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86Open Frequently-Asked Questions

The 86open FAQ
Last updated: December 23, 1997
Reformatted and re-posted: February 22, 2006

This file contains a list of Frequently Asked Questions (hence the term FAQ) regarding the *86open* group, as well as answers to those questions. It is written, maintained and Copyright ©1997 by Evan Leibovitch. It may be freely redistributed in unmodified form, and its primary source is http://www.telly.org/86open-faq though mirrors are welcomed.

Notes:

- The term Unix-on-Intel as used in this FAQ, refers to the subset of Unix systems specifically produced to run on computers based on industry-standard computer architectures using Intel® 80386 and compatible CPUs.
- Also, the term Unix, as used above and elsewhere in this FAQ, describes the entire realm of both commercial UNIX® operating systems and others such as Linux and BSD which have similar design.

PART 1 - HISTORY AND PURPOSE

Q1: What is *86open*?
86open is a loose and informal group of technically-oriented people, who work and/or program in the world of UNIX systems and compatibles on Intel-based, standard-architecture computers (Unix-on-Intel)

Q2: What are *86open's* goals?
Its goal is to address areas of common ground amongst a diverse group of operating systems, including (but not limited to) multiple variants of freeware OSs such as BSD and Linux, as well as commercial OSs from BSDI, SCO and Sunsoft. Any agreements, specifications and software produced by it will be made freely available (in source code where applicable).

Q3: When did it start?
After some initial e-mail discussions took place, the first actual meeting of the group took place at SCO's head office in Santa Cruz, California on August 22, 1997. That was the first and only physical meeting, everything since has taken place by e-mail.

Q4: Is it ongoing, or does it have a specific goal in mind, after attaining which it would cease to exist?
This hasn't been discussed in great detail by the group. Work has already started on *86open's* first

project, a library specification allowing a common binary to run without emulation on all participating operating systems (see Q15): While some participants have envisioned other projects once this first one is complete, all attention is presently focused on the library project and not beyond.

Q5: Isn't this just another one of the many Unix alliances?
No. *86open* is significantly different from most previous Unix industry groupings such as Unix International, the Open Software Foundation, the COSE and ACE consortia, and others.

- This group is made up of individuals, not companies. While many of 86open's participants share their own organizations' point of view, few officially represent them. It is our belief that the quality of this group's work, as well as its members' personal respect within their communities, will enable its works to be implemented across the Unix-on-Intel world.

- Being a highly technical group, it members have a less-competitive temperament than other groups which have been made up of management or marketing representatives. Further, participation is totally voluntary and nobody is here because they are forced to do so. This is, of course, just opinion, but it appears to be borne out by many members of the group.

- *86open* is the first such group to have significant representation from within the freeware (Linux and BSD) communities.

Q6: Aren't you just doing this as a reaction to Windows NT?
Yes and no. It would be a lie to deny that NT has provided a significant challenge to the Unix community, and part of the weakness of the Unix community is its high level of fragmentation. Anything that can be done to reduce this degree of fragmentation, while allowing each participant to maintain its unique set of strengths, is beneficial to the community as a whole.
On the other hand, there are many who believe that, NT or not, this effort is necessary and long overdue.
The participants in *86open* generally believe that Unix-on-Intel provides an unmatched combination of value and performance, and that its installed base is large and growing rapidly. We hope that our efforts on joint projects will highlight these strengths before the computing public.

PART 2 - ORGANIZATION

Q7: Where and how is *86open* incorporated?

86open is not incorporated, and there are no plans to formalize it to that extent. It has no budget, all costs to date have been borne by individual participants or their employers.

Q8: How is the group structured?
There are two main components to the *86open* group:

- The main group is about 30 people, who will jointly be involved in producing projects mutually agreed-to. All decisions will be reached by consensus of the group, with dissenting opinions accommodated whenever possible.

- A subset of this group, a seven-person 'steering committee', will handle publicity and other administrative tasks. It will make no technical decisions on its own.

To date the group has physically met once. Future meetings may be convened but presently all

collaborative work is done by e-mail.

