

Linux内核最新进展

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敏达生活

Outline

Who I am

Live with upstream kernel

Who writes the Linux kernel

Architecture relative features

Memory features

Staging features: ILP32

Who I am?



- Linux kernel developer
- Distributed storage developer
- Open source lover

Live with upstream kernel

- Why
 - Minimize migration effort
 - Collaborate with community
- How
 - Mailing list
 - IRC(e.g. irccloud)
 - Conference
- What
 - Feature
 - Pull request
 - Commit message
 - Code

Live with upstream kernel

- kernel newbie: https://kernelnewbies.org/Linux_4.16
- LWN: merge window
 - 4.16 Part1: <https://lwn.net/Articles/746129/>
 - 4.16 Part2: <https://lwn.net/Articles/746791/>
 - 4.17 Part1: <https://lwn.net/Articles/750928/>
 - 4.17 Part2: <https://lwn.net/Articles/751482/>
- Kernel mailing list
- Git merge log



Who writes
the Linux
kernel?

[+]	No.1	Hobbyists	7558417(11.53%)
[+]	No.2	Intel	6159531(9.39%)
[+]	No.3	Red Hat	6074666(9.26%)
[+]	No.4	Unknown	5775254(8.81%)
[+]	No.5	Novell	3229108(4.92%)
[+]	No.6	AMD	2620724(4.00%)
[+]	No.7	IBM	2601454(3.97%)
[+]	No.8	Broadcom	1848568(2.82%)
[+]	No.9	Linaro	1407847(2.15%)
[+]	No.10	Samsung	1370381(2.09%)

Who writes the Linux kernel

ref: http://www.remword.com/kps_result/all_whole_line.htm

Most active 4.16 employers					
By changesets		By lines changed			
Intel	1424	10.6%	AMD	97644	14.2%
Red Hat	971	7.2%	Intel	73566	10.7%
(Unknown)	962	7.2%	(Unknown)	33700	4.9%
(None)	895	6.7%	Red Hat	33027	4.8%
AMD	677	5.0%	(None)	31155	4.5%
IBM	566	4.2%	IBM	26329	3.8%
Linaro	524	3.9%	Linaro	25245	3.7%
Renesas Electronics	373	2.8%	(Consultant)	20772	3.0%
Mellanox	366	2.7%	Cavium	18173	2.6%
Google	365	2.7%	Samsung	16587	2.4%
SUSE	337	2.5%	ARM	16368	2.4%
(Consultant)	333	2.5%	Broadcom	13868	2.0%
ARM	328	2.4%	Texas Instruments	13597	2.0%
Oracle	320	2.4%	Code Aurora Forum	13437	2.0%
Huawei Technologies	295	2.2%	Oracle	13335	1.9%
Samsung	272	2.0%	Bootlin	13038	1.9%
Texas Instruments	233	1.7%	Mellanox	12999	1.9%
Broadcom	201	1.5%	Google	12281	1.8%
Netronome Systems	192	1.4%	Huawei Technologies	11781	1.7%

ref:

