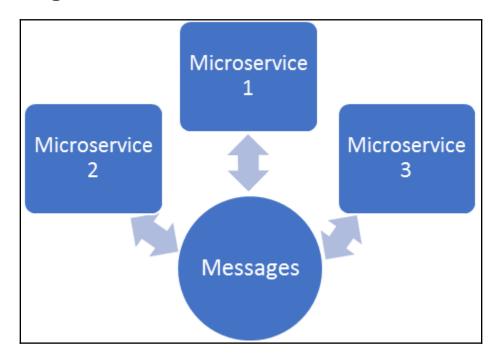
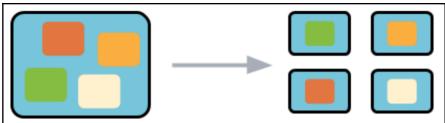
Graphic Bundle

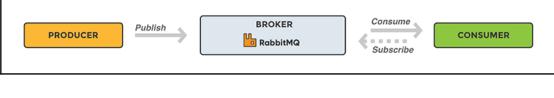
Chapter 1: Let's Talk Microservices, Messages, and Tools

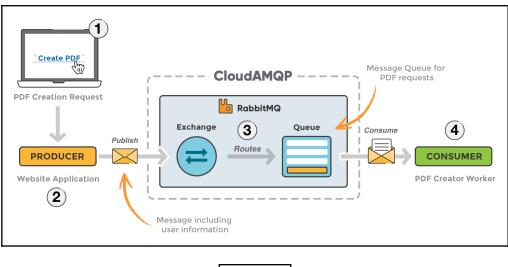


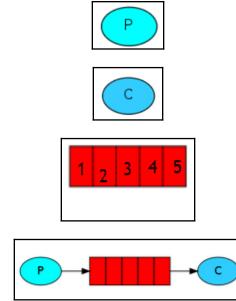


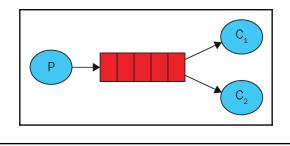


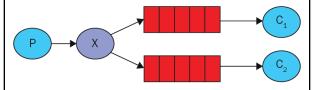


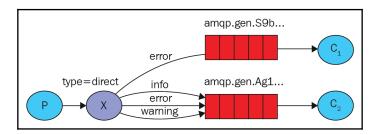


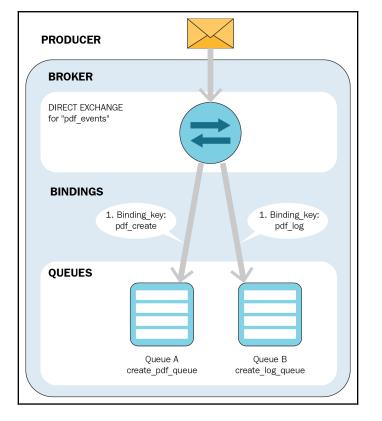


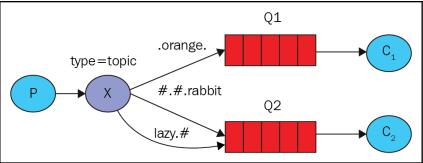


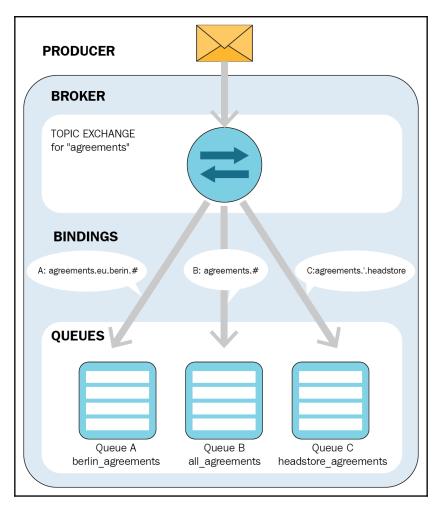


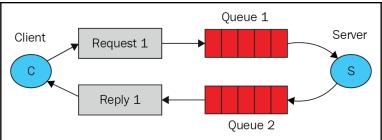


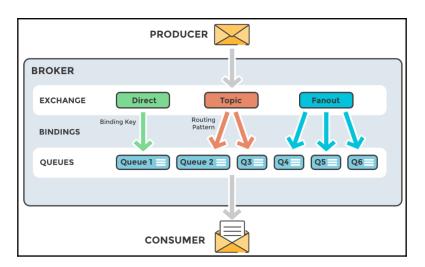


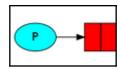


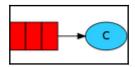


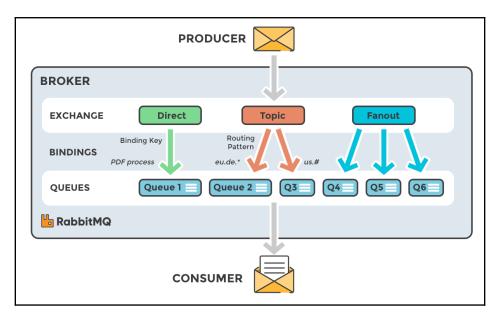


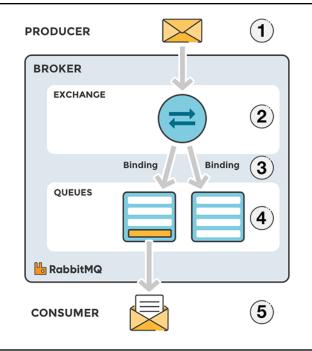


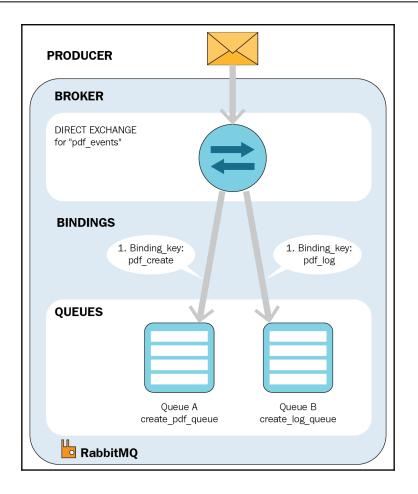


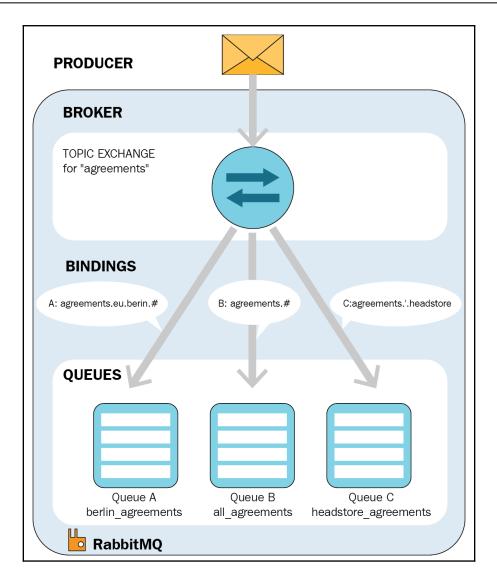


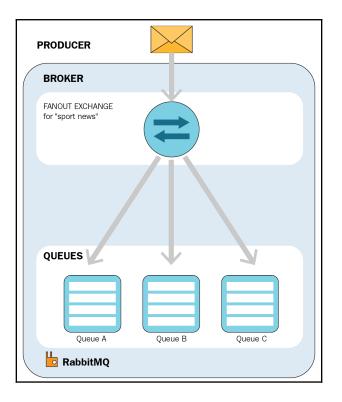


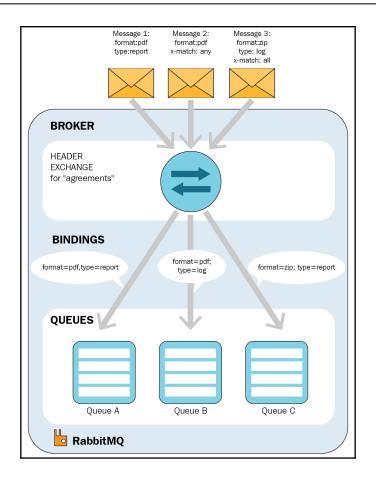












Chapter 2: ReflectInsight – Microservice Logging Redefined

Modfy View	HELP		Add Message -	📝 Edit Message	~				-	۵ (
Hide All Meth	* 🗸 🕐		Add Checkmark •	Bookmark Message(s)	X	₩ Re	aset Checkpoint	Ĩ 🕺	- Million - Mill	
View Cone View Hide Empty M	ethods Clear Reload	Add Separator			Delete	Y R	aset All Checkpoints	View Column Adjust	Advanced	
Close View View	÷		Add Checkpoint - Add	Highlight Message(s) + Edit	Message Delete		Checkpoint	Properties Columns Lavout	Search G Find	
	0		800	Ear	Delete		Properties	Layout	Pind	
All Messages [Message Type: A		ype: Exception]								+ 3
A load customer *	+ +					×	🔛 🖬 🖏			
Message			Category		Time Stamp		 Common 			
Adding Attachment Memory (filename)				vare.Insight.RIStress.Program vare.Insight.RIStress.Program	19:35:24.660 19:35:24.660	^	Line Number	48,976		
Attachment				vare.Insight.RIStress.Program	19:35:24.660		Message Type	Collection		
 Adding Attachment 				vare.Insight.RIStress.Program	19:35:24.660		Category	ReflectSoftware.Insight	.RIStress.Program	1
🛛 🗢 Adding Audit Failure				vare.Insight.RIStress.Program	19:35:24.660		Application	ReflectSoftware.Insight	RIStress	
Audit Failure				vare.Insight.RIStress.Program	19:35:24.660		Machine Name	INVFLDEVDEM01		
