VisionOSS Business Voice Services Management (BVSM)

A Broadband-Testing Report

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Broadband-Testing

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EXECUTIVE SUMMARY

- IP Telephony has, to date, been slower to take-off than was originally forecast in the '90's. Progress has been steady rather than spectacular.

- One of the primary reasons for this – certainly with large-scale deployments – is the cost and time associated with that deployment, as well as general uncertainty.

- The lack of a simple, "out of the box" solution at this level – meaning a hybrid of many different product elements, even if they are from the same vendor – implies a serious management issue, one that doesn't seem to have been addressed to date.

- Many companies are looking to outsource their IP Telephony requirements, placing a huge burden on the Service Provider – one that they feel they haven't necessarily been able to cope with to date.

- With BVSM – Business Voice Services Management – VisionOSS appears to have created a true, large-scale IP telephony enabler for both the service provider and large enterprise user alike. It is designed to support multi-site, multi-cluster applications, where the IP phone count is several thousands and upwards.

- BVSM is essentially an IP voice management tool, designed to assist with the management of IP voice services, resources and the underlying infrastructure. It is claimed to dramatically ease and speed up the deployment of major IP telephony installations, providing an automated system for that deployment.

- Key aspects of BVSM are its central modeling and workflow engine, designed for service management and automated infrastructure configuration, on top of which is a simple, logical web-based user interface, designed to turn complex business processes into easily-understood and managed features.

- The bottom line is that IP telephony installations that were previewed as taking months to deploy, or even seen as infeasible, can now be delivered in a fraction of the time, with huge associated cost savings and near-immediate ROI.

INTRO: IP TELEPHONY - ECONOMICALLY VIABLE?

The Problem Defined

For years now, vendors and analysts alike have talked about the emergence of IP telephony; “this is the year of VoIP” and similar claims have been heard too many times.

The reality is that, if you speak with the major analyst groups such as Gartner, the move to IP telephony has been steady rather than spectacular. So what are the reasons for this? Here, the old adage “if it ain’t broke, don’t fix it” is normally wheeled out, with reference to the PSTN network being somewhat more reliable that a typical data network - it’s the old five-nines (99.999%) uptime argument. While there is no denying that contemporary voice networks are very reliable, the cost of annual management, maintenance and especially the direct *and* associated costs with upgrading a traditional PBX *without* moving to IP-based telephony are enormous.

Managing two networks is always going to be more expensive than managing one. Plus, while there have been many attempts to provide a bridge between data and voice networks, they do not offer the genuine integration - with advanced functionality into the future – that switching to an IP telephony platform delivers.

So are there other, equally real, underlying reasons for the reticence associated with the move from classic to IP telephony? While the fear factor is very real, in many cases it comes down simply to implied costs. An enterprise looks at the complexities involved in deploying its own IP telephony solution and baulks at the estimated time to deliver and the costs associated with that. A service provider, equally, has perceived problems in being able to deliver a managed solution to that enterprise, at a cost that is favourable to both parties. In short, in too many cases, the bottom line has appeared to be prohibitive.

BVSM – The Business Case

One of the key issues for service providers and large enterprises is to keep the operational costs under control for both the installation phase and the ongoing operation of their IP voice and data platform. The VisionOSS Business Voice Services Management (BVSM) product claims to have a major impact in the reduction and control of both deployment and operational costs - with ROI in well under six months.

The company states that IP telephony deployments can be accelerated dramatically, with reduced costs due to faster roll-out and significant risk mitigation by avoiding program slippage (and associated penalties for the outsource operator). Post launch, operating costs can be reduced by automation, devolving administration tasks to end-users, reduction in overall staff allocation and reduction in required staff skill-levels.

BVSM – Target Customers

BVSM is not for the masses; it has been designed to manage large and complex IP telephony architectures.

As a result, the two primary markets that VisionOSS has identified for the solution are large-scale service providers (SPs) with a view to offering managed services with devolved administration and large, complex enterprise environments that require centralised control of their IP voice deployments, again with devolved administration. VisionOSS believes that there is a need for SPs to have an OSS (Operational Support System) management system that will let them host and manage multiple tenants across multiple sites and multiple clusters. Being able to share this infrastructure across several tenants will dramatically reduce the cost per user, making the SP offering far more attractive to the customer. BVSM has been designed to automate the configuration of this kind of deployment with significant operating cost savings resulting.

The requirement for a large, complex enterprise – as defined by VisionOSS – is not the same as that for SPs, but has several commonalities. If we take a bank, or a government department as an example, these tend to be large, multi-site, organizations, requiring a multi-cluster architecture. Moreover, they are not uniform in their nature, pointing towards the need for an integrated, centrally managed IP communications platform, which can be segmented to fit the organization and administered in a devolved hierarchy.

Another issue for the enterprise customer is the need for some kind of mechanism that enables the transition between existing TDM-based voice platforms and new IP-based replacements, where existing details – such as phone numbering and allocations – are preserved. Again, VisionOSS believes that BVSM provides the very OSS management tools required to achieve that.

Two Case Studies

This case study compares two UK banks. The first bank required over six man-months of dial plan design and testing even before deployment, without BVSM. Whereas a second bank, using BVSM, was able to implement a pre-defined, pre-tested, branch banking dial plan, (with only minor customisation) and effectively reduced the dial plan development/testing time to zero and with zero cost.

Another case study is based on the requirements of a real North American MSO/CLEC whose manual configuration data was used to recreate the scenario in a live test environment, using BVSM. The actual requirement was to deploy IP Voice to a North American university on a dedicated Cisco Call Manager cluster, with two sites, 250 end users. The SP estimated that they had invested as much as 350 hours in setting up and testing the university's service, using the manual CCM Administration user interface; this included around 100 hours onsite installing the phones.

