Captain, Where should I go?  
What should I do?  
(One of my favorite lines from the movie Titanic)

Avoiding Paralysis when things go wrong in Progress

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Progling

White Star Software
Introductions – Dan Foreman

- Progress User since 1984 (V2.1)
- Presenter at every PUG Challenge USA since inception
- Author of
  - Progress Performance Tuning Guide
  - Progress System Tables
  - Progress Database Administration Guide
  - Progress DBA Best Practices
  - Available in traditional book or electronic format
Introductions – Dan Foreman

- Author of Progress Utilities for DBAs
  - ProMonitor – used by the Progress Managed DBA Practice to monitor over 1,000 databases worldwide
  - Pro Dump&Load – used to dump & load the worlds largest Progress DB (12TB) with only 2 hours of downtime
Introductions – Dan Foreman

- Cyclist
Introductions – Dan Foreman

- Basketball Player (with frequent visits to the Emergency Room)
Introductions - Audience

- Progress Version (end users only please & live in Production)
  - V11.7
  - V11.6
  - V11.anythingelse
  - V10
  - V9
  - V8
  - V7
  - Pre-V7
Introductions - Audience

- Who is new to OpenEdge in the last year?
  - Welcome to our small, quirky community!!
- Database Operating System
  - AIX
  - Linux
  - Windows
  - Solaris
  - HP/UX
Introductions - Audience

- Largest Individual Database?
  - > 10TB
  - > 1TB
  - > 500GB
  - > 100GB
The Titanic’s Captain Smith’s Shock & Paralysis

When the water was coming onto the boat deck, Smith stood by and watched Officer Lightoller trying to launch Collapsible B. A third class passenger with her baby tried to ask Smith what they should do, however, Smith remained silent and walked towards the bridge to await his fate. He walked onto the bridge and opened the door to the wheel house. He closed the doors to the wheel house, and stood there looking at the rising water engulfing his ship.

http://jamescameronstitanic.wikia.com/wiki/Edward_John_Smith
I wish I hadn’t delayed scheduling that Database Health Check
How am I going to find those After Image files now?
Let’s Get Started
Identify the Symptoms

- Physical Server is down – that’s (usually) easy to understand
- Alerts are flooding in – more on Alerts in a few slides
- Users are wailing:
  - I can’t log in
  - My screen is frozen
  - The program locked up
  - Or other variations – see next slide
User Dialog

- User:
  - I had an error message on my screen that said something about “@$#%$%^%**(*(&”

- DBA:
  - Did you write down the message or capture the screen?

- User:
  - No, <insert some stupid excuse>

- DBA (what they would like to say):
  - Did you expect me to magically figure out what the message said?
Velocity versus Caution

- This is a difficult topic
- Companies that heavily rely on their Application can be very sensitive to down time and want the system back ASAP
- However rushing to get the system back up can
  - Obscure the cause of the problem
  - Create a worse problem(s), e.g. DB was crashed, now it’s corrupted
  - Rushing increases the probability of a fatal mistake
Information Gathering – What is working & what is not

- Alerts from Monitoring Processes
- Is the the Databases Accessible?
- Can New Client Sessions Start?
- Are Existing Client Sessions having issues?
- Progress Java Processes Accessible?
- Is the Operating System Accessible?
Alerts from Monitoring Processes – DB Related

- Can’t connect to the DB
- BI Growth & BI Stall
- AI Growth & AI Stall
- Connection Table (-n) Limit
- Remote Client Server Limit (-Mn, -Mpb)
- Lock Table (-L) Limit
- Long Duration Record Lock Conflict
Alerts

- Alert Fatigue
- Nuisance Alerts
- The Blame Machine: Why Human Error Causes Accidents by R. B. Whittingham
Are the Databases Accessible with promon?

- Does promon hang?
- Try the –NL startup option (No Lock)
- Try the –F startup option (‘F’ does not mean Force like it does with proutil truncate bi)
- If one of these is required to start promon, it usually indicates the DB is not operating normally and will probably need to be shutdown or subjected to a controlled crash
- If promon still hangs, get a Stack Trace (ProGetStack)
Are the Databases Accessible with promon?

- If you can start promon with one of the two previous options, capture all the ‘wait’ related screens
  - R&D > Status > Processes/Clients > Blocked Clients
  - debghb #5 Locked Buffers
  - debghb #6 Buffer Locks
  - debghb #11 Latch Counts
  - debghb #15 Buffer Lock Queue
- If you don’t know what debghb is, come to my presentation on promon
Client Connections – Self Service Client

- Try connecting to the DB(s) without the Application code being involved, i.e. the Progress editor
- 4GL/ABL SELF Service Client
  - Read Only: -RO
Client Connections – Remote 4GL/ABL Client

- Remote Client
  - Loopback Remote Client instead of using the LAN (don’t use –H parameter)
  - Eliminate DNS: -H <IP Address> instead of DNS Name
  - Spawn a new Secondary Login Broker (proserve –m3) and try using a different port#
  - Ping & Netstat are your friends
Can a SQL Client connect?
Client Connections - Other

- promon (already discussed)
- prostrct list
- rfutil –C aimage list
- proutil –C describe
Are the Progress Java Processes Queryable?