 Adding Audit Failure 				vare.Insight.RIStress.Program	19:35:24.660		User	Matt		
 Memory (stream) Adding Memory 				vare.Insight.RIStress.Program	19:35:24.660 19:35:24.660		Session Id	3463945355		
Adding Memory Adding Audit Success				vare.Insight.RIStress.Program vare.Insight.RIStress.Program	19:35:24.660		Process Id	13612		
Audit Success				vare.Insight.RIStress.Program	19:35:24.660		Thread Id	19060		
 Adding Audit Success 				vare.Insight.RIStress.Program	19:35:24.660		Request Id	19060		
🗟 🗢 Adding Checkmarks			ReflectSoftv	vare.Insight.RIStress.Program	19:35:24.660		Log Id	048976		
 Checkmark 				vare.Insight.RIStress.Program	19:35:24.660			048970		
✓ Checkmark ✓ Checkmark				vare.Insight.RIStress.Program	19:35:24.666 19:35:24.666		 Date Time 			
Checkmark Loaded Processes 1, 2, 3				vare.Insight.RIStress.Program vare.Insight.RIStress.Program	19:35:24.666		Time Zone	(UTC-05:00) Source		
✓ Checkmark				vare.Insight.RIStress.Program	19:35:24.666		Date	3/27/2014		
✓ Checkmark				vare. Insight. RIStress. Program	19:35:24.666		Time	19:35:24.666		
Checkmark			ReflectSoftv	vare.Insight.RIStress.Program	19:35:24.666		Time Difference	00:00:00.000		
 Adding Checkmarks 				vare.Insight.RIStress.Program	19:35:24.666		Time Offset	09:46:14.116		
Adding Collection				vare.Insight.RIStress.Program	19:35:24.666		Y Test Message			
Hash Table - No Scope String Collection - Scope All				vare.Insight.RIStress.Program vare.Insight.RIStress.Program	19:35:24.666 19:35:24.695		Time Created	3/27/2014 7:35:23 PM		
La String Collection - Scope All			Reliectority	vareurisignit.kustressurrögram	19:33:24:095	Ŧ	Date Created	Thursday, March 27, 20	014	
Details						÷×	Up Time	0D, 0H, 3M		
							Total CPU %	16		
							Free Disk Space	636.7G8 of 931G8		
System.Collections.Hashtable							 Memory Profiler 	0000000000000		
Key	Value		Туре				Memory Used	3.54 MB		
Enju	351-8765			m.String		-	Memory Used (R.			
Leah	922-5699		System	m.String			 Test Message 			
Nelly	110-5699		System	m.String		-	_			
James	010-4077		System	m.String			Thread			
Molly	221-5678		System	m.String			Process Time	00:00:11.5128738		
take	100.407					*	Random	1011068767		
🛄 Details 🔄 Bookmarks 🖓 Call Sta	*									