In the simulation, an actual Cisco IP telephony platform and VisionOSS' BVSM was used to demonstrate live that the set-up and configuration of the university, right through to live phones on the demonstration rack, could be completed in around 20 minutes. Using the BVSM GUI screens and using the bulk-loader for phone inventory, feature group definitions and users, the exercise showed a double order of magnitude saving from BVSM over the alternative manual configuration process. And there are other multi-tenant

examples which show that this is a powerful solution with a real bottom-line benefit.

IP Telephony Deployment – A Broadband-Testing Analyst Perspective

The fear factor of taking on new technologies is something that has clearly held back the deployment of VoIP to date.

Few would disagree that IP telephony *is* revolutionising corporate communications around the world, offering lower costs, greater flexibility and more advanced communications features. Not only that, but it lends itself ideally to the concept of outsourced business models, with Service Providers offering hosted-managed services. And who really wants to manage their own voice network, especially if thousands of users are involved?

So why haven't we seen mass uptake? Most believe that fear of change is the primary reason behind many companies delaying the move to date. Another is cost and the sheer amount of time it is envisaged that deployment will take, especially with large-scale implementations. For that reason, VisionOSS has come into existence, aiming to fully automate large-scale, multi-tenant, multi-site, multi-cluster provisioning of IP telephony networks.

Initially designed to work with Cisco's upcoming hosted-managed IP telephony solution, which is based around Cisco Call Manager and the company'sPGW2200 soft-switches, VisionOSS' BVSM platform is claimed by the company to be *the* critical service management component for this architecture.

The product has been tested alongside the Cisco products at Cisco's own NSITE test lab facility in Reading (see BVSM In Use section), with a focus on the MxU (Multi-tenant/Multi-site) market in particular. VisionOSS believes this is increasingly critical to deployments by large Telco service providers, IT outsourcers, large-scale enterprises and within green-field business park and 'Internet City' deployments.

Observed initial benefits of using BVSM include faster IP telephony platform design and build, cutting lead times from months to days, thereby both lowering costs and speeding times to market for hosting companies.

Thereafter, the software should provide lower operational overheads, by reducing the need for highly-trained engineers; while enabling rapid, multi-site rollouts more easily and more efficiently. Secure, devolved administration enables many basic tasks to be performed by end-customers own administrators, saving further operational costs and arguably improving customer satisfaction to boot.

It can therefore be argued that the BVSM product is a genuine enabler for the worldwide deployment of IP telephony services in the MxU markets. Application delivery platforms can be truly virtualised, which allows for multi-tenant hosting on a common, multi-cluster architecture, without compromising the wide range of features offered.

BVSM: WHERE IT FITS INTO THE BIGGER PICTURE

BVSM is what is defined as an Operational Support System (OSS) and is designed to automate the configuration of large-scale business IP voice infrastructures and manage the business voice services that operate on that architecture, whether that solution is provided by Cisco (as tested later) or other suppliers.

Convergence – the integration of data, voice and video into a single, IP-based network – has been the perceived holy grail of the IT industry for many years now. In line with this development, the TeleManagement Forum defined three key OSS areas, including billing and Customer care and assurance, but it is the third element - service fulfillment – that is the focus of VisionOSS and BVSM.

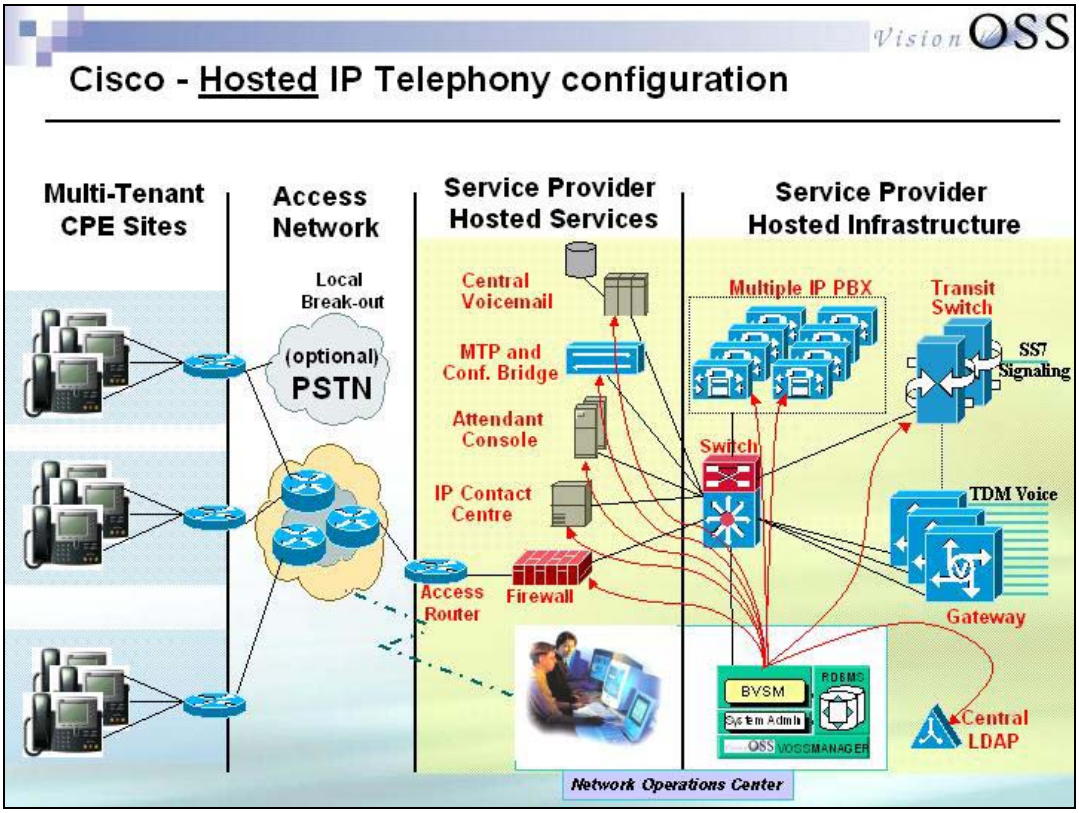


Figure 1 – Where BVSM Fits Into A Hosted IP Telephony Configuration

Taking a generic SP example, as a fundamental part of NOC (Network Operations Centre) operations, BVSM plugs into both the hosted infrastructure and hosted services, as we can see in the above diagram. More specifically, here is a brief description of what role it plays in key areas.

