

Process of local installation of **ISPadmin** system to software RAID1



In order to set-up the disc field and to implement the local installations at least elementary knowledge of Linux system is needed, therefore this installation is recommended to more experienced users, otherwise you can choose the easier installation described in the instruction "**Process of distant installation**" see http://www.ispadmin.cz/download/ISPadmin-remote_installation.pdf.

The following process will guide you in individual steps through the preparation of the disc field, the installation and the resulting configuration of ISPadmin system.

The installation of ISPadmin system is made from the installation CD. This medium is possible to get in two ways, as a **promotional CD**, which you can ask for free at presentation activities and conferences, which our firm takes part in. Or in a more common way, you can download the **ISO** picture of the installation CD from our FTP server:

ftp.net-service.cz

user: **ispadmin@ispadmin.cz**
pass: **ispadmin**

Insert the installation CD in the mechanics and choose *boot from cd* in BIOS setting. After the system is downloaded, the preparation of the installation environment passes off and the command line is displayed. Now you can start work locally or get connected to the server by means of SSH service, which you need the following data for: ip: **192.168.1.100** user: **root**
pass: **ispadmin**

1. Setting disk partitions

The example installation will suppose two SATA disks, which will be set as mirrors after the creation. The first one is connected as **/dev/sda** and the second one as **/dev/sdb**.

You create new disk partitions that will be needed for the creation of software raid and storage space. First create the first prime partition, where the system will be installed. The size of the 1st partition can be determined, if you take the space appropriate to storage space 2 – 4 GB away from the maximum disk size. Afterwards you create the second prime partition from the free space left, where the SWAP will be located.

If a sw raid is already active, you must cancel it, otherwise it would not be possible to handle the disc partitions. If it is not, go ahead.

```
mdadm --manage --stop /dev md0
```

Start the program **fdisk** with the parameter **/dev/sda**, which is the first disk.

```
fdisk /dev/sda
```

```
Device contains neither a valid DOS partition table, nor Sun, SGI or OSF disklabel
Building a new DOS disklabel. Changes will remain in memory only,
until you decide to write them. After that, of course, the previous
content won't be recoverable.
```

```
The number of cylinders for this disk is set to 38913.
There is nothing wrong with that, but this is larger than 1024,
and could in certain setups cause problems with:
 1) software that runs at boot time (e.g., old versions of LILO)
 2) booting and partitioning software from other OSs
   (e.g., DOS FDISK, OS/2 FDISK)
Warning: invalid flag 0x0000 of partition table 4 will be corrected by w(rite)
```

Display the disc partitions, eventually the ones created earlier can be removed with the command "**d**" so the disc is completely empty.

```
Command (m for help): p
```

```
Disc /dev/sda: 320.0 GB, 320072933376 bytes
255 heads, 63 sectors/track, 38913 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
```

Device	Boot	Start	End	Blocks	Id	System
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If the disc is empty, start creating the prime section.

```
Command (m for help): n          ### <n> is command for creating the prime section
Command action
  e   extended
  p   primary partition (1-4)
p          ### to create the new prime section, press <p>
Partition number (1-4): 1        ### it is the first section
First cylinder (1-38913, default 1):
Using default value 1           ### the first section always starts with cylinder 1, what is automatically offered by fdisk ,
                                   <Enter>
Last cylinder or +size or +sizeM or +sizeK (1-38913, default 38913): +316G
                                   ### Instead of the number of cylinders, you can enter the size in Mega or Giga
```

Similarly, you create storage space for SWAP in the free space left.

```
Command (m for help): n
Command action
  e   extended
  p   primary partition (1-4)
P
Partition number (1-4): 3
First cylinder (38001-38913, default 38001):
Using default value 38001      ### fdisk will again offer the first free cylinder,, confirm with <Enter>
Last cylinder or +size or +sizeM or +sizeK (38001-38913, default 38913):
Using default value 38913     ### Last free cylinder at the end of the disc is again offered automatically, so just press
                               ENTER. The second partition will be created to the end of the disc.
```

Display the list of partitions to make sure that the partitions created are of the sizes needed. If not, cancel all partitions and start again.

```
Command (m for help): p      ### display the partitions created

Disk /dev/sda: 320.0 GB, 320072933376 bytes
255 heads, 63 sectors/track, 38913 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
```

