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It has become obvious by now that the work-horse of our so-called
packet network is the venerable BBS program. In fact, some will argue
that it has been too successful. Every time that a band-aid is needed
to "fix" the network, it is applied through the various BBS programs.
It is probably fair to say that the maintenance of the forwarding
tables is a drudgery that most sysops could do without. This point also
under-scores a serious problem faced by all networks: ROUTING.

With the introduction of WORLI V7.00 and support for Hierarchical
routing designators, we have an opportunity to improve traffic routing
particularly for international traffic. Since N6VV is at the present
time responsible for traffic to Asia and the Pacific, and occasionally
Europe and Africa, he has implemented some Hierarchical routing
designators which will assist him in international routing.

Using this structure mail can now be addressed :

<div align="center">

JA1ABC @ JA1KSO.JPN.AS

or

VK4AHD @ AX4BBS.AUS.AU

</div>

Starting today you can begin using Continental and Country designators
for international traffic destined for Asia and the Pacific. A forward
file may be set up to support the following codes:

<div align="center">

** Continental Designators **

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 NA  - North America
 SA  - South America
 EU  - Europe
 AS  - Asia
 AF  - Africa
 AU  - Australia
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**   Country Designators   **

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For country codes there is a generally accepted international standard
for abreviations. These are used in international electronic message
standards such as ANSI X.12 and EDIFACT. They are published by the
International Standards Organization and known formally as ISO
3166-1981(E/F).

Country codes (abbreviated list to show common country codes):

Argentina	**ARG**	Japan	JPN
Australia	**AUS**	**Korea,North**	**PRK**
Austria	AUT	Korea,South	KOR
Belgium	BEL	Lebanon	LBN
Bermuda	BMU	Liechtenstein	LIE
Bolivia	BOL	Luxembourg	**LUX**
Brazil	BRA	Malaysia	**MYS**
Brunei	BRN	Mexico	MEX
Bulgaria	BGR	Monaco	**MCO**
Canada	CAN	Morocco	MAR
Chile	CHL	Netherlands	NLD
China	**CHN**	New Zealand	NZL
Colombia	**COL**	Nicaragua	NIC
Costa Rica	**CRI**	Norway	NOR
Cuba	CUB	Pakistan	**PAK**
Denmark	**DNK**	Panama	PAN
Dominican Republic	DOM	Paraguay	PRY
Ecuador	ECU	Peru	PER
Egypt	EGY	Phillipines	PHL
El Salvador	**SLV**	Poland	**POL**
Finland	FIN	Portugal	PRT
France	FRA	Romania	ROM
French Polynesia	PYF	Saudi Arabia	SAU
German Demo. Rep.	DDR	Singapore	SGP
Germany, Federal Rep	DEU	South Africa	**ZAF**
Greece	GRC	Spain	ESP
Greenland	GRL	Sweden	SWE
Guatemala	GTM	Switzerland	CHE
Haiti	HTI	Syria	SYR
Honduras	**HND**	Taiwan	TWN
Hong Kong	**HKG**	Thailand	**THA**
Hungary	HUN	Turkey	TUR
Iceland	**ISL**	United Kingdom	GBR
India	IND	United States	USA
Indonesia	IDN	Uruguay	URY
Ireland	IRL	USSR	SUN
Israel	ISR	Venezuela	VEN
Italy	**ITA**	Yugoslavia	YUG

State and province codes shall be the recognized two-character code established by the American and Canadian Post Offices. These may also be found in the **Callbook** listings.

It is after we get down to the state/province/county level where the trouble may begin. To understand why, we must examine how the BBS code goes about matching things in the route. The first principle is that it attempts to find a match between the items in its forward file and the left-most item in the address field. As an example, say that we send something to WORLI @ WORLI.CA.USA.NA, and that the only entries

that we have in the forward file are for CA. That match would be
sufficient to allow the message to be forwarded. If WORLI were found,
that entry would take precedence (because it is more left in the field
than CA) and would of course also ensure delivery. The best way to
look at it is"WORLI AT WORLI which is in CA which is in USA which is
in NA". So far so good.

But the Japanese network wants to use area routing numbers. For
example, JA1ABC @ JA1KSO.42.JPN.AS ... and everyone says, "So what,,
let them!" Of course that is very mature of all of us, but the trouble
is that the 42 in that string may also match wild-card ZIP codes that
some folks keep in their forward file, such as 42*. The solution we
propose is to use an agreed upon key character for designators below
the state and province level, and we recommend the octothorpe, "#".

So now the above address would be JA1ABC @ JA1KSO.#42.JPN.AS .
Other examples could be:

1) WORLI @ WORLI.#SFO.#NORCA.CA.USA.NA - WORLI within SFO (San
   Francisco) within North California, etc.

2) VE3BTZ @ VE3GYQ.#LONDN.#SONT.ON.CAN.NA - VE3BTZ at VE3GYQ in
   London, in Southern Ontario, in Ontario, etc.

There is another added benefit to this scheme. It involves Gatewaying
between the BBS world and other networks, such as TCP/IP via SMTP.
Much of the pioneer work in setting up the gatewaying protocols has
been done by NN2Z, N3EUA, and PAOGRI, amongst others. The WORLI BBS
package allows for the forwarding of mail between the BBS world and
the SMTP world. Of note is the fact that the WA7MBL package has allowed
such message exporting and importing for some time now. This means that
we can take advantage of the the TCP/IP host-names and their domain or
hierarchal format for forwarding. Thus it is possible to send mail from
the BBS to VE3BTZ as ve3btz@pc.ve3btz.ampr.org or from SMTP to
w0rli@w0rli.ca.usa.na and not have any ambiguity.

We expect that WA7MBL will also be implementing hierarchal routing in
the near future. This system is still compatable with older style
systems, as a system that handles hierarchal forwarding identifies
with the H feature letter: [RLI-8.00-CH$]. If it does not get an
appropriate response, it uses the left-most item in the "@ BBS" string
as the "@ BBS" for the message.

The authors hope that this paper will serve as a starting place for
improved message routing by means of implicit routing. Low-level (VHF)
BBSs need only maintain state or province or country codes for distant
BBSs, and route such traffic to their nearest HF Gateway. In turn, the
HF station routes it to the desired state, where the receiving Gateway
station would have a detailed list of the BBSs it serves.

Correspondence may be addressed to the address given at the start of
this paper, or to VE3GYQ @ VE3GYQ.ON.CAN.NA or N6VV @ N6VV.CA.USA.NA .