

AGL Gap Analysis

– Tizen(kernel) vs AGL(AGL Spec 9.3. Resource Control and 9.9. Drivers)

➤ Gap Analysis <Resource Control>

Tizen (<https://wiki.tizen.org/wiki/Security:Containers>) vs AGL (9.3 Resource Control)

Result: Conditional OK

The latest version of cgroup covers Memory Resource Control Specifications except for RSC.3.1 and RSC.3.2.

➤ Gap Analysis <Drivers>

BSP (LTSI3.10) vs AGL (9.9 Drivers)

Result: NG

There are no drivers about CAN, MOST and EthernetAVB in BSP. They are essentials for IVI system. Need some revises for some drivers(SD, etc.) to meet AGL spec requirement.

Note: There are not any definitions about drivers in Tizen Spec. So, we investigated BSP (LTSI3.10) by SoC vendor, instead of Tizen' s.

➤ etc

➤ OSS license

AGL Gap Analysis(Resource Control)

Priority	Subsystem	Name	Status	Original IF(cgroup,syscall)	Draft IF	Comment
RSC.1.1	cpu	Resource_Assignment Depending on Priority	OK	-	-	1. https://git.kernel.org/cgit/linux/kernel/git/torvalds/linux.git/tree/Documentation/cgroups/net_cls.txt?id=refs/tags/v3.16-rc3 cpu_acct 2. please see the attachment change_policy.c 3. renice -n N_priority -p P_pid (n is range from -20 ~19), N_pid is process_id 4. http://lwn.net/Articles/520076/
RSC.1.2		Priority_Set_Interface	OK	-	Wrap a function such as RSC.1.4 Dynamic_Resource_Change, and provides an API unified external, are used to the use of other processes.	
RSC.1.3		Supported_Resource_Type_About_Priority	OK	-	-	
RSC.1.4		Dynamic_Resource_Change	OK	cgroup: /cgroup/cpu/cg_xxx/cpu.shares SYSCALLS:sched_setscheduler/sched_setparam	cgroup(/cgroup/cpu/cg_xxx/cpu.shares) or syscall (sched_setscheduler/sched_setparam) For example, to order the definition of priority, to provide low, middle, only high.	
RSC.1.5		Resource_Logging	OK	-	logging to syslog API parameters	
RSC.1.6		Thread_Control	OK	cgroup: /cgroup/cpu/cg_xxx/cpu.shares SYSCALLS:sched_setscheduler/sched_setparam	There are two kinds of workqueue and softirq bottom half now. a. process priority of ksoftirqd generating the execution path of softirq is adjustable. b. workqueue is performed by a dedicated thread or event thread. dedicated thread or event thread can control the resources through the cgroup. Through RSC.1.4 Dynamic_Resource_Change function, adjust the thread priority of the event and ksoftirqd.	
Time Slot						
RSC.2.1	cpu storage net	Time_Slot_Based_Resource_Sharing	-	-	-	1. cpu.cfs_period_us https://access.redhat.com/documentation/ja-JP/Red_Hat_Enterprise_Linux/6/html/Resource_Management_Guide/sec-cpu.html#sect-cfs 2. cgroup-net_cls and tc: http://vger.kernel.org/netconf2009_slides/Network%20Control%20Group%20Whitepaper.odt https://git.kernel.org/cgit/linux/kernel/git/torvalds/linux.git/tree/Documentation/cgroups/net_cls.txt?id=refs/tags/v3.16-rc3 net_cls.txt 3. cgroup-blkio https://git.kernel.org/cgit/linux/kernel/git/torvalds/linux.git/tree/Documentation/cgroups/net_cls.txt?id=refs/tags/v3.16-rc3 blkio-controller.txt for throttle blkio control, there are 4 interface: blkio.throttle.read_bps_device blkio.throttle.read_iops_device blkio.throttle.write_bps_device blkio.throttle.write_iops_device for proportional weight, there are 2 interfaces: blkio.weight blkio.weight_devices
RSC.2.2		Time_Slot_Resource_Sharing_Interface	OK	cpu: /cgroup/cpu/cg_xxx/cpu.cfs_period_us /cgroup/cpu/cg_xxx/cpu.cfs_quota_us storage: /cgroup/blkio/cg_xxx/blkio.throttle_read_bps_device /cgroup/blkio/cg_xxx/blkio.throttle_read_iops_device /cgroup/blkio/cg_xxx/blkio.throttle_write_bps_device /cgroup/blkio/cg_xxx/blkio.throttle_write_iops_device network: /cgroup/blkio/net_cls/cg_xxx/net_cls.classid	cpu: /cgroup/cpu/cg_xxx/cpu.cfs_period_us /cgroup/cpu/cg_xxx/cpu.cfs_quota_us storage: /cgroup/blkio/cg_xxx/blkio.throttle_read_bps_device /cgroup/blkio/cg_xxx/blkio.throttle_read_iops_device /cgroup/blkio/cg_xxx/blkio.throttle_write_bps_device /cgroup/blkio/cg_xxx/blkio.throttle_write_iops_device network: /cgroup/blkio/net_cls/cg_xxx/net_cls.classid To create and publish API for the app	
RSC.2.3		Supported_Resource_Type_About_Time_Slot	OK	-	-	
RSC.2.4		Thread_Monitoring	OK	-	-	
RSC.2.5		Thread_Control	-	/cgroup/cpu/cg_xxx/cpu.rt_period_us /cgroup/cpu_cg_xxx/cpu.rt_runtime_us	through the interface of the cgroup. Implement the control of CPU time specified thread / thread group occupies.	

