

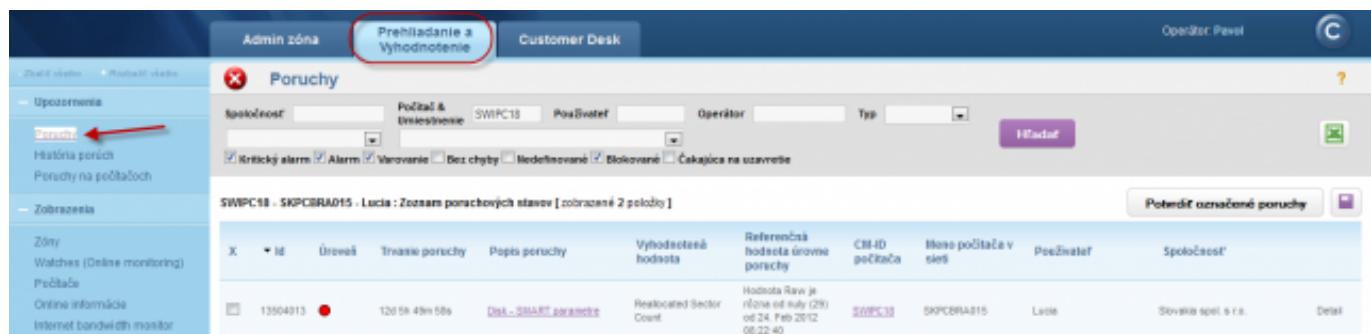
[View of errors and current historical data of parameters indicating the health of drive on CM Portal](#)

[Remote tests of hard drives](#)

Example of remote tests result - [faultless state of disk, defective disk](#)

[View of errors and current historical data of parameters indicating the health of drive on CM Portal](#)

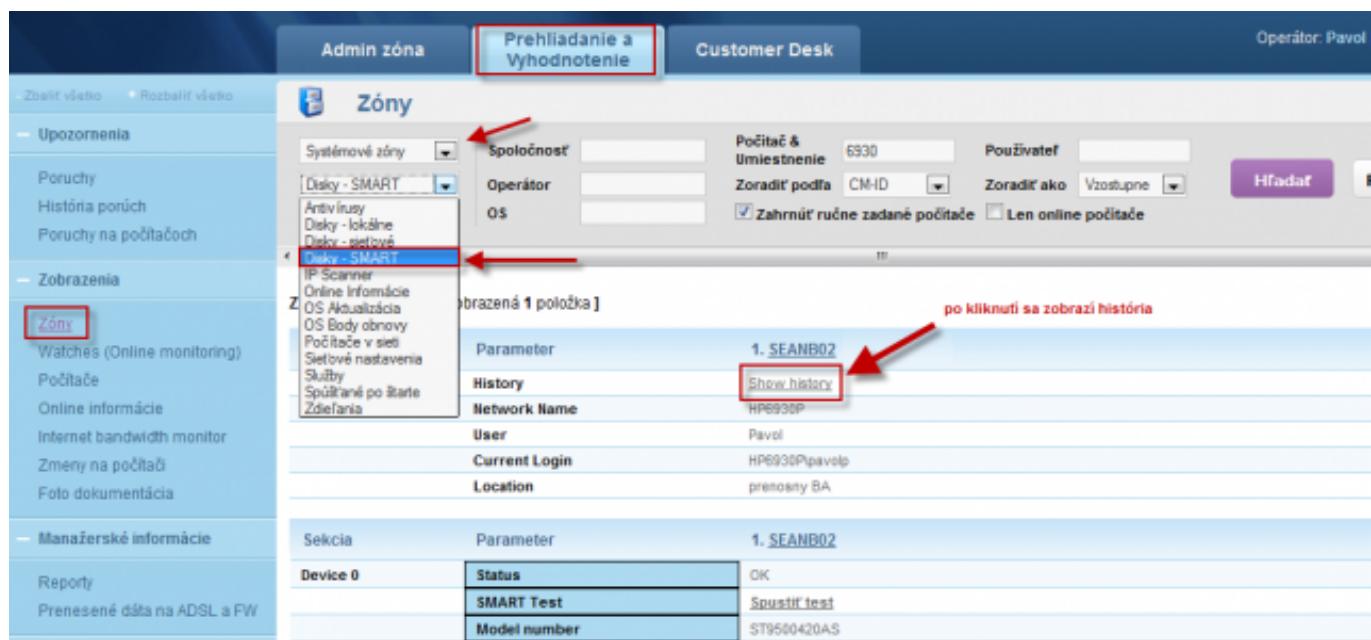
Health of disks is checked automatically on each PC, where C-Monitor client is installed, by monitoring of S.M.A.R.T. parameters. If status of the critical parameters gets worse, the operator is informed that the disk's health has worsen, automatically by an email message. The status will also appear in errors of the given customer. To remove the error, you must first confirm it. If you select perfect condition of disk at the confirmation, the error will disappear. The error will also disappear, when the disk is replaced by a faultless one, and then full descript on PC runs normally. If by testing you find out that the disk is indeed defective, then select the option to confirm defective disk, after which the error will be marked by a green tick and remains in the list of errors until the disk is replaced by a faultless one.



X	ID	Úvodní	Trvanie poruchy	Popis poruchy	Vyhodnotení hodiska	Referenčná hodnota úrovne poruchy	CM-ID počítača	Meno počítača v sieti	Poznatek	Spoločnosť
	13504913	●	12d 5h 49m 58s	Disk - SMART parametre	Reallocated Sector Count	Hodnota Raw je rôzna od nuly (29) od 24. Feb 2012 08:22:40	SWIPC18	SKPCBRA015	Ladislav	Slovenské spol. s.r.o.

Image: Poruchy SMART parametrov

Information about the current state of local disks are gathered on CM portal in the section *Presentation and Evaluation* -> *Presentation* -> *Zones* -> *Zone Disks - SMART* as displayed on the next image.

