// Proginov …and us
// Our tips and tricks with live demo
Proginov …and us

Our tips and tricks with live demo
22 years of existence
- A team of 250 on 1 location
- 2 private Datacenters
- More than 10,000 Progress DB
… and us

Inès Goujon

- Computer science and astrophysics studies
- Progress developer at Proginov for 22 months
- Work among the DBA team for about 10 months

Patrice Perrot

- Progress developer since 2001
- Optimize progress source since 2005
- Work for Proginov since 2008
- Optimization of “source and DB” in the DBA team since 2010
Our problematic

- + 10 000 databases
- + 200 000 r-code

Where are the issues?
// Proginov …and us
// Our tips and tricks with live demo
General presentation

Global monitoring

- 5 minutes
  - Analysis, prioritization & alerts

Low Level monitoring

- 30 seconds
  - Analysis & prioritization

High Level monitoring

- 0.05 second
  - Metrics
Live demo

Demo: https://www.youtube.com/watch?v=iTIlTjLVe4
Choice of **DBs** to monitor

1. DB Access
2. Rec Reads
3. DB Reads
4. Rec Locks
5. CUD
6. Absent fields
7. Most locks > 90% - L
8. Large increase of BI
Live demo

Demo: https://www.youtube.com/watch?v=UtJEjjVCH1M
Statement caching technic

How to change the caching type value?

/ Table : _Connect
/ Field : _Connect-Caching-type

- The different values of _Connect-Caching-type:
  - 2 : stack (STCA-OE)
  - 3 : one time

The problems...

2 ➡ Performance

3 ➡ Just 1

Value changed ignored (3 to 3)
### Statement caching cost

**FOR EACH**

<table>
<thead>
<tr>
<th>Type</th>
<th>Nb loop</th>
<th>Loop Time (ms)</th>
<th>%Elapse</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO-STCA</td>
<td>SELF</td>
<td>169</td>
<td>354,816</td>
</tr>
<tr>
<td>STCA-OE</td>
<td>SELF</td>
<td>167</td>
<td>360,491</td>
</tr>
</tbody>
</table>

**FIND FIRST**

<table>
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<tr>
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<td>SELF</td>
<td>198 012</td>
<td>0,302</td>
</tr>
<tr>
<td>STCA-OE</td>
<td>SELF</td>
<td>88 521</td>
<td>0,677</td>
</tr>
</tbody>
</table>
Our statement caching picking method
Our statement caching picking method

FIND FIRST sports2000._connect WHERE _connect-id = I-Connect-Id_Of_Very_Active_User
NO-LOCK NO-ERROR.

DO WHILE TIME < I-TIME-END :
  DO TRANSACTION :
    FIND CURRENT sports2000._connect EXCLUSIVE-LOCK NO-ERROR.
    /*Data collect / Leave if Disconnected*/
    _connect-CachingType = 2.
    FIND CURRENT sports2000._connect NO-LOCK NO-ERROR.
  END.
  DO TRANSACTION :
    FIND CURRENT sports2000._connect EXCLUSIVE-LOCK NO-ERROR.
    _connect-CachingType = 3.
    FIND CURRENT sports2000._connect NO-LOCK NO-ERROR.
  END.
  PAUSE 0.05 NO-MESSAGE . ➡️ How often ?
END.

DO TRANSACTION :
  FIND CURRENT sports2000._connect EXCLUSIVE-LOCK NO-ERROR.
  _connect-CachingType = 0.
  FIND CURRENT sports2000._connect NO-LOCK NO-ERROR.
END.
### Statement caching cost

#### FOR EACH

<table>
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<td>SELF</td>
<td>167</td>
<td>360,491</td>
</tr>
<tr>
<td>STCA-PNV</td>
<td>SELF</td>
<td>165</td>
<td>363,042</td>
</tr>
</tbody>
</table>

#### FIND FIRST

<table>
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<tr>
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<td>SELF</td>
<td>88 521</td>
<td>0,677</td>
</tr>
<tr>
<td>STCA-PNV</td>
<td>SELF</td>
<td>192 392</td>
<td>0,311</td>
</tr>
</tbody>
</table>

YMMV 0,05 s
### Statement caching cost

#### FOR EACH

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<th>%Elapse</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO-STCA</td>
<td>REMC</td>
<td>105</td>
<td>575,009</td>
</tr>
<tr>
<td>STCA-OE</td>
<td>REMC</td>
<td>105</td>
<td>575,095</td>
</tr>
<tr>
<td>STCA-PNV</td>
<td>REMC</td>
<td>105</td>
<td>575,200</td>
</tr>
</tbody>
</table>