AGL Gap Analysis(Resource Control)

RSC.3.1	Memroy	Resource_Release_Interface	NG	-	Pending order requirements unclear
RSC.3.2		Supported_Resource_Type_About_Release	NG	-	
Grouping					
RSC.4.1	cpu memory storage net	Process_Group_for_Resource_Control	-	-	
RSC.4.2		Grouping_Interface	-	-	<p>It provides two API, used for other processes.</p> <p>1: API to be added to the process group to process.</p> <p>2: API to be applied to the process group policy group that you previously defined.</p> <p>There must be as easy as possible the parameters of the function.</p> <p>For example: is the process type (or name) ID of the process group</p>
RSC.4.3		Supporting_Resource_Type_About_Grouping	OK	<p>cpu: /cgroup/cpu/cg_xxx/cpu.cfs_period_us /cgroup/cpu/cg_xxx/cpu.cfs_quota_us /cgroup/cpu/cg_xxx/cpu.shares</p> <p>storage: /cgroup/blkio/cg_xxx/blkio.throttle_read_bps_device /cgroup/blkio/cg_xxx/blkio.throttle_read_iops_device /cgroup/blkio/cg_xxx/blkio.throttle_write_bps_device /cgroup/blkio/cg_xxx/blkio.throttle_write_iops_device</p> <p>network: /cgroup/blkio/net_cls/cg_xxx/net_cls.classid</p>	<p>1. pilicy group - group of regarding cpu/stroage/network control</p> <p>2. process group - group of regarding processes</p>

AGL Gap Analysis(Drivers)

No	Driver	Status	Comment
1	SD/SDIO	Conditional OK	It's need to revise about Command Retry Sequence and its transfer rate.
2	MMC	Conditional OK	↑
3	SATA	OK	
4	PATA	Working	It's not finished about investigation of this item yet.
5	USB-H	Conditional OK	It's need to revise about its transfer rate.
6	USB-F	Working	It's not finished about investigation of this item yet.
7	UART	Conditional OK	It's need to revise about its Error Sequence.
8	SPI	Conditional OK	↑
9	I2C	OK	
10	GPIO	OK	
11	DISPLAY	Conditional OK	It's need to develop modules for multi-display system.
12	V-CAPTURE	OK	
13	SOUND	Conditional OK	It's need to develop additional channels because there are few channels.

AGL Gap Analysis(Drivers)

No	Driver	Status	Comment
1	CAN	NG	There are no drivers in BSP. Also, there might be a problem with test environment because sometime it includes each OEM' s spec.
2	MOST	NG	↑
3	EtherAVB	NG	↑
4	OpenMAX	OK	
5	OpenGL	OK	
6	Fastboot	Working	It' s not finished about investigation of this item yet.
7	Filesystem	Working	It' s not finished about investigation of this item yet.
8			
9			
10			