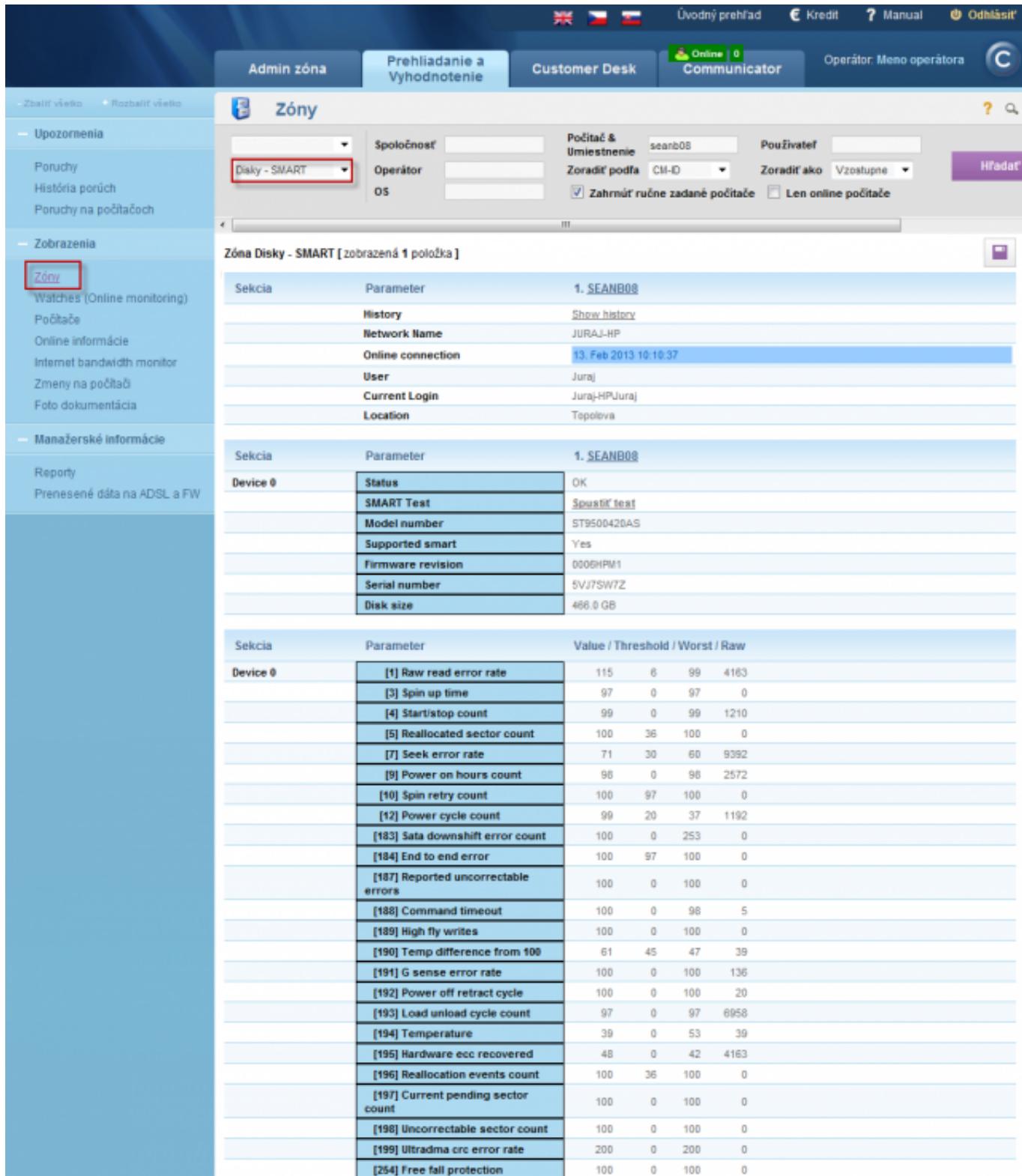


Parameter	1. SEANB02
History	Show history
Network Name	HP6936P
User	Pavol
Current Login	HP6936Ppavolp
Location	prenosny BA

Parameter	1. SEANB02
Status	OK
SMART Test	Spustiť test
Model number	ST9500420AS

Image: Zobrazenie zóny Disky - S.M.A.R.T s možnosťou zobrazenia histórie

The next image shows the current state of S.M.A.R.T parameters. If the values aren't red, the disk should be fine. By clicking on a PC name, you'll see the history of SMART parameters changes.



The screenshot shows the Customer Monitor web interface. The top navigation bar includes links for English, Polish, and Czech, along with options for 'Úvodný prehľad' (Home), 'Kredit' (Credit), 'Manual', and 'Odhlásiť' (Logout). The main menu on the left has sections for 'Admin zóna', 'Prehliadanie a Vyhodnotenie', 'Customer Desk', and 'Communicator'. The 'Customer Desk' tab is active, showing a sub-menu for 'Zóny' (Zones) which is highlighted with a red box. Other options in this menu include 'Watches (Online monitoring)', 'Počítače', 'Online informácie', 'Internet bandwidth monitor', 'Zmeny na počítači', and 'Foto dokumentácia'. Below this is a section for 'Manažerské informácie' with 'Reporty' and 'Prenesené dátá na ADSL a FW'. The central content area displays the 'Disky - SMART' zone details. It includes fields for 'Spoločnosť' (Company) set to 'seanb08', 'Počítač & Umiestnenie' (Computer & Location) set to 'seanb08', 'Operátor' (Operator) set to 'JURAJ-HP', 'Zoradiť podľa' (Sort by) set to 'CPU-ID', 'OS' (Operating System) set to 'Windows 7 Pro', and checkboxes for 'Zahrnúť ručne zadané počítače' (Include manually entered computers) and 'Vzostupne' (Ascending). A large table lists SMART parameters for 'Device 0'. The columns are 'Sekcia' (Section), 'Parameter', and 'Value / Threshold / Worst / Raw'. The table contains 26 rows of SMART parameters, each with numerical values for Value, Threshold, Worst, and Raw. The first few rows show values like 115, 6, 99, 4163 for raw read error rate, and 97, 0, 97, 0 for spin up time.

