

# Notification of total failures

Total outages of internet connections can be figured by methods that were already described in other articles on this web :

For longer outages use <u>Monitoring of computer availability with activation of internet line monitoring</u> [1]

To make direct PING tests to public IP addresses, follow the instructions at <u>Availability tests</u> (<u>Watches</u>) [2]

### Notification of lower internet connection quality

In the solution CM, quality of internet connection is monitored by tests (Watches conditions) of Ping packet loss and Ping Round Trip Time (also called response time, hereinafter RTT) executed from the C-Monitor client. There are two basic methods to execute these tests, and it's up to you which one do you prefer / need :

1. C.Monitor client is on a computer from the monitored line (inside the network) and the tests are running to an external IP address, which has very reliable connection (no packet loss and very short RTT)

2. C-Monitor client is on a server with very good connection and the tests are performed to IP address of the monitored line.

Note: as these are two directions of the tests, you also get different results, for which you need to take into account the capacities of upload / download.

A reliable internet line should have zero packet loss even for higher loads, and response RTT vary according to type of the line. You should have **the following typical RTT values for your measurements:** 

DSL ...cca 15-70ms UPC (coaxial) ...cca 10-30ms Optic ...cca 3-10ms FWA 10.5GHz, 26GHz - cca 10ms mobile ...HSDPA cca 70-100ms, GPRS over 150ms Wimax - over 50ms Wifi 5.4GHz links ...cca 4-10ms

Recommendation: If you haven't worked with Watches yet, then read the <u>Introduction to setup of</u> <u>Watches, conditions, actions</u> [3] first

Skip to Setup of quality monitoring via CM Portal (for all OS)

# Setup of monitoring of internet line quality via C-Monitor Console on Windows

## Setup of packet loss monitoring

The very setup is done through C-Monitor Console, launch Watch Wizard, name the new watch e.g. "Internet line quality", we recommend to choose the name as short as possible also with some specific name, as this name of the Watch will be used in notification emais, SMS messages and it's appropriate that it doesn't take too much space, and at the same time, you can easily tell what does the message belong to. Then press Next.

Select watch Ping packet loss.

#### Image: Zvolenie Ping Packet Loss

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In the next window, enter address which is going to be pinged. You may write name of the location, or directly the IP address. Choose compairing operator, percentage value (10% for an average line) and testing period (recommended 1min). Other values in square brackets are optional and will be filled by default values (specified in pop-up bubbles, which appear after hovering over these fields), if you don't need to make custom changes. The most relevant of these parameters is the length of history, which is defaultly 12 (meaning that Packet Loss is calculated from the last 12 tests, i.e. last 12 minutes for the recommended settings). You may then have pings written into a log file, in case that connection with CM Server was lost, so you won't lose detailed results of these tests.

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# Condition Definition

Available Functions	Ping Packet Loss
Available Functions Disk Queue Length Network Adapter Usage Internet IP Traffic Internet IP Transferred Data Free Space On Disk Exists File File Size	Ping Packet Loss         IP (Host) [   description] (e.g. 192.168.1.1   local router)         195.146.132.58         [Repeats] [Timeout in sec] [Bytes] [TTL] [History Size]         [LogFile]         C:\temp\LOG.txt
Files Size in Directory Exists Directory Directory Accessible LoggedOn User Windows Running Time Operating System started Date Day of Week Time TimeRange	Operator       Packet Loss %       Test Period Unit          10       1       min         Value from this condition send to CM server       •       •         • If value changes more than       1       •         • Always       •       •         • Never       •       •         • Assess the state of watch       •
Current IP Performance Counter Hardware Monitoring Ping Ping RoundTripTime Ping Packet Loss	OK Cancel

Image: Nastavenie parametrov pre PPL

When all parameters are configured, press OK Add check of Ping RTT (Round Trip Time - i.e. response time) to this watch by Add condition

# Setup of ping response time

In Watch wizard select Ping RTT (response time) and press Next.