>

ReflectInsight Router Service 0 Mbps 0% 9.2 MB 0 MB/s 0%

LE HOME N	↓ IAVIGATION SETTINGS HELP			RIStressTest.rlg	- ReflectInsight Log Viewer 5.7	.0					
View Clone	View	Clear Clear	Add Separator	 Add Message ▼ ✓ Add Checkmark ▼ ✓ Add Checkpoint ▼ 	Edit Message Bookmark Message(s) Highlight Message(s)	Delete Message		set Checkpoint set All Checkpoints	View Column Properties * Columns *	Advanced Search	
	View			Add	Edit	Delete		Checkpoint	Layout 5	Find	
All Messages	[Message Type: Assert]	[Message T	ype: Exception]					Properties			1
A load custom	er 👻 🖛 🔿	•					×	🔠 🖬 🖬			
Message				Category		Time Stamp		Common			
🥹 Err					ware.Insight.RIStress.Program	19:35:23.559		Line Number	48,666		
	ror False				ware.Insight.RIStress.Program	19:35:23.559		Message Type	Internal Error		
	st Exception ernal Exception: <sendfatal>[Format</sendfatal>	tExcention->Index	(zero based) must		ware.Insight.RIStress.Program ware.Insight.RIStress.Program	19:35:23.559 19:35:23.619		Category	ReflectSoftware.Insight.	RIStress.Progra	m
	st Exception:[Exception] - Test Excep		(zero bused) muse		ware.Insight.RIStress.Program	19:35:23.619		Application	ReflectSoftware.Insight.	RIStress	
🌩 Adding					ware.Insight.RIStress.Program	19:35:23.619		Machine Name	INVFLDEVDEM01		
	Exception				ware.Insight.RIStress.Program	19:35:23.619		User	Matt		
■ ♥ Adding					ware.Insight.RIStress.Program ware.Insight.RIStress.Program	19:35:23.619 19:35:23.619		Session Id	3463945355		
	st Exception				ware.Insight.RIStress.Program	19:35:23.619		Process Id	13612		
Int	ernal Exception: <sendfatal>[Formal</sendfatal>	tException->Index	(zero based) must			19:35:23.619		Thread Id	35124		
	ernal Exception: <sendfatal>[Formal</sendfatal>					19:35:23.619		Request Id	35124		
Int	ernal Exception: <sendfatal>[Format</sendfatal>	tException->Index	(zero based) must	be greate ReflectSoft	ware.Insight.RIStress.Program	19:35:23.619		Log Id	048666		
🛄 Details							Ψ×	 Date Time 			
🔒 🖻 🖬	4							Time Zone	(UTC-05:00) Source		
							^	Date	3/27/2014		
Internal E	xception: <sendfatal>[Fo</sendfatal>	rmatExceptio	on->Index (z	ero based) must	be greater than or e	equal to ze	er	Time	19:35:23.619		
The fo	llowing exception occur	red:						Time Difference	00:00:00.000		
								Time Offset	09:46:13.069		
								 Test Message 			
1) Exc	eption Information							Time Created	3/27/2014 7:35:19 PM		
Except	ion Type: System.Format	Exception						Date Created	Thursday, March 27, 20	14	
	e: Index (zero based) m			equal to zero an	d less than the size	of the a	rg	Up Time	0D, 0H, 3M		
	System.Collections.List			TE 10	the contract to			Total CPU %	38		
	Site: System.Text.Strin nk: NULL	gBullder App	pendFormat(S	/stem.lFormatPro	vider, System.String	g, System.	ОВ	Free Disk Space	636.7GB of 931GB		
	: mscorlib							 Memory Profiler 			
HResul	t: -2146233033							Memory Used	1.26 MB		
Charlet	race Information							Memory Used (R.			
SLACKI	ace information							 Test Message 			
at	System.Text.StringBuild					ject[] ar	gs	Thread			
	em.String.Format(IForma	tProvider pr	rovider, Str	ing format, Obje	ct[] args)			Process Time	00:00:03.0888198		
							>	Random	1646595029		