Managing Virtualisation and Multi-Tenant

Virtualisation is seen as a key requirement by many for the delivery of multi-tenant capabilities – for example with Cisco's own IP telephony solution. Multi-tenancy enables SPs to offer IP telephony services to multiple enterprise customers on a single, multi-cluster IP telephony architecture.

If we take the Cisco example, then here BVSM manages the configuration of the Cisco Call Manager – Cisco's IP telephony management software - and associated dial plans, plus analogue gateways, in order to allow virtualisation of the IP telephony platform.

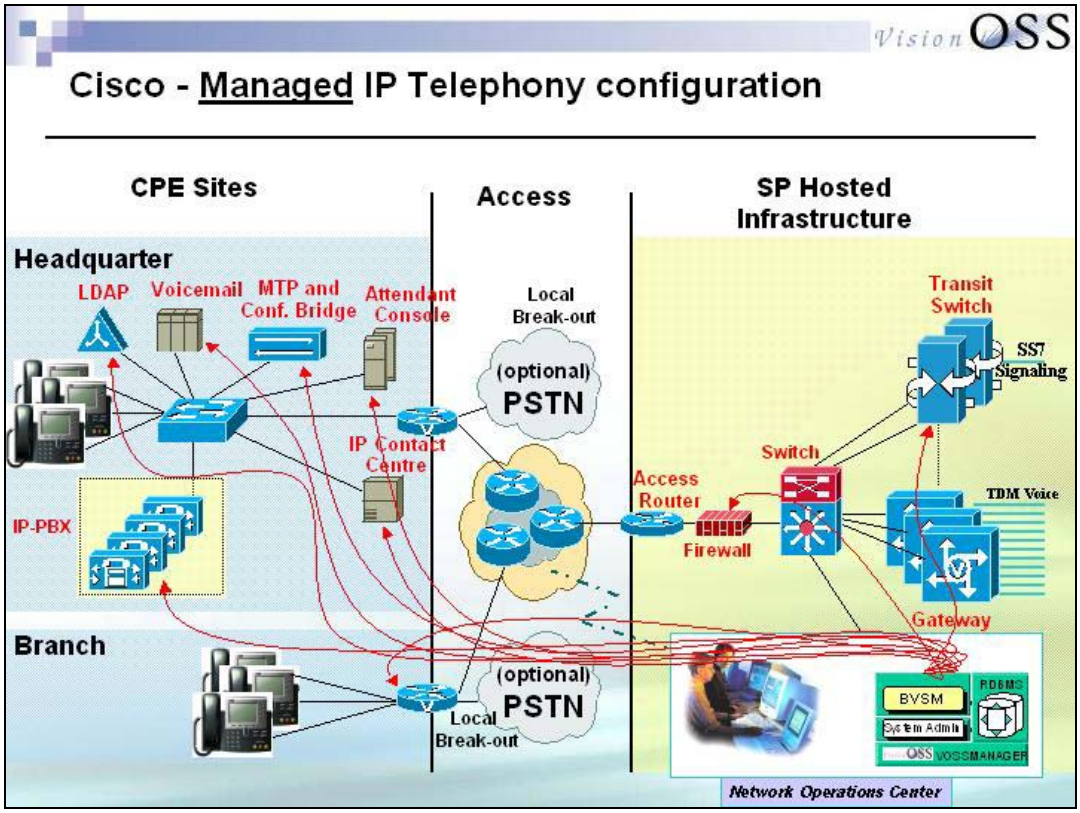


Figure 2 – Where BVSM Fits Into A Managed IP Telephony Configuration

Multi-Site Multi-Cluster

Whether operating an IP telephony platform themselves, or outsourcing to an SP, many large enterprises operate multiple sites or branches, or both. Taking the Cisco example again, the size and distribution of such a deployment requires multiple Cisco Call Manager Clusters. This combination of multi-site and multi-cluster results in a complex set of configuration requirements. BVSM provides the capability to manage customers who require multiple sites to operate over multiple clusters. It achieves this through its ability to abstract the customer-site-cluster structure into its own data schema.

Multi-Region

In addition to multi-cluster and multi-site, a Cisco IP telephony solution can also manage customers who operate in multiple regions, either nationally or internationally. Again, BVSM provides the abstracted data schema to allow for this multi-region capability.

Multi-Version

In a multi-element, multi-cluster architecture, it is unlikely that an SP will be able to maintain consistency across the versions of software on all equipment. Customer demands will also vary. Some will want their platform upgraded to the latest releases the moment they appear, while others will want to wait until they are proven in the field. BVSM resolves this issue, by providing the capability to manage multiple versions of code on integrated clusters and architecture.

BVSM In a Cisco IP Telephony Architecture

Cisco's 'Hosted-Managed' IP Telephony Platform offers a more advanced integrated architecture for IP telephony services, specifically targeting:

- Large scale (multi-cluster) Service Providers, offering hosted, multi-tenant deployments

- Large-scale (multi-cluster), multi-site enterprises and public institutions

Large enterprises and public institutions (e.g. city and government bodies) will often consist of multiple internal 'tenant' customers and may also require a form of 'multi-tenant' support as well as support for multiple Call Manager clusters.

The Service Fulfillment requirements for Cisco's next generation IP telephony architecture are far more extensive than for its traditional architecture. Within this new architecture, BVSM plays a vital role, providing the critical Service Fulfillment tasks.

Such an architecture is complex, consisting of several hardware and software elements, such as the Call Manager Clusters and Gateways, the PGW 2200 (or transit switch), Gatekeepers, H323 Serial Interfaces (HSIs) and Firewalls. All of these infrastructure elements need to be managed by BVSM.