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С	W	at	tch	W	izar	rd
		-			100	

# Add next condition for "Kvalita internetovej linky"

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erformance	Health of systems	Security
<ul> <li>Memory usage</li> <li>CPU usage</li> <li>Disk usage</li> <li>Disk read / write queue length</li> <li>Network adapter usage</li> <li>Process usage (memory, CPU)</li> <li>Performance counters</li> <li>Transfered speed in LAN,</li> </ul>	<ul> <li>EventLog Events Count (for Windows Vista and newer)</li> <li>Free space on disk</li> <li>Service status</li> <li>Loaded Device Driver</li> <li>Running process</li> <li>E-Mail looping test (SMTP -&gt; POP3)</li> <li>Ping RTT (response time)</li> </ul>	<ul> <li>Running user process</li> <li>Unauthorized admin process</li> <li>LoggedOn user</li> <li>Time limitations</li> <li>Date</li> <li>Day of Week</li> <li>Time</li> <li>Lime Bange</li> </ul>
Transfered speed of FTP     Internet IP trafic (transfer speed)     Internet IP trafic (transfer speed)     Internet IP transfered data	<ul> <li>Ping packet loss</li> <li>File size</li> <li>File size in directory</li> <li>Windows running time</li> <li>Hardware Membridian</li> </ul>	Custom conditions SNMP CHAT
<ul> <li>Preductine operiormance templates</li> <li>heck accessibility</li> <li>Ping</li> <li>SMTP</li> <li>POP3</li> <li>HTTP, HTTPS</li> <li>Exists file</li> <li>Exists directory</li> <li>Accessible directory</li> </ul>	<ul> <li>Hardware Monitoring</li> <li>HW monitoring of server (HP, DELL, FUJITSU)</li> <li>LINUX monitoring</li> <li>Environment Monitoring (snmp)</li> <li>Environment Monitoring (http)</li> <li>Preddefined health templates</li> </ul>	CHAT Variable CHAT Numeric Variable CHAT Vector Variable Use state of another Watch
Current IP <ul> <li>Network presented         <ul> <li>(active any network adapter)</li> <li>Back</li> <li>Next &gt;</li> </ul> </li> </ul>		Cancel

#### Image: Vybratie Ping RTT

In the next window, you'll choose the address, which is going to be pinged, either the location's name, or directly its IP address. Select what value of response time is going be monitored in the field Value - either minimal time, maximal, or average value. Then select operator, value in ms and testing period (<u>typical response values for different line types</u> are in the introduction to this article). Other values in square brackets are optional and will be filled by default values (specified in pop-up bubbles, which appear after hovering over these fields), if you don't need to change them.

# Ping PL,RTT via Watches

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# Condition Definition

	X

Available Functions	Ping RoundTripTime
Disk Usage Disk Queue Length Network Adapter Usage Internet IP Traffic Internet IP Transferred Data Free Space On Disk Exists File File Size Files Size in Directory Exists Directory Directory Accessible LoggedOn User Windows Running Time Operating System started Date Day of Week Time TimeRange Current IP Performance Counter Hardware Monitoring Ping Ping RoundTripTime	IP (Host) [  description] (e.g. 192.168.1.1   local router)         195.146.132.58         [Retries] [Timeout in sec] [Bytes] [TTL]         [LogFile]         C:\temp\LOG1.txt         Value       Operator         Test Period       Unit         1       min         Value from this condition send to CM server         If value changes more than       10         Always       Never         Assess the state of watch
	OK Cancel

Image: Nastavenie parametrov pre RTT

After setting the required parameters, and clicking on Next, you'll get to common Watch settings. For monitoring of internet lines quality, it's suitable to set delay of notifications (Delay for fail), especially where the connection quality is low, so that you won't receive notifications over every little hesitation of the line, as very short and occasional failures of the line don't really affect function of the systems working on internet connection USTOMER MONITOR