<https://lwn.net/Articles/750054/>

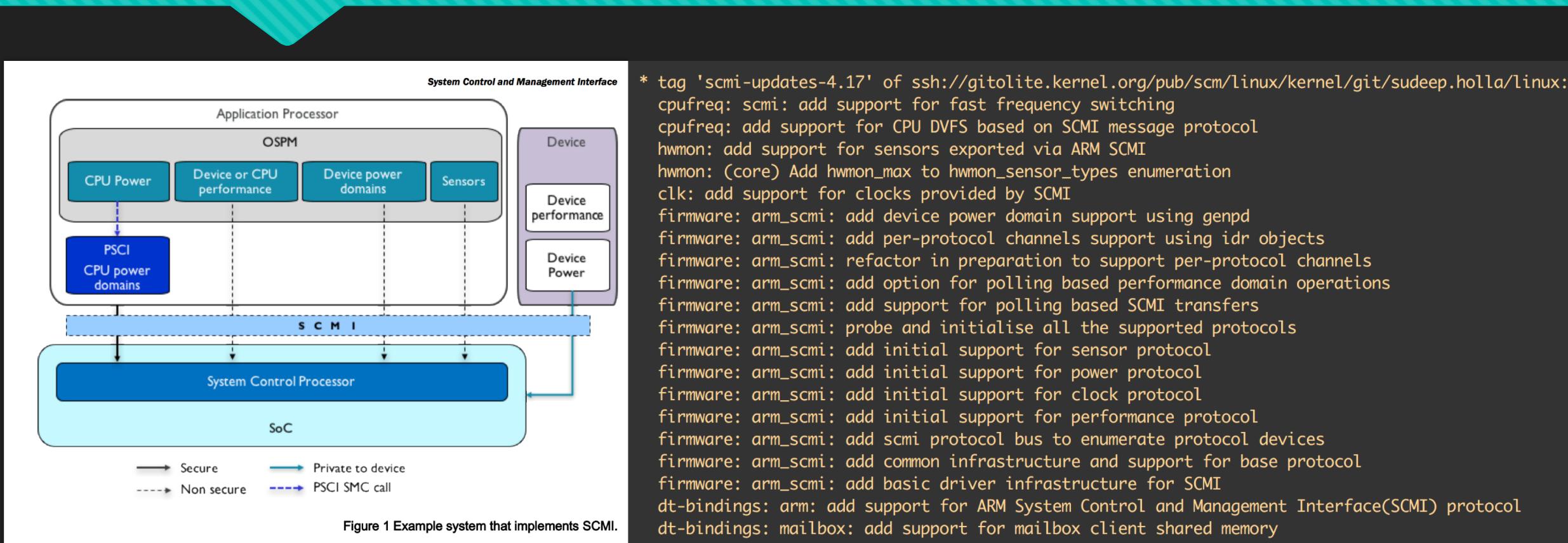
Who writes the Linux kernel

Meltdown and Spectre

- ISA and side-channel attack
- Upstream status

Ref: google I/O 1'31'': <https://mp.weixin.qq.com/s/bUVQVk3W6BM4WNNbFnJ4HQ>

SCMI



Ref:

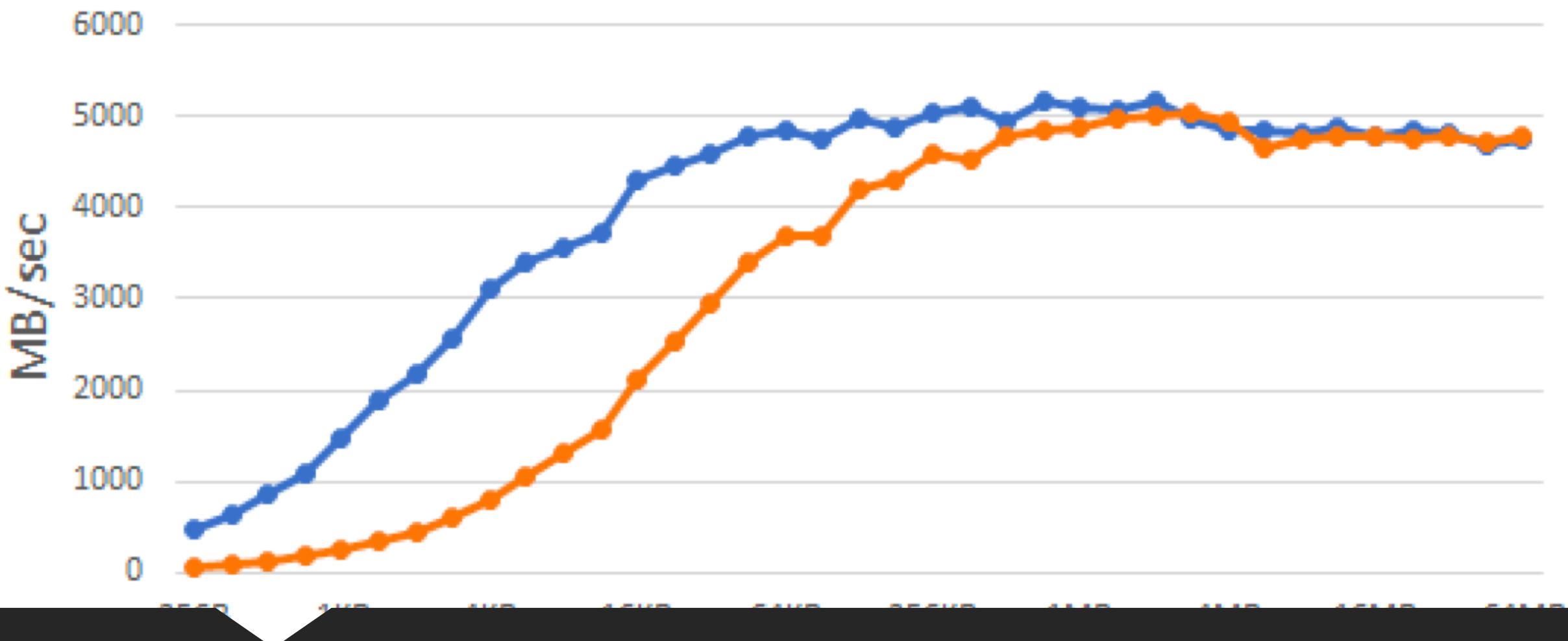
git log f46f11dc1e86270935041fbc3920ba71a050a5fd^!