#### FIND FIRST

<table>
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<th>Nb loop</th>
<th>Loop Time (ms)</th>
<th>%Elapse</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO-STCA</td>
<td>REMC</td>
<td>14,785</td>
<td>4,056</td>
</tr>
<tr>
<td>STCA-OE</td>
<td>REMC</td>
<td>7,630</td>
<td>7,854</td>
</tr>
<tr>
<td>STCA-PNV</td>
<td>REMC</td>
<td>14,508</td>
<td>4,132</td>
</tr>
</tbody>
</table>

0.05 s
Our statement caching picking method

/ To avoid a DB crash, use a stacktrace directory

/ Settings in the PROMON
  o R&D Advanced options
  o 1. Status Displays…
  o 18. Client Database-Request Statement Cache…
  o 8. Specify Directory for Statement Caches Files
Live demo

Demo: https://www.youtube.com/watch?v=cgd1inCgYqI
Choice of **users** to monitor in specific:

1. Access
2. Rec Reads
3. Reads
4. Rec Locks
5. CUD
How can you interpret the “?”?

Example on REMC

FOR EACH customer NO-LOCK

FOR EACH customer WHERE STRING(ROWID(customer)) = my_rowid NO-LOCK
Example: 100 loops

\[
\_\text{MyConn-NumSeqBuffer} = V-Bp.
\]

\[
\text{FOR EACH customer NO-LOCK} \ \text{cpt} = 1 \ \text{TO} \ 100 : \ \text{END}.
\]

\[
\_\text{MyConn-NumSeqBuffer} = 0.
\]

<table>
<thead>
<tr>
<th>V-Bp</th>
<th>DB Access</th>
<th>DB / OS read</th>
<th>Rec Read</th>
<th>BufMissed</th>
<th>Usual Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>25 800</td>
<td>3 801</td>
<td>10 000</td>
<td>14,7</td>
<td>Increase –B</td>
</tr>
<tr>
<td>0</td>
<td>25 800</td>
<td>40</td>
<td>10 000</td>
<td>0,1</td>
<td>OK</td>
</tr>
</tbody>
</table>

Increase –B have no effect on DB « Buffer Missed / Buffer HIT »
Live demo

Demo: https://www.youtube.com/watch?v=cJ27X-rMmqU
Find the mistakes in the right r-code

At every compile

Pre-process

Debug list

XREF

The lines are indicated in the STCA
Live demo

Demo: [https://www.youtube.com/watch?v=fhRLnPjPgV8](https://www.youtube.com/watch?v=fhRLnPjPgV8)
About indexes

★ For FOR EACH

→ hQry: QUERY-PREPARE Instruction
→ hQry: INDEX-INFORMATION
Counting records

- Backup DB every night
- Test of backup on a different machine
- Count table after table and index after index on the restored DB during
- Record them ! It’s done, you can use it !
And after… ?
Demo: https://www.youtube.com/watch?v=Cpo8nSKAb3k
The developer
Live demo

Demo: https://www.youtube.com/watch?v=rSk5Xhqlygk
// Diagnostic

/ Diagnostic event parameter : -DiagEvent
  - Lock table overflow
  - Bithold
  - Syserror

/ Diagnostic event Level : -DiagEvtLevel
  - 2 : Summary Data & Details data

/ Diagnostic pause length: -DiagPause
  - 0 second

/ Diagnostic directory : -DiagDir (/stacktrace)
Live demo

Demo: https://www.youtube.com/watch?v=sGO_b8eXLEI
What and where are the data we collect?

_DivXSummary

_DivXStartup

_DivXTrans

_DivXDbStatus

_DivXStorageObject

_DivXParam

_DivXIndex_File

_DivXArea

Diverse sources

Performances

Connection

Trans Durat

BI

-L

-LRU2 Enable

-B2

Nb checkpoints

Rangesize

Schema Area

Area T1

Block 1k
And after…?
Live demo

Demo: https://www.youtube.com/watch?v=2dp8kaoeYu0
Our corrections/actions for September 2018

