Survey about the IPv6 ready and patched applications

TIPSTER6 project report

Author: János Mohácsi <mohacsi@ik.bme.hu>

Introduction

In present days, IPv6 started to be deployed. Several operating system vendor and independent community started to ship their system with IPv6 support. One of the largest problem facing all the system with IPv6 support is the lack of the native IPv6 or shortage of IPv6 compatible applications. Unfortunately, the legacy IPv4 client applications cannot use the IPv6 services without some kind of translation, thus there is a important demand from the users to be able to use the next generation services. From the other side, the server side, a bigger demand is approaching. The new region (e.g. Eastern Europe, Asia), where the Internet started to be deployed now, and the new emerging mobile/home-appliance market, will eventually switch to IPv6 to able to serve their clients. This new wave of service providers will ask IPv6 compatible servers.

In this paper we would like to analyse the availability of the IPv6 ready or IPv6 patched applications available for the coming IPv6 tidal wave.

IPv6 application databases

When we started to collect IPv6 applications and information about them, we felt the situation to be a bit ambiguous. There are some places on the Internet where some information about the IPv6 applications has collected. Particularly good among them is the www.IPv6.org   www.hs247.com and the Bieringer IPv6 informations for Linux users: http://www.bieringer.de/linux/IPv6/index.html . But most of them are quite poor and outdated. We also found very useful the some distribution specific sites: www.freebsd.org/ports , KAME port collection , Polish Linux Distribution, Miskiewicz web site, UME website, and Waseda University IPv6 Windows site.

We can safely claim that the best collections of the IPv6 applications that are available for general use is available in FreeBSD port collection, in NetBSD package collection, and in the Polish Linux Distribution.

Since the information is quite scatted we decided to implement our IPv6 ready application and patch database. The goal of the this database was:

- Simply to use
- Searchable
- Support for Hungarian language since the TIPSTER6 project is responsible for deployment of IPv6 in Hungary.
- Delegation of privileges for reducing the maintenance cost.
- As comprehensible as possible.

## Implementation of the IPv6 application database

We decided to implement the database with freely available tools, with Web interface for ubiquitous access. We used Perl 5 with DBI interface for relieve the database dependency. However we implemented the database in MySQL we tried to avoid database specific features. The multilingual support we achieved with the gettext() library functions. We decided to store the following information in the database for each particular application:

- User who entered the information, for delegating of privileges for further modification and later maintenance
- Name of the program
- Version of the program
- Categories to which belong the particular program.
- Supported operating system
- Description of the program
- Accessibility, URL where you can download the program
- E-mail address of Maintainer
- If IPv6 port exists or integrated part of the program.
- E-mail address of IPv6 port maintainer
- Accessibility, URL of the IPv6 patches
- From which Information sources filled out this record
- If the author is planing to support IPv6 in the future he can fill out planned date of release.
- Supported Protocols and RFCs of the program
- Alternatives for this progam
- Comment from the entry maintainer, about the usage or availability.

We decided to keep the structure quite simple, but in the same time easily extendable. During the fill out phase we added the category field, that is why the searching interface not available for the category. Having some comment from the IPv6 user community and Tromsø TF-NGN meeting we decided to extend it some more information, that can be helpful for the users (see the Conclusion)

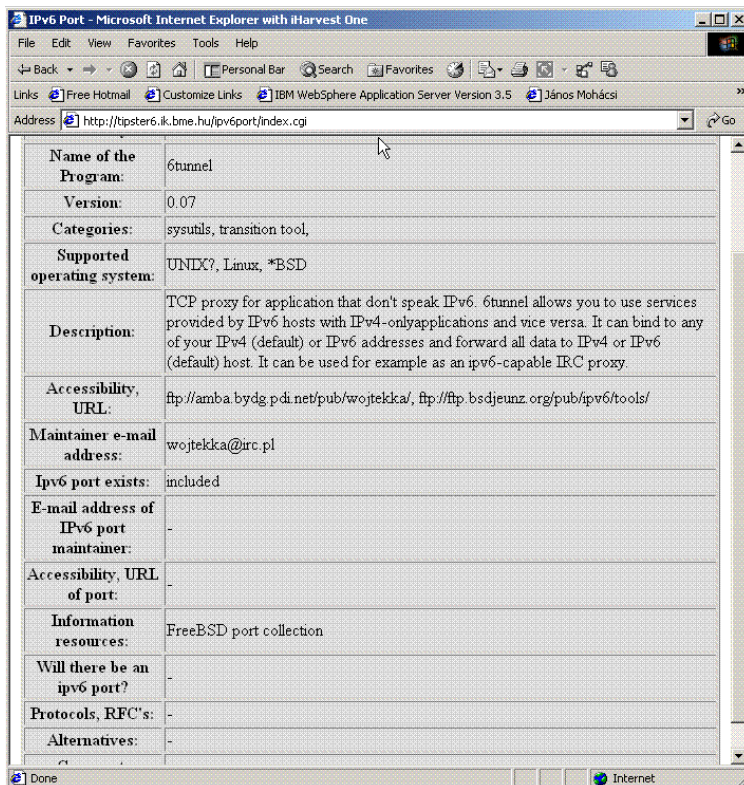The user interface is quite understandable, but there is a need for further improvement.

