Planning guide for Solution Architects

Software version 2.0

Documentation updated 23 April 2024

Planning guide for solutions architects

Table of Contents

        8.1   Overview   30

9   **Health Service**   32

        9.1   What is the Health Service?   32

        9.2   System alerts   33

        9.3   Configuring the Health Service   33

        9.4   End to end health checks   33

10   **Simple broadcast SMS**   34

        10.1   Overview   34

        10.2   How a user or application can send a simple broadcast   34

        10.3   Attachment .TXT format   34

        10.4   Broadcast example from Microsoft Outlook   35

11   **Backup and recovery**   36

        11.1   Disaster recovery   36

        11.2   Data storage   36

        11.3   Configuration files   36

        11.4   Instance backup and recovery   36

12   **Routine maintenance**   37

        12.1   SMPP \ TLS   37

        12.2   Software patches and upgrades   37

        12.3   License management of the SMS Software   37

BNS Group would like to thank the following people and organizations for making BNS Enterprise SMS server a world class product:

- To all our staff and their families for working tirelessly to deliver world class products.
- Messaging and Collaboration team Suncorp
- Microsoft for co-operation and support with Microsoft technologies
- Amazon Web Services for information provided as part of their partner network.
- MessageMedia & SINCH

1   Introduction

1.1   Intended audience

This documentation is designed for solution architects.   It provides information to allow an architect to design a simple or high availability solution for use in their cloud tenancy.

Specific deployment guides to deploy the software are available from BNS.

1.2   Overview

BNS Enterprise SMS Server is developed by Better Network Services (BNS) Group Pty Limited based in Australia.

BNS Enterprise SMS Server is a software solution that allows individuals or applications to send and receive SMS messages. It allows SMS messages to be send via and SQL API or via email. The test messages are sent via a SMS Service Provider or providers selected by the customer.

BNS Enterprise SMS Server is an enterprise-grade SMS solution that can send and receive large volumes of SMS messages, consolidating different messaging requirements across multiple companies and departments to a single robust, reliable, and scalable messaging platform allowing better cost management, compliance, and controls.

BNS Enterprise SMS Server leverages Cloud Computing. It takes advantage of Cloud technologies to provide scale and high availability by utilising features such as availability zones.

BNS Enterprise SMS Server utilizes the customer's SQL databases in the customer's cloud tenancy providing security of important meta data.

Information transferred over the Internet to a SMS service provider uses SMPP\TLS encryption and sends the limited amount of information required to send a SMS text message to the public SMS network.

BNS Enterprise SMS Server allows customers to leverage cloud based SQL Server as they modernize their applications. BNS added support for SQL Server as an API

allowing application developers the opportunity to leverage SQL Server in the cloud for a high performance SMS messaging platform.

Using SQL itself as an API for developers means that customers do not have to lock themselves into a proprietary REST API offered by a SMSC (SMS Message Centre).

A core advantage of BNS Enterprise SMS Server is that it supports many SMSCs allowing the customer to negotiate the best possible SMS rates. Furthermore, the SMS software supports high availability at the SMSC level with a primary and secondary SMS carriage over the Internet\VPN.

BNS Enterprise SMS Server works with Microsoft SQL Server on Windows Server and AWS RDS.   It also works with Azure SQL Managed Instances.

BNS Enterprise SMS Server allows solutions architects to create a high availability design including dual carriage to SMS network service providers.

BNS Enterprise SMS Server also offers data analytics providing rich insights into the use of SMS within the organization.

Version 2 offers backward compatibility for customers migrating from Version 1 platforms.

The solution is also able to be installed in on-premises datacentres.

1.3   Features and use cases

The purpose of BNS Enterprise SMS Server is to allow applications and individuals to send SMS messages. This can be in bulk or singularly. The interface can be via a SQL API and a record written into a database or via email. BNS Enterprise SMS Server can scale from single messages to **3 million**+ messages per day.

The BNS Enterprise SMS Server provides security, logging and reporting. The solution also provides the ability to scale and allows for business continuity by providing redundancy options in the a available implementation options. Business continuity is also provided by the solutions support for multiple SMSCs.

The BNS Enterprise SMS Server supported in both AWS and Azure. It is also supported in traditional on-premises implementations.

Enterprise customers who are modernising their applications for the cloud can implement a SQL Server based SMS interface for all business processes requiring a secure highly scalable solution from their cloud tenancy.

BNS Enterprise SMS Server is an enterprise-grade SMS solution that consolidates different messaging requirements across multiple companies and departments to a single robust, reliable and scalable messaging platform allowing better cost management, compliance and controls.

Customers like Suncorp Group implemented BNS's SMS software in 2009 as it re-engineered and consolidated multiple brands within the group.   Brands such as: Suncorp Insurance, Suncorp Bank, AAMI, GIO, Vero and Shannons use the software because it provides multiple brands the ability to use shared infrastructure with high availability and a rich set of features.

All SMS communications are logged and stored within the customer's cloud tenancy or on premise using the underlying database.

Applications simply write their SMS requests into a SQL Database (SMS-SQL-API DB) to send and receive SMS messages to\from mobile phones.

Applications can provide meta-data with their submission which is stored in the customer's SQL server.   The SMS software comes with a range of data analytics templates to provide rich insights into the use of SMS and its effectiveness.

Meta-data can include up to 10 custom fields which can be used for any purpose. Eg: a policy number, account number, campaign number etc.

Applications periodically process confirmations of their SMS messages and process any incoming messages at the same time.

Multiple applications are supported using a single interface SQL database. High availability design is provided to process the SQL API database.

SQL Server row level security can be implemented to allow applications visibility to their own records in the SQL API database.

The SMS software uses industry standard SMPP protocol to communicate with SMS Service providers supporting industry standard version 3.4

Benefits of using the SMS software include:

- Easily on-board business applications with minimal coding.
- Your business applications use SQL server in cloud or on-premises to send and receive SMS.
- Avoids any future re-programming should the underlying SMS provider change.

- Avoids using proprietary REST APIs unique to a single SMS provider.
- Avoids developing high availability controls to multiple SMS service providers.
- Allows production to DR failover of SMS traffic.
- Allows multiple SMS providers to be supported for high availability at the SMS provider level.
- Allows multiple SMS providers to be supported for cost optimisation.
- Primary and backup SMS providers are switched automatically without any application changes if there is a loss of communications to a primary SMS service provider.
- Industry-standard SMPP implementation at the SMS server supports many SMS service providers allowing best possible contract rates to be negotiated.
- Controls such as checking for duplicate messages to the same mobile over a 24 hour period is configurable at a server level.

