System Center Capacity Planner 2007 Evaluation

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About Cosiris and Ian Blyth

Cosiris Ltd was founded in 2006 by Ian Blyth as a specialist niche company focussing on Operations Manager. Cosiris has done work with a selection of UK companies on designing, deploying, tuning and training with both MOM 2005 and SCOM 2007.

http://www.cosiris.co.uk/

Ian Blyth has been working in IT since 1990 and specialises in infrastructure. As a Network Manager for a large UK firm he was responsible for the LANS, servers and server applications for 26 offices with 6,500 users.

Ian was a Senior Consultant for Deloitte & Touche where he did IT strategies, network reviews and designed and project managed infrastructure upgrades for clients.

Ian joined Microsoft in 1999 where he was a Systems Engineer. For the last 4 years at Microsoft Ian was the Technical Specialist for MOM in the UK. Ian has been a speaker at various events for Microsoft and partners throughout the UK, TechEd and IT Forum as well as speaking at Microsoft internal training events.

Ian maintains a blog focusing on Operations manager at http://ianblythmanagement.wordpress.com/
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Evaluating System Center Capacity Planner 2007 for Operations Manager 2007

I tried out SCCP with a few scenarios that I have come across at customer sites but the main one I wanted to try was the head office with multiple branches. I could not do the client that I wanted to do as they had 1700 branches but the model only allows 100. I therefore tried it using the limitation of 100 offices. This is a summary of using it for a company with a head office, where most of the servers are located, and 100 branches which are grouped as small (1 server), medium (4 servers) and large (10 servers).

Main – Management Group
This is the first step of the wizard. In the Main Office the wizard asks for the management group name but in reality it is the location of the management group as that is usually where the majority of managed servers are in most organisations. If you use the management group name instead of its location it looks confusing later on. Therefore I would have no clients in the management group “site” and create a remote site with all the HQ servers with a fast link to the Management Group. The links allowed are WAN style and not LAN which is an issue but you just choose the closest to a LAN speed.
Because of this it makes it difficult to model in a DMZ with gateway as you would need to create that as a separate remote site. There is no way to model a site with a DMZ. The only choice is if you are going to use a Gateway server for that site. So you need to have a “site” for a DMZ.

Here is a Remote Site profile using the Gateway Option for a DMZ.
Remote Sites - Branches
When configuring a branch office (Remote Site) it always adds desktops and gateway as a default. These should be off as default as most customers do not monitor clients and gateways are only useful in a DMZ which is usually at the main site. Although as I have stated above you need to create a remote site for the DMZ and then you can add the Gateway. Desktop are the default also in the list of devices even when you have said No to client monitoring. This should be 0 by default. I also prefer to do it by numbers of servers so by count rather than the default %. Most clients would give me a list of servers but do not say what % is Exchange, AD, IIS etc.

Remote Site page showing defaults.

You can only have 100 remote sites and then you cannot add more. This will be a problem for some large organisations. To model a large system like the customer with 1700 sites I would have to create 100 branches with 17 servers instead of 1700 branches with 1 server. This will size the servers and databases but will get the WAN utilisation wrong. Therefore I could increase the WAN bandwidth to 17 times the actual so that the % usage is correct or run the model again with 100 sites with 1 server to get a view for the WAN utilisation.
This page shows the remotes sites at 100 with the Add Remote Site Profile greyed out.

I created a model with a 100 offices and did them as small, medium and large. This would work for most organisations as that is how they usually work and makes it easier to work with the model rather than creating 100 offices (although at least you can put in the correct names when you do that) and what the actual number of servers are. That seems an awful lot of work. If you are in the organisation then it may be worth the effort to input it and keep it up to date but for a consultant coming in to do the work it is not worth the effort.
**Network Links**

These are done in US style. These do not match up with links that I am seeing at customers. So you just have to choose the one closest to actual bandwidth. I would rather have an option to fill in an actual number.

If you do one bandwidth for all sites then this screen shows full list with speeds and names.

