

Multi-homing user services (virtual mapping)

**Application Note AN290
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1 Overview

This Application Note describes how you can make use of the virtual mapping feature available in Vocality software releases from V05_02.01 onwards.

It is assumed you are familiar with the Vocality product range and understand the concepts 'tributary mapping' and 'hunt groups'.

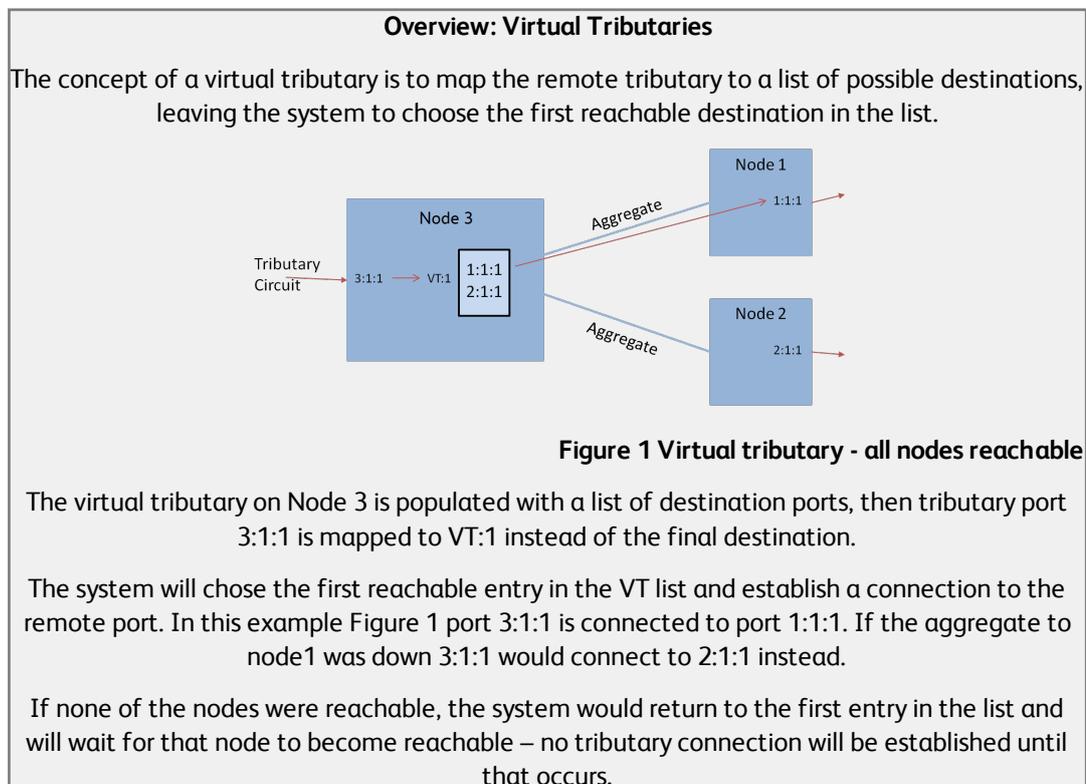
2 Introduction

In a communications network it is often desirable, for resilience and data backup purposes, to provide multiple hub sites for the connection and concentration of remote sites or services.

Prior to the introduction of the virtual mapping feature there was no mechanism for multi-homing remote tributaries onto multiple hub nodes. Virtual mapping allows multi-homing of tributaries and hunt groups, with automatic selection of an active hub node and automatic failover to another hub, should connection to the first hub fail.

3 Virtual tributaries

Without virtual mapping, a tributary on a remote node is directly mapped to a destination on the hub node, using the form *node:slot:port*. The system sets up a connection from the source port to the destination port across the aggregate link.





4 Virtual hunt groups

Without virtual mapping, hunt groups are created on the hub nodes; the call directory on the remote node is used to route calls to the hunt group. You are not able to (re)direct calls to a specific node without dialling a different number.

The virtual hunt group feature works in much the same way as the virtual tributaries, hunt groups are created on the hub nodes as usual, and then a virtual hunt group is created on the remote node. This virtual hunt group is populated with a list of the 'real' hunt groups located on the hub nodes. The call directory on the remote node is then used to route incoming calls to the virtual hunt group which will in turn route the call to the first reachable hunt group on the hub nodes.

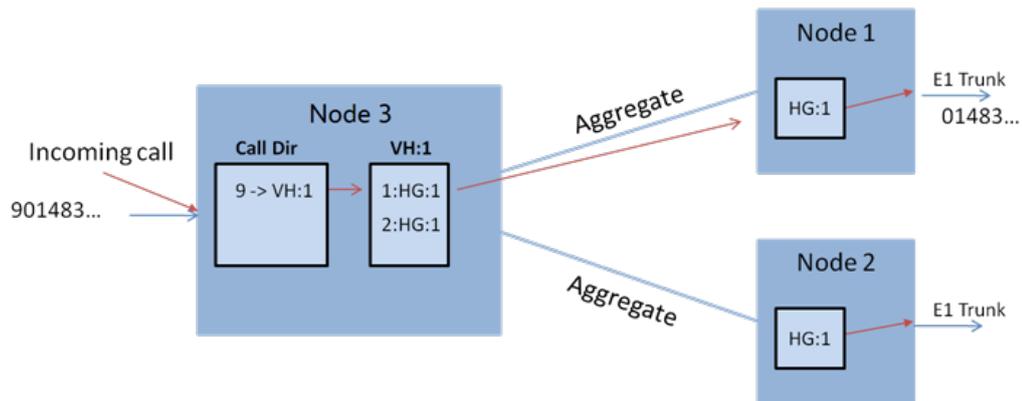


Figure 2 Virtual hunt groups

Virtual hunt group VH:1 is created on Node 3 and is populated with a list of destination hunt groups. When an incoming call arrives at Node 3, the dialled digits are used to lookup in the call directory and the call is routed to VH:1. The system then chooses the first reachable entry in the VH:1 list and establishes a connection to HG:1 on hub Node 1. Normal call processing takes place and call is passed out on a distant E1 trunk.