Device	Boot	Start	End	Blocks	Id	System
/dev/sda1		1	38000	305234968+	83	Linux
/dev/sda2		38001	38913	7333672+	83	Linux

The first partition must be the type **FD (Raid Autodetect)** and the second one for SWAP is the type **82 (Linux swap / Solaris)**

```
Command (m for help): t
Partition number (1-4): 1
Hex code (type L to list codes): fd
Changed system type of partition 1 to fd (Linux raid autodetect)
```

```
Command (m for help): t
Partition number (1-4): 2
Hex code (type L to list codes): 82
Changed system type of partition 1 to fd (Linux swap / Solaris)
```

Further, set the booting for the first partition, where the system will be installed.

```
Command (m for help): a
Partition number (1-4): 1
```

Check the setting again if everything is OK (sizes and types of partitions as well as the boot mark in the first partition).

```
Command (m for help): p

Disk /dev/sda: 320.0 GB, 320072933376 bytes
255 heads, 63 sectors/track, 38913 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes

   Device Boot      Start         End      Blocks   Id  System
/dev/sda1  *           1         38000   205234968+  fd  Linux raid autodetect
/dev/sda2                38001        38913     7333672+  82  Linux swap / Solaris
```

The last step in program **fdisk** is saving the changes made to the disc by entry to the table MBR.

```
Command (m for help): w
The partition table has been altered!

Calling ioctl() to re-read partition table.
Syncing disks.
```

So the settings of the first partition **dev/sda** is done. Now you apply the same process to the disc **/dev/hdb**. Run **fdisk** with parameter **/dev/sdb** and repeat the previous process with the second disc.

The partitions created in the both discs must be of the same size!

2. Creating the disc field RAID1 (mirror) and formatting

Now RAID1 (mirror) needs to be created from the first partitions of both discs **/dev/sda1** and **/dev/sdb1**. To do so, use the command

```
mdadm --create /dev/md0 --level=1 --raid-devices=2 /dev/sda1 /dev/sdb1
```

```
mdadm: array /dev/md0 started.
```

The state of raid can be displayed with the command

```
more /proc/mdstat
```

```
Personalities : [raid0] [raid1] [raid10] [raid6] [raid5] [raid4] [multipath] [faulty]
md0 : active raid1 sdb1[1] sda1[0]
      306841344 blocks [2/2] [UU]
      [=>.....] resync = 5.2% (16186816/306841344) finish=41.2min speed=117548K/sec

unused devices: <none>
```

Here you can see that the field is called **/dev/md0**, it is active (**md0 : active raid1**), it is set up of two discs (**sdb1[1] sda1[0]**), two of two discs are in the state "U", which means UP (**[2/2] [UU]**) and the time of synchronization completion is 41 min. After finishing the field will be fully redundant. The speed of mirroring is currently 117MB/sec.

Finally format the partitions. Be aware that formatting larger discs can take up to several minutes.

```
mke2fs -j /dev/md0          ### format the first partition to the file system ext3
mkswap /dev/sda2         ### creating file system for storage space in the second partition of the first disc
mkswap /dev/sdb2         ### creating file system for storage space in the second partition of the second disc
```

3. Unpacking data archive

Check the availability of the source archive **ispadmin.tgz**, that should be found in the directory **/install of the CD** . If not, it needs to be copied to the installation system from the installation CD with the program **scp**, or **winscp** from the other PC.

```
ls -al /install          ### The list of the directory content with the files in the installation CD
```

Add the system partition to the directory **/hd** and then unpack the data from the archive **ispadmin.tgz** there.

```
mount /dev/md0 /hd      ### connecting the disc created to the directory /hd., where you unpack the installation files
tar xvzf /install/ispadmin.tgz -C /hd ### this command runs unpacking the installation archive to the disc created
```

Adjustment of the partitions in the configuration file **/etc/fstab**. Adjust according to the following sample.

```
pico -w /hd/etc/fstab
```

```
/dev/md0    /      ext3    errors=remount-ro      0    1
proc        /proc  proc    rw,nodev,nosuid,noexec 0    0
/dev/sda2   none   swap    sw                       0    0
/dev/sdb2   none   swap    sw                       0    0
```