Sekcia	Parameter	Value / Threshold / Worst / Raw
Device 0	[1] Raw read error rate	115 6 99 4163
	[3] Spin up time	97 0 97 0
	[4] Start/stop count	99 0 99 1210
	[5] Reallocated sector count	100 36 100 0
	[7] Seek error rate	71 30 60 9392
	[9] Power on hours count	98 0 98 2572
	[10] Spin retry count	100 97 100 0
	[12] Power cycle count	99 20 37 1192
	[183] Sata downshift error count	100 0 253 0
	[184] End to end error	100 97 100 0
	[187] Reported uncorrectable errors	100 0 100 0
	[188] Command timeout	100 0 98 5
	[189] High fly writes	100 0 100 0
	[190] Temp difference from 100	61 45 47 39
	[191] G sense error rate	100 0 100 136
	[192] Power off retract cycle	100 0 100 20
	[193] Load unload cycle count	97 0 97 6958
	[194] Temperature	39 0 53 39
	[195] Hardware ecc recovered	48 0 42 4163
	[196] Reallocation events count	100 36 100 0
	[197] Current pending sector count	100 0 100 0
	[198] Uncorrectable sector count	100 0 100 0
	[199] Ultradrma crc error rate	200 0 200 0
	[264] Free fall protection	100 0 100 0

Image: Zobrazenie aktuálneho stavu S.M.A.R.T parametrov pre konkrétny počítač

There are four values for each parameter. Columns:

Value - a constant defined by SMART standard (current value)

Threshold - a value, below which Value cannot go, otherwise the disk is defective

Worst - the worst recorded value so far

RAW - absolute value of the monitored parameter (e.g. number of reallocated sectors)

Critical S.M.A.R.T parameters evaluated in CM according to increase of error events

Reallocated Sectors Count: The number of sectors, that were marked as inapplicable by the disk's electronics, and the data was moved to another sector. The data transfer doesn't mean the data has been damaged, though for an increasing amount of bad sectors, the reading and writing speed decreases. This doesn't mean that these sectors will be displayed as bad when we'd scan the disk. Modern disks have an area of sectors, which they use to replace bad sectors, if there are any found.

Reallocation Events Count: Total number of both successful and unsuccessful tries to move data from damaged sectors.

Current Pending Sector Count: Number of sectors in the failing state. If the operation of writing and check of the written data is successful, the sector is classified as functional. Otherwise, the system will try to transfer these data.

Uncorrectable Sector Count: Number of permanently damaged sectors. The higher this number is, the bigger is the risk of failure of the entire disk.

Other parameters evaluated in CM only by Value reaching a value under Threshold

Read Error Rate: Errors of data reading. Any deficiencies in this area refer to an error of reading heads or the disc surface. Intensive increasing of defectiveness almost always leads to irreversible data losses.

Spin Retry Count: Number of repeated tries to spin the discs. An increasing value indicates a problem with the engine, or the control electronics.

Spin-up Time: Time, in which the drive's discs spin up to the operating speed. Its increasing indicates malfunction of the engine, or eventually of the control electronics. When combined with high temperature, it's most likely a case of worn bearings.

Start/Stop Count: Number of cycles of the disk's turning on/off. High values in combination with a low amount of working time may be caused by bad setup of saving modes (for example turning off the disk after three minutes of inactivity, if data is written every four minutes).

Power On Hours count: Total running time since the disk's production. There's nothing we can do with high values.

Temperature: There can be more than one information, temperature sensors can be found in the disk's body, in the outside environment, as well as inside.

If some parameter values are red, it's necessary to check the disk's status. In C-Monitor version 2.6 and higher, there are [Remote tests of hard drives](#) available, read more in the text below.

If a disk doesn't pass these tests, the user must be notified, that it's effective to replace it, at best along with export of parameter history output. The export is done by clicking on the Excel icon in the top right corner.

If you don't want to use the integrated solution for testing disks via C-Monitor client, you can use the manufacturer's own software for testing potentially defective drives.

Remote tests of hard drives

[**Launch of the remote test from the zone - Disks - S.M.A.R.T**](#)

[**Launch of the remote test from the section Errors**](#)

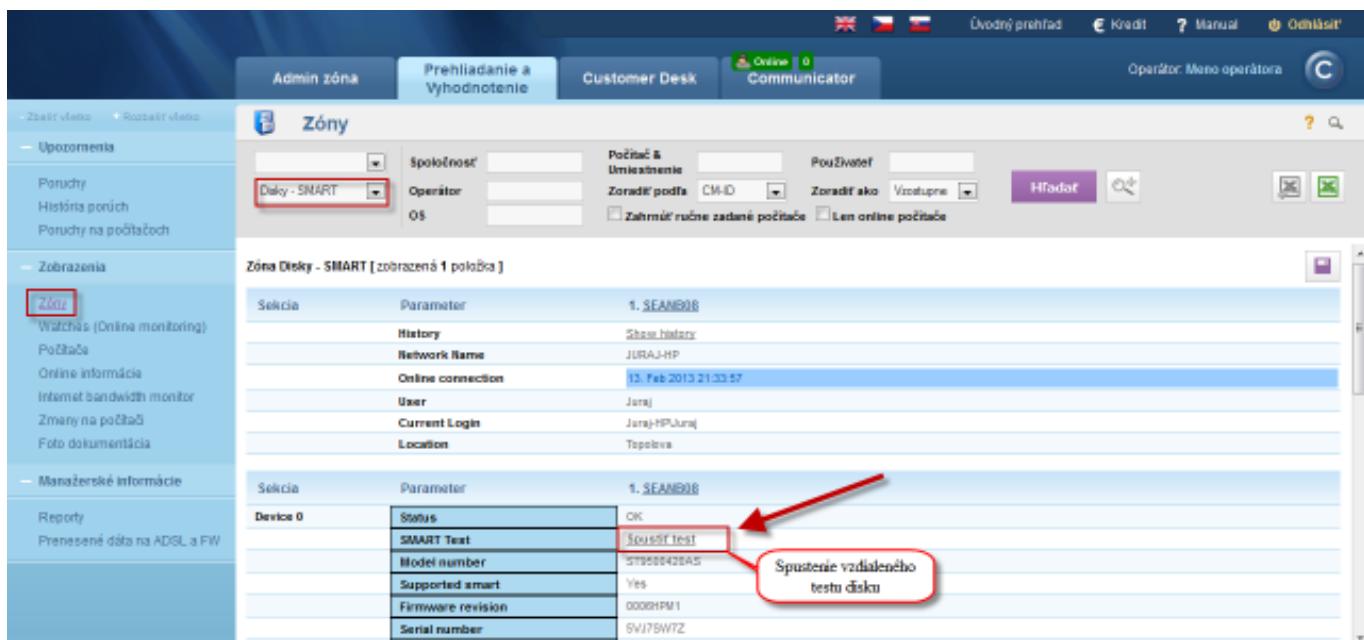
[Launch of the remote test of hard drive from e-mail](#)

[Assessment of the final and ongoing reports from remote drives tests](#)

Since version 2.6, C-Monitor client provides an option to remotely test hard drives. The test of a drive can be launched on several places. The test's result, as well as the ongoing status will be delivered to you by email. During the test, the user may work normally and won't be limited at all, as he won't even be aware that the test is running. Read more information in the text below.