Q9: What organizations are represented here?
It cannot be emphasized enough that 86open is comprised of individuals, not organizations. While we are doing our best to ensure that all possible *viewpoints* are represented, we work under the premise that *nobody* in this group speaks on behalf of their parent organization unless they explicitly say so. Having said that, it is our desire that the fruits of our work are implemented across the entire community of those who use and develop Unix-on-Intel. To that end, we have tried to attract individuals who can offer perspectives from across the community.
Current membership in the group reflects perspectives from Be Inc. BeOS, BSDI BSD/OS, Caldera Linux, Debian GNU/Linux, FreeBSD, NetBSD, Red Hat Linux, SCO® (OpenServer and UnixWare), Sunsoft Solaris, Intel® and The Open Group.

Q10: Why isn't <my operating system> on that list?
We have made reasonable attempts to solicit participation that reflects viewpoints from across the Unix-on-Intel spectrum.
We may have missed some, inadvertently. Developers of any relevant OS are encouraged to mail us to help us fulfill our tasks. The only OS whose developers have been invited to participate, but declined, is OpenBSD.

Q11: Who is involved?
Here is the current membership. Note that only names are given, not affiliations, deliberately (see Q9). Members of the steering committee are in **bold**:
Tim Bird, Keith Bostic, Chuck Cranor, Michael Davidson, Chris G. Demetriou, Ulrich Drepper, Don Dugger, **Marc Ewing**, Steve Ginzburg, Jon "maddog" Hall, Ron Holt, Jordan Hubbard, Dave Jensen, **Dion Johnson**, Kean Johnston, Andrew Josey, **Evan Leibovitch**, Robert Lipe, Bela Lubkin, Tim Marsland, Greg Page, **Bruce Perens**, Ron Record, **Andrew Roach**, Tim Ruckle, Joel Silverstein, **Bryan Sparks**, Chia-pi Tien, **Linus Torvalds**, Erik Troan.

Q12: How can I become a member of the technical group?
If you can offer a viewpoint that we don't have at this point, and if you have the time/resources/skills to work on projects in this group's plan, please mail us. No promises -- there are concerns that if the group gets too large it may be unworkable -- but we'll give all requests their due.

Q13: Is there any leader or chairperson?
At this time, no. Certain individuals have specific responsibilities, and so far that's worked for us.

Q14: Why the name *86open*?
It's simple, catchy, and describes both the group's focus (on Unix-on-Intel, often referred to as "X86" architectures) and the fact that the products of its work will be freely available.
It's also reminiscent of "88open", a respected industry group formed many years ago to support the Motorola 88000 processor. The 88open group ceased operations in 1994, and its last-known leadership is aware of our group and has no objections to the use of the term *86open*.

Q15: Do you have a logo?
We don't have one, and we're in no hurry to get one. Thanks for the offers, but that's nowhere near the top of our priority list.

PART 3 - PROJECTS

Q16: So what exactly are you doing?
At the August meeting, the *86open* group reached a consensus to put its initial efforts into a method to allow a single binary program to run, unmodified, on any participating OS. That is, one could develop a program on OpenServer that would run on FreeBSD, or develop on Linux and run on SolarisX86, and so on.

Q17: A single binary used by all Unix-on-Intel OSs -- who won?
This was not a battle to be won or lost. The *86open* binary project is *not* an emulation scheme in which one system's binary format becomes a standard which others must support. Rather, a single binary, written to a standard programming specification, will be able to run *natively* on all supporting platforms.

Q18: How can you get a single binary to work identically across all these diverse systems?
Most Unix-on-Intel binary packages are already largely similar. Almost all such operating systems use the "ELF" binary 'packaging'; the various operating systems have small but significant differences, though, that make each system's ELF binary unusable on others'.
Because of earlier binary compatibility efforts such as the iBCS2 (which has been a part of UNIX since System V/386 Release 3.2), most of the older functionality is already quite similar between the systems. Most of the divergence has been in post-iBCS2 developments such as lstat() and mmap().
The *86open* group plans to solve this problem by producing a standard set of library functions that would be provided on each participating OS. A binary using these standard functions would dynamically link into the local library containing them, thus allowing it to operate regardless of the different internals of the underlying OS.
It is up the library implementation on each OS to hide any OS-specific behavior behind the standard functions, allowing programmers to concentrate on a single Application Programming Interface (API) for a binary that will work on all systems.

