

eCube Systems ENABLING ENTERPRISE EVOLUTION

NXTware Remote

Advanced Development and Maintenance Environment for OpenVMS and other Strategic Platforms

Gerrit Woertman CTO OpenVMS Business Generating Software <u>gerrit@bgsoftware.nl</u> +31 6 51341600



- Why Modernize Development?
- What is NXTware Remote
 - Advanced tools
 - Rich integration
 - Powerful Debugger
- Benefits of NXTware Remote



- Terminalsession to VMS
- Edit programsource
- Compile, link, run
- Later DECset with LSE, CMS, MMS
- Or develop on desktop/laptop and use extensively ftp to copy sources both ways

- Enhanced Results
 - Improved Quality
 - Increased Productivity
 - Lower Costs
- Enriched Teams
 - Establishes best practices
 - Enrich current capabilities
 - Simplifies onboarding new developers
- Agile Organization
 - Improves development-operations (Dev-ops)
 - Provides great organizational adaptability

The components of a modern development Environment?



- Primary
 - Modern integrated development environment (IDE)
 - Powerful editors
 - Integrated graphical debugger
 - Integrated source code management
 - Open framework for adding tools
 - Best practices
- Contributing
 - Task/Requirement management
 - Dev-Ops automation between
 - Source code repository
 - Build
 - Testing



- What is NXTware Remote?
 - An integrated development/maintenance environment that
 - Increases software engineering productivity
 - Updates and modernizes the development process
 - Easily integrates external tools into the dev process
 - Supports best practices and improves code quality
 - Provides a
 - Remote development environment
 - Advanced software engineering tools
 - Powerful Debugger



- Eclipse-based IDE
 - Native HP Language Editors
 - Full integration /certification of 3rd party Eclipse plug-ins
- Remote Development
 - From: Windows, LINUX, MacOS
 - To: OpenVMS, LINUX, UNIX
- Language Support
 - Č/C++, COBOL, PASCAL, FORTRAN, BASIC
 - DCL, SQL, various scripting languages
- Modular Extensible
 - IDE and Remote Execution
 - MMS, CMS, SVN, etc
 - 3rd Party plug-ins

ie Edit Source Refactor N	avigate Search Project	NXTware Run	Mindow Help ・QL・:注册 Gi・:	
A Package Explorer	Hierarchy 🗖 🗖	RemoteProject	ServerImpl.java 🕄 🔃 Datab	
com.rotware.database.s com.rotware.remote com.rotware.remote.ser com.rotware.uprojet_open/// moureau_projet_open/// coureau_projet_open///	Ver 5 52 53	package *import : public (remoteServer.1mplemen emoteServer.RemotePro lass RemoteProjectSer	
Pouveau_projet_open//f Pouveau_projet_open//f	New Go Into	<pre>String ior = null; String classpathSep boolean isOpenVms = static Vector<short , emoteProjectServerI</short </pre>		
⊕ 🥪 test_jdb	Open in New Window Open Type Hierarchy Show In			
	Copy Qualified Name Copy Qualified Name Paste Copy Qualified Name Delete Copy Qualified Name Copy Qualified Name Delete		(); arator(); w Vector <short>();</short>	
	Build Path Source Refactor	<pre>emoteProjectServerI ();</pre>		
	🚵 Import	arator();		
	Build Project Refresh Close Project Close Unrelated Projects Assign Working Sets	F5	oid setIOR(String and the setIOR) of the setIOR (String and setIOR) of the setIOR) of the setIOR (String and	
	Run As Debug As 199 Convert to Remote Team Compare With Restore from Local History		Ba Comple Ba Comple Ba Debug Ca Debug Ca Debug Ca Debug Da Lycket Binaries Ca Lycket Binaries Ca Lycket Binaries Ca Lycket Binaries Da Lycket Project	
	PDE Tools		•	