1 🧉 🛃 🔹 = Untitled.rlg - Reflectinsight Live Viewer 5.7.0				[8]	۰
HOME NAVIGATION SETTINGS HELP					\otimes
Il Messages			Watches		ņ
	×		📓 🗙 🖬 🛍 🛍		
ssage	Time Stamp		Label	Value	
👻 Generation: 4637/5000. Tme/cen: 709 ms. Est. time remaining: 00h:04m:17s:367ms Fitness - Max: 4.9502 Mean: 0.8294. Complexity - Max: 166 Mean: 142.06 Champ: 145 Strategy: 1/8/201	8 08:16:41.056		Complexity - Mean	132.09	
Generation: 4647/5000, Time/gen: 691 ms, Est. time remaining: 00h:04m:03s:923ms Fitness - Max: 5.6441 Mean: 0.6120, Complexity - Max: 163 Mean: 134.50 Champ: 163 Strategy: 18/201			Champ	128	
Generation: +657/5000. Time/den: 701 ms. Est. time remaining: 00h:0+m:00s:+43ms Fitness - Max: 4.9756 Mean: 0.5073. Complexity - Max: 160 Mean: 143.86 Chamo: 160 Strategy: 1/a/20			Strategy	Complexifying	
Generation: 4667/5000. Time/den: 733 ms. Est. time remaining: 00h:04m:04s:089ms Fitness - Max: 5, 1262 Mean: 0, 7258, Complexity - Max: 157 Mean: 143, 43 Champ: 156 Strategy: 1/8/201	18 08:17:02.321		Specie size - Max	116	
Generation: 4677/5000. Time/cen: 729 ms. Est. time remaining: 00h:03m:55s:467ms Fitness - Max: 4.6804 Mean: 0.8399, Complexity - Max: 153 Mean: 133.69 Champ: 151 Strategy: 1/8/201	8 08:17:09.616		Specie size - Min	1	
Generation: 4688/5000, Time/gen: 1617 ms, Est. time remaining: 00h:08m:24s:504ms Fitness - Max: 4.8536 Mean: 0.7850, Complexity - Max: 150 Mean: 145.93 Champ: 146 Strategy:	8 08:17:27.409		Generations since last improvement	129	
👻 Generation: #698/5000, Time/gen: 742 ms, Est. time remaining: 00h:03m: +14:084ms Fitness - Max: 5.0929 Mean: 0.8337, Complexity - Max: 148 Mean: 143.39 Champ: 145 Strategy: 1/8/201			Obi Obiective Score	0.5661	
📽 Generation: 4708/5000, Time/gen: 741 ms, Est. time remaining: 00h:03m:36s:372ms Fitness - Max: 4.8712 Mean: 0.6593, Complexity - Max: 144 Mean: 139.84 Champ: 142 Strategy: 1/8/201	18 08:17:42.255		SpeciesSize0	1	
📽 Generation: 4718/5000, Time/gen: 721 ms, Est. time remaining: 00h:03m:23s:322ms Fitness - Max: 4.8545 Mean: 0.4845, Complexity - Max: 139 Mean: 135.11 Champ: 137 Strategy: 1/8/201			SpeciesSize1	3	
📽 Generation: 4728/5000, Time/gen: 736 ms, Est. time remaining: 00h:03m:20s:192ms Fitness - Max: 5.0803 Mean: 0.5670, Complexity - Max: 135 Mean: 129.95 Champ: 132 Strategy: 1/8/201	18 08:17:56.827		SpeciesSize1	218	
😻 Generation: 4738/5000, Time/gen: 723 ms, Est. time remaining: 00h:03m:09s:426ms Fitness - Max: 5.0115 Mean: 0.6186, Complexity - Max: 131 Mean: 128.17 Champ: 128 Strategy: 1/8/201			speciesSize2	63	
😻 Generation: 4748/5000, Time/gen: 704 ms, Est. time remaining: 00h:02m:57s:408ms Fitness - Max: 5.0922 Mean: 0.6899, Complexity - Max: 130 Mean: 124.38 Champ: 127 Strategy: 1/8/201	18 08:18:11.103			4	
🔆 Generation: 4759/5000, Time/gen: 783 ms, Est. time remaining: 00h:03m:08s:703ms Fitness - Max: 4.8821 Mean: 0.7472, Complexity - Max: 124 Mean: 120.59 Champ: 119 Strategy: 1/8/201	18 08:18:19.726		SpeciesSize4	1.1	
🔆 Generation: 4769/5000, Time/gen: 695 ms, Est. time remaining: 00h:02m:40s:545ms Fitness - Max: 5.3163 Mean: 0.7492, Complexity - Max: 119 Mean: 116.25 Champ: 117 Strategy: 1/8/201	18 08:18:26.685		SpeciesSize5	5	
👹 Generation: 4779/5000, Time/gen: 689 ms, Est. time remaining: 00h:02m:32s:269ms Fitness - Max: 5.4802 Mean: 0.4926, Complexity - Max: 117 Mean: 112.30 Champ: 117 Strategy: 1/8/201	8 08:18:33.575		SpeciesSize6	3	
😻 Generation: 4789/5000, Time/gen: 682 ms, Est. time remaining: 00h:02m:23s:902ms Fitness - Max: 4.7408 Mean: 0.3504, Complexity - Max: 113 Mean: 108.89 Champ: 110 Strategy: 1/8/201	18 08:18:40.393		SpeciesSize7	1	
😻 Generation: 4799/5000, Time/gen: 709 ms, Est. time remaining: 00h:02m:22s:509ms Fitness - Max: 4.7041 Mean: 0.4322, Complexity - Max: 108 Mean: 104.73 Champ: 107 Strategy: 1/a/201	18 08:18:47.488		SpeciesSize8	1	
🔆 Generation: 4809/5000, Time/gen: 700 ms, Est. time remaining: 00h:02m: 13s: 700ms Fitness - Max: 4.9714 Mean: 0.3853, Complexity - Max: 106 Mean: 102.09 Champ: 102 Strategy: 1/8/201	18 08:18:54.497	•	SpeciesSize9	1	
🔆 Generation: 4819/5000, Time/gen: 676 ms, Est. time remaining: 00h:02m:02s:356ms Fitness - Max: 4.1453 Mean: 0.6431, Complexity - Max: 104 Mean: 102.02 Champ: 100 Strategy: 1/a/201	8 08:19:01.265		SpeciesMeanFitness0	4.3644	
😻 Generation: 4829/5000, Time/gen: 1136 ms, Est. time remaining: 00h:03m:14s:256ms Fitness - Max: 4.6362 Mean: 0.5285, Complexity - Max: 103 Mean: 99.59 Champ: 103 Strategy: 1/8/201	8 08:19:12.627		SpeciesMeanFitness1	4.8557	
😻 Generation: 4839/5000, Time/gen: 710 ms, Est. time remaining: 00h:01m:54s:310ms Fitness - Max: 5.0722 Mean: 0.5784, Complexity - Max: 93 Mean: 92.17 Champ: 93 Strategy: Sim 1/8/201	18 08:19:19.736		SpeciesMeanFitness2	0.5208	
😻 Generation: 4849/5000, Time/gen: 658 ms, Est. time remaining: 00h:01m:39s:358ms Fitness - Max: 4.4119 Mean: 0.5912, Complexity - Max: 92 Mean: 89.98 Champ: 90 Strategy: Sim 1/8/201	18 08:19:26.319	•	SpeciesMeanFitness3	1.4864	
🔆 Generation: 4859/5000, Time/gen: 672 ms, Est. time remaining: 00h:01m:34s:752ms Fitness - Max: 4.5665 Mean: 0.3949, Complexity - Max: 89 Mean: 87.14 Champ: 87 Strategy: Sim 1/8/201	8 08:19:33.042		SpeciesMeanFitness4	3.4896	
👹 Generation: 4869/5000, Time/gen: 661 ms, Est. time remaining: 00h:01m:26s:591ms Fitness - Max: 4.3348 Mean: 0.4482, Complexity - Max: 89 Mean: 85.89 Champ: 85 Strategy: Sim 1/8/201	8 08:19:39.656		SpeciesMeanFitness5	3.8416	
😻 Generation: 4879/5000, Time/gen: 672 ms, Est. time remaining: 00h:01m:21s:312ms Fitness - Max: 4.3044 Mean: 0.5053, Complexity - Max: 87 Mean: 84.66 Champ: 78 Strategy: Sim 1/8/201	18 08:19:46.384		SpeciesMeanFitness6	4.3695	
😻 Generation: 4889/5000, Time/gen: 678 ms, Est. time remaining: 00h:01m: 15s: 258ms Fitness - Max: 4.2528 Mean: 0.3327, Complexity - Max: 85 Mean: 78.68 Champ: 73 Strategy: Sim 1/8/201	18 08:19:53.173		SpeciesMeanFitness7	5.4745	
😻 Generation: 4899/5000, Time/gen: 650 ms, Est. time remaining: 00h:01m:05s:650ms Fitness - Max: 4.5200 Mean: 0.2909, Complexity - Max: 79 Mean: 70.39 Champ: 71 Strategy: Sim 1/8/201	8 08:19:59.681	-	SpeciesMeanFitness8	4.1663	
😻 Generation: 4909/5000, Time/gen: 673 ms, Est. time remaining: 00h:01m:01s:243ms Fitness - Max: 4.2046 Mean: 0.1588, Complexity - Max: 74 Mean: 66.12 Champ: 70 Strategy: Sim 1/8/201	8 08:20:06.419		SpeciesMeanFitness9	5.0560	
😻 Generation: 4919/5000, Time/gen: 673 ms, Est. time remaining: 00h:00m:54s:513ms Fitness - Max: 2.2081 Mean: 0.1180, Complexity - Max: 70 Mean: 61.08 Champ: 61 Strategy: Sim 1/a/201	18 08:20:13.155		SpeciesMeanChamp0	130.0000	
🐺 Generation: 4929/5000, Time/gen: 637 ms, Est. time remaining: 00h:00m:45s:227ms Filness - Max: 2.4500 Mean: 0.0290, Complexity - Max: 58 Mean: 56.24 Champ: 54 Strategy: Sim 1/8/201	18 08:20:19.534			124.0000	
🟶 Generation: 4939/5000, Time/den: 618 ms, Est. time remaining: 00h:00m:37s:698ms Fitness - Max: 2.4339 Mean: 0.1098, Complexity - Max: 55 Mean: 53.44 Champ: 54 Strategy: Sim 1/8/201	8 08:20:25.717	r -	SpeciesMeanChamp2	129,6881	
tals	÷ :			134.3175	
				126,7500	
				128.0000	
eration: 128/5000, Time/gen: 580 ms, Est. time remaining: 00h:47m:05s:760ms Fitness - Max: 6.1410 Mean: 1.0057, Complexity - Max: 1	36 Mean: 127.99		SpeciesHeanChamp5	138.0000	
mp: 129 Strategy: Complexifying, Specie size - Max: 141 Min: 1, Generations since last improvement: 119			SpeciesMeanChamp5	138.0000	
		* II -	SpeciesMeanChamp8	124.0000	
Detals 🔊 Call Stack			SpeciesMeanChamp9	124.0000	
16 Message(s) 🕓 08:22:17.701 Line: 515 Modified			sble 🔍 Remote Connections Online		_