But if you want to do different links for different sites it only gives you the cryptic name and not the speed. So you need to know all the WAN terms to do this or have to go back to this drop down.
You can only specify a speed for all or you have to specify a speed for each one individually. In my example I would like 1 speed for small branches, another for medium and another for large. I would like to group them together as, again, that is how most customers work, but you cannot do that. You can set the default bandwidth on the first screen so when you chose Specify Connectivity for Each Remote Site it uses that and so you can then do the small amount that may be different as individuals.

I think it would be better if you could specify the network speed as part of the remote site profile so then my grouping would work.
This gives a number of choices based on the list provided out of the box and you can add more using the Hardware Editor. I would rather see the tool recommend a set of specifications rather than spend ages modelling server hardware in the Hardware Editor section. Once you see what the recommendation is you can map it to what you can buy then there should be an option to do “what if” I lower the disk size, number of processors etc to see how that would work.

As you see you can only specify one disk size for the database type. More on this later.
**Application**
The application for this model is System Center Operations Manager. I suppose that they have to keep the title vague as it can be used for Exchange and SharePoint.

The defaults are good for a small organisation. When you go fault tolerant you get a number of new options.
Model Summary

It seems like you are forced to have a SAN with what I have chosen,

After going back to the first page of the wizard and correcting that then you get a list of servers based on the choice of components you supplied.
You only get the number of disks needed based on the types you have supplied. Not the actual size of the databases and log files that you would like to know about for backups or sizing your own servers.

The use of servers and clients is confusing. They mean OpsMgr server roles and agents.

Once you have run the simulation you can go in and model certain bits of the sites (like LAN links in a site which is not available in the wizard). There is no easy way to see what you have input! Bizarre. You have to use the drop down to find the site and show details and then hover over each client server to see how many of each was done. Until you run the simulation you can go back and tweak the figures. Once the simulation is done then you cannot go back.

According to SCCP in order to monitor 410 agents with fault tolerance and excluding ACS it is specifying 9 servers - a cluster for the database, a cluster for the data warehouse, a cluster for the RMS, 2 management servers and a reporting server. As I asked to consolidate server roles where possible I would have had the data warehouse and the OpsMgr database on the same cluster saving 2 servers (an expensive cluster). This highlights the weakness of the current version of SCOM with fault tolerance that you have to have so many separate clusters. I hope that is rectified in the next SP or next version of SCOM. As there are only 410 agents I would only have one management server as
it can cope with 2000 agents and use the RMS cluster as a backup if that management server failed. So I disagree with the design produced although technically it is correct it is extremely conservative and so specifies more servers than are really needed.

Copy to Clipboard feature then gives this “Shopping list”.

### Output

**Topology**

- Sites with servers: 1
- Sites with clients only: 100
- Total number of clients: 410

**Site: Test**

- Number of users: 100
- Number of servers: 9
- Number of SAN connections: 1

**Server: Management Server 1**

- Processor: 2-processor, 2.13 GHz, Xeon 3000-Series (1-chip x 2-core)
- Minimum memory: 2.0 GB
- Disk: DiskArray 1\Volume 1 (Log Files), 71.99999 GB RAID 1 (2 x 72.00 GB SCSI 10,000 RPM)
- Disk (OS Volume): Disk with OS Volume
- NIC: 1 x 1,000 Mb/s
- Roles: Management Server

**Server: Management Server 2**

- Processor: 2-processor, 2.13 GHz, Xeon 3000-Series (1-chip x 2-core)
- Minimum memory: 2.0 GB
- Disk: DiskArray 1\Volume 1 (Log Files), 71.99999 GB RAID 1 (2 x 72.00 GB SCSI 10,000 RPM)
- Disk (OS Volume): Disk with OS Volume
- NIC: 1 x 1,000 Mb/s
- Roles: Management Server

**Server: OpsMgr Data Warehouse**

- Processor: 2-processor, 2.13 GHz, Xeon 3000-Series (1-chip x 2-core)
- Minimum memory: 2.0 GB
- Disk (OS Volume): Disk with OS Volume
- NIC: 1 x 1,000 Mb/s
- SAN connections: 1 x 4 Gb/s
- SANs: SAN Array\Volume 5 (Data Files), 600 GB RAID 10 (4 x 300.00 GB SCSI 15,000 RPM)
- SAN Array\Volume 6 (Log Files), 71.99999 GB RAID 1 (2 x 72.00 GB SCSI 10,000 RPM)
Roles: Reporting data warehouse