1.4   History

BNS first released version 1.0 of the SMS software in 2009 with many releases in the 1.x series over a decade.   The initial release of the software was called msXsms Enterprise SMS Server and was designed for integration with Active Directory and Microsoft Exchange.   In 2023, the product was rebranded to BNS Enterprise SMS Server in line with extensive development and testing to operate in high availability clouds such as: AWS and Azure.

Version 2.x of the SMS software, offers customers the ability to scale in the cloud and take advantage of high availability across cloud availability zones\regions.

In its global IT outlook for 2021 and beyond, IDC predicted the continued migration of enterprise IT equipment out of on-premises data centers and into data centers operated by cloud service providers such as AWS and Microsoft.

In 2021, BNS went on its own journey to the cloud and decided it was timely to re-design the SMS software to operate where enterprise customers were migrating to.

BNS provides professional services to the customer to assist the customer as required to design a solution and install the SMS software.   BNS usually performs skills transfer in the process to ensure that the customer's systems engineers have a deep understanding of how message flows work.

The SMS Server software was awarded 2 software badges as part of the AWS ISV accelerate program. AWS Foundation Technical Review (AWS verified software) and the AWS Partner RDS service ready badge.

BNS is also a Microsoft Partner and provides deployment guides for implementation on Azure, including cross region DR.

2   Architecture

2.1   Conceptual overview diagram
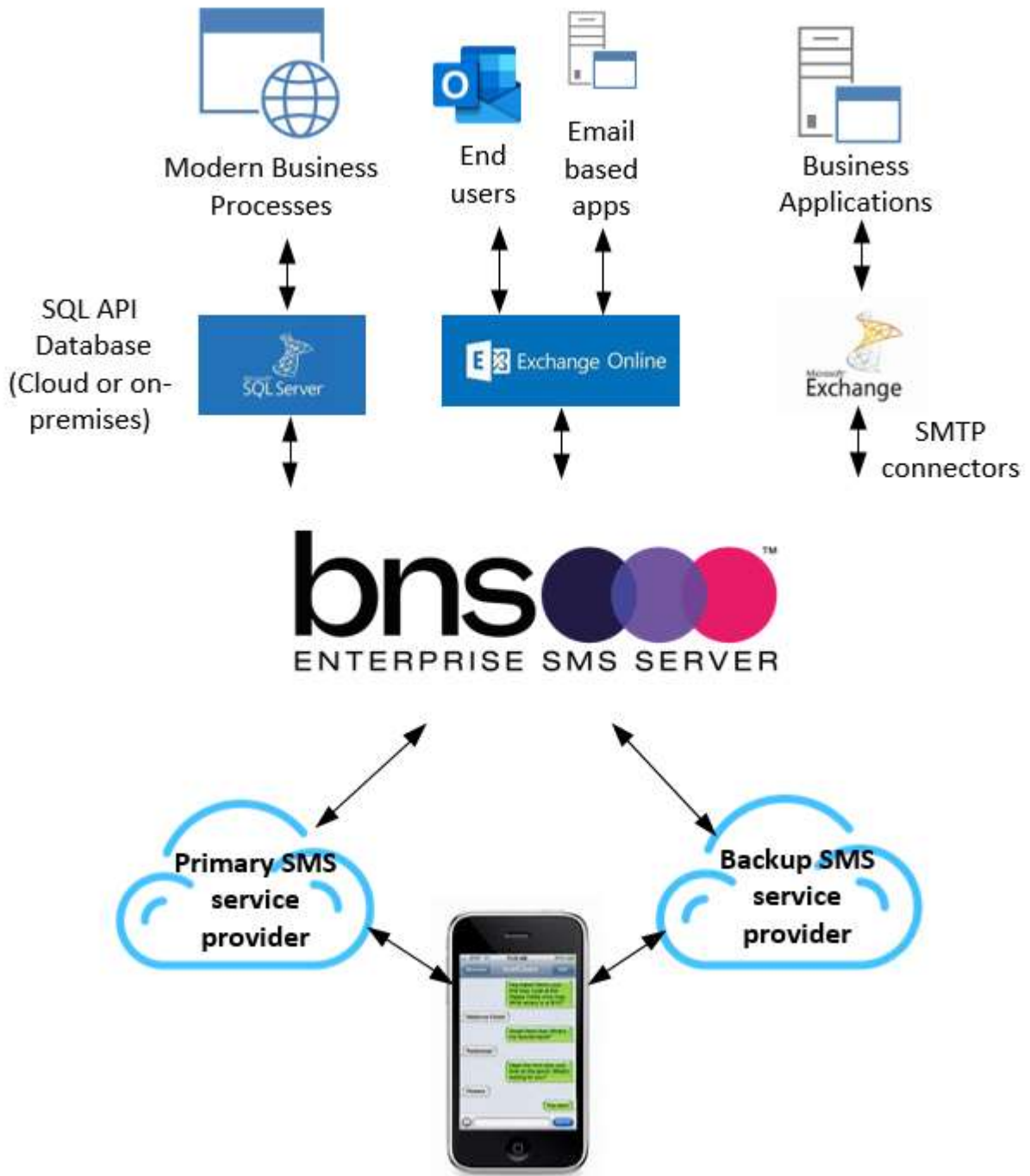
2.2   Architectural Description

BNS Enterprise SMS Server can be implemented with 3 separate interfaces to allow the ingestion of SMSs to be sent by applications or end users.

These are:

1.   SQL for Modern Business processes.

2.   Exchange Online for End Users or Email based applications

3.   SMTP connectors for on-premises Exchanges Servers to support customers migration from previous versions of the software

2.3   SQL API

Microsoft SQL on-premises or in cloud is recommended for all business applications to send and receive SMS messages.

Your application developers probably use SQL already. SQL offers organisations a secure and high availability platform.

SQL allows rich data analytics to be used leveraging meta data held in your database for every SMS transaction.

2.4   End users and Outlook

BNS Enterprise SMS Server Microsoft Outlook coupled with Office 365 Exchange online is popular for enterprise customers.

BNS Enterprise SMS Server supports Microsoft's recommendations to use the Microsoft Graph API when developing any application working with their cloud based solutions.

Selected end users or shared mailboxes can be offered one-way or two-way SMS messaging from Office 365.

There are limitations with Exchange online https://learn.microsoft.com/en-us/office365/servicedescriptions/exchange-online-service-description/exchange-online-limits#sending-limits-1

2.5   Exchange Server SMTP support

BNS Enterprise SMS Server supports its original design for Exchange Server based systems where applications and users send and receive via SMTP Connectors. BNS recommends that <u>high volume</u> customers should use SQL as the API rather than SMTP. However, Exchange Server SMTP processing is very fast where business applications can only use SMTP for SMS delivery.