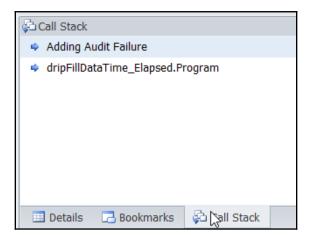
) 🞽 🖬 🕤	Ŧ			RIS	tressTest.rlg	- ReflectInsight Log Viewer 5.7.	0
FI		HOME NAVIO	GATION SETTINGS HELP						
Nev	w V	/iew Modify Vie	W Hide Empty Methods	Clear Reload	Add Separator	 Add Mes Add Che Add Che Add Che Add Che 	eckmark -	Edit Message Bookmark Message(s) Highlight Message(s) * Edit	Delete Message Delete
Advanced		All Messages	☐ [Message Type: Assert]	[Message Ty	pe: Exception]				
Ince		Message					Category		Time Stamp
		🗸 Checkn	nark				ReflectSoftv	vare.Insight.RIStress.Program	19:35:22.222
Search		Audit S	uccess				ReflectSoftv	vare.Insight.RIStress.Program	19:35:22.222
_		🔕 Audit F	ailure				ReflectSoftv	vare.Insight.RIStress.Program	19:35:22.222
		🗸 Checkn	nark				ReflectSoftv	vare.Insight.RIStress.Program	19:35:22.222
		🔕 Audit F	ailure				ReflectSoftv	vare.Insight.RIStress.Program	19:35:22.222
		🙆 Audit F	ailure				ReflectSoftv	vare.Insight.RIStress.Program	19:35:22.222
		🗸 Checkm	nark				ReflectSoftv	vare.Insight.RIStress.Program	19:35:22.273
		🔶 Adding Aud	dit Success				ReflectSoftv	vare.Insight.RIStress.Program	19:35:22.273
		Checkm	nark				ReflectSoftv	vare.Insight.RIStress.Program	19:35:22.273
		Audit S	uccess				ReflectSoftv	vare.Insight.RIStress.Program	19:35:22.273

