Netsukuku topology

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November 19, 2006

Abstract

In this document, we describe the fractal structure of the Netsukuku

4.1.2 Level n

We further subdivide the network topology in *groups of*
and we continue to name them as gnode.
At this point, we repeat recursively this subdivision process until we can group all the nodes of the network into a single gnode.

Doing so, we've structured the network in $n + 1$ levels (from 0 to n).
In the base level (level 0), there are 256 single nodes.
In the first level (level 1), there are 256 normal gnodes. Each of them contains 256 single nodes.

4.2 Fractal map

The advantages of using a fractal topology are clear.
The node *N*

4.3 CIDR routing

The QSPN, for each level, will build the routes necessary to connect each (g)node to all the other (g)nodes of the same level. The routes will be saved in the maps of each node.

If the node $N = g_3 \cdot g_2 \cdot g_1 \cdot g_0$ wants to reach a node M which belongs to different gnodes, f.e. $M = g_3 \cdot g_2 \cdot h_1 \cdot h_0$, it will add a CIDR[3] route in the routing table of the kernel:
all the packets whose destination is $g_3 \cdot g_2 \cdot h_1 \cdot 0 \ldots 255$ *will be forwarded to the gateway* X.

We'll see later how the gateway X is chosen.

5 Tracer Packets in high levels

In the QSPN document [1], we've seen how a Tracer Packet works in a network composed by single nodes, i.e. a gnode of level 0.
We'll now study its way of working on higher levels.

5.1 A gnode is a node

In the abstract sense a single node is an entity which:

1. receives input frseh:

Figure 4: The gnodes G_1, G_2 and G_3

6.1 Endless loops

Consider the situation in figure 5. A and B are bnodes of the node G_1, while C

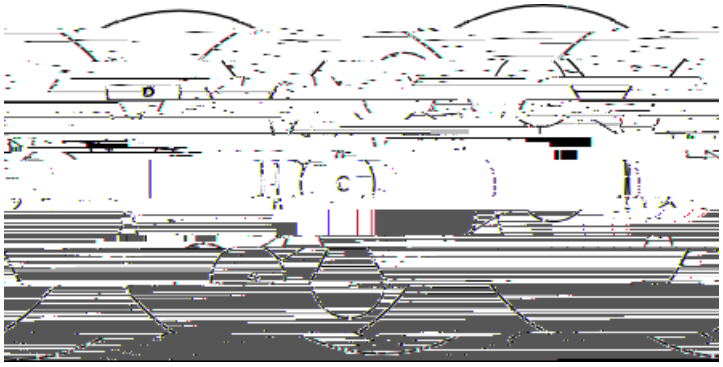

Figure 5: Three bnodes, forming a cycle

routes, connecting x to every node of G. In symbols:

$$n = |G|, \quad g_i \quad G$$

$$E(x \to G) = \frac{\sum_{i=1}^{n} E(x \to g_i)}{n}$$

where g_i is a0 Tm d[(x)]TJ F149 1963 Tm f8 1461 0 Tm d[(,)]TJ TJ F89 1963 Tm f6 1638 7 -22.457 Tm d[(E)]TJ F89 1963 Tm f7 1928

2. $b_i \leftarrow b \leftarrow a \leftarrow A$ The generic node b_i B receives the TP. Utilising the saved $E(A$

the whole net:

$E(B_G \rightarrow B_R)$ changes substantially.

The bnode can notice the change of $E(G)$ by inspecting the QSPN of lower levels, which are sent inside G. When the quality of the routes to reach the internal nodes of G varies, the $E(G)$ value will change too. If the variation