Launch of the remote test from the zone - Disks - S.M.A.R.T

Test of a disk can be carried out directly from the zone Disks - SMART, which is located in the section *Presentation and Evaluation -> Presentation -> Zones -> Zone Disks - SMART*. Search for a specific computer using the upper filter, and press the button *Run test* as displayed on the next image.



Section	Parameter	Value
History	Show history	
Network name	JURAJ-HP	
Online connection	13. Feb 2013 21:33:57	
User	Jura	
Current login	Jura-HP\Jura	
Location	Topelova	

Section	Parameter	Value
Device 0	Status	OK
	SMART Test	Spušťte test
	Model number	ST3500420AES
	Supported smart	Yes
	Firmware revision	0000HPL1
	Serial number	SV17BWTZ

Image: Spustenie vzdialeného testu pevného disku zo zóny diskы-smart

In the next window you can enter any email address of the test result's sender, or keep the default address, and into the field *send test result to address* enter email or emails, to which the result is going to be sent, default address is the currently logged operator's one. Then press *Run test* which triggers an instruction to C-Monitor client to execute the test of drive. Here you can also interrupt a currently running test, as well as request the status of also running tests, which is also going to be sent to your email.

The screenshot shows the Customer Monitor web interface. On the left, there's a sidebar with links like 'Zoznam', 'Upozornenia', 'Poruchy', 'Zobrazenia', 'Manažerské informácie', and 'Reporty'. The main area is titled 'Zóny' (Zones). A red box highlights the 'Disky - SMART' option in the 'Spoločnosť' (Company) dropdown. Below this, there's a section for running SMART tests, with fields for email recipients and test results. The bottom part of the screenshot shows a table of error logs.

Image: Spustenie vzdialeného testu pevného disku zo zóny diskы-smart

Launch of the remote test from the section Errors

Another option to launch the test is in the section *Presentation and Evaluation* -> *Warnings* -> *Errors*, then search for a specific S.M.A.R.T error. In this error's detail, there's a button to launch remote test of the disk, as displayed on the next image. The following window is the same as described for launching the test through the [zone Disks - SMART](#), therefore, all settings are the same as well.

This screenshot shows the 'Poruchy' (Errors) section of the Customer Monitor interface. The sidebar has a red box around the 'Poruchy' link. The main area displays an error detail for ID 13749182. A red arrow points to the 'Spustiť test' (Start test) button in the error detail view.

Image: Spustenie vzdialeného testu pevného disku z poruchy

Launch of the remote test of hard drive from e-mail

For each error that is automatically evaluated on a computer, an information about the error is sent to the operator by email. When one of the important S.M.A.R.T parameters is changed, an error is generated that warns about defective disk. An email is sent to the operator regarding this situation, which is displayed on the next image. A link to execute a remote test of the disk from CM Portal is highlighted in the text. By clicking on this link, you'll be automatically redirected to CM Portal webpage.