2.6   More information

BNS web site: https://www.bnsgroup.com.au

BNS Knowledge Base. https://smskb.bnsgroup.com.au/home

3   Deployment Options

3.1   Deployment Overview

A BNS Enterprise SMS Server deployment requires the BNS Enterprise SMS Server itself and a supporting SQL database.

The solution can be deployed in Amazon Web Services (AWS), Microsoft Azure or on-premises.

The solution can be deployed in any of three patterns:

1. A single location environment, providing *99.9%* environmental uptime.

2. A highly resilient multi datacentre pattern utilizing Availability Zones (AZs) providing *99.95%* environmental uptime.

3. A vendor provided SQL environment with cross regional support providing *99.99%* environmental uptime.

3.2   Amazon Web Services (AWS) deployment options

3.2.1   Single-AZ

Deployment in a single AZ requires a minimum of 1 x SMS Server and 1 x AWS RDS service with either: Microsoft SQL Express or Microsoft SQL Server (Standard or Enterprise).

Multiple SMS Servers can be deployed in a single AZ providing high availability of the SMS server software in a single AZ.

3.2.2   Multi-AZ

In an Amazon RDS Multi-AZ deployment, Amazon RDS automatically creates a primary database (DB) instance and synchronously replicates the data to an instance in a different AZ. When it detects a failure, Amazon RDS automatically fails over to a standby instance without manual intervention.

Deployment in multiple AZ requires a minimum of 2 x SMS Server (1 in each AZ) and 1 x AWS RDS service using Microsoft SQL Server.
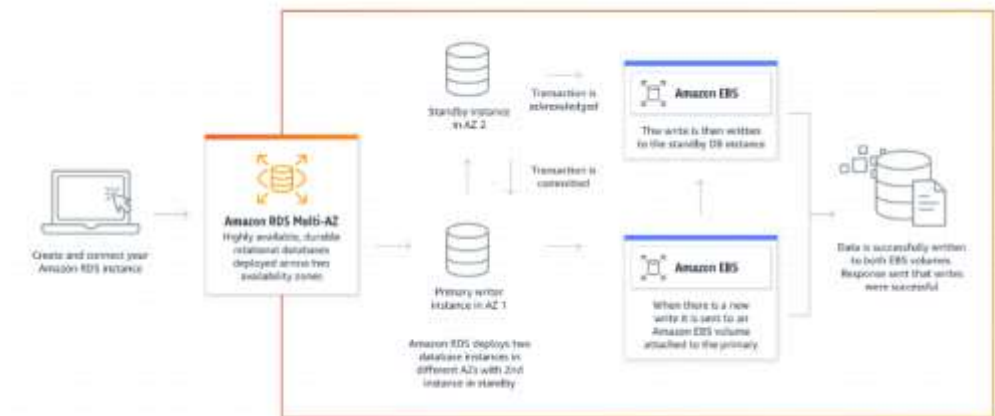
3.2.1 AWS Deployment Guide

A detailed AWS Deployment guide can be accessed here:

https://smskb.bnsgroup.com.au/deploymentaws

3.3 Microsoft Azure deployment options

3.3.1 Single AZ

It is recommended that the deployment of the SQL Server in Azure is done via the use of a SQL Managed Instance. The SQL Managed Instance can be deployed in either the General Purpose and Business Critical tier. Once the SQL Server is in place, deployment of the in a single AZ requires a minimum of 1 x SMS Server.

Multiple SMS Servers can be deployed in a single AZ providing high availability of the SMS server software in a single AZ.

3.3.2 Multi-AZ

In an Azure SQL Managed Instance Multi-AZ deployment, SQL Managed Instance automatically creates a primary database (DB) instance and synchronously replicates the data to an instance in a different AZ. When it detects a failure, Azure SQL Managed Instance automatically fails over to a standby instance without manual intervention.

Deployment in multiple AZ requires a minimum of 2 x SMS Server (1 in each AZ) and 1 x Business Critical service tier Zone Redundant Azure SQL Managed Instance.

The following diagram shows the architecture of this High Availability solution:
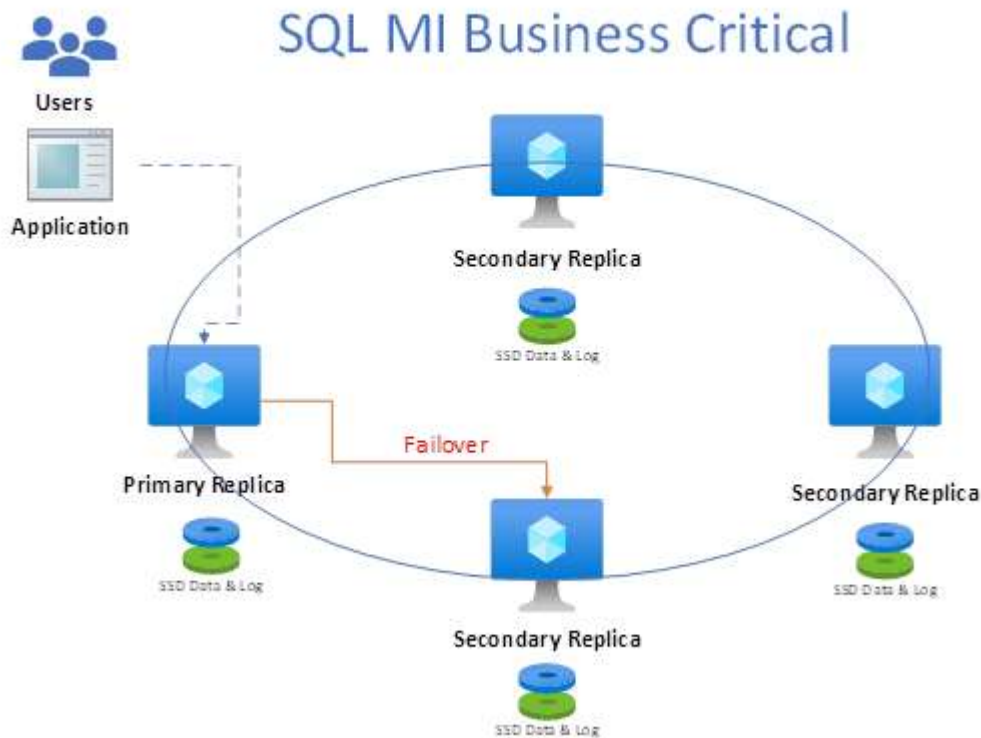
3.3.1 Multi-Region

In Azure it is possible to install two SQL Managed Instances and have them function as primary and secondary across Azure Regions instead of Availability Zones. For Multi-Region deployment, an Azure SQL Managed Instance is created in an Azure Region and a secondary SQL Managed instance is created in a separate Azure Region. An Auto Failover Group is then created to connect the two Instances. Azure then automatically synchronously replicates the data to the secondary Instance. When it detects a failure, Azure automatically fails over to a standby instance without manual intervention.

