation of a new infrastructure and the associated costs. This provides a "hard ROI," in which the same capabilities are replaced with equivalent but less expensive technology.

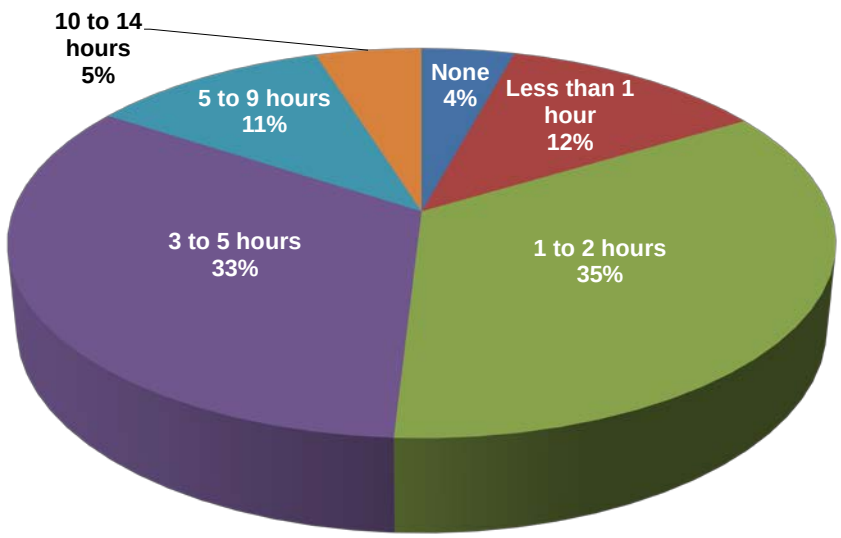
In this case, a "soft ROI" analysis would be needed. The new capabilities, such as those provided by Mobile UC, provide an increase in productivity, so the best that can be hoped for is an attempt to quantify the savings in terms of time lost. However, this still does not account for additional capabilities that might not have been possible previously. And all of these calculations are confounded and compounded by the simple fact that most respondents are giving a "best effort" estimation of the time lost in various tasks.

Consequently, we present a variety of scenarios and quantify the savings that one can typically expect to realize as a part of a Mobile UC solution, realizing Mobile UC itself is a gradual and evolutionary process as compared to an either/or "flash cutover."

To begin to get a handle on the amount of time that is lost in not having a robust Mobile UC implementation the respondents were asked early in the questionnaire "How many hours of productivity would you estimate a given knowledge worker in your organization loses each week because he or she doesn't have consistent access to corporate resources when out of the office?"

As shown in **Figure 8**, the answers varied widely. However, as a starting point, this question yielded a (somewhat sparse) 3.25 hours per week. But it's a valid benchmark.