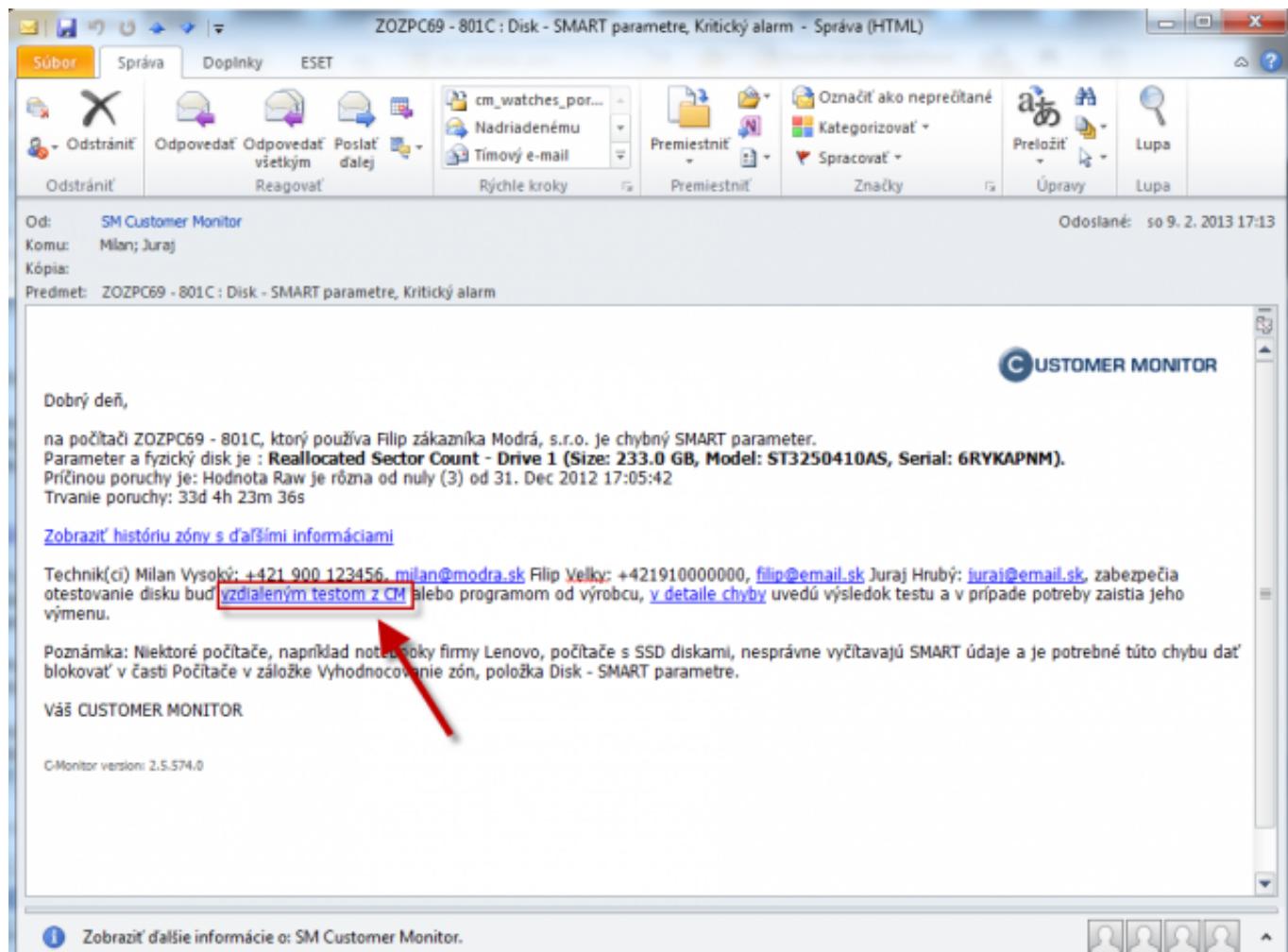
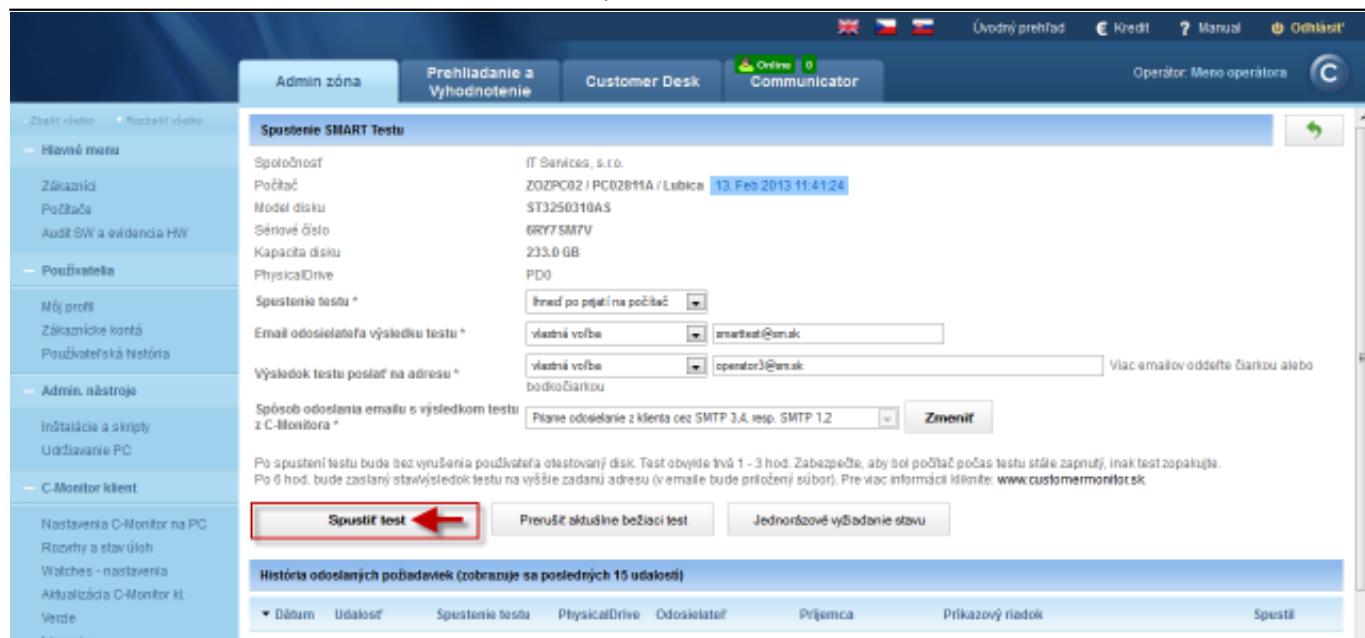


Image: Spustenie vzdialeného testu pevného disku z emailu

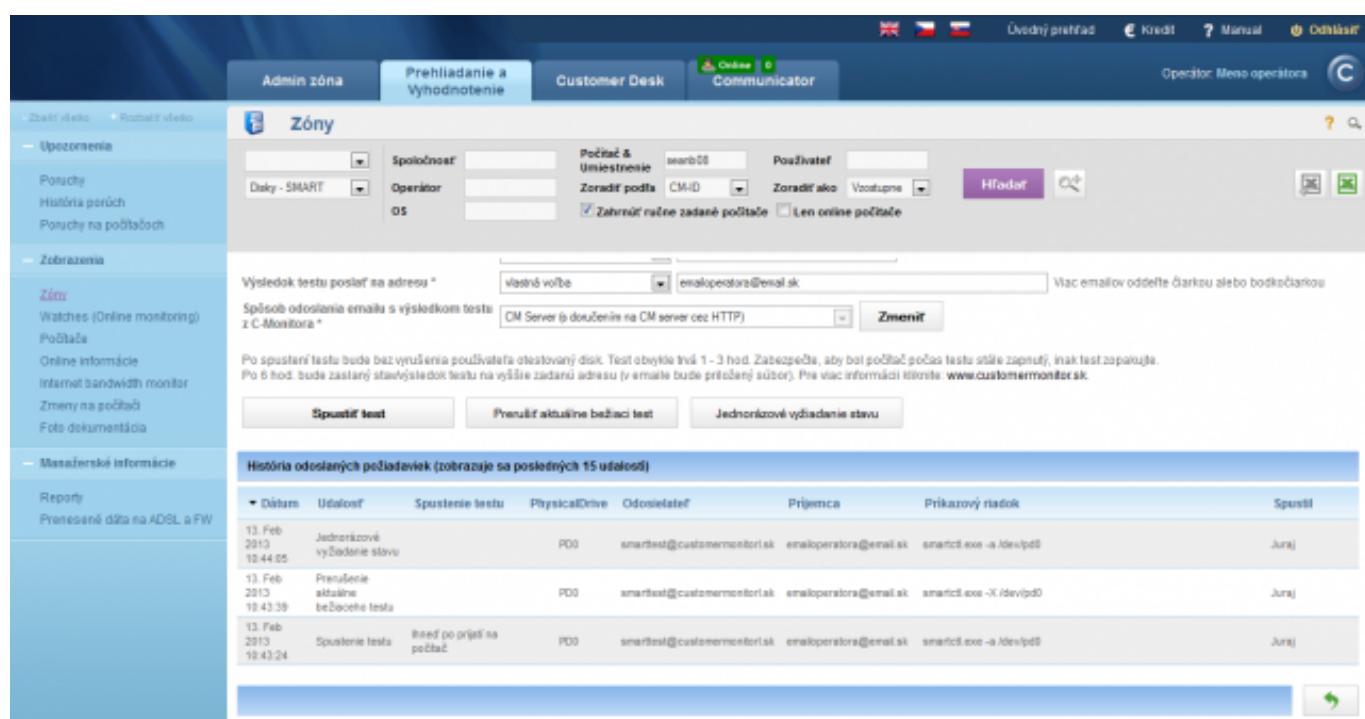
After login to CM portal, you'll see this next window, where you just perform the same settings as are described at launch of the remote test from the section [zone Disks - SMART](#), and start the test