Deployment in multiple regions requires a minimum of 2 x SMS Server (1 in each Region) and 2 x Azure SQL Managed Instances in separate Regions.

3.3.2 Azure Deployment Guide

A detailed Azure Deployment guide can be accessed here:

https://smskb.bnsgroup.com.au/deploymentazure

3.4 Time to complete deployment

3.4.1 Single-AZ

Software setup can be performed in on a single Windows Server in less than 1 day if all aspects of the project are well organized.

3.4.2 Multi-AZ

Software setup can be performed in a multi-AZ Windows Server in 2 days if all aspects of the project are well organized.

For more information refer to the BNS Server deployment guides/

https://smskb.bnsgroup.com.au/deployment-guides

3.5 SMS server licensing from BNS Group

Enterprise licensing options are available from BNS group (www.bnsgroup.com.au). A usage based model is typically used by enterprise to allow for unlimited scale of the SMS platform and monthly billing.

3.6 SMS Service provider costs

Usually this cost is an operational monthly cost based on usage with some fixed costs per month for items such as SMS Numbers for two-way SMS.

4 SQL API Architecture

4.1 SQL API - Simple design
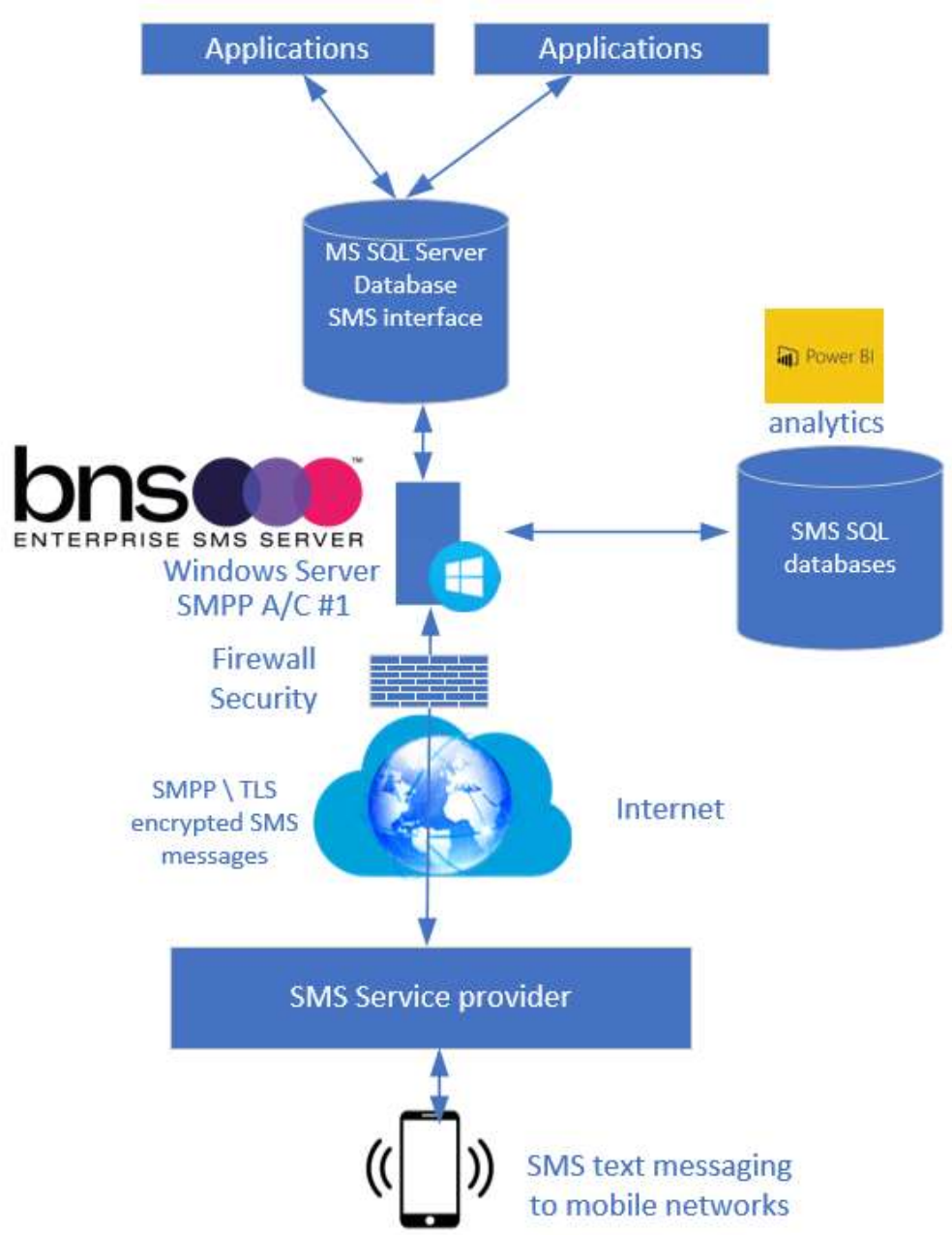
4.2 SQL API - High availability design

Best Practice Design SQL API design

1 x SMPP account for HA inbound SMS and Delivery receipts
SQL API Server with 'ANY Server' load balance across both servers
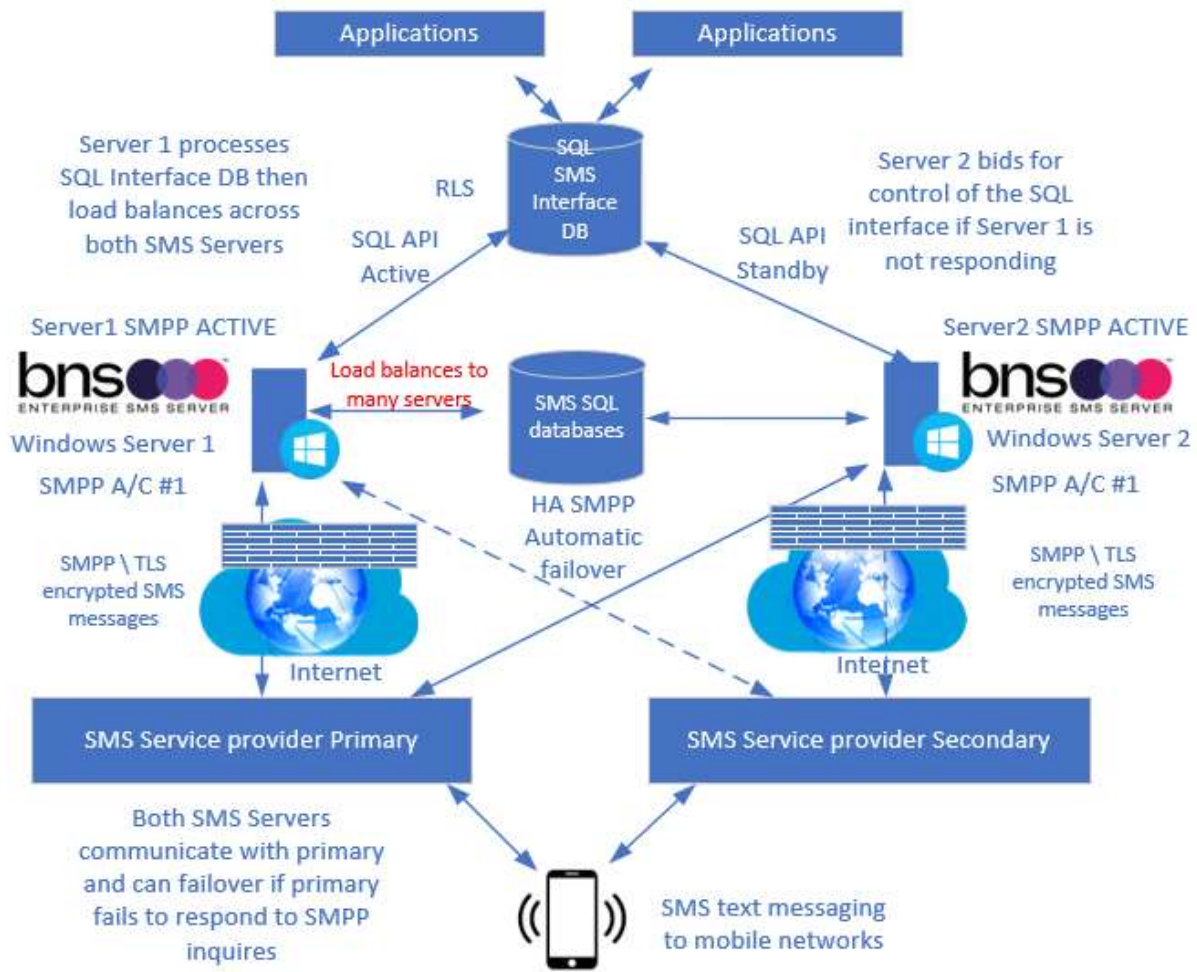
High availability (HA) requires 2 SMS Servers. Both servers use the same SMPP Account to the SMSC.

Server1 in the above diagram shows that it is Active in terms of processing the SQL SMS Interface DB. Server2 is in standby mode and checks the Server Control table in the SQL Interface DB to see if Server1 has updated its time stamps. If Server2 determines that Server1 is not processing the SQL SMS Interface DB then it will take control and make itself the Active Server whilst demoting Server1 to be in standby mode.

4.3 SQL API Interface with Exchange Server high availability design

High availability Design

SQL Interface and Exchange Server

High volume apps

Applications

Modernised SQL cloud based applications

SQL
SMS
Interface
DB

Active\Standby

SMS
Service
provider(s)

bns
ENTERPRISE SMS SERVER
Windows Server 1
SMPP A/C #1

bns
ENTERPRISE SMS SERVER
Windows Server 2
SMPP A/C #1

SMS
Service
provider(s)

SMTP

SMTP

Exchange Server   Exchange Server

SMTP
Connectors to
both SMS
Servers

Applications

SMTP Based
applications

The above diagram shows how a customer with some Applications using Exchange Server can use the platform in addition to modernized applications using SQL to send and receive SMS messages.

Server1 and Server2 should be in different availability zone. SQL Server should be high availability across availability zones\regions.

bns
ENTERPRISE SMS SERVER

5 Office 365 Exchange online