Server: OpsMgr Data Warehouse Server (Passive)
Processor: 2-processor, 2.13 GHz, Xeon 3000-Series (1-chip x 2-core)
Minimum memory: 2.0 GB
Disk (OS Volume): Disk with OS Volume
NIC: 1 x 1,000 Mb/s
Roles: Passive node of the clustered Reporting data warehouse

Server: OpsMgr Database Server
Processor: 2-processor, 2.13 GHz, Xeon 3000-Series (1-chip x 2-core)
Minimum memory: 2.0 GB
Disk (OS Volume): Disk with OS Volume
NIC: 1 x 1,000 Mb/s
SAN connections: 1 x 4 Gb/s
SANs: SAN Array\Volume 3 (Data Files), 600 GB RAID 10 (4 x 300.00 GB SCSI 15,000 RPM)
SAN Array\Volume 4 (Log Files), 71.99999 GB RAID 1 (2 x 72.00 GB SCSI 10,000 RPM)
Roles: Operations Manager database

Server: OpsMgr Database Server (Passive)
Processor: 2-processor, 2.13 GHz, Xeon 3000-Series (1-chip x 2-core)
Minimum memory: 2.0 GB
Disk (OS Volume): Disk with OS Volume
NIC: 1 x 1,000 Mb/s
Roles: Passive node of the clustered Operations Manager database

Server: OpsMgr Reporting Server
Processor: 2-processor, 2.13 GHz, Xeon 3000-Series (1-chip x 2-core)
Minimum memory: 2.0 GB
Disk (OS Volume): Disk with OS Volume
NIC: 1 x 1,000 Mb/s
SAN connections: 1 x 4 Gb/s
SANs: SAN Array\Volume 1 (Log Files), 71.99999 GB RAID 1 (2 x 72.00 GB SCSI 10,000 RPM)
Roles: Operations Manager Reporting server

Server: Root Management Server
Processor: 2-processor, 2.13 GHz, Xeon 3000-Series (1-chip x 2-core)
Minimum memory: 4.0 GB
Disk (OS Volume): Disk with OS Volume
NIC: 1 x 1,000 Mb/s
SAN connections: 1 x 4 Gb/s
SANs: SAN Array\Volume 2 (Log Files), 71.99999 GB RAID 1 (2 x 72.00 GB SCSI 10,000 RPM)

Roles: Root Management Server

Server: Root Management Server (Passive)
Processor: 2-processor, 2.13 GHz, Xeon 3000-Series (1-chip x 2-core)
Minimum memory: 4.0 GB
Disk (OS Volume): Disk with OS Volume
NIC: 1 x 1,000 Mb/s
Roles: Passive node of the clustered Root Management Server

SAN: SAN Array

Disk: Volume 1 (Log Files), 71.99999 GB RAID 1 (2 x 72.00 GB SCSI 10,000 RPM)
Volume 2 (Log Files), 71.99999 GB RAID 1 (2 x 72.00 GB SCSI 10,000 RPM)
Volume 3 (Data Files), 600 GB RAID 10 (4 x 300.00 GB SCSI 15,000 RPM)
Volume 4 (Log Files), 71.99999 GB RAID 1 (2 x 72.00 GB SCSI 10,000 RPM)
Volume 5 (Data Files), 600 GB RAID 10 (4 x 300.00 GB SCSI 15,000 RPM)
Volume 6 (Log Files), 71.99999 GB RAID 1 (2 x 72.00 GB SCSI 10,000 RPM)

After you click finish you get this diagram which is not that useful.

Hovering over each one gives the details of the site and also the Site Topology diagram which gives you all the OpsMgr servers and SAN details.
You can drag them into a better view

But it does not link the clusters together but just shows them as separate servers with passive in the name of the second. And you cannot move the External Network and sites icon.
Simulation
After you are finished with the model you can run the simulation. This produces this dashboard.

Great – there are no bottle necks but with a 9 server management group to do 410 agents I would hope not. When I hover over the largest % storage it tells me it is SAN Vol 5 but I have no idea what is Vol 5 until I go back to the list of servers and find it is the SAN volume for the data warehouse database. You can go into each section and look at the detail.