	\$ show time	
	\$ SH memory	
	\$ f	
	ELCONTEXT	F\$\$CONTEXT
1 D1 PROGRAM CALC		Compile and Link
2 05 N1 = 0		complie and link
3 06 N2 = 0		
4 10 TNDHT "FNTED THE ETDST MIMBED."	Compile Link Alternate Language Co	mpile
Interactive Session	n	
		Ansi Standard 🔄 Listing 🔄 Debug
Search Filter M* Sea	arch Disconnect Clear Display	
		Select
Executable DISK\$USERS:[RDOYLE1MULTIPLIER.EXE	V Relaunch	
Display of DISK\$LISERS(IRD	CMS RESERVE	
Files	CheckO	lut
Enter first sumber (1 disit)		
		KLE.COB
ICA_PRT343_GET_DATA	A.COB	A_TRB71H_SET_ACCUM_IKUL.COB
Enter second number (1 dig ICA_TRB561_CHECK_H	IIST.COB	
ICA_TRB711_EDIT_BENI	ILEUMI.COB	
ICA_TRB711_APPL.COB	3	
ITERATION.COB	×	
<	> <	>
Comments Reserve for der	mo	
		Send Cancel
		rowse
		5554.0
		Remove
	×	ALC.OBJ V
		Clear List
Input		
	Send	
		Compile
Connected	Close	
		Close
		cioac

NXTware-Remote



Remote Development Architecture







- Remote architecture
 - NXTware Remote Studio
 - Eclipse plugin
 - NXTware Remote Server
 - Remote execution engine
 - NXTware Server
 - Cross-platform Communication platform
- Remote Operation
 - Studio enables users retrieve and edit code the transfer to a remote server for operations
 - On remote server the source code is built, complied, run and debugged from within Eclipse



- Rich Editor Features
 - Easy Navigation
 - Syntax Highlighting
 - <u>Content Assist</u>
 - Mirroring and Synchronizing Files
 - <u>Source Code Templates</u>
 - <u>Macros and Shortcuts</u>
 - <u>Search & Replace</u>
 - <u>Bookmarks</u>



Oracle RDB (Relational Database Management System) integration

HP CDD (Common Data Dictionary)

• CDO, BLDCDO

• HP ACMS

(Application Control Management System)

• GDF, TDF, IFDL, CDO

• HP RMS

(Record Management Services) integration

• **CMS,** NXTware Remote advanced integration with CMS





Rich Integration: CMS File Diff



NXTware-Remote - Compare (C:\temp2\)	192.168.1.14_demo_cobol/src_remote_files/compare/MYDEMOFILE_V1.COB with C:\temp2\19	2.168.1	1.14_dem	no_cobol/src_remote_files/compare/MYDEM	OFILE_V3.COB) - Eclipse 🛛 🗕	0 ×
File Edit Navigate Search Project NXTware Run	Window Help						
📑 🖛 🕼 🗁 🐝 🐝 🔛 🖿 🐝 🐝 🗳	▼ 088 ▼ 🖓 😳 😳 🖬 ▼ 🗷 💱 އ‡ 🐨 🔛 ▼ 🖏 FIN FIN FIN FIN FIN - RAS RAS RAS AS	Q .	• 🔗	' • 🖗 • 🖓 • 🌤 🗢 • 🖘 📧 🞄 🕸	,		
				Quick	Access 😭	🐉 Java 😰 NXTw	vare-Remote
Project Explorer 🛛 🔡 Outline 📃 🗖	Compare (C:\temp2\192.168.1.14_demo_cobol/src_remote_files/compare/MYDEMOFILE_V1.COB with C:\temp2	\192.168	.1.14_demo	o_cobol/src_remote_files/compare/MYDEMOFILE_V3.CC	DB) 🖾		- 0
	Text Compare					5 6 6 6 4	🔬 49 🗛
⊿ 😅 192.168.1.14_demo_cobol			1				
a 🗁 src	1 IDENTIFICATION DIVISION.		1 IDEN	TIFICATION DIVISION.			A
DISK\$USERS	2 PROGRAM-ID. MYDEMOFILE.		2 PROG	RAM-ID. MYDEMOFILE.			
B RDOYLE	3 AUTHOR. rdoyle.		3 AUTH	OR. rdoyle.			
Src_remote_files	4		4				
NXTware.remote	5		5				
b BAS 192.168.1.14_new_basic_project2	7		7				
E 192.168.1.14_new_c_project_demo	8 ENVIRONMENT DIVISION.		8 ENVI	RONMENT DIVISION.			
E 192.168.1.14_new_c_project2	9 CONFIGURATION SECTION.		9 CONF	IGURATION SECTION.			
E 192.168.1.14_new_c_project3	10 INPUT-OUTPUT SECTION.		10 INPU	T-OUTPUT SECTION.			
192.168.1.14_new_c_project4 102.168.1.14_new_feature_project2	12 DATA DIVISION		12 0474	DIVISION			
SI 192.108.1.14_new_fortran_projects	13 FILE SECTION.		13 FILE	SECTION.			
× w	14 WORKING-STORAGE SECTION.		14 WORK	ING-STORAGE SECTION.			
	15 LINKAGE SECTION.		15				
	16		16 PROCE	SECTION.			
	18		18	SECTION.			
	19 END PROGRAM MYDEMOFILE.		19 I	DISPLAY "Hello World".			
	20		20				
			21				
			23 END 1	PROGRAM MYDEMOFILE.			
			24				
							~
	<	>	<				>
	R I # E .	• 🖻 •		Problems 🕸 🧔 Tasks 🗐 Bookmarks			~
CMS SHOW DIFFERENCES 192.168.1.14_demo_cobol				6 errors, 0 warnings, 0 others			
%CMS-S-FETCHED, generation 3 of element	DISK\$USERS: [RDOYLE.cms]MYDEMOFILE.COB fetched		^	Description	Resource	Path	Location
RDOYLE job terminated at 12-AUG	-2014 14:04:13.50			Errors (6 items)			
Accounting information:							
Buffered I/O count: 52	0 Peak working set size: 4720						
Page faults: 41	2 Mounted volumes: 0						
Charged CPU time: 0 00:00:00.0	0 00:00:00.36						
			\checkmark				
<			>	<			>
Left: 16 : 1, Right: 15 : 1, incoming deletion #1 (Left: 15 : 15,	Right: before line 15)						
🖶 🚞 🌌 🅼 🔯				1 1 3	- i	∎ ant ⊕) ENG US	3:05 PM 2014-08-12