In practice, then, BVSM takes what is a truly complex OSS fulfillment problem and simplifies it in every area.

BVSM IN USE

Administering BVSM: The GUI

In order to get a feel for BVSM we controlled the application remotely from our test labs. An important point to make here is – even by Internet access – the application ran quickly with no problems whatsoever. We also looked at it live onsite at Cisco's NSITE test lab facility where BVSM was administering a Cisco IP telephony deployment.

In line with the whole concept of BVSM – taking a complex scenario and simplifying it – the GUI (Graphical User Interface) is easy to master and relatively intuitive, given the complexity of the application in question – IP telephony deployment and management.

The browser-based interface consists of a Menu on the left hand-side of the screen and an "active area to the right. Most options are selectable via clicking on a highlighted (bold) option, or via drop-down menus. There are seven main options – Network, Resources, General Administration, Location Administration, Self Care, Dial plan tools and Setup tools. Clicking on any of these reveals a set of sub options, which opens up directly below.

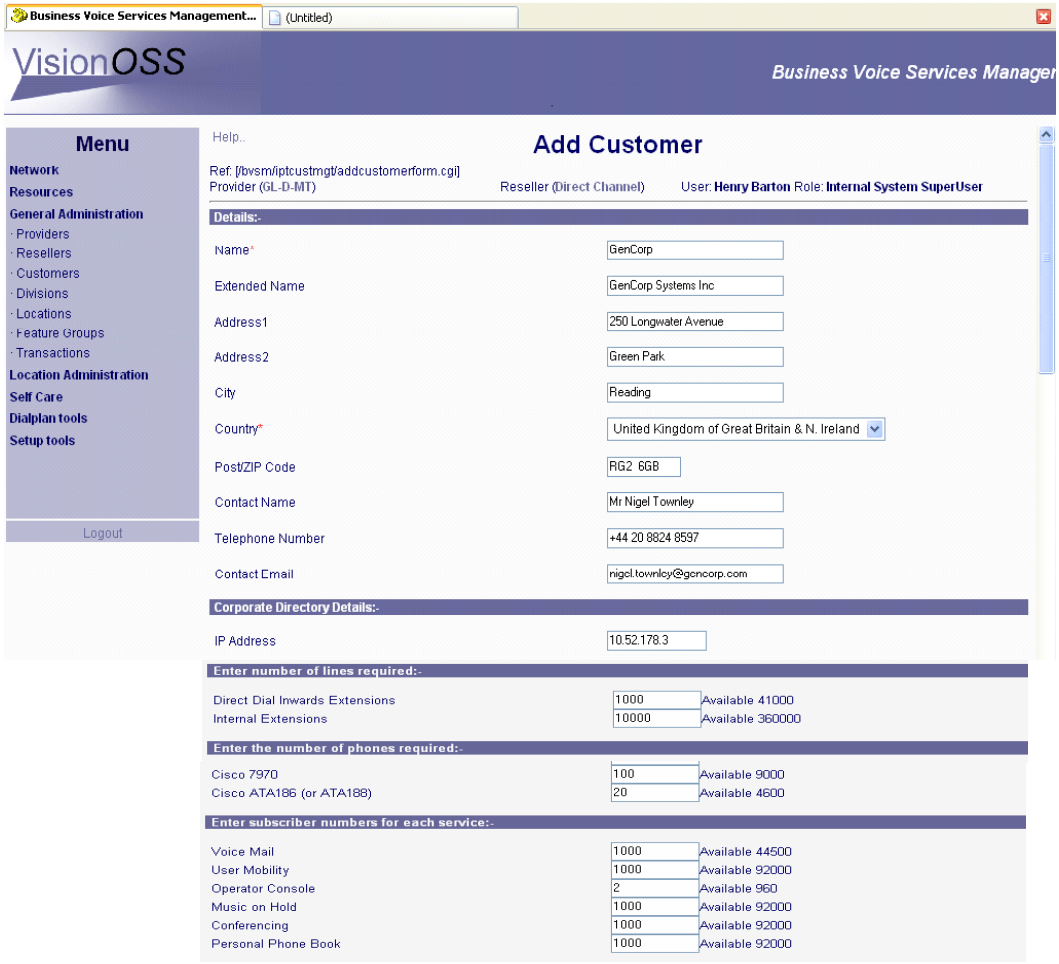


Figure 3 – The BVSM GUI – Managing Customers

Clicking on any of these sub-options brings up the active screen to the right, such as the Add Customer screen shown above.

Depending on the sub-option, the choices vary, but in most cases the screen content are searchable via drop-down menu options, or via a general search. Clicking on any highlighted text options will enable you to drill down to the next level.

For example, from Network, you can select PBX Devices which brings up the Provider Management screen highlighted above. Items here can be searched by drop-down options of Provider Name or Description. Clicking on a “Name” drills down to a CCM Cluster Management screen, showing server details such as: Description; Log-in Username and password; IP-PBX Lines; MoH Lines; Switchboard Console Lines; Voicemail details; Technical Email (contact) address; and various operational settings. Additional buttons on the page lead to another choice of relevant options, such as: “Servers” for managing individual services within a Cluster; “Groups”, for managing redundancy; and “View CCM Config”, which provides more detailed configuration choices. There are also messages that appear onscreen, such as “Device not responding” against the server IP address, if it appears to be down.