4. LILO boot loader setting

After finishing the installation you need to set the boot sector and to create a boot loader, so switch to the new disc and adjust the file **/etc/lilo.conf**

```
chroot /hd
```

```
pico -w /etc/lilo.conf
```

```
prompt
disk=/dev/md0
# bios=0x80
timeout=20
default=ISP_admin_64
boot=/dev/md0
map=/boot/map
raid-extra-boot=mbr-only # un-hash the line
root=/dev/md0

image=/boot/vmlinuz-2.6.27.7
```

```
label=ISP_admin_64
read-only
```

Then run the program **lilo** to create a boot sector

lilo

```
Warning: '/proc/partitions' does not exist, disk scan bypassed
Added ISP_admin_64 *
The Master boot record of /dev/sda has been updated.
Warning: /dev/sdb is not on the first disk
The Master boot record of /dev/sdb has been updated.
```

Finally you leave the chroot environment with the command **exit**

exit

5. Connection setting

In order to start the server with the new IP address, not the default one 192.168.1.100, you have to enter the new address data to **/hd/etc/rc.local: IP address, net mask and gateway**. Preset addresses are enough to overwrite at the commands **ifconfig** and **route**.

pico -w /hd/etc/rc.local

Umount the disc with new installation

umount /hd

Eject the CD from the mechanics so the new installation system is loaded, not the installation CD.

eject

If the CDRom is in the interface SATA, everything is OK. If it is IDE, it is necessary to enter which block device it is.

eject /dev/hdc

You can get to the situation when you cannot control the cd mechanics (especially with USB interface and some SATA mechanics) by means of a remote administration. Solving this problem requires manual action. On completion of installation with technical support, it is necessary to eject the installation CD manually. After the subsequent restart the server installed will boot well from the hard disk.

Finally restart the system in order to launch the already installed system.

reboot -f

After the subsequent restart the new system is launched. If not, check the boot sequence in BIOS setting and set the first item to the system disk.

If everything is done well, the system is loaded and it is possible to log in. The initial accesses for login are preset like this:

Distant log in SSH	user: root	Access to the ISP admin over web	user: admin
	pass: ispadmin		pass: ispadmin

6. Configuration installation

After completing the installation the system is yet to be configured according to the domain names, for which you have to create two DNS records directed to IP address of the server installed. The DNS records can be chosen for your own use, but the name chosen must be at least the domain of the third order.

For example:

Administrator interface:	admin.vasefirma.cz, sprava.vasefirma.cz, ...
User interface:	client.vasefirma.cz, zakaznik.vasefirma.cz, portal.vasefirma.cz, ...

If the DNS records created are indicative of your server well, test the records with the command **ping**, then you can continue with the system configuration.

ping admin.vasefirma.cz

```
Order PING to vasefirma.cz [81.0.237.137] - 32 bytes of dates:
...
Statistics ping for 81.0.237.137:
Packets: Sent = 4, Received = 4, Lost = 0 (Waste 0%)
```

For our purposes we can suppose that the IP address of the server is 10.0.0.1 NAT to 81.0.237.137. The DNS records then indicates IP 81.0.237.137 and server has the IP address set to 10.0.0.1

To the file **/etc/hostname** enter the name of the server: `„ admin.vasefirma.cz ”`

```
pico -w /etc/hostname
```

```
To the file /etc/guest the IP address and hostname is entered like this:      „ 10.0.0.1      admin.vasefirma.cz
klient.vasefirma.cz”
```

```
pico -w /etc/hosts
```