The screenshot shows the 'Spustenie SMART Testu' (Run SMART Test) section. It displays disk details: Spoločnosť (IT Services, s.r.o.), Počítač (Z0ZPC02 / PC02B11A / Lubica), Model disku (ST3250310AS), Sériové číslo (6RY7SM7V), Kapacita disku (233.0 GB), and PhysicalDrive (P00). There are fields for sending test results via email to 'smartest@email.sk' and 'operator3@email.sk'. A note says: 'Po spustení testu bude bez vynúšenia používateľa otestovaný disk. Test trvá 1 - 3 hod. Zabezpečte, aby bol počítač počas testu stále zapnutý, inak test zaneprája. Po 6 hod. bude zaslany stav/výsledok testu na výber zadanú adresu (v emaile bude priložený súbor). Pre viac informácií kliknite: www.customermonitor.sk'. Buttons include 'Spustiť test' (Run test) with a red arrow pointing to it, 'Prenášať aktuálne bežaci test' (Transfer current running test), and 'Jednorázové vyžadenie stavu' (One-time check of status).

Image: Spustenie vzdialeného testu pevného disku z emailu

Logs recording the test's execution, single status requests, as well as completion, are located in the bottom part of the window from where the tests are launched, and are displayed on the next image.



The screenshot shows the 'Zóny' (Zones) section with a search bar and filters for 'Daly - SMART', 'Operator OS', 'Počítač', 'Zoradí podla', 'Zoradí ako', and 'Vzťahy'. It includes checkboxes for 'Zahrnúť našne zadané počítače' and 'Len online počítače'. Below is a table for 'História odoslaných požiadaviek' (History of sent requests) with columns: Dátum (Date), Udalosť (Event), Spustenie testu (Run test), PhysicalDrive (PhysicalDrive), Odosielateľ (Sender), Príjemca (Recipient), Prikazový riadok (Command line), and Spustil (Started by). The table lists three entries related to the SMART test.

Image: Zobrazenie histórie odoslaných požiadaviek SMART testu

Assessment of the final and ongoing reports from remote drives tests

Request for status of a disk's test is performed automatically after 6 hours since the test started. You may request an ongoing status of the test anytime by clicking on the button *onetime check of status*, which is in the same section as the button for the test's execution. Results and status of the

test will be delivered to you by email, which is displayed on the following image. The results are saved in the attachments, marked by an arrow on the image, and it can be opened in the Notepad.

