



sendQuick Clustering Solution and Setup Guide

version 1.2

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(Strictly Private and Confidential)

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1 Introduction

This document aims to provide an overview about sendQuick clustering solution and its configuration steps.

2 Architecture Overview

SendQuick Clustering setup (SQHA) aims to provide:

- High-availability of sendQuick
- Load-balancing for SMS messages sending

2.1 High-availability (HA) clusters

High-availability clusters (also known as failover clusters) are implemented primarily for the purpose of improving the availability of services which the cluster provides. They operate by having redundant nodes, which are then used to provide service when system components fail. SQHA use the two nodes in a HA cluster. HA cluster implementations attempt to manage the redundancy inherent in a cluster to eliminate single points of failure. In SQHA, the secondary server will monitor the primary SQHA by both HTTP (port 9180) and ICMP PING. If both returned as failure, the secondary system will take over the IP address of the primary node and assume as primary node. If the primary node is back on-line, the secondary node will switch back to its original state and resume its role as a secondary node.

In the physical setup, primary server will be assigned IP to both ETH0 and ETH1. IP assigned to ETH0 will be the IP for user access, IP for ETH1 will be used for monitoring. For secondary, its ETH0 should be connected to the same network environment of primary, and its ETH1 should also be assigned as the same network environment as primary. Ideally, ETH1 of primary and secondary should be connected via a network cross cable. Thus, any disturbance of the network environment will not affect the communication between primary and secondary. Once secondary notice primary is not responding, it will assume the role of primary by setting its ETH0 as primary IP.

If secondary detected primary has back online (by monitoring the IP address via ETH1), it will resume the role of secondary give up its ETH0 IP address.

For secondary, it is recommended to copy the ETH0 MAC address of the primary server into secondary machine. Secondary system will use this MAC address for its ETH0 once it assume to role of primary machine. This would resolve issue where remote machine would cache the MAC address of primary machine instead of flushing the MAC address when another machine use the same IP.

2.2 Load-balancing clusters for SMS Messaging

SendQuick has a built-in load-balancing function to load balance the SMS message sending by distributing all workload come through one or more load-balancing front ends, which then distribute it to a collection of back end. In SQHA, the primary server will distribute outgoing SMS messages via its secondary node.

2.3 Limitation

SQHA is not ideal for different physical locations for primary and secondary system. Since SQHA uses HTTP (port 9180) and ICMP PING for monitoring, it is subject to any network disturbance. A reliable network environment is a requirement for SQHA setup.

Other limitations include:

- SQHA currently does not cater for any disturbance on ETH0 port of primary server. This means if the network port (ETH0) or LAN cable or switch port is not functioning, the HA will not take effect as the cross cable (heartbeat) is still functioning. If the customer is using sendQuick Alert Plus or sendQuick Entera, the PING function can be used to check from Primary to Secondary, to detect a network port failure.
- SQHA have limitation in an event the cross cable has issue resulting in issue on heartbeat. This may cause an IP conflict as both systems become Pirmary server.

3. sendQuick Clustering Configuration.

In summary: *Setup secondary system first and followed by configuring primary.*

1. Setup the system as per normal for "Server Setup" for both Primary and secondary.
2. Set an internal IP for ETH1 (it should network port label: ETH1) under "Optional Network". Only ETH1, do no use other ethernet port for clustering configuration.
3. Connect the crossed network cable between primary ETH1 (label as ETH1 on the system) and secondary ETH1 (label as ETH1 on the system).
4. Select secondary mode in clustering configuration of secondary system. Make sure the local IP is its ETH1 IP and remote IP is the primary ETH1 IP.
5. Copy the primary ETH0 MAC address, and save into secondary Virtual MAC address setup.
6. Select primary mode in the clustering configuration of primary system. Make sure the local IP is its ETH1 IP and remote IP is the secondary ETH1 IP.
7. A successful page will be shown on the Primary server once the setup is completed.

3.1 Example

An overall network design:

