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Capacity Management Maturity Assessing and Improving the Effectiveness

Many organizations have a Capacity Management process or function in place, but no practical way to assess the effectiveness or even the strengths and weaknesses of the process or function.

This led to the development and refinement of a Capacity Management Maturity Assessment, consisting of 20 carefully chosen questions that help an organization assess maturity and effectiveness.

Once completed, the results will allow the Capacity Manager to better communicate the importance of Capacity Management and also create a plan to fill identified gaps going forward.

Applying this assessment to multiple organizations allows comparisons to be made between organizations and between an organization and others sharing characteristics, such as type of business, geographical location, organizational size, among others.

This white paper will discuss the concept of Capacity Management Maturity, how is the concept of maturity defined and what are the building blocks that reflect a mature process or function within an organization.

There are some known challenges with using a self-assessment, so why would an organization want to complete one? We'll look at some of those issues and also talk about why a self-assessment can still be a valid tool to point organizations in the right direction.

Next, we'll look at the survey, question by question. Each of the 20 questions was chosen carefully and, in many cases, refined over time. Each can be an indicator of work done well or room for improvement. As a set, the results can be an indicator of the current level of maturity and reveal opportunities to increase that level.

While the current version of the survey is reasonably new, there have been enough responses to it to show some trends based on industry and/or geography. We'll look at some of those.

Finally, we'll talk about the future of the survey and how it fits into ongoing efforts to improve the maturity and visibility of the capacity management process in all organizations

Introduction

The author / presenter has been involved in Capacity Management for 18 years – at a technical level, as an educator, a consultant, a technical marketer, a strategic marketer, and as the head of marketing for a CM-focused vendor.

One of the author's long-term goals is to elevate the visibility of capacity management in organizations and help others to do the same. A well-defined, mature Capacity Management process can help organizations provide needed capacity while reducing overspend, capacity-related incidents, and panic buying.

Setting the Landscape

What is Capacity Management?

A fairly standard definition of Capacity Management is:

An IT process that helps ensure capacity meets current and future business requirements in a cost-effective manner.

A well-defined Capacity Management process will focus on four subprocesses:

Business Capacity Management – translating business needs and plans into capacity and performance requirements for services and infrastructure.

Service Capacity Management – managing the capacity of live, operational IT services. This includes both proactive and reactive activities to ensure SLAs are met.

Component Capacity Management – managing the performance, utilization, and capacity of IT resources and individual IT components

Capacity Management Reporting – To provide other ITSM processes and management with information related to service and component capacity, utilization, and performance

In order to support the process, specific activities (monitoring, analysis, tuning, modeling, etc.) are undertaken in both proactive and reactive ways.

What is Maturity?

A maturity model is a set of structured levels that describe how well the behaviors, practices, and processes of an organization can reliably produce desired outcomes. Various models exist. For the purposes of this survey, we'll focus on the Capability Maturity Model, which consists of five levels of process maturity.

There are 5 levels of maturity, from complete chaos through to optimization with continual improvement. We'll provide short, sharp definitions of each level that could be used when talking to management and then we'll break each of those down further in subsequent slides.

The five levels of process maturity in the Capability Maturity Model are:

1. **Initial.** Processes are undocumented and in a state of dynamic and chaotic manner. They tend to be driven in an ad hoc, uncontrolled, and reactive manner. Processes at this level tend to be unstable.
2. **Repeatable.** Some processes are repeatable, possibly with consistent results. Discipline is unlikely to be rigorous, but where it exists it may help to ensure existing processes are maintained during stressful periods.
3. **Defined.** Sets of defined and documented standard processes are established and subject to some degree of improvement over time.
4. **Managed.** Using process metrics, management can effectively control processes and identify ways to adjust and adapt the process to particular projects without losses of quality.
5. **Optimizing.** The focus is on continual improvement through both incremental and innovative changes.