Powerful Debugger: Managing values



Debug - 192.168.1.14_demo/debug/ITERATION.COB - Eclipse							
File Edit Navigate Search Project Run Window Help							
· O · ↔ S / F 9. < < < < < < < < < < < < < < < < < <	$\mathbf{Q}_{\mathbf{a}}$ \mathbf{v} (\mathbf{b}) \mathbf{v} (\mathbf{c}) \mathbf{v} (\mathbf{c}) \mathbf{v} (\mathbf{c}) \mathbf{v} (\mathbf{c}) \mathbf{v} (\mathbf{c})	ss 🛛 😰 🖄 Java 🍋 Resource 🛍 NXTware-Remote 🔯 Debug					
🐐 Debug ⊠ 🍇 🗢 🗖	(x)= Variables 🔀 💁 Breakpoints	£_ ⇒t _i 📄 ∨ 🖓 🗖					
▲ 📧 192.168.1.14_demo [HP Cobo]]	Name	Value					
a 🔐 rdoyle	♦ NUM1	45					
a 🧬 Thread[1]	♦ NUM2	88					
StackName - ITERATION:24							
NXTware-Remote Process							
		A					
		×					
	<	>					
cos *ITERATION.COB 🕴	- 8	🗄 Outline 🛛 🕒 🕂 🗖 🗖					
16 MAIN SECTION.	^	IDENTIFICATION DIVISION					
17 DISPLAY "Enter First Number : ".		M ENVIRONMENT DIVISION					
18 ACCEPT Num1.		🖌 🎯 Data Division					
19 DISPLAY Num1.		Working Storage Section					
20 DISPLAY "Enter Second Number : ".		💷 01 Num1					
21 ACCEPT NUM2.		I 01 Num2					
22 DISPLAY WINZ.		👊 01 Result					
23 District Director		😼 01 Operator					
25 DISPLAY Operator.		PROCEDURE DIVISION					
26 IF Operator = "+" THEN		🕺 MAIN					
27 ADD Num1, Num2 GIVING Result							
28 END-IF.							
29 IF Operator = "*" THEN							
30 MULTIPLY Num1 BY Num2 GIVING Result							
31 END-IF.	× .						
Console % @ Tacks 60° Examine							
Enter First Number							
45							
Enter Second Number :							
88							
Enter operator (+ or *) :							
break at ITERATION\ITERATION\%LINE 24							
24: ACCEPT Operator.							
aaaaaabBG>		×					
<		>					
	Writable Insert	24:1					
		FNG 934 AM					