5.1 Introduction

Customer applications which cannot use the SQL API database approach for high volume traffic can use email.

However, the use of Exchange online as an interface to the SMS Servers has limitations. Microsoft Exchange online limitations are documented at this link: https://learn.microsoft.com/en-us/office365/servicedescriptions/exchange-online-service-description/exchange-online-limits#sending-limits-1

If a customer has Exchange Server and Exchange online, it is recommended to use Exchange Server SMTP connectors to send SMS messages rather than Exchange online.

For email based processing using Exchange online, uses an Exchange online mailbox to process email based requests from users and email based applications. An Exchange online transport rules allows simple addressing of SMS requests and redirects the messages to a mailbox.

The SMS software follows Microsoft recommendations to use the Graph API to access resources within Office 365.

The Microsoft Graph is a RESTful web API that enables you to access Microsoft Cloud service resources.   For more information refer to https://docs.microsoft.com/en-us/graph/use-the-api

6 Infrastructure requirements

6.1 Components and general guidelines

Description	Requirement	Comments
Operating system	Windows Server 2019, 2022 or better.	The minimum is for smaller customers with less throughput requirements.
EC2 Instance type AWS Large Enterprise	T3.2xLarge	32GB Ram 8 x VCPU
EC2 Instance type AWS Small enterprise	T3.XLarge for smaller installations	16GB Ram 4 x VCPU
Azure Instance type Large Enterprise	Standard_D8s_v5	32GB Ram 8 x VCPU
Azure Instance type Small Enterprise	Standard_D4s_v5	16GB Ram 4 x VCPU
SMPP SMS protocols	SMPP or SMPP\TLS	Some SMSC's support SMPP\TLS for example MessageMedia & SINCH. Some SMSC connections offer a VPN connection.
Directory services	Active Directory (optional)	If not available then a local user service account can be used
SQL Server	Microsoft SQL Server or SQL Express for smaller installation in a single availability zone	AWS RDS SQL Express is supported for dev\test. AWS production deployment requires RDS MS SQL Server for HA Azure production deployment requires Azure SQL Managed Instance HA
Email & DNS	Office 365 email account for use by the SMS software for alerting administrators	DNS is required to resolve smtp.office365.com
Wireshark	Only for initial deployment	To confirm connectivity and any

		troubleshooting
Firewall rules	Allow outgoing SMPP\TLS protocol on specific ports for bi-directional SMS communications	If outgoing rules are required, the firewall team will be required to allow outgoing SMPP protocol on a port from internal IP addresses to external IP addresses. SMPP uses character set GSM03.38 within the SMPP packets

SMS Servers can be deployed in a single availability zone or across multiple availability zones (Multi-AZ).