In the file `/etc/httpd/conf/httpd.conf` permit `NameVirtualHost` directive and adjust the addresses marked so the file looks like this:

```
pico -w /etc/httpd/conf/httpd.conf
```

```
#Listen 81                                     ### hash the port 81 at the beginning
#Listen 82
#Listen 84

options FollowSymLinks

NameVirtualHosts 10.0.0.1:80                   ### set the address for virtual guests and relevant ports
NameVirtualHost 10.0.0.1:443

### ISP Admin
<VirtualHost admin.ispadmin.cz:80>           ### adapt the domain name for unsecured access
    DocumentRoot "/data/support_nossl/"
</VirtualHost>

## ISP Admin SSL
<VirtualHost admin.ispadmin.cz:443>         ### adapt the domain name for safe access
    DocumentRoot "/data/support/ispadmin/"
    AddDefaultCharset Windows-1250
    <Directory /data/support/ispadmin/>
        Options ExecCGI
        AllowOverride All
    </Directory>
    CustomLog /var/log/apache2/access_support_ispadmin.log combined
    AddType application/x-httpd-php .php .php3 .php4
    php_admin_value open_basedir "/data/support/:/tmp/:/data/"
    php_admin_value include_path "./usr/local/lib/php/:/tmp/"
    php_admin_value disable_functions "openlog, exec, passthru, proc_open, proc_close, shell_exec"
    php_admin_value display_errors "On"
    php_admin_value safe_mode "Off"
    php_admin_value register_globals "On"
    php_admin_value sendmail_path "/usr/sbin/sendmail -t -i -f webmaster@ispadmin.cz"

    ### un-hash the following part and so activate HTTPS for higher security
    SSLEngine on
    SSLCipherSuite ALL:!ADH:!EXPORT56:RC4+RSA:+HIGH:+MEDIUM:+LOW:+SSLv2:+EXP:+eNULL
    SSLCertificateFile /etc/httpd/conf/cert/server.crt
    SSLCertificateKeyFile /etc/httpd/conf/cert/server.key
    SSLCertificateChainFile /etc/httpd/conf/cert/ca.crt
    SetEnvIf User-Agent ".*MSIE.*" \
        nokeepalive ssl-unclean-shutdown \
        downgrade-1.0 force-response-1.0
</VirtualHost>

## ISP Admin support SSL
<VirtualHost klient.ispadmin.cz:80>         ### set the domain name of the user interface of clients. Here the interface is based on
    http and not on https, because if a certificate is not granted by a certification authority for https, the attempt to enter the page with IE is followed with
    an error display regarding the certification validity and the entry to the page is not recommended. The users may be then puzzled.

    DocumentRoot "/data/support/ispadmin_support/"
    AddDefaultCharset Windows-1250
    CustomLog /var/log/apache2/access_support_ispadmin_support.log combined
    AddType application/x-httpd-php .php .php3 .php4
    php_admin_value open_basedir "/data/support/ispadmin_support/"
    php_admin_value include_path "./usr/local/lib/php/"
    php_admin_value disable_functions "openlog, exec, passthru, proc_open, proc_close, shell_exec"
    php_admin_value display_errors "On"
    php_admin_value safe_mode "Off"
    php_admin_value register_globals "On"

# SSLEngine on
# SSLCipherSuite ALL:!ADH:!EXPORT56:RC4+RSA:+HIGH:+MEDIUM:+LOW:+SSLv2:+EXP:+eNULL
# SSLCertificateFile /etc/httpd/conf/cert/server.crt
# SSLCertificateKeyFile /etc/httpd/conf/cert/server.key
# SSLCertificateChainFile /etc/httpd/conf/cert/ca.crt
# SetEnvIf User-Agent ".*MSIE.*" \
#     nokeepalive ssl-unclean-shutdown \
#     downgrade-1.0 force-response-1.0
</VirtualHost>
```

7. Password setting

Furthermore, you enter the initial passwords into the SQL database, the hints can be displayed with the command

```
/usr/local/script/ispadmin/ispadmin_change_pass.pl
```

Change of the administrator's password SQL DB "root"

```
/usr/local/script/ispadmin/ispadmin_change_pass.pl mysql_root ispadmin nové_heslo
```

Change of the user's password SQL DB "ispadmin"

```
/usr/local/script/ispadmin/ispadmin_change_pass.pl ispadmin ispadmin nové_heslo
```

Change also the user's password root for the access through SSH

```
passwd root
```

Restart the server again with the command **reboot** so all the changes appear

```
reboot
```

After the system restarts with the initial data (user: admin pass: ispadmin) log in to the web interface and change the admin's password "admin" in the bookmark "Settings / Administrators" to yours, which is safer.

8. License activation

In order to use the system ISPamin fully you need to buy and then activate the license for certain number of users.

The file **licence.php**, which you get via email, needs to be copied to the directory **/data/support/ispadmin/config/**.

You can use the program **scp**, or from the windows **winscp**, which is possible to download at <http://www.winscp.org>, to copy the files to the server.

Finally you need to enter the valid license key to the file **/data/vulture - port/ispadmin/config/config.php**
for example: KEY = 23- A8B2- 12D3.

When you log in next time, your installation will be active.

Then the whole installation is completed.