The one area that I do find useful is the list of WAN links and utilisation as an organisation with low bandwidth and heavy utilised links would be interested in this.
**Database sizing**

You would like to know the database sizes for doing on disk backups and tape backups and not just the size of disks used especially as you can only specify one type of disk for the database and logs.


The model says 410 servers but I used the total number (419) for the spreadsheet and I assumed a log file size of 20%.

<table>
<thead>
<tr>
<th>Database and logs</th>
<th>SCCP (GB) With 600 GB disks</th>
<th>SCCP (GB) With 36 GB disks</th>
<th>Sizing Spreadsheet (Community) GB</th>
<th>Sizing Spreadsheet (MS blog) GB</th>
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<tr>
<td>OpsMgr database</td>
<td>600</td>
<td>72</td>
<td>15</td>
<td>4</td>
</tr>
<tr>
<td>Data Warehouse database</td>
<td>600</td>
<td><strong>216</strong></td>
<td>492</td>
<td>297</td>
</tr>
<tr>
<td>OpsMgr log</td>
<td>72</td>
<td>36</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Data Warehouse log</td>
<td>72</td>
<td>36</td>
<td>98</td>
<td>60</td>
</tr>
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I did the model twice using 600 GB disks and then 36 GB disks for the OpsMgr and DW databases. You can only select 1 size for each database.

With 600 GB disks the data warehouse data size looks OK but 600 GB RAID 10 for a 15 GB database! That is the problem with limiting the number of disks that can be profiled and using disks instead of database sizes. This is really poor.

Using 36 GB disks is much better for the Operations Manager database as it uses the minimum number of disks for RAID 10 (4 disks) and less wasted space but bizarrely the DW now does not have enough space on it according to the spreadsheet calculations. Even the unofficial one from Microsoft, which is used as the basis of the sizing white paper, says that you will need 297 GB but SCCP has only sized it at 218 GB. In fact the Performance and Sizing white paper says that between 250 and 500 servers the db sizes are 5 GB and 320 GB.

There was no warning or message that you should use larger disks. Therefore organisations that use this will be in for a shock after a few months as they realise that they are running out of space. As this is the official calculator then this is unacceptable and as such I cannot use it for customer work.
Summary

You need to do a lot of work with profiling usage and hardware devices if you want it to match the organisations actual setup. There are a lot of factors that can be changed and profiled if you want to but the question is what additional value does it provide? Using the design and sizing white papers will give you most of the information with a lot less work. SCCP does give you a lot of information (which can be exported as a spreadsheet) but most of it is of no use (to me anyway). It does not tell you one of the key sizes which are the sizes of the actual databases but just what disks you would use (which is based on a limited choice of disks you are forced to give). And with that limited choice it can give a very poor result as shown above where a 600 GB SAN disk (using 4 x 300 GB disks) was chosen for a 15 GB database or even worse the wrong result with the DW sizing which is bad considering this is the official sizing tool.

You are limited to 100 sites which means that you have to inflate the servers per site to get the server sizing and either inflate the WAN links to match to get the correct % or run the model again with the correct number of servers per branch to get the WAN utilisation.

On top of that the design for the number of servers is high for the number of agents and I could immediately knock off one third of the servers off and still meet the sizing and capacity requirements.

I do not know how good SCCP is for Exchange or SharePoint but my view is it is a lot of work for very little value. I would only use it if a customer insisted as they had heard it was the “official sizing tool” and they were paying me to do it or to impress a customer with lots of fancy details. I would rather have the sizing spreadsheet as produced by Steve De Luca for MOM 2005 which sized the databases and WAN links for you with a good estimate and was very fast to use. Lucky the data for creating the database size has been done by Kerrie and Cameron as part of their Unleashed book (a spreadsheet on the book’s CD) or you can get the spreadsheet I created based on their figures before the book came out. I get the feeling that this has been created in isolation with little or no testing from consultants in the field (Microsoft and partners) who design and size OpsMrg systems all the time.

My verdict - SCCP for SCOM is a flop.

Ian Blyth