Figure 8: Weekly Time Lost

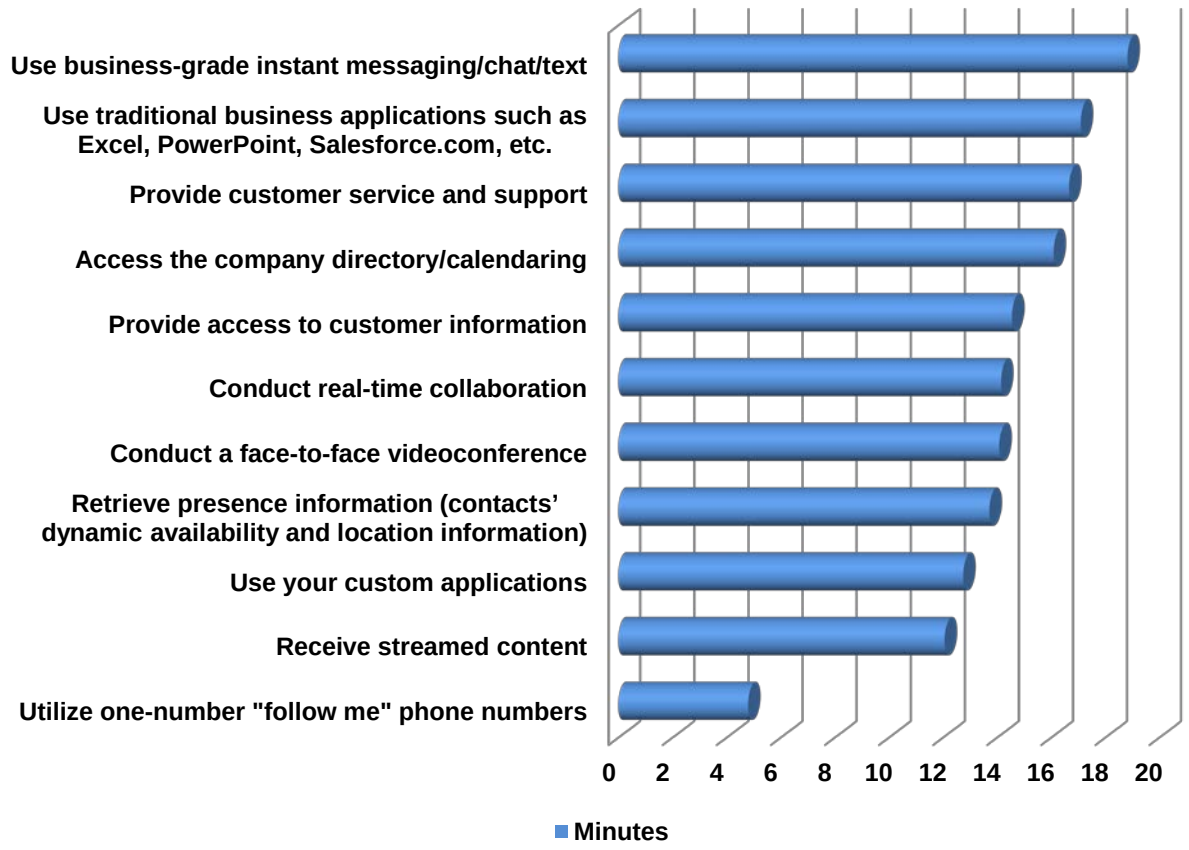


How many hours of productivity would you estimate a given knowledge worker in your organization loses each week because he or she doesn't have consistent access to corporate resources when out of the office?

Closer to the end of the survey, after the respondent has been questioned extensively about the implications and possibilities of a Mobile UC implementation, there were vastly difference responses.

Figure 9 shows responses to "How much time per day do you think the average knowledge worker in your organization loses in productivity each day because your mobile UC solution doesn't have the indicated capacity?" for a number of tasks.

Figure 9: Time Lost per Employee per Day



How much time per day do you think the average knowledge worker in your organization loses in productivity each day because your mobile UC solution doesn't have the indicated capacity?

At first glance, these results are not surprising since the sum of the estimates comes in at about 2.6 hours. However, note that these losses are "*per day*" whereas the first question was "*per week*." So what does all of this mean?

There are at least two factors that must be considered in explaining the discrepancy between these two results. First, we believe that at the start of the survey, the scope of Mobile UC may have not been realized. So the answer increased when asked in detail about specific tasks. Secondly, several of the tasks are not mutually conclusive. For instance, real-time collaboration, face-to-face videoconferencing, and receiving streamed content may all be due to

the lack of a singular capability. So there may be some "double-counting" when the times are summed.

Considering these factors, we are using a ballpark number that 1.5 hours per day (90 minutes) is lost in productivity due to the lack of fully implemented Mobile UC. This results in 7.5 hours per week.

It is unrealistic to assume that all of this time can be recovered, so we drop back and assume that one-third of the time could be recovered, resulting in roughly 30 minutes per day, or 2.5 hours per week.

So now the question is how to monetize this time.

Webtorials has created a calculator for modeling the dollar value of saving a given number of hours per week. The calculator takes into account the salary range of the knowledge workers, vacation and overhead, the number of hours worked per week by employees in a given salary range, and the distribution of salaries in the company.

Applying this analysis, we found that the approximate average savings per employee per year is on the order of $5,500.

Figure 10: Annual Savings

Company Size:	***31,671***			
% of workforce who are knowledge workers	***54%***	**KW workers**	**Annual Savings per Employee**	**Annual Savings**
Under $50k	23%	3,877	2,505.66	9,715,525
$50k to 90k	37%	6,309	4,518.54	28,506,318
$90k to $120k	26%	4,397	6,256.37	27,506,658
Over $120k	15%	2,551	8,514.03	21,721,446
Totals/Averages		17,134	5,448.65	87,449,948

Further, based on the responses for this particular survey, we created a composite company. As shown in **Figure 10,** this results in annual savings for the composite company of well over $87 million per year.

As always, your results may vary, so we invite you to perform your own analysis and "what-if" scenarios for your company using the complimentary Webtorials Time / Cost Savings Calculator.

Summary

Mobile Unified Communications represents the integration of two of the most powerful trends in the IT industry. And while the functions covered in this report represent an important portion of this "4D Unified Communications," there are implications here that are also intertwined with trends such as virtualization and cloud-based services.

As of this writing, Mobile UC is in the early stages of mainstream adoption, realizing that this adoption is a part of a wide range of functions – not a single "yes" or "no" decision. The adoption of Mobile UC will be accelerating rapidly as enterprises see the combined power of new devices (smartphones and pad/tablet computers) as an enabling technology coupled with the demand from users to support these devices as a part of the overall consumerization of the network and BYOD trends.

Among knowledge workers, about two-thirds are mobile at least some of the time, and at least 25% of the time spent by workers who are mobile at some point is spent as "mobile hours." While this is already reaping benefits, many projects are delayed because of the inability to collaborate effectively and to reach key decision makers. Fully implemented Mobile UC can help significantly in alleviating these pain points.

The study examined and quantified the pain points in detail. Of particular interest, we also defined a Productivity Gap that quantifies the ease or difficulty with which tasks are accomplished in a mobile as compared to fixed-location environment. The Productivity Gap was accomplished both alone and, perhaps even more importantly, as compared with the importance of key tasks and the time lost because of these tasks.

Finally, a financial model was applied to the findings. While it is impossible to come up with an exact dollar for time recovered due to the myriad parameters involved, we found that an extremely conservative estimate of the dollar value per employee per year is at least $5,500 (US).

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The primary author of this study is Steven Taylor.

Published by Webtorials Editorial/Analyst Division
www.Webtorials.com

Division Cofounders:
Jim Metzler
jim@webtorials.com
Steven Taylor
taylor@webtorials.com

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