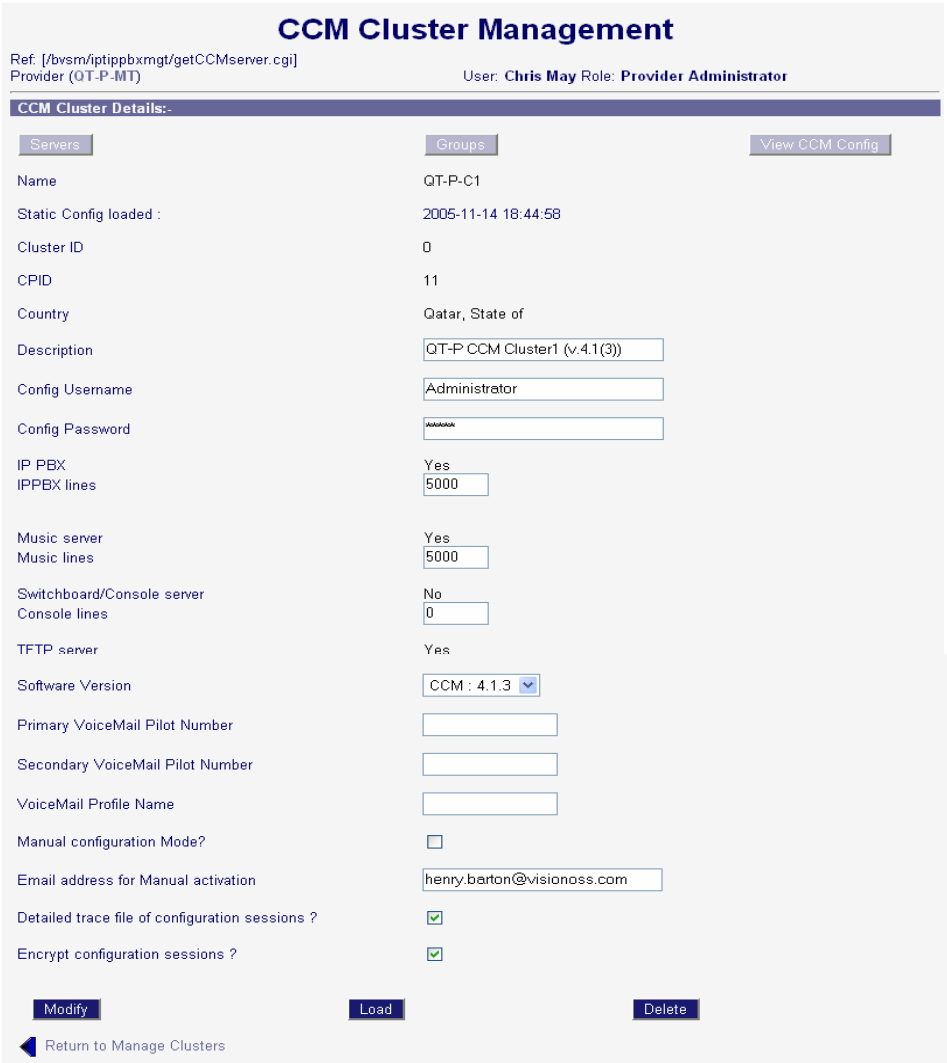


Figure 4 – CCM Cluster Management Network

Most of the Menu options have several sub-options, so initially there appears to be a lot of information to manage – and there is – but because the methodology follows the same lines for all the different tasks, getting your head around the software is not complicated; we would expect user training on BVSM to be relatively short, simple and inexpensive.

Some of the screens contain a lot of options, or simply long lists of items, but this is inevitable given that the software is designed to support IP telephony installations of 10,000 phones and beyond. Often a screen will provide you with a list of pre-prepared options (templates) that you can load, such as for bulk loading or dial plan configuration models.

These can be loaded as Excel spreadsheets from a screen such as that shown above, with iconic representation of each model.