Level 1 – Initial

- No Process activity
- Regular capacity breaches and outages
- Minimal funding
- Project based delivery and sizing
- No documentation or governance
- All capacity management activities are reactive
- Small pockets of CM in technical silos
- A mixture of platform specific tools, no capacity management focus
- No process definition, some capacity management delivered by individuals

Processes are undocumented and in a state of dynamic and chaotic manner. They tend to be driven in an ad hoc, uncontrolled, and reactive manner. Processes at this level tend to be unstable.

Level 2 – Repeatable

- Some acknowledgement of capacity management, technical silos actively managing capacity
- No objectives set, all activities still ad hoc
- Some process definition, focus is still reactive
- Pockets of people doing some capacity management
- Some key metrics captured, individual data sources
- Still very component focused

Some processes are repeatable, possibly with consistent results. Discipline is unlikely to be rigorous, but where it exists it may help to ensure existing processes are maintained during stressful periods.

Level 3 – Defined

- Capacity management exists in the organization but the communication interfaces are undefined
- Objectives have been set and basic capacity plans are being produced
- Processes are defined and documented in a wider initiative
- Key deliverables are being produced, mainly based on defined templates
- Roles and responsibilities are defined but some areas are still working in silos

- Component level data is being captured and stored centrally
- Reports are being generated automatically
- Basic trend models are being used for forecasting
- Component capacity management is being done well, organization at a minimum is looking at Service capacity management

Sets of defined and documented standard processes are established and subject to some degree of improvement over time.

Level 4 – Managed

- Capacity management has been fully implemented and integrated with the business and IT
- Business objectives are defined and being met
- The process is proactively focused
- Process, activities and communication interfaces are documented
- IT is using defined capacity management processes and activities
- Capacity management spans all IT with champions ensuring benefits are understood and realized
- Component and Service level tools are being used
- Data stored in a CMIS
- More advanced models are being used for predictions
- Service capacity management has been implemented and is actively used

Using process metrics, management can effectively control processes and identify ways to adjust and adapt the process to particular projects without losses of quality.

Level 5 – Optimizing

- Capacity management is now embedded in the business and culture
- Capacity implications assessed for all key business decisions
- Awareness of capacity management company-wide
- All capacity management objectives with the business objectives
- Capacity management is now part of Continual Service Improvement
- Well defined process governance with capacity thresholds regularly tuned
- Key capacity metrics included in all SLA's with all reactive/proactive elements understood
- An experienced and well trained group supports the capacity management process,

including a process owner, manager and capacity champions

- All communications/interfaces are defined with relevant information automatically exchanged
- A strategic solution has been implemented and includes component, service and business data
- Data captured is being analyzed and correlated using a CMIS
- Advanced capacity models are used that allow the business to understand wider implications of meeting business objectives
- Business capacity management has been implemented with the entire business using and understanding the benefits of capacity management

The focus is on continual improvement through both incremental and innovative changes / improvements.

Capacity management Maturity Survey

Once it was decided to use the Capability Maturity Model, an initial method of placing Capacity Management processes into one of these five levels was needed.

The method needed to be:

- Inexpensive
- Easy to complete
- A good indicator of maturity
- Something that provided direction / guidance on how to elevate that level
- Built on a foundation of established good practice

So the survey?

- 20 questions
- Person/group completing the survey are asked how they think they are doing in various areas
- Each statement is answered on a scale of 1-10

The survey was built over a few iterations. As with any project, it's possible some of the statements in the survey will continue to be adjusted over time.

There needed to be enough granularity to provide direction on which areas needed to be improved to elevate the level of the process, but not so much that the survey would be too cumbersome to complete.

We ended up with 20 statements. Respondents are asked to evaluate the statement for their own organization and score on a scale from 1 to 10 – 1 means “we don’t do this at all” and 10 means “we probably couldn’t do this better if we tried.” Most organizations will fall somewhere between those two extremes for all of the statements in the survey.

We’re going to walk through the 20 questions in the survey – this is a perfect opportunity to answer those questions for your own organization. While we won’t be talking about the scoring of these surveys as part of this white paper, you’ll get a feel for your organization’s maturity and you can always complete our survey online at www.metron-athene.com/survey/

The Survey - Statement 1

“We are reducing the number of capacity incidents year on year.”