Q19: This might work in concept, but is it practical?
Yes, absolutely. One such proof-of-concept is the the *lxrun* project, which allows Linux binaries to work on SCO and Solaris operating systems by mapping Linux OS-specific system calls to their SCO equivalents by use of a 'shim' library.
The feasibility of a common Unix-on-Intel binary by use of a single library specification was agreed to by all the programmers involved.

Q20: What will be in this new library?
That's what's being worked on at this time. The emphasis is on defining a set of functions that is "sufficient, yet limited", in the words of Linux creator Linus Torvalds. The intention is to include all the basic functions necessary to create applications (and act as a base for other libraries, such as for X Windows), while removing redundancies and unnecessary code according to the groups' consensus.
The group is starting with a conventional Unix 'libc' (GNU's *glibc2*) as its point of reference. While any participant is welcome to create its own implementation of the *86open* library specification, the reference will be based on glibc.

Q21: What programs will benefit?
The intent of the 86open library specification is that it will be sufficiently complete to allow most kinds of software applications to use it in lieu of the OS-specific libraries required presently. We will attempt to offer documentation to assist developers to port existing applications to the *86open* library functions.
We understand that certain kinds of software that must necessarily be close to the OS kernel will probably *not* benefit from the portability aspects of the *86open* specificationi. This is because such

programs, such as performance monitors, will require OS-specific facilities beyond the scope of our efforts.

Q22: How will you ensure that the specification is open?
The license of GNU glibc requires that it's freely available in source code, and that all modifications to it be similarly available. Furthermore, *86open* is committed to maintaining a reference implementation of its library specification that is available in source code and freely re-distributable.

Q23: Won't this library specification create just another Unix 'standard'?
This is certainly not our intent. Wherever possible we will remain consistent with The Open Group's Single Unix Specification. But there may be areas the group needs to address --- such as direct video access --- that are architecture-specific and thus outside the scope of the SUS.

Q24: When will the specifications and reference library be available?
Progress is being made. But it's too early to promise any deliverables, and the consensus is that it's better to say "we're not sure" than to pick a date out of thin air and lie. We like to think we're above that; being open can mean more than releasing source code.

PART 4 - FUTURE

Q25: Is anything planned once the library specification is complete?
86open is fully aware that a common binary -- while a significant step -- is only part of the solution to making the Unix-on-Intel platform attractive and easy-to-support for application developers.
While nothing is concrete -- all attention is presently focused on the library project -- further issues have been raised that may be later addressed by *86open*, such as installation systems and common filesystem layouts. It must be emphasized, however, that future projects haven't been dealt with any level of detail, and likely won't until the current one is near completion.

SECTION 5 - LEGAL FODDER

Q26: Are there any trademarks in this FAQ that you need to identify?
Why, yes, glad you asked.
BeOS is a trademarks of Be, Inc.
BSD/OS and BSDI and are trademarks of Berkeley Software Design, Inc.
Intel is a registered trademark of Intel Corporation.
Linux is a trademark of Linus Torvalds.
Microsoft and Windows NT are either trademarks or registered trademarks of Microsoft Corporation.
SCO, OpenServer and UnixWare are trademarks or registered trademarks of the Santa Cruz Operation, Inc.
Solaris is a trademark of Sun Microsystems, Inc.
UNIX is a registered trademark of The Open Group.
There may be others. If we've left them out, it's accidental.

Q27: Is *86open* a trademark?
Haven't given it any thought -- no lawyers in the group. Right now there's no formal entity to 'own' it anyway.

For more information, email 86open@telly.org or check out www.telly.org/86open