
Subject: Set thread priority for linux

Posted by [tojocky](#) on Sat, 02 Jun 2012 16:50:31 GMT

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Hello,

Having some experience with thread priority on linux I propose to implment Thread::Priority(int);

Ok the implementation for linux is:

```
....
#ifdef PLATFORM_POSIX
int policy, res;
struct sched_param param;

if ((res = pthread_getschedparam(handle, &policy, &param)) != 0){
    return;
    //TODO: should returns the error
}
if(percent <= 25){
    policy = SCHED_IDLE;
    param.sched_priority = (sched_get_priority_max(policy) -
sched_get_priority_min(policy))*percent/25;
}else if(percent <= 75){
    policy = SCHED_BATCH;
    param.sched_priority = (sched_get_priority_max(policy) -
sched_get_priority_min(policy))*(percent-25)/50;
}else if(percent <= 125){
    policy = SCHED_OTHER;
    param.sched_priority = (sched_get_priority_max(policy) -
sched_get_priority_min(policy))*(percent-75)/50;
}else if(percent <= 175){// should be a root
    policy = SCHED_FIFO;
    param.sched_priority = (sched_get_priority_max(policy) -
sched_get_priority_min(policy))*(percent-125)/50;
}else{
    policy = SCHED_RR;
    param.sched_priority = (sched_get_priority_max(policy) -
sched_get_priority_min(policy))*(minmax(percent, 175, 225)-175)/25;
}

if ((res = pthread_setschedparam(handle, policy, &param)) != 0){
    return;
    //TODO: should returns the error
}
#endif
....
```

and the hole method:

```
void Thread::Priority(int percent)
{
    ASSERT(IsOpen());
#ifdef PLATFORM_WIN32
    int prior;
    if(percent <= 25)
        prior = THREAD_PRIORITY_LOWEST;
    else if(percent <= 75)
        prior = THREAD_PRIORITY_BELOW_NORMAL;
    else if(percent <= 125)
        prior = THREAD_PRIORITY_NORMAL;
    else if(percent <= 175)
        prior = THREAD_PRIORITY_ABOVE_NORMAL;
    else
        prior = THREAD_PRIORITY_HIGHEST;
    SetThreadPriority(handle, prior);
#endif
#ifdef PLATFORM_POSIX
    int policy, res;
    struct sched_param param;

    if ((res = pthread_getschedparam(handle, &policy, &param)) != 0){
        return;
        //TODO: should returns the error
    }
    if(percent <= 25){
        policy = SCHED_IDLE;
        param.sched_priority = (sched_get_priority_max(policy) -
        sched_get_priority_min(policy))*percent/25;
    }else if(percent <= 75){
        policy = SCHED_BATCH;
        param.sched_priority = (sched_get_priority_max(policy) -
        sched_get_priority_min(policy))*(percent-25)/50;
    }else if(percent <= 125){
        policy = SCHED_OTHER;
        param.sched_priority = (sched_get_priority_max(policy) -
        sched_get_priority_min(policy))*(percent-75)/50;
    }else if(percent <= 175){// should be a root
        policy = SCHED_FIFO;
        param.sched_priority = (sched_get_priority_max(policy) -
        sched_get_priority_min(policy))*(percent-125)/50;
    }else{
        policy = SCHED_RR;
        param.sched_priority = (sched_get_priority_max(policy) -
        sched_get_priority_min(policy))*(minmax(percent, 175, 225)-175)/25;
```

```
}  
  
if ((res = pthread_setschedparam(handle, policy, &param)) != 0){  
    return;  
    //TODO: should returns the error  
}  
#endif  
}
```

Any comments are welcome!

Best regards,
Ion.

Subject: Re: Set thread priority for linux
Posted by [mirek](#) on Sun, 03 Jun 2012 11:15:24 GMT
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I would like to add this patch, but (Ubuntu 10.04):

```
/home/cxl/upp.src/uppsrc/Core/Mt.cpp: In member function 'void Upp::Thread::Priority(int)':  
/home/cxl/upp.src/uppsrc/Core/Mt.cpp:255:12: error: 'SCHED_IDLE' was not declared in  
this scope
```

...I guess more work is needed to resolve all compatibility issues.

It has to work with Debian since 5, FreeBSD, MacOSX.