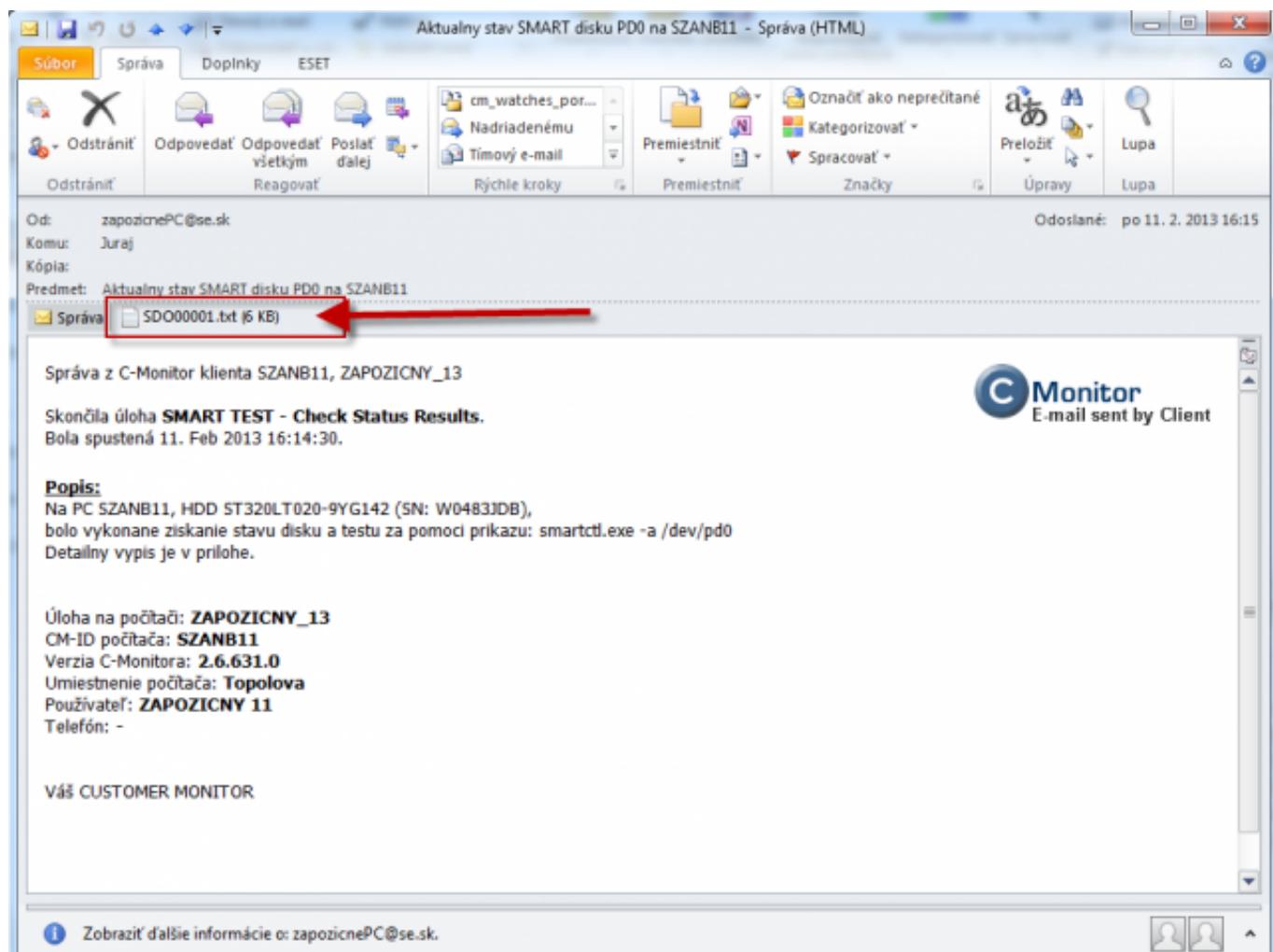


Image: Email s prílohou zobrazujúci priebežný a finálny stav vzdialeného testu disku

After opening the attachment, you'll see a report from the disk's test. Important parts that you should see are displayed on the next image.

First, check if the test ran on the required disk, by capacity or serial number. Sometimes, it might happen that name of the disk has changed after PC restart, and doesn't match the name on CM portal. Disks are only called according to PDx (Physical disk x).

In the bottom part of the report, marked as *SMART Self-test log structure revision number 1*, is the result of the test. Possible final states are described in the text below.

```

SDO0001.txt - Poznámkový blok
Súbor Úpravy Formát Zobrazit' Pomocník
smartctl 6.0 2012-10-10 r3643 [i686-w64-mingw32-win8(64)] (sf-6.0-1)
Copyright (c) 2002-12, Bruce Allen, Christian Franke, www.smartmontools.org

--- START OF INFORMATION SECTION ---
Device Model: ST320LT020-9YG142
Serial Number: W0483JDB
LU WWN Device Id: 5 000c50 0534284e1
Firmware Version: 0003l VM1
User Capacity: 320 072 933 376 bytes [320 GB]
Sector Sizes: 512 Bytes logical, 4096 bytes physical
Rotation Rate: 5455 rpm
Device is: Not in smartctl database [for details use: -P showall]
ATA Version is: ATA8-ACS T13/1699-D revision 4
SATA Version is: SATA 2.6, 3.0 Gb/s (current: 3.0 Gb/s)
Local Time is: Mon Feb 11 16:14:31 2013
SMART support is: Available - device has SMART capability.
SMART support is: Enabled

SMART Self-test Log structure revision number 1
Num Test_Description Status Remaining LifeTime(hours) LBA_of_first_error
# 1 Extended offline Completed without error 00% 528 -
# 2 Vendor (0x50) Completed without error 00% 0 -

SMART Selective self-test Log data structure revision number 1
SPAN MIN_LBA MAX_LBA CURRENT_TEST_STATUS
1 0 0 Not_testing
2 0 0 Not_testing
3 0 0 Not_testing
4 0 0 Not_testing
5 0 0 Not_testing

Selective self-test flags (0x0):
After scanning selected spans, do NOT read-scan remainder of disk.
If selective self-test is pending on power-up, resume after 0 minute delay.

```

Image: Časti z výsledného reportu, ktoré sú pre vás dôležité

Test has verified faultless state of the disk

The test ran without any errors, output from such test is displayed below. Text in the column **Status gives information whether the test ran without errors - the disk is fine.**

```

SMART Error Log Version: 1
No Errors Logged

SMART Self-test log structure revision number 1
Num Test_Description Status Remaining LifeTime(hours) LBA_of_first_error
# 1 Extended offline Completed without error 00% 528 -
# 2 Vendor (0x50) Completed without error 00% 0 -

```

Image: Test overil bezchybný stav disku

Test has proven a defective disk

The test is completed and an error has been found, the next image nicely shows result of a test, which has proven that the disk is faulty. For such tests, we recommend to replace the disk.

```

SMART Self-test log structure revision number 1
Num Test_Description Status Remaining LifeTime(hours) LBA_of_first_error
# 1 Extended offline Completed: read failure 90% 1172 7726402
# 2 Extended offline Interrupted (host reset) 80% 1 -

```

Image: Vyhodnotenie chybného stavu disku

Other possible states

1. Test is still running, output from this status is displayed below, there's also an information how many % remain to the test's completion.

```
SMART Error Log Version: 1
No Errors Logged
```

Num	Test_Description	Status	Remaining	LifeTime(hours)	LBA_of_first_error
# 1	Extended offline	self-test routine in progress	90%	526	-
# 2	Vendor (0x50)	Completed without error	00%	0	-

Image: Test ešte stále beží

2. The test hasn't run at all, description of possible states and reasons

a, If the output report contains the message **Interrupted (host reset)** , it means that a user has most likely turned off the device, on which the disk was tested. We recommend to settle on, that the user keeps the device turned on for at least 6 hours since beginning of the test, to be sure that the test will have enough time to be completed.

b, In case you're sure that the device has not been turned off, this message means that the test couldn't be finished, as the disk's deflection is at such a high level, it simply wasn't possible. Therefore, we recommend to immediately backup all important data and replace the disk.

Num	Test_Description	Status	Remaining	LifeTime(hours)	LBA_of_first_error
# 1	Extended offline	Interrupted (host reset)	90%	454	-
# 2	Extended offline	Interrupted (host reset)	90%	362	-
# 3	Extended offline	Interrupted (host reset)	90%	1	-

Image: Testovanie sa nedokončilo

c, If the ouput report contains a message **Aborted by host** it means that the user, under which the test was carried out has logged off. As you can see on the next image, the test was not successful until the 5th time. We recommend to notify the user, that his disk is going to be tested, and he should not turn off the PC, or log out.