High performance access to SQL Server is required.

Deployment across multiple regions would best be implemented using an instance of the SMS servers and databases within a region. This provides optimal performance for high speed SMS messaging for an enterprise.

6.2 Connectivity to SMS Network Service providers (SMSC)

6.2.1 Encryption of SMS data over the Internet

The software uses SMPP\TLS to encrypt the data. TLS version 1.2 min is used. SMPP\TLS is the preferred method of connection and is easy to setup with those SMSCs which offer that type of authentication and connection.

6.2.1 Some SMSC connections are via encrypted VPN

The SMS software can be configured to use SMPP with no TLS where a secure VPN is deployed between the customer network and the SMSC network. This is more complex whereas SMPP\TLS over the Internet is easy to setup.

6.2.1 Selection of a SMSC

Not all SMSCs implement the full options providing in the SMPP 3.4 specification. For customers to take full advantage of data analytics capabilities of the SMS Software suite, the SMSC must provide network error codes back to SMS Software in delivery notifications.

Network error codes include the reasons why an SMS could not be delivered.

ENTERPRISE SMS SERVER

6.3   Domain based Windows Service Account

A single Active Directory Windows Service Account can be used by ALL SMS Servers or separate service accounts can be setup one for each server if required.

A non-active directory implementation can use a local user (service account) using computer management\users and groups.

Windows service account(s) require full permissions to the SQL Databases.

The Windows service account must be added to the local administrators group of the SMS server.

6.4   Certified SMS Messaging Centres (SMSC)

The SMS software has been fully tested with various SMSCs.

SINCH and MessageMedia for example provide support for SMPP\TLS connectivity and provide the necessary optional network error results within the SMPP protocol. SMSC capabilities should be considered when making a commercial decision on which SMS service provider you will use.   BNS recommends that careful selection be made to ensure that network error results are passed back to the SMS Software which in turn will update the SMS databases ready for data analytics to examine why some SMS messages did not reach the destination.

Examples of SMSCs providing network error codes.

www.sinch.com

www.messagemedia.com

Both companies provide global coverage for SMS delivery.

For more information refer to www.bnsgroup.com.au for the latest list of SMS service providers tested.

6.4.1   Other SMPP service providers

SMPP version 3.4 is an industry standard used by most SMS service providers to allow SMPP based applications like BNS Enterprise SMS Server to send and receive SMS messages.

However, there are many considerations regarding inter-operability and optional implementations within the standard.

BNS has tested with many service providers. For more information contact our support team.

7 Capacity planning and performance

7.1 Latency

Transmission speeds between the SMS software VM and the SMSC is affected by latency. There are many things which can affect latency including:
- Networks hops between the VM and the SMSC network
- Firewalls
- Other network components

Knowing where the SMSC is located can help decide where to place your SMS software VMs.

7.2 SMSC Throttle

SMSCs can throttle performance. Check if any throttling is included in your SMSC contract.

7.3 VM performance

The number of VCPUs does impact the performance over the wire between the SMS software VM and the SMSC.   BNS tested a 2 x VCPU and 4 x VCPU from a test lab over the wire to SMSC and found that a 4 x VCPU VM provided a 40% improvement in performance. One of the reasons a 4 x VCPU provided significant gains was because TLS requires processing time but also other factors within the VM such as AV software.

BNS Enterprise SMS Server has the ability to scale the number of SMPP binds and therefore requires additional memory and vcpu resources.   Infrastructure

requirements and deployment guides cover the exact size instance types required with the ram and vcpu requirements.

7.4   Windows Defender

BNS found that Windows Anti Malware service will consume significant amounts of VCPU if the SMS exclusions recommended have not been implemented.

7.5   SMPP speeds per SMS Software VM

SMPP performance is affected by latency.

The SMS Software supports multiple binds per server. BNS publishes performance of SMPP based on test lab configurations.

BNS is aiming to support 10 x transmit binds and 1 x receive bind per VM providing significant throughput per second.

BNS will publish multiple bind performance in 2024.

7.6   Database sizing for SQL Server

7.6.1   SQL Server Database creation and sizing

Table 4:   SQL Server database capacity planning

Database	Est transaction storage	Size of database	Comments
sms-archive	10 million records in Main Store table	15GB Initial sizing depends on expected total number of transactions.	This includes index space. If you plan to have 100million archive records then make your database size 150GB with room to grow. SQL transaction log files can be set to 30% of the estimated database size requirement.
sms-current	Cleared daily	1GB for large installations	This database contains transient data only. Information is moved to the archive early hours the following day. SQL transaction log files can be set to 30% of the estimated database size requirement.
SMS-SQL-API	Transient, cleared as transactions are processed	1GB initial size	This database contains transient data only. It is cleared by applications and the SMS software. SQL transaction log files can be set to 30% of the estimated database size requirement. . Row level security (RLS) is required when there is more than 1 application accessing this database.

SQL Admins are responsible for creating 3 databases.

More information on SQL configuration can be found in the configuration guides.

https://smskb.bnsgroup.com.au/deployment-guides

8   SMS Console

8.1   Overview

The BNS Enterprise SMS Console is an IIS based console which can be installed on one or more SMS Servers.

The console provides a series of administrative functions and some lower security operational level support.

Administrator functions allow new users and applications to be added to the platform as well as:

- SMS numbers and sender IDs
- Submission queues
- SQL API status information
- Current Database status

Console Software Requirements

Software	Version/service packs	Mandatory or optional	Vendor/Manufacturer
.net Framework	Version which comes with the OS	Mandatory	Microsoft Corporation
Internet Information Server	IIS which comes with the OS	Mandatory	Microsoft Corporation

Details on how to deploy and operate the BNS Enterprise SMS Server Console can be found in the deployment guides.

