



# **SAP Business Communication Management**

**Quick Guide  
Best Practices  
Data Center Setup**

## BACKGROUND AND TARGET

The purpose of this document is to outline the requirements and give some sizing principles of a hosting environment for the SAP BCM Rapid Deployment Solution.

### Servers:

For setting up a hosting environment, it is recommended to start with the following server setup:

- A two node SQL Cluster. This can either have its own storage for the databases, or use a high performance SAN. It always has a local C drive for the operating system (2 drives in RAID1).
- Two application servers
- One reporting server. Own C drive, as per cluster above.

Servers are physical, not virtual. The table below illustrates some recommended hardware models.

Specs (min)	Apps Servers	SQL Clusters*	Std Reporting Servers
Server	HP DL/BL 460 (G6)	HP DL/BL 460 (G6))	HP DL/BL 460 (G6)
CPU	1 Quad Core	2 Quad Core	2 Quad Core
Memory	8 GB	64 GB	24 GB
Disk	2x 160 GB, Raid 1	SAN	Network file storage or SAN

It is recommended to duplicate the server components where possible, so Dual NIC cards, dual power supplies.

The SQL cluster gives redundancy for the SQL databases, which contain the operational BCM data. The two application servers give redundancy for BCM application components.

Note in addition to these you need standard network components such as domain controllers, which should be separate servers from the BCM.

This setup can either be run for standalone customers, or used for multiple customers in a hosting environment. The exact number of simultaneous agents/customers depends on a lot of varying factors. However a good rule of thumb is to add a new server when the CPU load is around 30%, to give the existing customers room to grow, and ensure there is always a backup server available which can take the capacity. This is illustrated in the table below:

Customers Total (#)	Max Simultaneous Users (#)	Apps Servers	SQL Clusters	Std Reporting Servers
10	1000	2+1	1	1
20	2000	4+2	1	1
50	5000	8+2	2	1-2
100	10000	16+4	4	2

**Notes:**

- These specs are based on live ASP environment with approximately 60 customers and 8000 simultaneous users.
- One SQL Cluster requires minimum two SQL servers, 1 witness server and high-end SAN disk array
- In addition to the above hardware, the VoIP gateway capacity needs to be increased as well in line with the growth

**PSTN connection:**

2 VoIP gateways

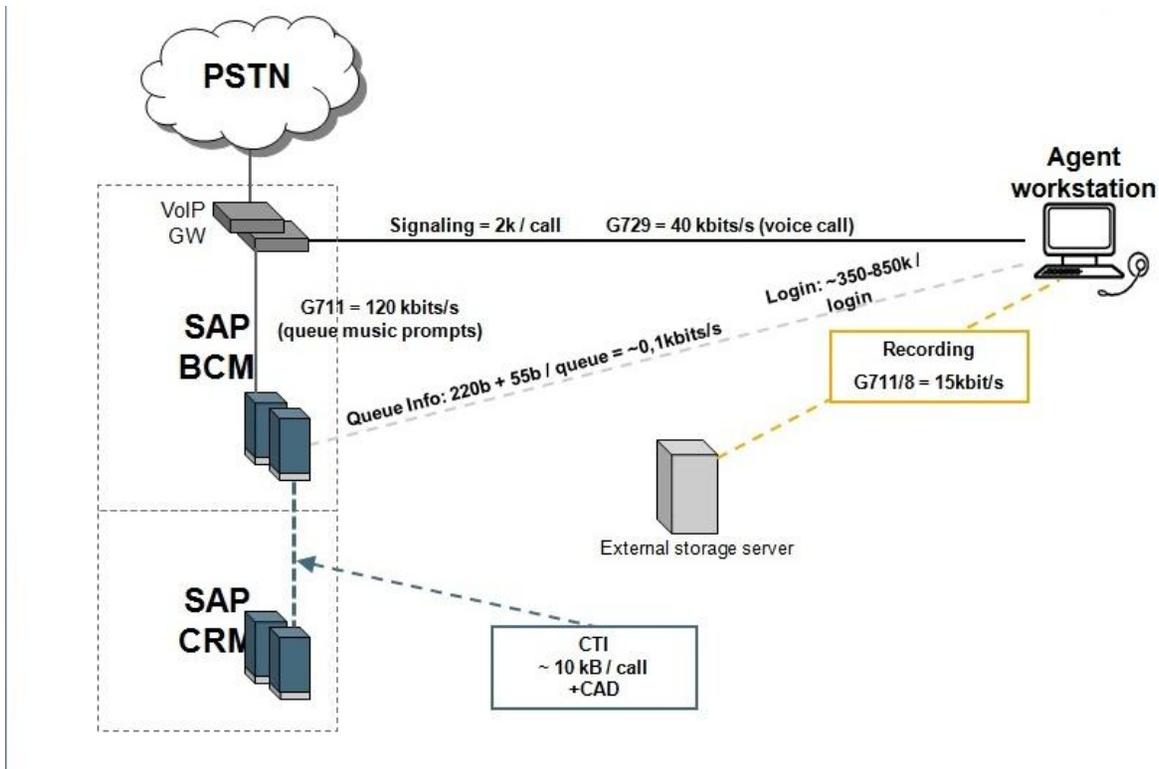
From the Telco Operator I would recommend T1(/E1/J1) connection to a VoIP gateway instead of a direct SIP trunk connection to our SIP bridge. Whilst we have SIP trunks in action with some operators, it is not always out of the box compatible due to many different implementations of SIP. So a SIP trunk from an operator would require full testing prior to use. T1's are the standard tested way to go, and my recommendation. Additional T1's , and the corresponding VoIP gateway modules can be added later when needed with many models. This way you can start with e.g. 2 T1's per gateway, and add more when required. You can configure on the gateway that a certain range points to a certain customer instance. As with servers, dual Power supplies and dual NIC cards are recommended.

Gateways, like servers, can be shared between customers. Gateways can be housed in the data centre, provided the telco operator can send the numbers there, so at least for each country a separate local gateways is required/recommended.

For gateways, we typically use Audiocodes Mediant 1000 or 2000, although we are also compatible with Cisco and Innovaphone models. Please refer to our ICL list, which shows the supported gateways. The Audiocodes in particular we have found to be reasonably priced, reliable and with good expansion possibilities. It is recommended to start with at least two of these in your data centre to have redundancy.

**Bandwidth:**

This depends on the number of calls, number of agents, and whether recording is implemented. Presuming here that the gateways are in the data centre, for G729, which is typically good quality for voice calls, it is 30-40Kbps, per call. In addition there is standard signaling such as agents logging into the system, and communication between components. This is also illustrated in below picture. For redundancy in the connection to the customer, you can double the connections. For this WAN link to the customer, it can basically be any link capable of providing sufficient bandwidth and performance, e.g. a point-to-point or a multi protocol label switching (MPLS) link.



**Data Centers:**

Whilst you can have two data centers, getting a reliable high availability connection between them is usually a long term project. Recommended to start with just one location for your data centre, and get good redundancy there. See to it to have UPS, backup generators, and duplicated network components such as switches, firewalls etc so there is no single point of failure. Each server could connect to two switches at the same time for redundancy.

**Disaster Recovery site:**

If this is needed, the hardware depends on what kind of redundancy is needed. A minimal setup would be 1 SQL server and 1 application server. For full redundancy also at the DR site, duplicate the primary site's hardware.

**Firewalls:**

It is a good idea to have firewalls between the clients and the servers, to prevent unauthorized access to components or other customers. Please refer to the Security Guide detailing the ports needed to be opened in different setups.

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