<http://infocenter.arm.com/help/index.jsp?topic=/com.arm.doc.den0056a/index.html>



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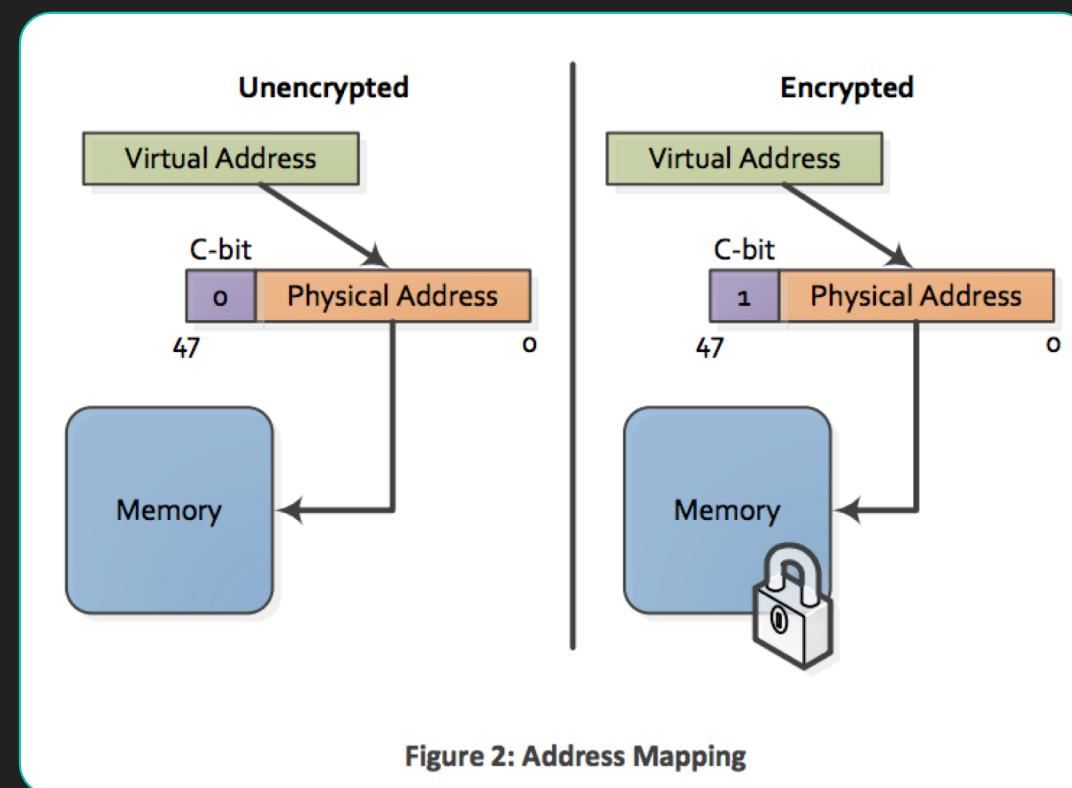


Memory encryption: Intel SGX

Ref: https://medium.com/@danny_harnik/impressions-of-intel-sgx-performance-22442093595a