https://smskb.bnsgroup.com.au/deployment-guides
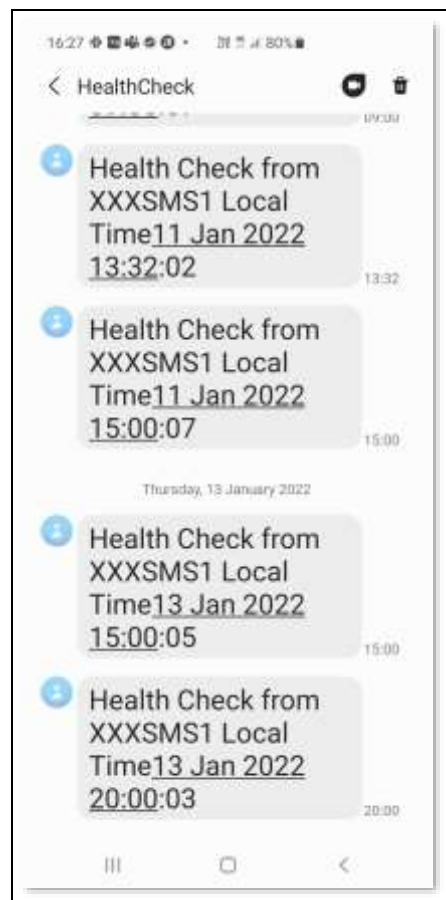
9 Health Service

9.1 What is the Health Service?

The health service is a Windows Service running on each SMS Server. The service sends test SMS messages to a configured set of mobile numbers at times defined by the system administrator.

For example, a system engineer and /or platform owner can receive multiple SMS messages from that server during the day to prove that end to end connectivity is fully operational.

A platform owner would expect an SMS from the servers at say 9am in the morning and 3pm in the afternoon.   If the SMS messages do not arrive that will be an indication that something is not operational either within the customer's network or the service provider or the mobile telecommunications network.

Example phone SMS messages.

9.2 System alerts

In addition to the health service, the system will send email alerts to a nominated email address if it detects warnings or errors.

The health service can detect a SMS message flow problem and report it via email to the nominated system administrator email address.

9.3 Configuring the Health Service

Refer to the deployment guide for this product.
https://smskb.bnsgroup.com.au/deployment-guides

9.4 End to end health checks

Assigning a virtual SMS number on the SMS Software platform and sending a health check to that number will do the following:

1. It will confirm that a transmission to and from the SMSC network works correctly.
2. A delivery confirmation will be received for the sending part.
3. An inbound SMS message will be received in your email completing the inbound leg of the health check.

10 Simple broadcast SMS

10.1 Overview

Simple broadcast allows end users or business processes to send a simple text file within an email to initiate a simple broadcast via SMS.

This feature allows a business to rapidly perform a simple broadcast to a target audience such as employees, contractor, customers etc.

The aim of this functionality is to make it as simple as possible for end users to use the system.

Work flow business systems can also utilise the simple broadcast feature with some considerations.

10.2 How a user or application can send a simple broadcast

We will use an end user for Brand-A business unit for example, an application programmer would do the same:

- Address an email TO:Broadcast@Brand-A**Broadcast**.SMS (the **destination domain** can be any value but must contain the word '**broadcast**'. Broadcast is meaningful for system administrators and end users).

- Enter the subject = the subject is not used in simple broadcast so it can be any value

- Enter text into the message body in Outlook with no additional spaces. The characters in the email message body will be used to generate the SMS text sent to all recipient mobile numbers in the text file attachment

- A text file (.TXT) file **must be** attached to an email containing the mobile numbers of SMS Recipients.

10.3 Attachment .TXT format

This is simply a list of mobile numbers
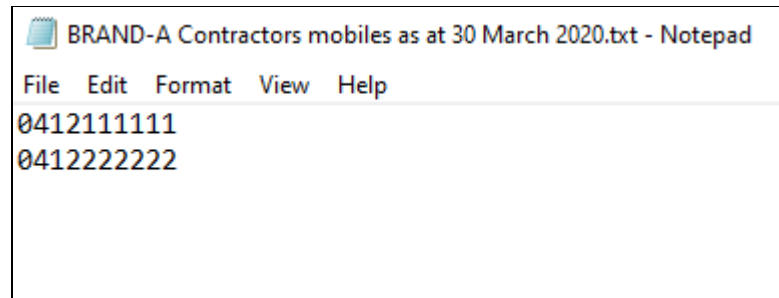
- Numbers must be on a separate line.
- International numbers would be in international format eg: 44xxxxxxxxxxxxx being a UK mobile number.
- You can use 61412xxxxxx for Australian numbers or just use 0412xxxxxxx.
- Spaces, +, (,) and other similar characters are removed by the software

10.4 Broadcast example from Microsoft Outlook

End users or applications across multiple brands may want to extract information from a CRM and target them using SMS. Other target audiences may include: Staff, contractors or anyone else for that matter.
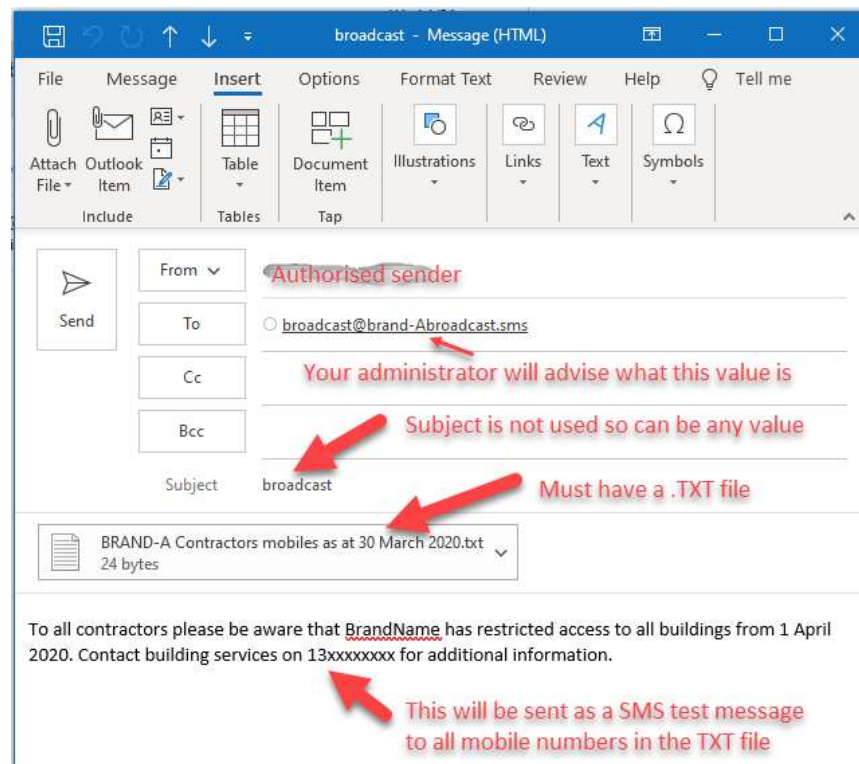
11 Backup and recovery

11.1 Disaster recovery

A design should deploy into multiple zones providing a high availability design.