## **Ping PL,RTT via Watches**

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Modify Watch	L	
Conditions		
Name (Description)		Short Name
Kvalita Internetovej linky	63	₩2
Enabled		
🖶 🎥 🗙 😂 습 문 🗸		
Conditions		
Ping Packet Loss 195.146.132.58 < 10%, 6x, timeout 5s, bytes 56, TTL 64, packet loss (hist. 30), check	every 1m	in, logfile "C:\tem
2 Ping Average RTT 195.146.132.58 < 400 ms, 4x, timeout 5s, bytes 56, TTL 64, check every 1min, logfile	e "C:\tem	p\LOG1.txt"; Valu
State of watch is:         OK       if all conditions are true         FAIL - if at least one condition is false         If state of the watch changes to FAIL, do Start Actions (Add New Start Actio		
While state of the watch is FAIL, do Repeat Actions (Add New Repeat Action		
If state of the watch changes to OK, do End Actions (Add New End Action)		
If state of the watch is UNKNOWN, notify this by options in actions		
☑ Delay for FAIL state. Conditions for FAIL state must be met at least 5 Min ▼		
Evaluate watch state with longer period than 30s (specified by C-Monitor license)		
Note: Watches are active from 5 min after the operating system start		
Edit with Wizard	OK	Cancel

Image: Spoločné nastavenia watchov

For setup of actions, follow the instructions at <u>Setup of Watch actions</u> [3].

# Setup of line quality monitoring via CM Portal (for all OS)

Creation of watch can be configured even without direct access to the PC, by addition through CM Portal. After login to CM portal, open *Admin zone* and in the left menu *Watches - Settings*. Enter parameters of the required computer into the upper filter. When the PC/server is filtered out, it'll be displayed with its already existing watches, if there are any. By clicking on *Display watches*, you'll get to the option to add a new one.



# Ping PL, RTT via Watches

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	1 Admin zóna	rehliadanie a Vhodnotenie Customer I	Desk			Openator: Pevol	C
- Ztaliť vlatko 🔹 Rozbaliť vlatko	🔞 Watches - nast	tavenia					
<ul> <li>Hlavné menu</li> </ul>	Spoločnosť seal H	Počítač & Umiestnenie (330	Postivatef	Operator	Jednockuché		Previous
Zákaznici	Nilzov Watchu	🗆 Len zapnuté Watches 👘 Len onli	ine politale	Hadat	O Reziliené		Watches
Počítače						Add watches via SWL	lie on selected PCs
<ul> <li>Použivatelia</li> </ul>	X CM-ID Menovsieti	Umiestnenie Poußvatef	Spoločnosť	Watches	Aktuálne na PC	Naposl. Posl. onlin odoslané spojenie	s 3
Māj profil						PC do CM	
Zákaznicka kontá Používatetská história	SEMMON2 H#4800#	prenoany DA Pavol	SEAL IT Services, s.r.o.		Ana	10. Apr 2012 10. Apr 2011 10:26:04 10:27:18	Display watches SWL history
- Admin. nástroje	< 1/1 -> 20	<ul> <li>Zobrazujem položky 1 - 1 z celkového</li> </ul>	o počtu 1 polažiek				
Inštalácie a skripty C-Image nastavenie Udržiavanie PC							
- C-Monitor klient							
Nastavenia C-Monitora na PC Rozinty a stavišeh Wetnes - nastavenia Adaalizacia C-Monitor kilenta Verde Licencie Stahnuté súbory z počhačov	2						

#### Image: Zobrazenie watchov cez CM portál

Click	on	Add	watch
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门 Watches - na	astavenia								
Spoločnosť seal Názov Watchu	Počitač & Umiestnenie	6930 es 🖾 Len on	Použivateř Ine počitače	Operátor	Hfadaf	<ul> <li>Jednodu</li> <li>Rozšíren</li> </ul>	ché é		Previous Watches
Zoznam watches od	osielaných z počítač	a SEANB02/	HP6930P / Pavol / p	renosny BA			pridanie	watchu Add	ratch Back
<ul> <li>Watch name</li> </ul>	State			Conditions		Min, change value	Delay for FAILED state	Start / Repeat / End actions	
< 1/1 > 20	<ul> <li>Zobrazujem položky 1</li> </ul>	0 z celkového p	počtu O položiek						