Num	Test_Description	Status	Remaining	LifeTime(hours)	LBA_of_first_error
# 1	Extended offline	Aborted by host	90%	1872	-
# 2	Extended offline	Aborted by host	90%	1872	-
# 3	Extended offline	Aborted by host	90%	1872	-
# 4	Extended offline	Aborted by host	90%	1872	-
# 5	Extended offline	Completed without error	00%	1871	-

Image: Testovanie bolo viackrát zrušené ale nakoniec sa test dokončil

d, Request of ongoing status didn't show the running test - in some cases, it might occur that after requesting ongoing status of the disk, it states that there are no running tests. In this case, we recommend to wait the 6 hours since beginning of the test and just view the report after the test is completed, as it already contains information about course of the test.

```
SMART Self-test log structure revision number 1
No self-tests have been logged. [To run self-tests, use: smartctl -t]
```

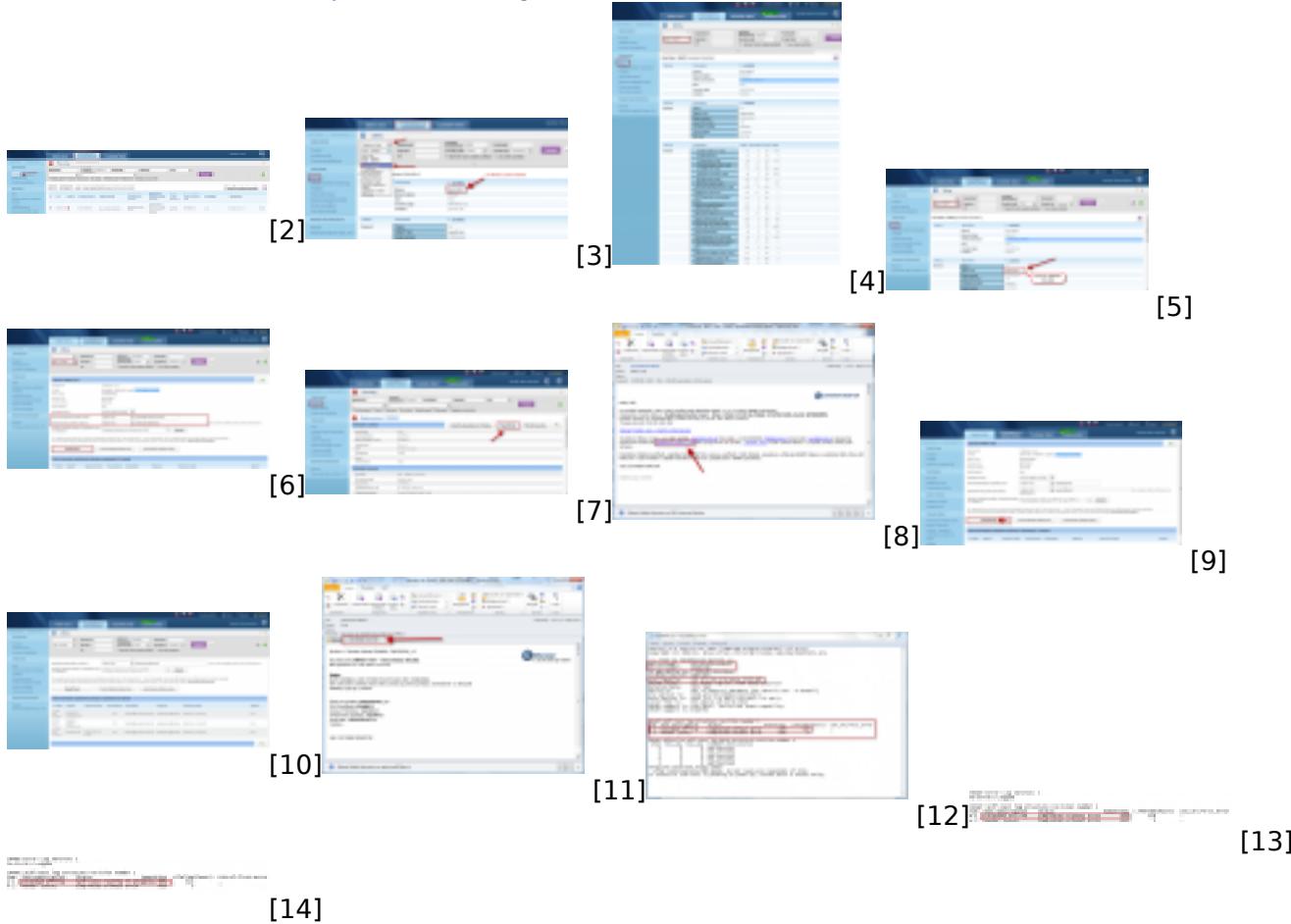
Image: Pri zistovaní priebežného stavu sa nezistila prítomnosť žiadneho bežiaceho testu

Date:

03/28/2012 External Links:

[Nastavenia a notifikácia porúch](#) [1]

Images:



Links

- [1] <https://www.customermonitor.eu/node/605>
- [2] https://www.customermonitor.eu/sites/default/files/10_2.png
- [3] https://www.customermonitor.eu/sites/default/files/1_2_0_0.png
- [4] <https://www.customermonitor.eu/sites/default/files/zona%20smart.png>
- [5] <https://www.customermonitor.eu/sites/default/files/spustenie%20smartu%20zo%20zony.png>
- [6] <https://www.customermonitor.eu/sites/default/files/spustenie%20smart%20testu%20zo%20zony%20disk%20smart.png>
- [7] <https://www.customermonitor.eu/sites/default/files/spustenie%20smart%20testu%20z%20poruchy.png>
- [8] <https://www.customermonitor.eu/sites/default/files/spustenie%20smart%20testu%20z%20emailu.png>
- [9] <https://www.customermonitor.eu/sites/default/files/spustenie%20testu%20z%20emailu.png>
- [10] <https://www.customermonitor.eu/sites/default/files/historia%20odoslanych%20poziadaviek%20smart%20testu.png>
- [11] <https://www.customermonitor.eu/sites/default/files/email%20skoncenie%20ulohy%20smart.png>
- [12] <https://www.customermonitor.eu/sites/default/files/smart.png>
- [13] https://www.customermonitor.eu/sites/default/files/smart1_0.png
- [14] https://www.customermonitor.eu/sites/default/files/smart%202_0.png