The effectiveness of a Capacity Management process can be measured in many ways, but one of the most obvious ways is to compare the number of capacity-- related incidents from year to year and see if the process is causing those numbers to decrease as the process matures.

A common reaction to this question in interviews is that it’s unknown how many of those types of incidents actually occur in an organization. That’s something that should be corrected as quickly as possible.

When incidents are reviewed and classified, that data should be made available to the Capacity Manager. When the number of capacity--related incidents decrease over time, it’s a perfect opportunity for the Capacity Manager to make sure that information is widely known.

After all, when a process or function is successful in the eyes of senior management, it will continue to receive all the resources it needs to thrive.

The Survey – Statement 2

“We capture key component level capacity metrics e.g. utilization, memory usage, etc.”

A foundation of a successful Capacity Management process is the capturing of component-level statistics.

From an ITIL perspective, requirements are often communicated top-down (Business to Service to Component), but data is typically captured from the bottom-up (Component to Service to Business). A lack of component data in a particular area means it will not be possible to troubleshoot if a hardware component is a bottleneck for a capacity-related incident. Many times, the component data is checked first – if there appears to be enough capacity at the component level, other areas can be investigated.

Organizations with a lack of understanding of Component Capacity Management tend to throw hardware at capacity issues and spend more money than is necessary, so this is a necessary question for a survey like this.

The Survey – Statement 3

“A capacity plan is regularly produced and updated in line with business strategy / plans.”

There are many components to a good Capacity Plan, many of which are covered in other statements on this survey.

But the creation of a regular plan, one that is a living document that is updated as business strategies and plans change, is a strong indicator that Capacity Management is a mature process within an organization.

Many organizations that respond to this statement do complete a regular plan, but typically don't revisit that plan when things change in the middle of the year/quarter/month (depending on the frequency of the plan).

The Survey – Statement 4

"The service / component relationships are documented and stored in the Configuration Management System (CMS)."

This question is very ITIL--oriented, and it's possible that organizations would answer lower on this statement because they aren't actively aligning to ITIL.

However, it's still a very important concept – components combine in a certain way to make up an IT service and having that documented so that the information is accessible is very important. When investigating an incident with a service, for example, the organization needs to know immediately which components are involved. Likewise, when there are changes to services that change the demand for IT resources, it's important that the organization be able to incorporate those changes into their plans at the component level.

The Survey – Statement 5

“Capacity Management roles and responsibilities are clearly defined.”

Compared with Statement 4, Statement 5 is left at a very high level and usually provokes a considerable amount of thought by those taking the survey.

To some degree, roles and responsibilities are usually defined, but few feel that those are defined well enough. One outcome of this survey might be for the organization to list all the activities and responsibilities and figure out how they should get done.

The Survey – Statement 6

“Key service level capacity metrics are captured e.g. transaction count, response times, etc.”

When an organization tells me that it has a service level agreement based on end-- user response time, I always ask how that is measured – frequently it isn’t. For Service Capacity Management to be effective, the types of metrics listed above must be captured and evaluated regularly. In many organizations, this is seen as a challenge or an opportunity going forward.

The Survey – Statement 7

“Component / application monitoring thresholds are reviewed and tuned regularly.”

Capacity thresholds should be set at a level so that breaches actually mean something to the capacity manager. Go above a threshold and performance suffers (or will soon suffer). Go below a threshold of disk space and it's time to consider archiving old data sets or purchase additional disk. Thresholds aren't static, however, nor should they be set the same for every component or every service / application. Mature organizations have a set of thresholds defined and documented and have a process in place to review and tune them regularly.

The Survey – Statement 8

“Performance and capacity data is stored centrally in a Capacity Management Information System (CMIS).”

Capturing data is important. Storing it in a place where it's easily retrievable and put to use is vital. There are different models of storing capacity data. In our experience, those that store data centrally where the capacity manager has easy access tend to have the more mature Capacity Management process.