	Properties		ņ	>
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	Common			
	Line Number	48,163		
Message Type Category		Audit Failure		
		ReflectSoftware.Insight.RIStress.Program		
	Application	ReflectSoftware.Insight.RIStress		
	Machine Name	INVFLDEVDEM01		
	User	Matt		
	Session Id	3463945355		
	Process Id	13612		
	Thread Id	33864		
	Request Id	33864		
	Log Id	048163		
v	Date Time			
	Time Zone	(UTC-05:00) Source		
	Date	3/27/2014		
	Time	19:35:22.222		
	Time Difference	00:00:00.000		
	Time Offset	09:46:11.672		
v	Test Message			
	Time Created	3/27/2014 7:35:19 PM		
	Date Created	Thursday, March 27, 2014		
	Up Time	0D, 0H, 3M		
	Total CPU %	38		
	Free Disk Space	636.7GB of 931GB		
v	Memory Profiler			
	Memory Used	1.26 MB		
	Memory Used (R	1324200		
Y	Test Message			
	Thread			
	Process Time	00:00:03.2760210		
	Random	1535238345		

-

	Watches	Ф ж
È	X 🖬 🖬 🛍	
	Label	Value
Ð	Mode	train
0	LSTM Layer Size	200
	Hidden Layers	lstm:200
	Template Feature Size	174,751
•	Template Feature Context Size	174,751
	Pretrained Dense Feature Size	200
Θ	Data\Corpus\NER_ENU\train.txt	619,076 records
Θ	Training Records	17
Θ	Data\Corpus\WER_ENU\valid.txt	32,828 records
Θ	Validation Records	17
Θ	Processor Count	12
Θ	Incremental Training	No
Θ	Random Value	0.463699321478465
Θ	OutputLayer	simple
Θ	Sparse Feature Size	174751
Θ	Dense Feature Size	400
Θ	Max Seq Len	1,024
Θ	VQ	No
Θ	CRF Training	Yes
Θ	Minibatch Size	1
Θ	Is Const Alpha	No
Θ	Total RNNs	24
Θ	Learning Rate	0.1
Θ	Gradient Cutoff	1
•	Processed Sequence	7,624
•	Processed MiniBatch	27
	Sentence Error Count	2,646
	Iteration	6K/ 619.076K
0	Error token ratio	4.10660466718333%
	Error sentence ratio	34.5666666666667%
1	Properties 📑 Watches	

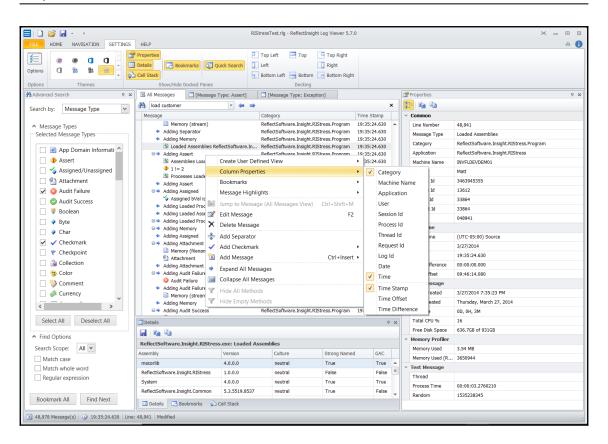
	🗜 Bookmarks 🛛 🖓 🛪								
v	Views: All Messages 🕞 🔛 🧔 🛼 🖾 🥋 🔀								
	View	Message	Date	Time	Line				
	All Messages	Q Audit Failure	3/27/2014	19:35:22.222	48160				
		Q Audit Failure	3/27/2014	19:35:22.222	48162				
	All Messages	Q Audit Failure	3/27/2014	19:35:22.222	48163				
	🔟 Details 🛛 🗔 Bookmar	ks 🖓 Call Stack							