Video Demo: https://www.youtube.com/watch?v=3icNPjKjtXg



- Database Management
 - Dbeaver for Database integration (SQL and RDB support)
- Source Code Management Support
 - Quality Center, Subversion, Git, Microsoft Team Foundation, etc
- Requirement and Task Management
 - Mylyn Task Management (Quality Center support)
 - Custom integration
- Quality/Check Style
 - ACRT Automatic Code Review Tool for COBOL
- Custom Integration
 - Jenkins Build Automation



- Brings Continuous integration and Build Automation to OpenVMS
 - NXTware Remote Server acts as a Jenkins proxy on OpenVMS
- NXTware Remote for Jenkins allows developers to
 - Detect build breaks sooner
 - Identify failing tests more quickly
 - Make progress faster

Remote for Jenkins Architecture







- Primary components
 - Modern integrated development environment (IDE)
 - Powerful editors
 - Open framework for adding capabilities
 - Best practices for development engineering
- Valued-adding components
 - Task/Requirement management
 - The Next Step: Dev-Ops automation (Continuous Integration) between
 - Source code repository
 - Automated Build
 - Automated Testing



- Proven demonstrated benefits
 - Developers are
 - More productive
 - Generated fewer bugs
 - Created code that was easier to manage
 - Managers are able to better
 - Allocate resources
 - Track efforts
 - Forecast deliverables
 - End users receive
 - Better quality application updates faster



- What can NXTware Remote do for you and your users?
 - 30 %— 45% improvement in overall productivity
 - 100% 300% improvement in productivity for specific tasks
 - 50% decrease in bugs and errors that reach QA
 - Overall reduction in the amount of time and energy needed to develop, build and test software



Visit <u>www.ecubesystems.com</u> Watch the NXTware Remote <u>playlist</u> More Info: <u>gerrit@bgsoftware.nl</u>



Don't just take our word for it: (bit.ly/1E0m7KN)



https://www.youtube.com/watch?v=1V0gm98Xj4g



eCube Systems ENABLING ENTERPRISE EVOLUTION

NXTware Remote for Jenkins

Short overview of the benefits of Build Automation, Continuous Integration and NXTware Remote for Jenkins

Gerrit Woertman CTO OpenVMS Business Generating Software gerrit@bgsoftware.nl +31 6 51341600



- Build automation is the process of automating tasks that software developers do in their day-to-day work including:
 - compiling computer source code into binary code
 - packaging binary code
 - running automated tests
 - deploying to production systems
 - creating documentation and/or release notes



- The benefits of build automation include
 - Improved product quality
 - Accelerated compile and link process
 - Elimination of redundant tasks
 - Minimization of bad and faulty builds
 - Documentation of build and release history to track issues
 - Removal of dependencies on specific personnel
 - Saved time and money because of the reasons listed above.



- Continuous Integration (CI) is a development process that
 - requires developers to integrate code into a shared repository several times a day
 - each check-in is then verified by an automated build
 optionally followed by automated tests
 - allows teams to detect problems early



Four Steps to Continuous Integration





- Popular Continuous Integration Server
 - Widely used
 - Extensible
 - Ease to use
- Multi-platform
 - Windows, Linux, Unix
 - But not OpenVMS



- Brings Continuous integration and Build Automation to OpenVMS
 - NXTware Remote Server acts as a Jenkins proxy on OpenVMS
- NXTware Remote for Jenkins allows developers to
 - Detect build breaks sooner
 - Identify failing tests more quickly
 - Make progress faster