- Admin Server?
- Name Server?
- AppServer Brokers?
  - What is the status of the AppServers, i.e. is the number AVAILABLE > zero?
- WebSpeed Broker?
  - What is the status of the Agents, i.e. is the number AVAILABLE > zero?
- If the proadsv/nsman/asbman/wtbman process hangs or fails, try the Java Virtual Machine Process Status Tool (jps command)
Operating System

- **Is it possible to login?**
  - Direct attached Console?
  - Remotely? SSH versus Telnet
  - Can the box be pinged with IP address and/or Host Name?

- **OS Stats**
  - CPU
    - High? Compared to what?
  - Memory
    - High? Compared to what?
  - Disk
    - High? Compared to what?
Check the Logs

- Database Log
- AppServer / WebSpeed Logs
- Admin Server Log
- Name Server Log
- OS System Logs
- Logs created by scripts
Specific Symptoms – Periodic DB Freezes

- **Online backup with large BI File**
  - DB Transaction Activity is *frozen* during this portion of the backup
  - Client doesn’t receive any messages
  - Solution: V11.3 probkup backups active BI clusters only

- **Quiet Point (proquiet)**
  - Client doesn’t receive any messages
Specific Symptoms – Periodic DB Freezes

- **Checkpoint Duration**
  - Buffers Flushed
  - Sync Call
  - DB Buffer Scan

- **AI Stall (-aistall)**
  - Client doesn’t receive any messages

- **BI Stall (-bistall)**
  - Client doesn’t receive any messages
DBA Response

- Turn on your body camera (similar to what the police use) or put your GoPro on a hat
DBA Response

- Make sure that the AI files are being archived properly (in case things go from bad to worse suddenly)
- Increase the logging level on AppServers & WebSpeed Agents
- Start running gather.sh (or similar) Script
- Client Logging (James Palmer’s presentation)
- Statement Caching
- Stack Traces (Dan Foreman’s presentation)
DBA Response

- Have a super-script to automate everything on the previous slide….the peak moment of a problem/crisis is not the time to be searching the manuals, writing scripts, or other unproductive activities
- Is the issue related to a Record Lock or Blocked Client?
- Identify recent changes made to the system (next slide)
- Update your Resume or CV
What Changed on the System that might have caused this?

- Change Control
- Things not always covered by change control:
  - Configuration changes made in the application
  - Scheduling changes
  - Hardware changes
    - Even seemingly safe & trivial stuff like a Firmware upgrade on the SAN
What Changed on the System that might have caused this?

- Things not always covered by change control:
  - Network activities
    - New hardware in the infrastructure
    - New routes
    - DNS changes
    - Firewall changes
  - Good things with bad consequences
    - Virus Scanners
    - Port Scanners
Miscellaneous Things to Check

- Increase in load
  - Seasonal
  - New business acquisition
  - Auditors

- DB License File – recent increase in connections?

- Are File sizes getting larger than normal
  - DB Extents
  - Backup Files
  - Log Files
Suspected corruption? Recommend an OS backup because `probkup` might fail if there is corruption and that can result in a big waste of time

- A backup can give you time to look at things deliberately & carefully
- See my presentation on DB Repair

Do NOT automatically assume that you need to force access with –F option
DB Crash - Restart Problems

- Won’t restart using Explorer or dbman? Try a simple proserve as that (sort of) removes Java from the list of possibilities
- Does Single user work? (pro command)
- Utility Access? (proutil truncate bi, dbanalys, prostrct list/statistics, rfutil aimage list)
- Preserve the AI Files!
- Preserve the DB Log files – some DB startup scripts truncate the log without saving a copy first
Getting Help

- Don’t wait until a problem occurs to wish you had a document/wiki with contact info for:
  - Progress
  - Application Vendor(s)
  - Hardware Vendors (Server & SAN if from different vendors)
  - OS (if from a different vendor than hardware)
  - 3d Party stuff
  - Network (Internal & External – e.g. WAN)
  - When you do your periodic disaster test, make sure this document is up-to-date
Getting Help

- Open a Conference Call Bridge and/or GoToMeeting/Webex or similar

- Delegate
  - Note taker, screen image grabber
  - Make coffee, get pizza
  - Keep the buzzards (i.e. management & hysterical users) away
  - Coordinate the call bridge(s)

- Have you practiced? Some companies will practice a full blown disaster but not outages that are severe but less than disaster intensity
Human Factors

- Remain calm
  - At one customer I was visiting, a big problem occurred and the DBA said “it’s been nice knowing you”… and freaked out instead of helping me
- Assign blame later
- Tell the “vultures” to go away
Post Mortem

- Full Definition of *postmortem* according to Merriam-Webster
  1. done, occurring, or collected after death
  2. following the event
- Document **everything** while it’s fresh in everyone’s mind
Problem Avoidance

- Periodic Progress Health Checks
- Adherence to DBA Best Practices
- Monitoring (which is a subset of Best Practices)
Not All Problems can be Avoided

- Complete loss of all hydraulic systems, including backups
- The pilot: “There was no training procedure for complete hydraulic failure. We've all been through one failure or double failures, but never a complete hydraulic failure.”
Thank You

- If you are enjoying the conference, please take a moment and give some appreciation to the organizers....it’s a thankless job with hundreds of details that can derail a session (e.g. projector or audio malfunction), a meal, or worse (heavy rain at an outside event)
Questions?

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