Memory encryption: AMD SEV

Ref: http://amd-dev.wpengine.netdna-cdn.com/wordpress/media/2013/12/AMD_Memory_Encryption_Whitepaper_v7-Public.pdf



```
@@ -1365,6 +1369,13 @@ unsigned long do_mmap(struct file *file, unsigned long addr,
     if (offset_in_page(addr))
         return addr;

+    if (flags & MAP_FIXED_NOREPLACE) {
+        struct vm_area_struct *vma = find_vma(mm, addr);
+
+        if (vma && vma->vm_start <= addr)
+            return -EEXIST;
+    }

    if (prot == PROT_EXEC) {
        pkey = execute_only_pkey(mm);
        if (pkey < 0)
```

Memory: Introduce **MAP_FIXED_NOREPLACE**

- git log --oneline --grep MAP_FIXED_NOREPLACE
- Commit: a4ff8e8620d3 mm: introduce MAP_FIXED_NOREPLACE

Staging features: ILP32

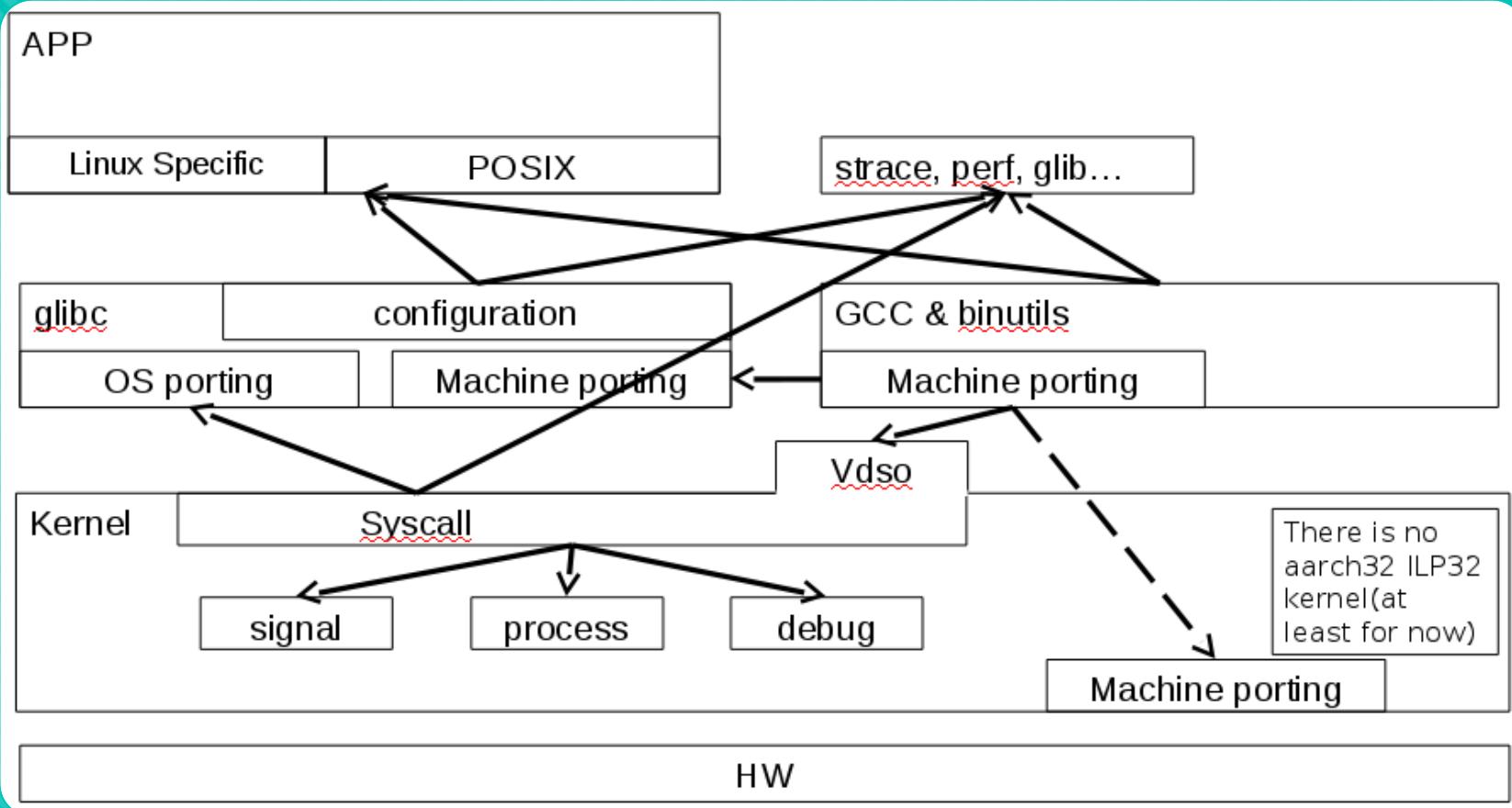
```
88c5962bd33e (yury/ilp32-4.16) arm64: ilp32: Make the Kconfig option default y
2a3c10a41c44 arm64:ilp32: add ARM64_ILP32 to Kconfig
48a17244fe5d arm64:ilp32: add vdso-ilp32 and use for signal return
2b7dc0f6757e arm64: ptrace: handle ptrace_request differently for aarch32 and ilp32
cf4bc5d1e683 arm64: ilp32: introduce ilp32-specific sigframe and ucontext
b812dab0b44a arm64: signal32: move ilp32 and aarch32 common code to separated file
a6c4e745df66 arm64: signal: share lp64 signal structures and routines to ilp32
b7f787f07098 arm64: ilp32: add sys_ilp32.c and a separate table (in entry.S) to use it
aa0ab84b0b73 arm64: ilp32: share aarch32 syscall handlers
69c86cf3bb1f arm64: ilp32: introduce binfmt_ilp32.c
227d777e6f53 arm64: change compat_elf_hwcap and compat_elf_hwcap2 prefix to a32
d9be9fce0063 arm64: introduce binfmt_elf32.c