The starting page:
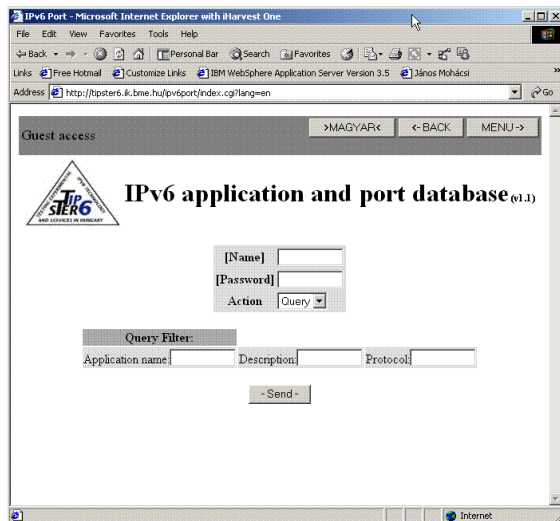
Query result page:
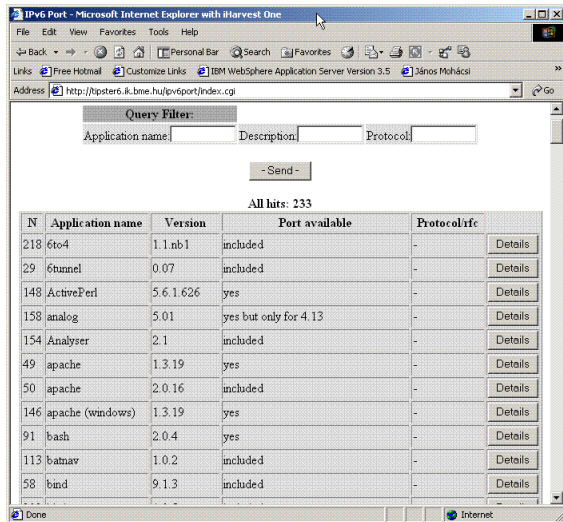
Detailed result page:

Survey Results

After filling out the database, we have decided to make some analysis about the IPv6 ready and IPv6 ported applications. The result of 13th June 2001, we had 216 package in the database. 123 package (57% of total) has

native IPv6 support, which is good, since no additional work necessary to install them on a IPv6 ready system. The remaining packages (93) can be further divided in two categories:

- the patches that is in sync with current version of the package: 52 (24% of total)
- the patches that is older then the current version of package: 41 (19% of total)

The later is a bad news, since quite large number of applications has to be reported or to check against the current version of the package.

About the operating system support we got the following result:

- UNIX: 162 (75%)
- Windows: 45 (21%)
- Linux: 172 (80 %)
- *BSD: 178 (82 %)

The result is supporting our previous observation, the best IPv6 supported platform is *BSD, than Linux. The least number of packages for Windows is not unexpected, since less windows package available is in source code. Jun Ya Kato who made most of the packages at the Waseda University, has an announcement on their homepage that, if somebody knows a good Windows package with source code available, he will voluntary port it to IPv6.

We also made survey based the categorisation:

- ftp: 27
- irc: 13
- news: 7
- mail: 19
- mbone: 7
- multimedia: 11
- devel:14
- sysutils: 34
- games:12
- www: 34
- testing: 22
- X: 5
- remote login: 8
- editor: 9
- misc: 29
- DNS: 6
- transition: 8
- routing:6

We found that, the most popular application is the WWW, then FTP, mailing applications, and IRC. The system utilities, miscellaneous and the testing category is not relevant since they are grouping category. It is important to emphasise, that also confirms the JOIN 6bone statistics, the most important IPv6 applications: WWW, mailing and IRC (according to our and JOIN project measurement the IRC generates the largest traffic). Good news, that most of the application category has enough number of applications to be chosen from.

We also make some other observation that cannot be described with figures. Largest supplier of the IPv6 patches are related to some projects: KAME project, USAGI project, Linux Polish distribution project, FreeBSD port collection. Largest number of the patches done by Asian (Japanese) and Eastern-Central European persons. The packages that already has IPv6 support is done by usually by individuals from mostly from Europe, then USA. The distribution of the applications and patches are seems to be related to attitude of the personality of the nations. The Japanese persons are known to be working hard, are they not resist building up their systems step-by-step, from very small pieces. The American and European attitude is rather to built something new and completely under their control, with ego.

In our opinion, the relative shortage of IPv6 compatible applications is determined by several fators:

- The existing applications has to be ported to support IPv6. It would be useful to find a programming environment where simply changing the environment to IPv6 compatible would be enough. Of course, it would

not be possible for management tools like ifconfig, netstat etc., but some high level application environment could promote IPv6 usage. There is a good step in this direction the Java 1.4 and possible step could be with the scripting languages e.g Perl.

- Relatively unknown method of writing protocol independent programs. There is a good reference at the KAME newsletter, and also good examples can be found in second edition of Unix Network Programming written by R.W. Stevens. Unfortunately the later is out of print.

- There is no automatic or semi-automatic translator for C source code. The Socket Scrubber developed by the SUN is usable but it is not comprehensible enough.

Conclusion

We implemented the IPv6 application database, and we have found it to be useful for us and for the IPv6 community. It is working , although its user interface not very polished yet. There are some missing elements in the database. The most important missing piece is the e-mail address of the maintainer of a particular application. This field is sometimes not filled, since the author/maintainer is not always available, or easily identifiable from the Web page of the package. Most of the time the RFC/protocol information also missing, since we did not have time read through all the source code about the protocol support. If you would like to test it you can start at: http://tipster6.ik.bme.hu/ipv6port/index.cgi?lang=en

We are spending large amount of time of updating the information available in the database. The delegation of the maintenance is not working that way as we expected. Most of the work is done by János Mohácsi in the IPv6 applications and port database. If he does not have enough time to work on, we will probably cease updating of the database.

After discussing the community and participant of the TF-NGN projects we found several extensions to be useful, that should be implemented in the future:

- Report forum, for each applications that can be filled by the users, about their experiences
- Weekly mailing list about the changes
- More search options (e.g. by category)