The Survey – Statement 9

"Capacity implications of a Change are represented and discussed during Change Advisory Board (CAB) meetings."

One of the key process interfaces in ITIL is between Capacity Management and Change Management. The Capacity Manager should represent the process on the Change Advisory Board and implications should be discussed and considered. Changes are risky and not planning for the required capacity or performance of those changes shows an organization that doesn't consider Capacity Management a vital part of the process. Likely the process isn't as mature as it should be.

The Survey – Statement 10

"Component and service metrics are correlated to understand the service capacity."

How does a change in the number of transactions of a service affect the utilization of the components that make up the service?

Knowing how various metrics relate and how strongly they are correlated is an indicator of a mature Capacity Management process.

The Survey – Statement 11

"Capacity reports are generated automatically, at a suitable granularity, and are available to the appropriate audience."

Most organizations have one Capacity Manager per thousands of components. Therefore automation of activities within the process, where possible, is key.

The automation of Capacity Reporting is one of the first tasks a Capacity Management process or function should put in place. Therefore, this statement is another indicator of the level of maturity of the process.

The Survey – Statement 12

"The capacity process is documented in line with the business requirements."

Another indicator of the maturity of a process is how well it's documented, compared with other IT functions and processes.

If the Capacity Management process is not documented as well as other, more reactive, processes (such as the Service Desk or Incident Management), it's an indicator that the organization doesn't value Capacity Management to the same degree.

This statement usually generates some thought and discussion – how much documentation is required? This depends on the level of documentation used in the business (and could be influenced by regulatory requirements), but the comparative level is an indicator of process maturity in the organization.



If a tree falls in a forest...

We've seen many organizations have Capacity Management as a "tick in the box" when it comes to sign-off on projects. An analyst runs some models, evaluates some data, writes up a recommendation and the project team buys what they planned on buying anyway.

Organizations that function this way quickly realize that they can eliminate the Capacity Management process and complete their checklist quicker.

Beyond that, those Capacity Management teams/processes that have a lot of recommendations acted upon are typically mature – they've built up trust between themselves and their management.

Also, a lot of professionals completing this survey aren't keeping track of this metric. One way to prove the value of the process is to track the success and failure of recommendations acted upon (and those not acted upon).

The Survey – Statement 14

“Recommendations from the capacity process are included in any Service Improvement Programs.”

When services are performing poorly, a Service Improvement Program can be developed to deal with that. It’s another indicator of a more mature process if the Capacity Manager is asked to provide recommendations as part of this program.

The Survey – Statement 15

“Enterprise-wide capacity management tools are used.”

In talking to organizations, we’ve found many that have more than one capacity management tool that may only cover part of the organization.

It’s certainly possible to have more than one tool – some organizations use various tools to manage different types of hardware or technology – but most organizations that have a mature Capacity Management process invest in tools they use enterprise-wide, rather than have various administrators manage the capacity of the sphere they manage on a day-to-day basis.

The Survey – Statement 16

“The business provides regular forecast information and it is used by the capacity process.”

Without regular business forecasts, the Capacity Management process would be forced to rely on utilization trends and over--provisioning (in many cases).

It's virtually impossible for a Capacity Management process to be at the Managed or Optimizing level without having key business forecasts it can then use to make predictions about future IT requirements.

The Survey – Statement 17

“No hardware is purchased without a capacity plan or a sizing report supporting the justification.”

This is closely aligned with Statement 13, but is strong enough to stand on its own.

Do project managers in your organization decide what hardware to buy based on the technology used or based on recommendations by the company selling the software? Are administrators able to buy whatever they want (whatever size they want) when it's time to replace systems due to be retired?

If so, then it's unlikely that the Capacity Management process is mature – a Capacity Management process that's mature is an integral part of the buying process. A key aspect of Capacity Management is that it be cost-effective. That means that Capacity Management should be intimately involved in keeping costs under control by completing Capacity Plans and sizing reports.

The Survey – Statement 18

“The infrastructure is sized based on performance testing and modeling.”