In the case that one or more of the hub nodes is unreachable, system behaviour is the same as for virtual tributaries.

In all cases you dial the same number and you are unaware that the call has been rerouted.

5 Virtual mapping and backup aggregates

The virtual mapping feature and the existing backup aggregate capability are distinct. They can coexist on the same unit but their interaction depends on system timers as well as other variables such as link type and intervening equipment on the aggregate path.

For example consider the following situation:

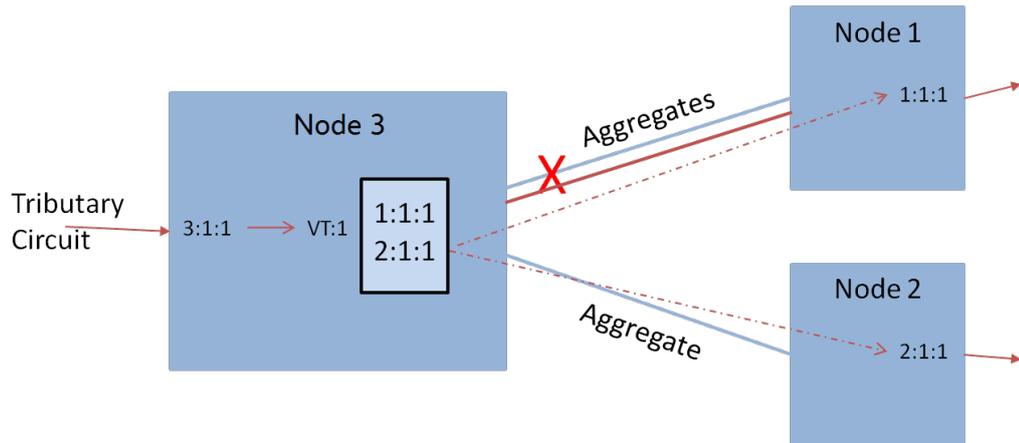


Figure 3 Virtual tributaries with backup aggregate

In this example there are both primary and backup aggregates to Node 1. When the primary aggregate to Node 1 fails it will cause the tributary connection to fail. After a timeout the system will try to re-establish that tributary connection. There are two possible outcomes:

- If the backup aggregate to Node 1 has had time to become active, the call will be routed to Node 1 as before, but now over the backup aggregate.
- If the backup aggregate to Node 1 is not yet active, Node 1 is not at that instant reachable, so the call will be routed to Node 2.

6 Virtual mapping with intermediate nodes

The virtual mapping feature is designed for a typical hub and spoke network where the remote nodes are directly connected to one or more hub nodes. It is not suitable for networks where the aggregate links from the remotes to the hubs are routed via an intermediate node. This is because the virtual mapping function depends on the remote node knowing that the hub is reachable over a particular aggregate path. The only indication it has to make that decision is whether the 'local' aggregate is up; it can have no knowledge of the state of the aggregate between an intermediate node and the hub.

7 Supported tributary types

Virtual mapping can be used with IP, voice and serial data tributaries.

8 Configuration of the 'spoke' unit

8.1 Virtual tributaries

From the **Main menu**, you should navigate to **Call Routing > Virtual Mappings > Virtual Tribs**.



Figure 4 Virtual Tribs menu

Move the cursor over <ADD NEW MAPPING> and press <Spacebar> to add a new entry. Move the cursor over <ADD MEMBER> and press <Spacebar> to add a member to the list. Type in a valid destination. Repeat as necessary.

When you are finished press <Esc> and press <Y> to save your changes.



Figure 5 Virtual Tribs menu - populated

In Figure 5 there are two serial data tributary destinations in VT:1. (These could be IP ports or voice ports – but you must not mix port types in the same virtual tributary.) (An entry pointing to this virtual tributary could be added to the **Call Routing > Directory** menu on the same node.)

In order to set parameters for the tributary, you should then navigate to the **Data menu**(because these are serial tributaries):

Figure 6 Data menu - destination set to VT:1

To use a particular Virtual Tributary specify it as, say, 'VT:1' without a node ID.

Finally, to prove your connection is up, you can navigate to **Diagnostics > Agg Status**.

Figure 7 Agg Status showing active connection

Here you can see an active connection from 2:0:2 to 1:0:2. (Node 0, which was the first choice in the list in Figure 5, was down in this example.)

8.2 Virtual hunt groups

These are created on remote nodes in a similar way to the virtual tributaries.

From the main menu you should navigate to **Call Routing > Virtual Mappings > Virtual Hunt Groups**.

Add a new Virtual Hunt Group and add members to represent the hunt groups on the hub nodes in the same way as was done for virtual tributaries above.



Figure 8 Virtual hunt group menu - populated

Now go to the **Call Routing > Directory** menu on the same node and add an entry pointing to the virtual hunt group just created VH:1.

Figure 9 Call Routing > Directory menu with entry pointing to virtual hunt group VH:1

Now when you dial a '9' the call will be routed via VH:1 to either 0:HG:1 or 1:HG:1, depending on which node is reachable.

9 About Application Notes

Application Notes are intended as a supplement to, rather than a substitute for, your User Manual. Should you have queries which are not answered by our current documentation, your local Vocality support team would be happy to hear from you.
E-mail support@vocality.com.