#### Image: Pridanie Watchu

In the popped window, name the watch e.g. "Inet line quality" we recommend to choose the name as short as possible also with some specific name, as this name of the Watch will be used in notification emais, SMS messages and it's appropriate that it doesn't take too much space, and at the same time, you can easily tell what does the message belong to. Then it's suitable to tick Delay for False, especially where the connection quality is low, so that you won't receive notifications over every little hesitation of the line, as very short and occasional failures of the line don't really affect function of the systems working on internet connection. Then press Continue



## Ping PL, RTT via Watches

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New watch	_ 🗆 🙁
Name (Description) Short Name	Kvalita Inet linky 1 W2
Enabled	
Watch state	OK if all conditions are true FAIL if at least one condition is false
Notify Unknown State from C-Monitor by Watch actions	
Notify Unknown State from CM server	Notification can be enabled after updating watch on the computer
Delay for FAIL state	Conditions must be met at least 5 min 💌
Evaluation and notification of errors on CM server:	For this watch: ALLOWED on CM server   Notification is enabled
	For computer: ALLOWED (Change in computer settings)
	For customer: ALLOWED (Change in customer settings)
IMPORTANT NOTE: No modificat only by sending the modified con	tions during editing of the watch are saved to the database. Watch configuration is updated infiguration to the C-Monitor client.
	3 💾 Continue 🛞 Close

Image: Vytvorenie a pomenovanie watchu

In the next window, press Add condition. In the left menu, select condition Ping Packet Loss. Enter address which is going to be pinged into the field IP (host). You can also write DNS name of the location. Choose compairing operator, percentage value (10% for an average line) and testing period (recommended 1min). Other values in square brackets are optional and will be filled by default values, if you don't need to change them. Then press Apply

ற Watches - nastavenia	3						
Spoločnosť seal Počítač & U Názov Watchu 🗌 Len za	Imiestnenie 6930 Použiva ppnutė Watches 🗌 Len online poči	teľ Operátor Hľadať © Jednoduché tače					
🔶 Kvalita Inet linky (SEANB02) 🧯 Nová podmienka pre watch _ 🗆 🛛							
General Conditions & Actions	Filter:	Ping Packet Loss					
List of conditions Description	Network Presented Operating System started	IP (Host) [   description] (e.g. 192.168.1.1   local router) 195.146.132.58					
Add condition	Porto Performance Counter Ping Ping Packet Loss Ping Round Trip Time	[Repeats] [Timeout in sec] [Bytes] [TTL] [History Size]					
List of Actions Type Description	Process Usage Running Process Running User Process SMTP 2	Operator Packet Loss % Test Period Unit					
Add action	SNMP Z Service Status Time TimeRange Transfer Speed Transfer Speed of FTP Unauthorized Admin Process Watch State	Value from this condition send to CM server If value changes more than 1 Always Never					
IMPORTANT NOTE: No modifications of configuration is updated only by sending	windows Putning Time	4 😫 Apikovat' 📀 Zavriet'					



Image: Vytvorenie podmienky pre PPL

By clicking on Add condition, you'll similarly add another condition to check Ping Response time. Select Ping Round Trip Time in the left menu.Enter the address, which is going to be pinged, into field IP (host). You can also write location's DNS name. Select what value of response time is going be monitored in the field Value - either minimal time, maximal, or average value. Then select operator, value in ms and testing period (<u>typical response values for different line types</u> are in the introduction to this article). Other values in square brackets are optional and will be filled by default values, if you don't need to change them. Then press Apply