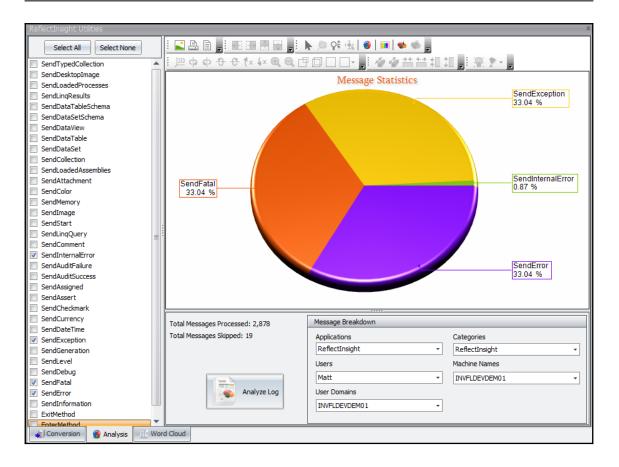
🕂 Advanced Search	÷×						
Search by: Message Type	~						
 Message Types Selected Message Types 							
App Domain Informati App Assert Ssigned/Unassigned	^						
Attachment							
Q Audit Failure O Audit Success V V Boolean							
 Ø Byte Ø Char 							
Checkmark							
Collection							
Comment	~						
< >							
Select All Deselect All							
▲ Find Options Search Scope: All ▼							
Match case							
Match whole word							
Regular expression							
Bookmark All Find Next							

Time Display Format - Main View						
Time Format: 🕕	Military	✓				
Time Zone Type: 🕕	Source	\checkmark				
Apply to all views	now 🛈					
Customizations: 🕕	Reset					

Customize how AutoSave and AutoPurge are handled							
Auto Save/Purge							
Select either Auto Save or Auto Purge for the Viewer:							
Auto Save This option tells ReflectInsight to save the current visual logged messages to a physical log file when a certain criteria has been met. After the file has been Auto Saved, ReflectInsight will clear the current visual logged messages in preparation of new incoming messages.							
 Save on New Day Save User Define Views during Auto Save (1) 							
Message Limit: (i) 1000000 1000 1000 1000							
File Size Limit: (1) 0 0 102,400 MB							
File Recycle Limit: ① 0 0 100							
Auto Purge This option tells ReflectInsight to purge the top visual logged messages by a top amount, whereby, removing it from the Viewer's memory, when a message limit has been reached. Please note: ReflectInsight will NOT save purged messages to a physical log file.							
Message Limit: 100000 1000 — 1,000,000 Purge Top: 20% Image: Compare the second							
Customizations: () Reset All							