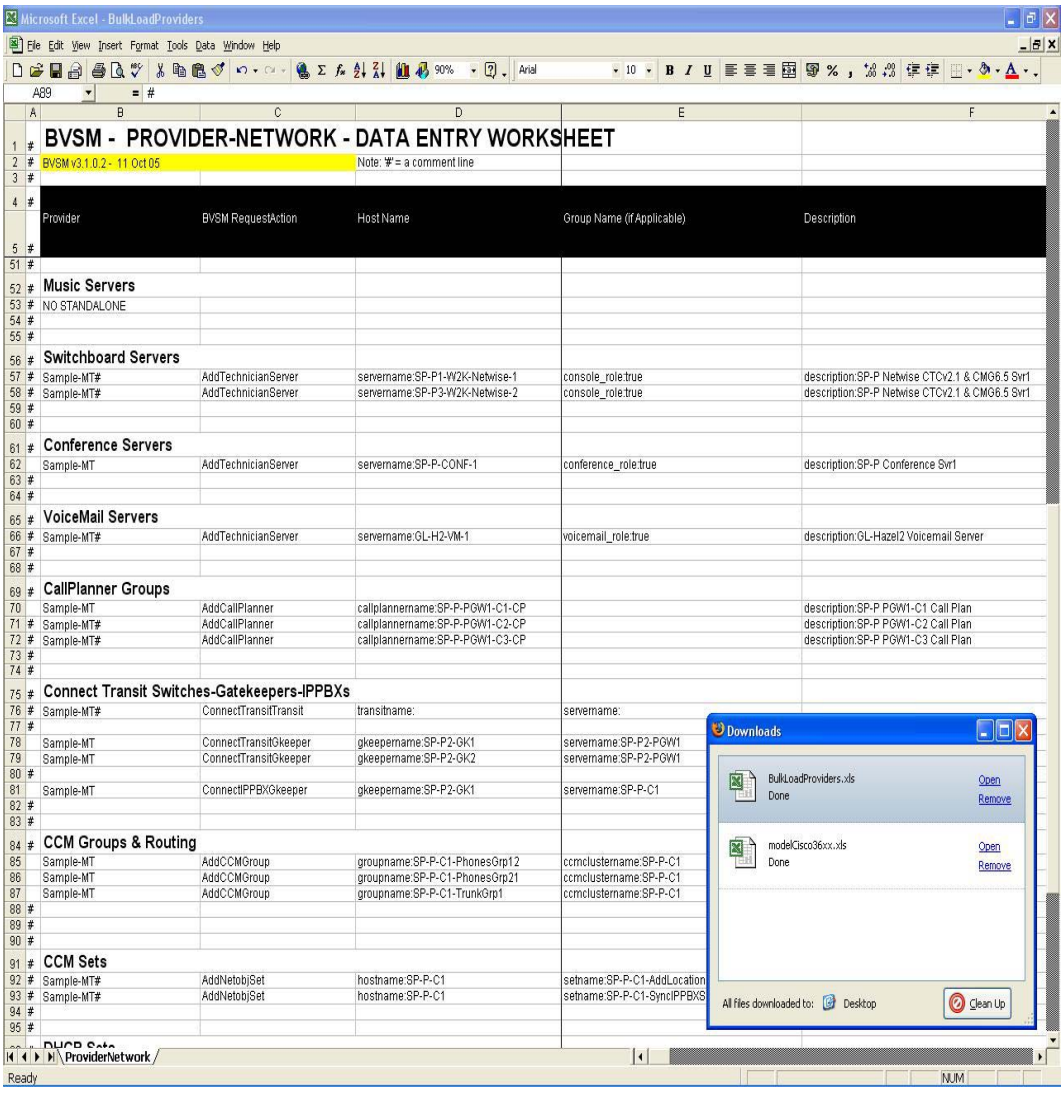
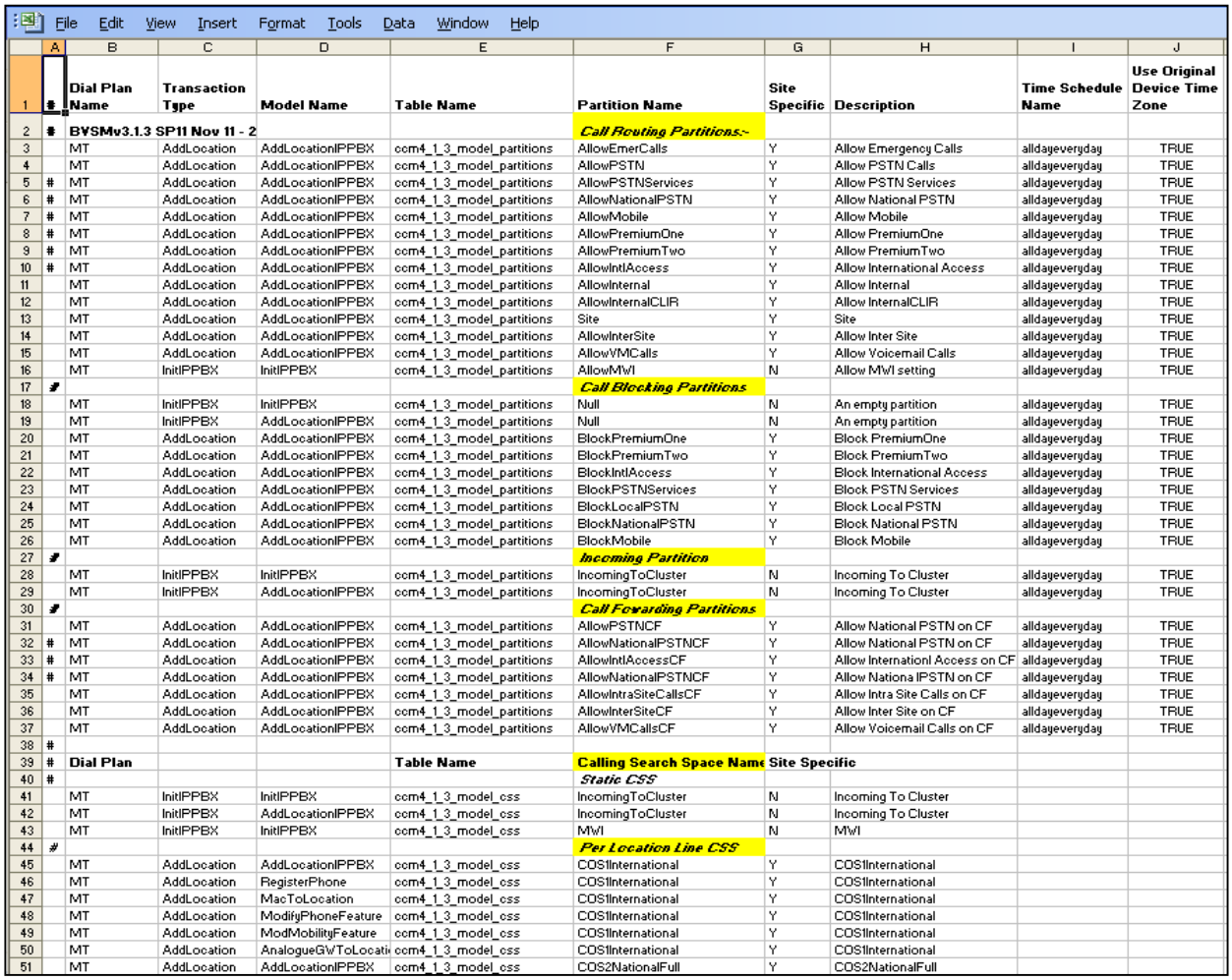


Figure 5 – Excel Spreadsheet Example

Earlier in the report we mentioned the importance of dial plan management. This is one area that has caused huge deployment delays in the past, yet is fundamental to successful IP telephony deployment.