🕅 Watches - nastavenia								
Spoločnosť seal Počítač & Um Názov Watchu 🗌 Len zap	niestnenie 6930 Použivate nuté Watches 🖾 Len online počita	er Operátor Hfadat Operátor Jednoduché						
🔶 Kvalita Inet linky (SEANB02) 🧿 Nová podmienka pre watch _ 🗆 🛛								
General Conditions & Actions	Filter:	Ping RoundTripTime						
List of conditions Description  Ping Packet Lose 195.148.132.58 < 10%, 6x, timeout 5 Add condition	LoggedUn User Memory Usage Network Adapter Usage Network Presented Operating System started POP3 Performance Counter Ping Performance Loss	IP (Host) [   description] (e.g. 192.168.1.1   local router) 195.146.132.58 3 [Retries] [Timeout in sec] [Bytes] [TTL] [LogFile] DF						
List of Actions Type Description	Process Usage Running Process Running User Process	Value Operator Time In ms Average RTT  C Value V						
Add action Podmienka alebo akcia bola upravovana	SMTP SNMP 2 Service Statua Time 2 TimeRange Transfer Speed Transfer Speed f FTP Unauthorized Admin Process	Value from this condition send to CM server  Value changes more than 10 ms Always Never						
IMPORTANT NOTE: No modifications du configuration is updated only by sending th	Watch State *	4						

Image: Vytvorenie podmienky pre PPL

Here you can see the list of already created conditions. Click on Update to submit the created watch to the PC. Two warning windows will appear afterwards.

	Admin zóna Prehliadanie a Customer Desk Vyhodnotenie	Operátor, Pr	eval Pałković				
Zoast classo Rosbat r classo	😰 Watches - nastavenia						
Havné menu Zákazníci	Spotočnosť sed Počítač 5. Umiestanie 930 Použivateľ Operátor Utraduť 2. Jednodudná Názov Watchu Len zaprutá Watches Len online počítače Rozšírené		Previous Watches				
Počítače Audit SW a evidencia HW	Kvalita Inet linky (SEANBO2)     Genetal Conditions & Actions	× Dek	ite 😂 Updato Beck				
Poulivatelia	List of conditions						
Mőj profil Zákaznácka kontá Používateľská história	Description  * Prog Parket Loss 188 148 132 88 < 10%, Br. Innexed Br. Bytes M. TTL M. pastet loss (Not. 30), sheak every free, Value to CM res. sharps 1  * Prog Average RTT 155 145 132 89 < 400 ms. 4x, innexed Sr. bytes 55. TTL 64, otack every free, Value to CM res. sharps 10 Add exection		Rati Delete Edit Delete				
Admin. nàstroje							
inŝtaliácie a skripty C-Image nastavenie	List of Actions Type Description Events	Dolay					
Uddiavanie PC	Add action						
<ul> <li>C-Monitor kleant</li> <li>Nastavenia C-Monitora na PC</li> <li>Roorty a stav úloh</li> </ul>	Podmienka alebo akcia bola upravovaná pečas editácie tohte watchu.						
Walchen - mastavenia	IMPORTANT NOTE: No modifications during editing of the watch are saved to the database. Watch configuration is updated only by sending the modified configuration to the C-Monitor client.						

Image: Zoznam podmienok watchu

In the first one, confirm submission of the watch to the PC/server



# Ping PL, RTT via Watches

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Kvalita Inet linky (SEANB02)		🗙 Delete 😂 Update.
General Conditions & Actions		
List of conditions	Are you sure to update changes on C-Monitor?	
Description		
Ping Packet Loss 195.148.132.88 < 10%, 8x, timeout 6s, bytes 56, TTL 84, packs		Edit Delate
Ping Average RTT 195.145.132.58 < 400 ms, 4x, timeout 5s, bytes 55, TTL 54, ct	OK Zrušiť	Edit Delata
Add condition		

Image: Potvrdenie zapísania zmien

The second window contains a warning, that you shouldn't edit the watch until it's received on the PC/server