Mirek

Subject: Re: Set thread priority for linux
Posted by [tojocky](#) on Sun, 03 Jun 2012 13:17:10 GMT
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mirek wrote on Sun, 03 June 2012 14:15: I would like to add this patch, but (Ubuntu 10.04):

```
/home/cxl/upp.src/uppsrc/Core/Mt.cpp: In member function 'void Upp::Thread::Priority(int)':  
/home/cxl/upp.src/uppsrc/Core/Mt.cpp:255:12: error: 'SCHED_IDLE' was not declared in  
this scope
```

...I guess more work is needed to resolve all compatibility issues.

It has to work with Debian since 5, FreeBSD, MacOSX.

Mirek

You are right,
Sorry, I don't use old versions.

Please try this one:

```
void Thread::Priority(int percent)
{
    ASSERT(IsOpen());
#ifdef PLATFORM_WIN32
    int prior;
    if(percent <= 25)
        prior = THREAD_PRIORITY_LOWEST;
    else if(percent <= 75)
        prior = THREAD_PRIORITY_BELOW_NORMAL;
    else if(percent <= 125)
        prior = THREAD_PRIORITY_NORMAL;
    else if(percent <= 175)
        prior = THREAD_PRIORITY_ABOVE_NORMAL;
    else
        prior = THREAD_PRIORITY_HIGHEST;
    SetThreadPriority(handle, prior);
#endif
#ifdef PLATFORM_POSIX
    int policy, res;
    struct sched_param param;

    if ((res = pthread_getschedparam(handle, &policy, &param)) != 0){
        return;
        //TODO: should returns the error
    }
    int percen_min, percen_max;
    if(percent <= 25){
#ifdef SCHED_IDLE
        policy = SCHED_IDLE;
        percen_min = 0;
        percen_max = 25;
#elif defined(SCHED_BATCH)
        policy = SCHED_BATCH;
        percen_min = 0;
        percen_max = 75;
#else
        policy = SCHED_OTHER;
        percen_min = 0;
        percen_max = 125;
#endif
    }else if(percent <= 75){
```

```

#if defined(SCHED_IDLE)
policy = SCHED_BATCH;
percen_min = 25;
percen_max = 75;
#elif defined(SCHED_BATCH)
policy = SCHED_BATCH;
percen_min = 0;
percen_max = 75;
#else
policy = SCHED_OTHER;
percen_min = 0;
percen_max = 125;
#endif
}else if(percent <= 125){
policy = SCHED_OTHER;
#if defined(SCHED_IDLE)
percen_min = 75;
percen_max = 125;
#elif defined(SCHED_BATCH)
percen_min = 25;
percen_max = 125;
#else
percen_min = 0;
percen_max = 125;
#endif
}else if(percent <= 175){// should be a root
policy = SCHED_FIFO;
percen_min = 125;
percen_max = 175;
}else{
policy = SCHED_RR;
}
param.sched_priority = (sched_get_priority_max(policy) -
sched_get_priority_min(policy))*(minmax(percent, percen_min,
percen_max)-percen_min)/(percen_max - percen_min);

if ((res = pthread_setschedparam(handle, policy, &param)) != 0){
// don't have privileges? I'm trying maxim possible! I do not use EPERM because not all os
support this one
policy = SCHED_OTHER;
percen_max = 125;
percen_min = minmax(percen_min, 0, percen_max);
param.sched_priority = (sched_get_priority_max(policy) -
sched_get_priority_min(policy))*(minmax(percent, percen_min,
percen_max)-percen_min)/(percen_max - percen_min);
if ((res = pthread_setschedparam(handle, policy, &param)) != 0){
return;
//TODO: should returns the error

```

```
}  
}  
#endif  
}
```

I have checked this functionality for MacOS, iOS, Linux and freebsd if it exists. My code I compared with QT.

Thank you Mirek!

Ion.

Subject: Re: Set thread priority for linux
Posted by [mirek](#) on Fri, 08 Jun 2012 17:29:58 GMT
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Applied. Thanks.

Subject: Re: Set thread priority for linux
Posted by [tojocky](#) on Fri, 08 Jun 2012 18:26:21 GMT
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mirek wrote on Fri, 08 June 2012 20:29Applied. Thanks.
Thank you Mirek!

Subject: Re: Set thread priority for linux
Posted by [tojocky](#) on Fri, 08 Jun 2012 20:12:14 GMT
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mirek wrote on Fri, 08 June 2012 20:29Applied. Thanks.

Mirek,

It is my mistake, please change from "percen_" into "percent_".

Thank you in advance.