This is closely aligned with statements 13 and 17, but again strong enough to stand on its' own. How is your infrastructure sized? Are models being built? Are performance tests being completed and evaluated? If this is happening under the guidance of the Capacity Manager, the process is likely more mature.

The Survey – Statement 19

“The scope of Capacity Management covers all of the services defined within the Service Portfolio.”

Organizations that actively manage the capacity for all services in the Service Portfolio typically have a more mature Capacity Management process.

Not all services have to be managed in the same way – business-critical, customer-facing services likely receive the most attention to detail, but all services need to be evaluated and considered as part of a mature Capacity Management process.

The Survey – Statement 20

"There is a regular (e.g. monthly) Capacity Management review meeting with the process manager and champions."

While a Capacity Plan may only be written quarterly or annually, there needs to be frequent interaction between the Capacity Manager and the champions that provide the funding and other backing the process requires to exist.

All processes need a champion – and the champion for Capacity Management needs to be someone with significant influence in the business and/or IT. Without a champion, the process will not be considered an integral part of IT and there's little chance it will be a mature process. Capacity Management must communicate on a regular basis with the champion and with other stakeholders in order to communicate the ongoing value of the process.

Some results...



Once a statistically significant set of results was received, spider diagrams were created for each industry.

This is a fairly current diagram for the finance industry. At first glance, on average finance companies:

Good:

- Hold regular review meetings
- Capture component metrics
- Generally have well--defined roles
- Action is taken on recommendations

Not so good:

- Few are generating regular capacity plans in line with their business plans
- Thresholds are not reviewed / tuned regularly (if any exist)
- Reporting is not typically automated
- Coverage of services in the Service Portfolio is not 100% (likely not close)

Some results...



Using the spider diagram to compare industries (or companies) can highlight how different industries (or companies) operate.

In our experience, government organizations tend to be more process driven, especially in the UK. Comparing government with finance:

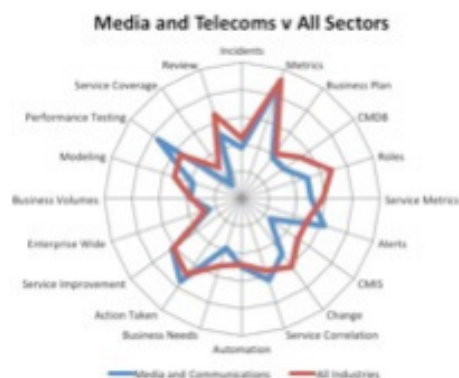
- Capacity tends to be much more involved with Change Management
- Relationships tend to be better defined in the CMDB / CMS
- Government tends to use fewer enterprise-wide capacity tools
- Capacity Management has to function with business forecasts more in government

Some of the differences seen above have to do with regulation or government requirements. Others have to do with the fact that government organizations are not seen as volume driven to the same extent as finance, or even retail organizations.

However, one way to use these diagrams is to see where opportunities exist.

Another use of the diagrams (not shown in this paper) is to compare your organization with one in the same sector. Radical differences between the organization and others in the sector provide insight on potential competitive advantages and disadvantages.

Some results...



Another way to view the results is to compare a company or industry against all responses, as seen above.

Taking a quick look at the diagram, there are few real differences between Media/Telecoms and the other sectors.

Still, this kind of comparison can be useful in a check to see that the company within a particular industry isn't missing a trick.

Conclusion

One thing that should be made very clear is that Capacity Management Maturity is not easy to achieve. Most organizations that have dedicated Capacity Management functions / teams score either a 2 or a 3 in this model. Organizations that do not have dedicated teams/functions normally score between a 1 or a 2.

The survey is a perfect discussion point between the Capacity Manager and management. The results of the survey provide quick feedback on areas to improve.

Using the survey to compare the results for your organization against others in your industry or geography gives an opportunity for you to see where you stack up and possibly identify where you are behind others so you can catch up. It's also a perfect opportunity to put processes in place that give your organization a competitive advantage over others in your industry.

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