NXTware Remote for Jenkins Architecture





NXTware Remote for Jenkins Architecture





Jenkins Interface





Jenkins with NXTware Remote Plugin



Jenkins Interface

			- 0	×
(C) (Altp://robert-pc	::8080/jenkins/job/a/confi	gure $\mathcal{P} \star \mathcal{O}$ 🔮 a Config [Jenkins] X	☆ 🕆	\$
<u>File Edit View Favorites</u>	<u>T</u> ools <u>H</u> elp X	Google 🗸 Search 🗸 Search 🗸 More >>	Sign In	a, -
👍 in Michael Page Careers Lir	n 🧃 Revision 41086	5-trunk 🗘 😈 Progressbar jQuery UI 👌 👻 🗟 💌 🗁 Page 💌 Safety	y ▼ T <u>o</u> ols ▼ 🔞 ▼	»
Jenkins > a > configu	uration			
Build Now		Discard Old Builds		
O Delete Project		This build is parameterized		
Configure		Disable Build (No new builds will be executed until the project is re-enabled.)	0	
		Execute concurrent builds if necessary		
😣 Build History	(<u>trend</u>) —	Advanced Project Options		
#8 <u>26-Aug-2014 3:42</u>	2:39 PM		Advanced	1
#7 <u>26-Aug-2014 3:29</u>	9:12 PM	Source Code Management		
#6 <u>26-Aug-2014 3:22</u>	2:47 PM	O cvs		
#5 <u>26-Aug-2014 3:20</u>	0:41 PM	O CVS Projectset		
#4 <u>26-Aug-2014 10:2</u>	20:23 AM	None		
#3 <u>26-Aug-2014 10:1</u>	15:48 AM	○ Subversion		
S RSS for a	all 🔊 RSS for failures			
		Build after other projects are built	6	
			6	
			U	
		5010		
	1	In NXTware-Remote		
	-	Connection And Fine [C: (edipse_luna_64/edipse/plugins/com.nxtware.remote.common/data/192.168.1.14.xml		
		Connected	At Connection	
		Path disk\$users:[rdoyle]		
			Delete	
		Add by distent		
		Past wild Actions		
	\leq			
		Sare Approv		
	/			-
Help us localize this page		Page generated: 26-Aug-2014 3:46:26 PM REST API	Jenkins ver. 1.567	\sim

NXTware Remote

Continuous Integration and Jenkins



Jenkins Interface: Returning results from an OpenVMS Build via NXTware Remote

	nsole P + C	🧕 🧝 a #9 Console [Jenk	tins] ×				
File Edit View Favorites Tools Help X	Google				🗸 🚼 Search 🔹	🚰 Share	More »
👍 in Michael Page Careers Lin 🗿 Revision 41086	5 -trunk 🎧 😈 Progressbar jQ	uery UI					
Jenkins							
Jenkins ▶ a ▶ #9							
 Back to Project Status Changes Console Output View as plain text Edit Build Information Delete Build Previous Build 	Console O Started by user anonymous Building in workspace C:\U %DCL-I-SUPERSEDE, previous %DCL-I-SUPERSEDE, previous %DCS-FETCHED, generation SYSTEM job termine Accounting information: Buffered I/O count: Direct I/O count: Direct I/O count: Page faults: Charged CPU time: Finished: SUCCESS	Jsers\Robert\.jenki s value of DCL&PATH s value of DECC&FFS h 3 of element DISK ated at 26-AUG-2014 186 88 2145 0 00:00:00.13	ns\workspace\a has been superseded CASE PRESERVE has b SUSERS:[RDOYLE.cms]A 14:50:02.02 Peak working set s Peak virtual size: Mounted volumes: Elapsed time:	een superseded ORDER.F fetched ize: 27232 225488 0 0 00:00:00.44			



CI Process on OpenVMS

- Create a new job from a CMS repository
- Build that code, see build results
- Run tests, see test results
- Make a change and watch it run through the system

NXTware Remote for Jenkins



Before

- Building is slow, error prone
- Testing is onerous
- Code coverage is onerous
- Bugs caught later
- Developers worry about servers
- No change control for deployments
- Slow progress
- Different artifact per environment
- Inconsistent configuration per environment
- Deployments are "hard"
- Integration difficult

After

- "fire and forget", consistent
- Testing is automated
- Code coverage is easy
- Bugs caught early and often
- Developers worry about code
- Change control in the right places for deployments
- Rapid progress. Greater agility.
- Identical artifact per environment
- Identical configuration per environments
- Deployments are "click" easy
- Integration simplified



- Primary components
 - Modern integrated development environment (IDE)
 - Powerful editors
 - Open framework for adding capabilities
 - Best practices for development engineering
- Valued-adding components
 - Task/Requirement management
 - The Next Step: Dev-Ops automation (Continuous Integration) between
 - Source code repository
 - Automated Build
 - Automated Testing



Visit <u>www.ecubesystems.com</u> More Info: <u>Pmarquez@ecubesystems.com</u> or <u>gerrit@bgsoftware.nl</u>