The design of BNS Enterprise SMS Server has inherent automatic failover for a complete failure in a cloud AZ. It may also be configured to failover between regions in Azure.

Refer to the deployment guide for detailed discussion on high availability design.

11.2 Data storage

All data is stored in SQL Server except some basic log files which are stored on the server. Log files typically show what has happened like services starting, stopping and basic logging information. If you had to recover a server from backup, it would not affect the integrity of the system.

Current day data is stored in the SMS-Current Database.   Early hours of the following day, the previous days information is then moved to the SMS-archive database.

The SMS-SQL-API database contains only transient information between business applications and the SMS Server core services.

Standard backup and recovery of SQL server should be managed by the customer.

11.3 Configuration files

Configuration files are stored on each Windows SMS Server.   They are simple text files which can be edited using notepad.

11.4 Instance backup and recovery

It is important to have a recovery plan for a failure of the Windows Server VM host, the SMS Software and the SQL Server platform.

Refer to the deployment guides for the cloud providers for details.

https://smskb.bnsgroup.com.au/deployment-guides

12 Routine maintenance

12.1 SMPP \ TLS

The SMS Software negotiates TLS based on the SMS Service providers TLS cyphers. As such there is no key management required on the SMS Server for TLS encryption. Any maintenance on the SMS Service provider's SSL certificates do not affect the SMS software.

12.2 Software patches and upgrades

If Software patches are required to the SMS software, BNS will notify all customers.

Upgrades are managed through a software release notice which describes the upgrade process relevant to that release of software.

12.3 License management of the SMS Software

Annual licenses are provided to the customer which are renewed usually as part of an enterprise agreement. BNS will provide updated license files which are deployed by the customer in accordance with instructions provided by email.

13 Support

13.1 How to receive support

Primary support is via email by sending a request to support@bnsgroup.com.au

If the customer has a system down condition:
- Log the request via email first support@bnsgroup.com.au then
- Call +61 2 80016653 24 x 7 and leave your details for 'Technical Support'.

13.2 Support Tiers

BNS has 1 main support tier for enterprise customers offering a 4 hour SLA response during business hours 9am to 6pm Monday through Friday Australian Eastern time zone Sydney\Canberra.

A support request logged via email to support@bnsgroup.com.au is mandatory to receive a 4 hour response.

All support is via email (to create a ticket), telephone and remote assist using Microsoft Teams or the preferred remote tools supported by the customer.

BNS operates a 24 x 7 service for taking support requests after an initial email has been sent to support@bnsgroup.com.au
- For urgent service, call +61 2 80016653 24 x 7 and leave your details for 'Technical Support'. State that your request is urgent.

Customers requiring premium service including 24 x 7 contracts should contact BNS.

14 Appendix 1 - Terminology

AZ

Availability Zones are physically separate locations within each cloud provider region that are tolerant to local failures. To ensure resiliency, a minimum of three separate availability zones are present in all availability zone-enabled regions.

AWS AZ

Amazon Web Services availability zone

AWS Multi-AZ

Amazon Web Services multiple availability zones. Usually used to describe a deployment which is across multiple AZs.

AWS RDS

Amazon Web Services Relational Database Services

Azure AZ

Azure Web Services availability zone

SMPP

SMPP - Short Message Peer-to-Peer Protocol

The SMPP (Short Message Peer-to-Peer) protocol is an open, industry standard protocol designed to provide a flexible data communications interface for the transfer of short message data between the SMS Server software and a Message Centres, hereinafter referred to as a SMS Service provider.

The SMS Server software implements version 3.4 of the SMPP standard and has been tested with a number of SMS Service providers.   Not all SMS Service providers implement all options within the standard.   It is important that the customer selects a supported SMS Service provider.

SMSC

SMS Message Centre. A SMS Service provider supporting SMPP version 3.4

A certified SMSC is one which has been tested by BNS.

VM

Virtual Machine – in this documentation it refers to the Windows Server software running on the AWS cloud platform.

15 Appendix 2 – Version Comparison

15.1 SMS software version 2 compared to version 1

Many enhancements have been included in version 2. The following table shows a high level summary of the differences.

Component \ Service	Version 1	Version 2	Comments
Number of From SMTP connectors from on-premises servers	3	2	Version 1 based its SMS priority on the Connector used from Exchange to the SMS Server. Version 2 uses the Priority in the sender table in the SQL database. SMTP support in version 2 allows a high priority SMTP connector and a normal priority connector to deliver SMS traffic from Exchange load balanced to both SMS servers.
Graph API support to process from Office 365 Exchange online (EOL)	**No support**	Supported	Used in conjunction with EOL transport rules, version 2 allows end users and applications to send their SMS requests to EOL. EOL transport rules then re-direct the email to a EOL mailbox for processing by the SMS Server.
SMTP to on-premises Exchange transport servers	Supported	Supported	Where the customer has on-premises servers reachable from their cloud tenancy this can be used. However, use of authenticated SMTP\TLS to EOL is preferred.
SMTP\TLS to Exchange Online	**No support**	Supported	This is the preferred method of sending confirmations back to end users and applications. It is also used for inbound SMS where configured for 2 way.
SQL server as an API for applications	**No support**	Supported	Version 2 introduces SQL as an easy way for applications to send and receive SMS. **It offers scale and high availability and avoids the use of proprietary APIs from SMS Service providers and therefore avoids lock-in to a specific SMS service provider.**
Message Length maximum per	320	2000 default	Depends on the carrier capability. SINCH

SMS request		but can go higher	for example has a maximum of 2000 7 bit characters.
Health Service	**No support**	Supported	Automatic scheduled messages to confirm end to end for outbound SMS. Inbound SMS using a virtual number assigned to an admin can achieve end to end for inbound SMS.
Component \ Service	Version 1	Version 2	Comments
Data Analytics	**No support**	Supported	
Active Directory group membership authentication	Supported	**No support**	Version 2 uses SQL sender authentication as this provides faster checks compared to AD. Customers who want to allow all end users to send SMS do not have to add each user to their SQL tables.
Email Protective Marking (EPM)	Supported	Supported	Version 2 supports EPM standards including 2018.4
Microsoft Purview Sensitivity labels and data loss protection	Not supported	Supported	Version 2 supports EPM created by Microsoft Purview in accordance to the ASD blueprint for secure cloud. Refer to this article BNS announces support for Microsoft Purview & Australian Government Secure cloud blueprint (bnsgroup.com.au)