<ul> <li>Kvalita Inet linky (SE</li> </ul>	INR021	X Detete	
General Conditions & A	Request to update watch has been sent to C-Monitor. Watch will be updated in few minutes, placed do NOT addiwatch until your chapses will be applied on the computer		
List of conditions	mach will be updated in tex minutes, please do non edit watch driel your changes will be applied on the computer.		
Description	Continue with redirecting to the list of watches.		
Ping Packet Loss 195.145.132.55 < 1		Edit	Delete
Ping Average RTT 195.146.132.58 <	OK	Edit	Delete
Add condition	UK		

Image: Upozornenie aby ste needitovali watch počas prenosu na PC

When the watch is successfully received on the PC, you'll see a list of watches for the PC and their status

$\odot$	Watches - nas	stavenia								
Spoli Názo	čnosť seal Počítač & Umiestnenie 6330 Používateľ Operátor Hr V Watchu EL cen zapruté Watches Len online počítače		Hfadat	<ul> <li>Jednodu</li> <li>Rozšíren</li> </ul>	ché é		Previous Watches			
+ z	Zoznam watches odosielaných z počítača SEANB02 / HP6930P / Pavol Paškevič / prenosny BA     Add watch     Eack									
•	Watch name	State			Conditions		Min. change value	Delay for FAILED state	Start / Repeat / End actions	
1	Cvalita Inet linky (edited watch)	•	OK - because all o TRUE - Ping Pi TRUE - Ping '1	onditions are true loket Loss '195.148.132.58' (0' 95.148.132.58' Average RIT (1	5) < 10% (30. 4. 2012 10.54(53) 4 ma) < 400 ma (30. 4. 2012 10.54(58)		±1 a10 ma	Sm Ga	START: - REPEAT: - END: -	Edit Delete
2 1	hetaženia servera	•	OK - because all o TRUE - Memory TRUE - CPU U TRUE - Disk U	onditions are true y Usage "Used Total M.S." (45 : sage "Bystem" (13%) < 55% sage "' (4%) < 55%	S) < 99 %		12 45 46	10m Da	START - REPEAR - END: -	Edit Delete
<	1/1 - > 20	Zobrazujem pol	ožky 1 - 2 z celko	vého počtu 2 polažiek						

## Image: Zoznam watchov a ich stav





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# Links

[1] https://customermonitor.eu/how-cm-works-0/monitoring-and-diagnostics/monitoring-server-availablility/signalization-connection

[2] https://customermonitor.eu/how-cm-works-0/monitoring-and-diagnostics/monitoring-server-availablility/monitoring-watches

[3] https://customermonitor.eu/how-cm-works-0/monitoring-and-diagnostics/introduction-setuponline-monitoring-watches

[4] https://customermonitor.eu/how-cm-works-0/monitoring-and-diagnostics/introduction-setting-online-monitoring-watches-0

[5] https://customermonitor.eu/how-cm-works-0/monitoring-and-diagnostics/outages-and-quality-lan-connections

[6] https://customermonitor.eu/sites/default/files/1\_1.png

- [7] https://customermonitor.eu/sites/default/files/3\_0.png
- [8] https://customermonitor.eu/sites/default/files/8\_3.png
- [9] https://customermonitor.eu/sites/default/files/9\_3.png
- [10] https://customermonitor.eu/sites/default/files/7\_3.png[11] https://customermonitor.eu/sites/default/files/10\_3.png
- [12] https://customermonitor.eu/sites/default/files/15\_0.png
- [13] https://customermonitor.eu/sites/default/files/11\_2.png
- [14] https://customermonitor.eu/sites/default/files/12\_2.png
- [15] https://customermonitor.eu/sites/default/files/13\_2.png
- [16] https://customermonitor.eu/sites/default/files/14\_2.png
- [17] https://customermonitor.eu/sites/default/files/2 1.png
- [18] https://customermonitor.eu/sites/default/files/4\_3.png
- [19] https://customermonitor.eu/sites/default/files/5\_4.png