File Edit View Insert Format Tools Data Window Help

	A	B	C	D	E	F	G	H	I	J
1	#	Dial Plan Name	Transaction Type	Model Name	Table Name	Partition Name	Site Specific	Description	Time Schedule Name	Use Original Device Time Zone
2	#	BVSMv3.1.3 SP11 Nov 11 - 2				Call Routing Partitions:-				
3		MT	AddLocation	AddLocationIPPBX	ccm4_1_3_model_partitions	AllowEmerCalls	Y	Allow Emergency Calls	alldayeveryday	TRUE
4		MT	AddLocation	AddLocationIPPBX	ccm4_1_3_model_partitions	AllowPSTN	Y	Allow PSTN Calls	alldayeveryday	TRUE
5	#	MT	AddLocation	AddLocationIPPBX	ccm4_1_3_model_partitions	AllowPSTNServices	Y	Allow PSTN Services	alldayeveryday	TRUE
6	#	MT	AddLocation	AddLocationIPPBX	ccm4_1_3_model_partitions	AllowNationalPSTN	Y	Allow National PSTN	alldayeveryday	TRUE
7	#	MT	AddLocation	AddLocationIPPBX	ccm4_1_3_model_partitions	AllowMobile	Y	Allow Mobile	alldayeveryday	TRUE
8	#	MT	AddLocation	AddLocationIPPBX	ccm4_1_3_model_partitions	AllowPremiumOne	Y	Allow PremiumOne	alldayeveryday	TRUE
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11		MT	AddLocation	AddLocationIPPBX	ccm4_1_3_model_partitions	AllowInternal	Y	Allow Internal	alldayeveryday	TRUE
12		MT	AddLocation	AddLocationIPPBX	ccm4_1_3_model_partitions	AllowInternalCLIR	Y	Allow InternalCLIR	alldayeveryday	TRUE
13		MT	AddLocation	AddLocationIPPBX	ccm4_1_3_model_partitions	Site	Y	Site	alldayeveryday	TRUE
14		MT	AddLocation	AddLocationIPPBX	ccm4_1_3_model_partitions	AllowInterSite	Y	Allow Inter Site	alldayeveryday	TRUE
15		MT	AddLocation	AddLocationIPPBX	ccm4_1_3_model_partitions	AllowVMCalls	Y	Allow Voicemail Calls	alldayeveryday	TRUE
16		MT	InitIPPBX	InitIPPBX	ccm4_1_3_model_partitions	AllowMWI	N	Allow MWI setting	alldayeveryday	TRUE
17	#					Call Blocking Partitions				
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37		MT	AddLocation	AddLocationIPPBX	ccm4_1_3_model_partitions	AllowVMCallsCF	Y	Allow Voicemail Calls on CF	alldayeveryday	TRUE
38	#									
39	#	Dial Plan			Table Name	Calling Search Space Name	Site Specific			
40	#					Static CSS				
41		MT	InitIPPBX	InitIPPBX	ccm4_1_3_model_css	IncomingToCluster	N	Incoming To Cluster		
42		MT	InitIPPBX	AddLocationIPPBX	ccm4_1_3_model_css	IncomingToCluster	N	Incoming To Cluster		
43		MT	InitIPPBX	InitIPPBX	ccm4_1_3_model_css	MWI	N	MWI		
44	#					Per Location Line CSS				
45		MT	AddLocation	AddLocationIPPBX	ccm4_1_3_model_css	COS1International	Y	COS1International		
46		MT	AddLocation	RegisterPhone	ccm4_1_3_model_css	COS1International	Y	COS1International		
47		MT	AddLocation	MacToLocation	ccm4_1_3_model_css	COS1International	Y	COS1International		
48		MT	AddLocation	ModifyPhoneFeature	ccm4_1_3_model_css	COS1International	Y	COS1International		
49		MT	AddLocation	ModMobilityFeature	ccm4_1_3_model_css	COS1International	Y	COS1International		
50		MT	AddLocation	AnalogueGWToLocati	ccm4_1_3_model_css	COS1International	Y	COS1International		
51		MT	AddLocation	AddLocationIPPBX	ccm4_1_3_model_css	COS2NationalFull	Y	COS2NationalFull		

Figure 6 – Dial plan spreadsheet

If we take a service provider scenario, the dial plan is at the core of the design requirement, as it must be configured into every infrastructure element. Typically a unique dial plan is created each time a customer is added – which is an administrator's nightmare. But with BVSM, a number of dial plan templates have already been created and tested for common customer requirements. In addition, these templates are exposed to the Service Provider as a spreadsheet, so that customization is infinitely easier, speeding deployment dramatically.

Worse still is the fact that a dial plan is never static. There is always need for ongoing updates. In that "traditional" scenario, imagine the multifold impact of making ongoing changes to the dial plan within each element of the infrastructure and how much delay they would add to the ongoing management of the system. Again, with BVSM, these changes are handled in a simple, one-time change, so ease and speed become the keywords, rather than complexity and delay.

Moreover, multiple dial plans can be managed on the one BVSM platform. For example, a service provider may operate one dial plan for a dedicated, managed cluster for a large enterprise, using an enterprise dial plan, plus separate, hosted, multi-tenant cluster, using a multi-tenant dial plan.

A Summary Of The Key Benefits (as defined in a Cisco IP Telephony Environment)

Automated Configuration

The requirement for automated configuration processing of a Cisco IP telephony solution consists of not only automation, but also the co-ordination of message flows across the Call Managers, Gatekeepers, PGWs, DHCP servers, and so on; that is, across the IP telephony architecture. A consistent set of configuration instructions is required to be sent to all elements of the architecture, using different dial plan elements and drivers. BVSM automates and co-ordinates the configuration of multiple network elements, using a pre-designed dial plan.

Example: To add a new customer with two sites, 300 users and phones would take approximately 300 man-hours to manually enter the necessary coordinated data into the multiple network elements. By way of comparison, for a large complex enterprise customer, BVSM ran through just under 8,000 (business) process transactions to add 14 locations. This process took one operator 29 minutes. It was estimated that the number of actual message flows into the Call Managers, Gatekeepers, PGWs, DHCP servers etc would have been a factor of five to 10 times higher than 8,000.

For example, statically loading a Call Manager cluster requires 600 AXL SOAP transactions versus two recorded BVSM transactions. It was estimated that there was a need to process some 500-1000 BVSM transactions per branch location, each of which would otherwise require manual configuration.

Rapid, Virtualised, Service Activation

Service activation is the technical process of creating, delivering and managing a service to or for a customer. It generally involves the configuration of multiple products (for example dial-tone, voice mail, conferencing, corporate directories and XML applications) for the one service. It also generally requires the pre-requisite of network and CPE provisioning. In most cases, end-users should be able to order service activation online and service activation systems should deliver the services automatically.