<table>
<thead>
<tr>
<th>Type</th>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-B2 need</td>
<td>94</td>
<td>Memory resource allocated for future</td>
</tr>
<tr>
<td>-B2 small</td>
<td>28</td>
<td>Close to saturation</td>
</tr>
<tr>
<td>-L</td>
<td>16</td>
<td>Lock Table Overflow (&gt; 90 %)</td>
</tr>
<tr>
<td>Area T1</td>
<td>17</td>
<td>Area type 1</td>
</tr>
<tr>
<td>DBANALYS</td>
<td>57 944</td>
<td>Automatic task</td>
</tr>
<tr>
<td>IDXCOMPACT</td>
<td>5 127</td>
<td>Automatic task</td>
</tr>
<tr>
<td>LRU2 Enable</td>
<td>256</td>
<td>Due to SQL</td>
</tr>
<tr>
<td>MAJ -B</td>
<td>166</td>
<td>Tunning</td>
</tr>
<tr>
<td>Max User</td>
<td>127</td>
<td>Nb user &gt; -n</td>
</tr>
<tr>
<td>RangeSize</td>
<td>106</td>
<td>No Range parameters</td>
</tr>
<tr>
<td>Schema-Area</td>
<td>67</td>
<td>Table or Index in the Schema-Area</td>
</tr>
<tr>
<td>- i</td>
<td>0</td>
<td>No-integrity parameter</td>
</tr>
<tr>
<td>Counting record</td>
<td>6 853</td>
<td>Automatic task</td>
</tr>
</tbody>
</table>
Can’t control immediately?
Can’t control immediately?

The top Worst 200

<table>
<thead>
<tr>
<th>Client</th>
<th>User</th>
<th>App</th>
<th>PID</th>
<th>Alerts</th>
<th>TOP 1</th>
<th>TOP 2</th>
<th>TOP 3</th>
<th>TOP 4</th>
<th>TOP 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAVARIEAU</td>
<td>pcow0111</td>
<td>SAV SP</td>
<td>D4APPD16</td>
<td>6,076</td>
<td>10,716,012</td>
<td>9,128,115</td>
<td>9,076,201</td>
<td>8,809,888</td>
<td>8,804,100</td>
</tr>
<tr>
<td>MILLET</td>
<td>qcow0761</td>
<td>MILVI CHTE</td>
<td>D4APPH24</td>
<td>54,620</td>
<td>6,005,570</td>
<td>5,659,530</td>
<td>5,558,674</td>
<td>5,513,896</td>
<td>5,485,679</td>
</tr>
<tr>
<td>BREMSTAR</td>
<td>ws0320</td>
<td>wbremsr</td>
<td>rxapp105</td>
<td>30,140</td>
<td>2,225,447</td>
<td>1,630,819</td>
<td>1,796,483</td>
<td>1,796,431</td>
<td>1,611,346</td>
</tr>
<tr>
<td>THIEBAUT</td>
<td>qcow0225</td>
<td>BCH VOLE</td>
<td>D4BATCHV13</td>
<td>21,052</td>
<td>7,018,668</td>
<td>6,404,633</td>
<td>1,548,376</td>
<td>1,394,666</td>
<td>1,391,503</td>
</tr>
<tr>
<td>BREMSTAR</td>
<td>ws0320</td>
<td>wbremsr</td>
<td>rxapp105</td>
<td>11,501</td>
<td>1,811,375</td>
<td>1,356,454</td>
<td>1,351,034</td>
<td>1,348,202</td>
<td>1,344,645</td>
</tr>
<tr>
<td>SCAR</td>
<td>qed0770</td>
<td>BCH SCARBR</td>
<td>D4BATCHV08</td>
<td>48,728</td>
<td>4,830,522</td>
<td>3,793,205</td>
<td>3,658,382</td>
<td>3,076,857</td>
<td>1,894,988</td>
</tr>
<tr>
<td>HEALTHCAIR</td>
<td>qcow0601</td>
<td>HEA V ANOL</td>
<td>D4APPC06</td>
<td>22,416</td>
<td>1,149,761</td>
<td>1,147,548</td>
<td>1,147,147</td>
<td>1,131,596</td>
<td>1,130,047</td>
</tr>
<tr>
<td>MILLET</td>
<td>qcow0761</td>
<td>MILSG LUBE</td>
<td>D4APPH29</td>
<td>19,100</td>
<td>3,682,012</td>
<td>2,756,490</td>
<td>1,890,283</td>
<td>1,843,318</td>
<td>1,841,001</td>
</tr>
</tbody>
</table>

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Propritée de PROGINOV – reproduction interdite
Customer Feedback

/ Low level monitoring
- April 2017
- No slowness feedback

/ High level monitoring
- October 2017
- No slowness feedback

- Surprise of our reactivity (ex : -L, -n,...)
- Call for a slowness ? We are already treating it !
Questions ?

Another question later?
Contact us at pperrot@proginov.com or igoujon@proginov.com
Thank you for your attention 😊

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