f5446bbe63eb arm64: ilp32: add is_ilp32_compat_{task,thread} and TIF_32BIT_AARCH64
9004838923c3 arm64: introduce is_a32_task and is_a32_thread (for AArch32 compat)
0458b36fb77f arm64: uapi: set __BITS_PER_LONG correctly for ILP32 and LP64
f00e69817d12 arm64: rename functions that reference compat term
0b99ff727d47 arm64: rename COMPAT to AARCH32_ELO in Kconfig
a043e409d947 arm64: ilp32: add documentation on the ILP32 ABI for ARM64
a5a574c17606 thread: move thread bits accessors to separated file
29a5b16a8111 asm-generic: Drop getrlimit and setrlimit syscalls from default list
d28a53977821 32-bit userspace ABI: introduce ARCH_32BIT_OFF_T config option
e2da3e9f6fea compat ABI: use non-compat openat and open_by_handle_at variants
c98d3dba8f8a ptrace: Add compat PTRACE_{G,S}ETSIGMASK handlers
7c3403693e46 arm64: signal: Make parse_user_sigframe() independent of rt_sigframe layout
0adb32858b0b (tag: v4.16) Linux 4.16
```

Ref: <https://github.com/norov/linux/tree/ilp32-4.16>



	ILP32	LP64	LLP64	ILP64
char	8	8	8	8
short	16	16	16	16
int	32	32	32	64
long	32	64	32	64
long long	64	64	64	64
size_t	32	64	64	64
pointer	32	64	64	64
	arm aarch32 aarch64 ILP32 x32 n32	aarch64 LP64	64bit windows	

Staging features: ILP32



Staging features: ILP32

Thanks:你可能感兴趣的文章



- 半瓦平时有随手记笔记的习惯，公众号《敏达生活》。只分享自己有体会的信息，希望能促进价值信息流动。任何建议欢迎给我留言或添加我的微信：
- [春风吹又生——梳理中国CPU](#)
- [Linux自动化部署工具综述（Linux自动化部署工具系列之一）](#)
- [比较操作系统镜像制作方式（Linux自动化部署工具系列之二）](#)
- [ARM生态系统的盛会Linaro connect（之一）：arm64 server和端侧AI](#)
- [ARM生态系统的盛会Linaro connect（之二）：arm64 workstation和低成本调试工具](#)
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