Example: A Cisco IP Telephony Solution is designed to offer an extensive list of rich, applications and services, such as IP Contact Centre, Universal Messaging, Video Telephony and Conferencing. These services all require service activation in a flexible, coordinated manner. More importantly, they all need to be virtualised, so that an SP can operate a single service platform, yet deliver services to multiple customers.

BVSM provides rapid service activation for multiple services, on a virtualised basis. It achieves this through a very flexible design within BVSM itself. The internal scheduling engine is able to manage virtualised services on a virtualised delivery network.

Rapid Deployment of Infrastructure

Initial rollout of IP telephony infrastructure is a critical part of the project. New customers have made the decision to upgrade from legacy technology to the latest IP voice technology and so it is critical that the project rolls out on time and works as specified. Otherwise you risk the customer forming the wrong perception of the project, something that is difficult to recover from.

Example: The typical deployment scenario for a Cisco IP telephony solution is rarely a Greenfield site. In most cases, the customer (be they large enterprise or SP) requires a Cisco IP telephony solution to initially take over the legacy end-users as well as establishing a platform for new users. There is a requirement to support the existing numbers and dial plan from the legacy users and transition them to the new IP telephony platform.

BVSM readily allows for the migration of existing legacy users or customers from analogue PBX platforms to the new Cisco IP telephony platform. It specifically manages number portability, if this is a requirement. Importantly, a Cisco IP telephony solution allows the PGW to manage calls from both the old PBX and the new IP telephony systems. In combination with the PGW, BVSM can enable both analogue and IP phones to operate along side each other on a users desk to ensure users are able to become accustomed to the phones prior to switch over.

Bulk Loading Capability

Rapid rollout of an IP telephony infrastructure is made possible due to the bulk loading capability of BVSM for network infrastructures. BVSM has the ability to load and configure large and complex architectures, including the relationship between primary and redundant sets, plus the relationship between groups of infrastructure that operate together for regions, or virtual services.

Auto Phone Registration

Automated self-registration of phones is also possible with BVSM. This involves a site and its phones being pre-loaded into the BVSM database. When the site is brought online, phones can be plugged-in at any desk and they will self-discover and self-provision, with BVSM allocating an IP address and phone number from a pre-configured list of numbers.

Users can subsequently log into the phone and use a password to confirm their phone registration ‘and user to phone’ association. This auto-registration process greatly increases the capacity of SPs or enterprises to roll out new sites.

IP Telephony Resource Management

IP Resource Management involves the planning and control of key IP voice assets, including: IP addresses, phone numbers; and physical assets such as phones and lines.

Example: While most SPs have inventory management systems, there is still a requirement for IP resource management that is not provided by inventory management. BVSM provides a comprehensive inventory management tool for IP addresses and phone numbers, both internal and E164 external numbers. BVSM also performs a number of logical business rules relating to these IP resources, to ensure that the resources cannot be wasted or used incorrectly. BVSM also provides a basic inventory management system for phones, lines and services. This enables SPs to monitor and manage their physical resources down to their partner channels, customers, divisions and customer locations.

IP Layer Management

Because it manages the IP Layer through its integration with the DHCP server, BVSM is able to offer a number of additional resource management capabilities. Primarily, BVSM can ensure that phones will only register on their dedicated voice VLAN or IP subnet. This ensures that a phone from one customer cannot be used in another customer's location. Even within the one customer; location-to-location phone usage is not possible, without proper inventory processing through BVSM. The inventory shrinkage experienced by most operators will be significantly less under this model.

Secure, Devolved Administration

Devolved administration allows end-users to access the central management system to self-administer day-to-day moves, adds and changes (MACs), without having to resort to requests to the SP. Security restrictions ensure that, for a virtualised platform, one client cannot access another client's data. This provides two key benefits:

- The Service Provider has less operating costs.
- The customer has a much faster turn-around on MACs and so has better productivity performance from their investment.

Example: Secure, devolved administration is a fundamental requirement of SPs. BVSM provides devolved administration through its web-based GUI. This interface is password protected and allows clients to only access MAC processing features and functions that correspond to their seniority and access rights. For example, location administrators can only perform MACs on their own location and not other locations. Customer administrators can only perform MACs on their locations and divisions, not other customers' locations.

BVSM's data is held with a relational database that in itself is virtualised and therefore provides the required data security. Clients can only access BVSM's abstracted data with an authority level that pre-determines what data they are able to access. They cannot access other clients' data, nor can they access provider network data even though it relates to their account.

End-User Self Care

End-users, who are at the bottom of the administrative hierarchy chain, can access self-care web pages that allow for features and functionality to be self managed. This might include:

- User Details
- Passwords and Phone PIN maintenance
- Service and Feature changes (e.g. setting Call Forward)
- Accessing specific information such as Corporate and Personal Directories
- Updating Phone Profiles and Mobility Profiles
- Accessing Voicemail Settings

Example: End-user self-care is a fundamental requirement of SPs. BVSM provides an extensive list of self-care features for end-users. These can be accessed either directly through the phone or through a web-based GUI.

End-User self-care eliminates a significant percentage of calls to the Service Provider's call centre, thereby reducing operating costs.

IN SUMMARY

Large-scale IP telephony deployment to date has been slowed by two key factors: a fear of the unknown and – tied in with this – the complexity and (very slow) speed of deployment and associated costs.

Few would disagree that switching to IP telephony would – in the long term, at least – both reduce operating costs and create a platform for new and innovative voice and data applications that improve productivity. So, enter BVSM from VisionOSS, to absorb the complexity and bring those deployment lead-times down from months to days or weeks, at the most. Correspondingly, deployment and operating costs are slashed dramatically, with an estimated ROI by VisionOSS of three months or less.

Given that this concept applies to large enterprise and Service Provider solutions alike, BVSM has to be seen as a real enabler for large-scale IP telephony deployment. IP handset vendors rejoice!