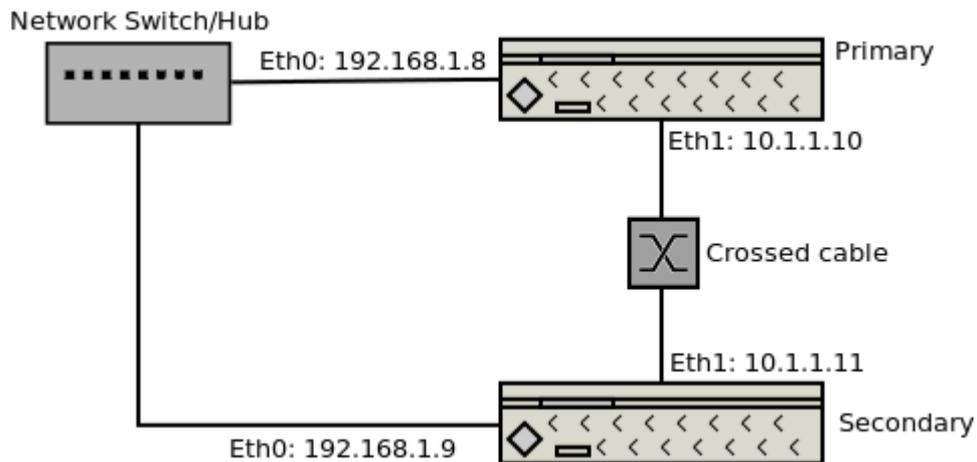


Figure 3.1: Overall Network Diagram for sendQuick Clustering Solution

- Primary ETH0, IP: 192.168.1.8, netmask: 255.255.255.0
- Secondary ETH0, IP: 192.168.1.9, netmask: 255.255.255.0
- Primary ETH1, IP: 10.1.1.10, netmask: 255.255.255.0
- Secondary ETH1, IP: 10.1.1.11, netmask: 255.255.255.0
- Network gateway for both Primary and secondary is 192.168.1.1
- Copy the ETH0 MAC address into secondary configuration. Refer to Figure 3.3

Optional Network Settings

Network Interface (eth1) (00:10:F3:14:31:23) This will set the IP and netmask for eth1. Please consult your network administrator for correct settings.	eth1 IP: <input style="width: 100%;" type="text" value="10.1.1.11"/>
	eth1 netmask: <input style="width: 100%;" type="text" value="255.255.255.0"/>
Network Interface (eth2) (00:10:F3:14:31:24) This will set the IP and netmask for eth2. Please consult your network administrator for correct settings.	eth2 IP: <input style="width: 100%;" type="text"/>
	eth2 netmask: <input style="width: 100%;" type="text"/>
Network Interface (eth3) (00:10:F3:14:31:25) This will set the IP and netmask for eth3. Please consult your network administrator for correct settings.	eth3 IP: <input style="width: 100%;" type="text"/>
	eth3 netmask: <input style="width: 100%;" type="text"/>

Figure 3.2: Example Optional Setup Page for secondary machine

Server Mode Setup

System Mode This option will set the system mode.	Secondary ▼				
<ul style="list-style-type: none"> Standalone - The system will run by itself for sending and receiving messages. Primary - The system will share the modem pool with the secondary server. Secondary - The system will monitor the primary server activity, and attempt to take over the primary server IP upon primary server failure. Data Sync(exclude Network Monitoring Rules) - The system will synchronise the data except the rules created under Network Monitoring. This option is for the systems which are not in the same network. Full Data Sync - The system will synchronise the data including the rules created under Network Monitoring. This option is for the systems which are set up in the same network. 	Note for Secondary setup: <ul style="list-style-type: none"> The Secondary will automatic setup the same set of modem grouping with the primary server for load balancing and primary server failure. The keyword management of secondary server will be disabled and will use the keyword management under the primary server. Secondary will attempt to take over the IP of Primary if detect Primary failure. The health check is done over TCP/IP connection. Thus, a reliable network connection is required, otherwise, an unwelcome network IP clash may occur and give in unexpected result. 				
	<input type="checkbox"/> Check to suspend the clustering mode. (Use this only if there is a need to shutdown the system for maintenance. NOTE: Both machine needs to be in suspend mode manually. Not applicable for Standalone mode.)				
	Server Name: B ▼				
	<ul style="list-style-type: none"> If the server is in "Data Synchronization" mode, one of the servers should have named "A" and the other should have named "B". 				
Primary/Secondary These fields only applicable for system mode: Primary and Secondary.	<table style="width: 100%;"> <tr> <td style="width: 60%;"><input style="width: 95%;" type="text" value="10.1.1.11"/></td> <td>Local IP</td> </tr> <tr> <td><input style="width: 95%;" type="text" value="10.1.1.10"/></td> <td>Remote IP</td> </tr> </table>	<input style="width: 95%;" type="text" value="10.1.1.11"/>	Local IP	<input style="width: 95%;" type="text" value="10.1.1.10"/>	Remote IP
<input style="width: 95%;" type="text" value="10.1.1.11"/>	Local IP				
<input style="width: 95%;" type="text" value="10.1.1.10"/>	Remote IP				
<ul style="list-style-type: none"> If this system is set as Primary, then remote IP should be the IP of Secondary. If this system is set as Secondary, then remote IP should be the IP of Primary. The local IP must be the IP assigned to eth1. The virtual MAC address is use whenever the secondary take over the primary server role. Format is ethN=<MAC Address> Where N is ethernet number. For example: eth0=00:0C:29:59:B4:BA This would set eth0 of secondary system with the MAC address of 00:0C:29:59:B4:BA once it assume primary role. NOTE: eth1 on both primary and secondary are reserved for HA synchronisation, so they cannot be used in this configuration. 	Virtual MAC Address: <input style="width: 100%; height: 40px;" type="text" value="eth0=00:0C:29:59:B4:F9"/>				
Server Alert Notification The system will sent an alert notification if detected primary/secondary server is down.	Email: <input style="width: 100%;" type="text"/> SMS: <input style="width: 100%;" type="text"/> Enable alert: <input type="checkbox"/>				
Save Update Alert Notification Only Reset					

Figure 3.3: Clustering Setup page for secondary.