Dittled.rig - ReflectInsight Live Viewer 5.7.0					(2)	۲
HOME NAVIGATION SETTINGS HELP						v
Messages				Watches		1
▼		×		📓 🗙 🖬 🛍 🐚 🐚		
sole	Date	Time Stamp		Label	Value	
	egy: 1/8/2018	08:16:41.056		Complexity - Mean	132.09	
Generation: #647/5000, Time/gen: 691 ms, Est. time remaining: 00h:04m:03c:923ms Fitness - Max: S.6441 Mean: 0.6120, Complexity - Max: 163 Mean: 134.50 Champ: 163 Strati		08:16:47.972		Champ	128	
Generation: 4657/5000, Time/aen: 701 ms. Est. time remaining: 00h:04m:00s:443ms Fitness - Max: 4.9756 Mean: 0.5073. Complexity - Max: 160 Mean: 143.86 Champ: 160 Strat		08:16:54.994		Strategy	Complexifying	
Generation: 4667/5000, Time/gen: 733 ms, Est. time remaining: 00h:04m:04s:089ms Fitness - Max: 5.1262 Mean: 0.7258, Complexity - Max: 157 Mean: 143.43 Champ: 156 Stratt	egy: 1/8/2018	08:17:02.321		Soecie size - Max	116	
Generation: 4677/5000, Time/aen: 729 ms, Est. time remaining: 00h:03m:55s:467ms Fitness - Max: 4.6804 Mean: 0.8399. Complexity - Max: 153 Mean: 133.69 Champ: 151 Stratt		08:17:09.616		Specie size - Min	1	
Generation: 4688/5000, Time/gen: 1617 ms, Est. time remaining: 00h:08m:24s:504ms Fitness - Max: 4.8536 Mean: 0.7850, Comolexity - Max: 150 Mean: 145.93 Chamo: 146 Stra	tegy: 1/8/2018	08:17:27.409		Generations since last improvement	129	
Generation: 4698/5000, Time/gen: 742 ms, Est. time remaining: 00h:03m:44s:084ms Fitness - Max: 5.0929 Mean: 0.8337, Complexity - Max: 148 Mean: 143.39 Champ: 145 Stratt	egy: 1/8/2018	08:17:34.840		Obi Obiective Score	0.5661	
Generation: 4708/5000, Time/gen: 741 ms, Est. time remaining: 00h:03m:36s:372ms Fitness - Max: 4.8712 Mean: 0.6593, Complexity - Max: 144 Mean: 139.84 Champ: 142 Strati	egy: 1/8/2018	08:17:42.255		SpeciesSize0	1	
Generation: 4718/5000, Time/gen: 721 ms, Est. time remaining: 00h:03m:23s:322ms Fitness - Max: 4.8545 Mean: 0.4845, Complexity - Max: 139 Mean: 135.11 Champ: 137 Stratt	egy: 1/8/2018	08:17:49.465		SpeciesSize1	3	
Generation: 4728/5000, Time/gen: 736 ms, Est. time remaining: 00h:03m:20s: 192ms Fitness - Max: 5.0803 Mean: 0.5670, Complexity - Max: 135 Mean: 129.95 Champ: 132 Stratt	egy: 1/8/2018	08:17:56.827		SpeciesSize1	218	
Generation: 4738/5000, Time/gen: 723 ms, Est. time remaining: 00h:03m:09s:426ms Fitness - Max: 5.0115 Mean: 0.6186, Complexity - Max: 131 Mean: 128.17 Champ: 128 Stratt	egy: 1/8/2018	08:18:04.063		SpeciesSize2	63	
Generation: 4748/5000, Time/gen: 704 ms, Est. time remaining: 00h:02m:57s:408ms Fitness - Max: 5.0922 Mean: 0.6899, Complexity - Max: 130 Mean: 124.38 Champ: 127 Stratt	egy: 1/8/2018	08:18:11.103				
Generation: 4759/5000, Time/gen: 783 ms, Est. time remaining: 00h:03m:08s:703ms Fitness - Max: 4.8821 Mean: 0.7472, Complexity - Max: 124 Mean: 120.59 Champ: 119 Strati	egy: 1/8/2018	08:18:19.726		SpeciesSize4	4	
Generation: 4769/5000, Time /aen: 695 ms, Est. time remaining: 00h:02m:40s:545ms Fitness - Max: 5.3163 Mean: 0.7492, Complexity - Max: 119 Mean: 116.25 Champ: 117 Stratt		08:18:26.685		SpeciesSize5	5	
Generation: 4779/5000, Time/gen: 689 ms, Est. time remaining: 00h:02m:32s:269ms Fitness - Max: 5.4802 Mean: 0.4926, Complexity - Max: 117 Mean: 112.30 Champ: 117 Stratt	egy: 1/8/2018	08:18:33.575		SpeciesSize6	3	
Generation: 4789/5000, Time/gen: 682 ms, Est. time remaining: 00h:02m:23s:902ms Filtness - Max: 4.7408 Mean: 0.3504, Complexity - Max: 113 Mean: 108.89 Champ: 110 Stratt	egy: 1/8/2018	08:18:40.393		SpeciesSize7	1	
Generation: 4799/5000, Time/gen: 709 ms, Est. time remaining: 00h:02m:22s:509ms Filtness - Max: 4,7041 Mean: 0.4322, Complexity - Max: 108 Mean: 104.73 Champ: 107 Stratt	egy: 1/8/2018	08:18:47.488		SpeciesSize8	1	
Generation: 4809/5000. Time/gen: 700 ms, Est. time remaining: 00h:02m: 13s: 700ms Fitness - Max: 4.9714 Mean: 0.3853, Complexity - Max: 106 Mean: 102.09 Champ: 102 Strati	egv: 1/8/2018	08:18:54.497		SpeciesSize9	1	
Generation: 4819/5000, Time/gen: 676 ms, Est. time remaining: 00h:02m:02s:356ms Fitness - Max: 4.1453 Mean: 0.6431, Complexity - Max: 104 Mean: 102.02 Champ: 100 Stratt	egy: 1/8/2018	08:19:01.265		SpeciesMeanFitness0	4.3644	
Generation: 4829/5000, Time/gen: 1136 ms, Est. time remaining: 00h:03m:14s:256ms Fitness - Max: 4.6362 Mean: 0.5285, Complexity - Max: 103 Mean: 99.59 Champ: 103 Stratt	egy: 1/8/2018	08:19:12.627		SpeciesMeanFitness1	4.8557	
Generation: 4839/5000. Time/gen: 710 ms. Est. time remaining: 00h:01m:548:310ms Fitness - Max: 5.0722 Mean: 0.5784. Complexity - Max: 93 Mean: 92.17 Champ: 93 Strategy	: Sim 1/8/2018	08:19:19.736		SpeciesMeanFitness2	0.5208	
Generation: 4849/5000, Time/gen: 658 ms, Est. time remaining: 00h:01m:39s:358ms Fitness - Max: 4.4119 Mean: 0.5912, Complexity - Max: 92 Mean: 89.98 Champ: 90 Strategy:	: Sim 1/8/2018	08:19:26.319		SpeciesMeanFitness3	1.4864	
Generation: 4859/5000, Time/gen: 672 ms, Est. time remaining: 00h:01m:34s:752ms Fitness - Max: 4.5665 Mean: 0.3949, Complexity - Max: 89 Mean: 87.14 Champ: 87 Strategy	: Sim 1/8/2018	08:19:33.042		SpeciesMeanFitness4	3.4896	
Generation: 4869/5000, Time/gen: 661 ms, Est. time remaining: 00h:01m:265:591ms Fitness - Max: 4.3348 Mean: 0.4482, Complexity - Max: 89 Mean: 85.89 Champ: 85 Strategy	: Sim 1/8/2018	08:19:39.656		SpeciesMeanFitnessS	3.8416	
Generation: 4879/5000, Time/gen: 672 ms, Est. time remaining: 00h:01m:21s:312ms Fitness - Max: 4.3044 Mean: 0.5053, Complexity - Max: 87 Mean: 84.66 Champ: 78 Strategy	: Sim 1/8/2018	08:19:46.384		SpeciesMeanFitness6	4.3695	
Generation: 4889/5000, Time/gen: 678 ms, Est. time remaining: 00h:01m: 15s:258ms Fitness - Max: 4.2528 Mean: 0.3327, Complexity - Max: 85 Mean: 78.68 Champ: 73 Strategy	: Sim 1/8/2018	08:19:53.173		SpeciesMeanFitness7	5.4745	
Generation: 4899/5000, Time/gen: 650 ms, Est. time remaining: 00h:01m:05s:650ms Fitness - Max: 4.5200 Mean: 0.2909, Complexity - Max: 79 Mean: 70.39 Champ: 71 Strategy		08:19:59.681		SpeciesMeanFitness8	4.1663	
Generation: 4909/5000, Time/gen: 673 ms, Est. time remaining: 00h:01m:01s:243ms Fitness - Max: 4.2046 Mean: 0.1588, Complexity - Max: 74 Mean: 66.12 Champ: 70 Strategy		08:20:06.419		SpeciesMeanFitness9	5.0560	
Generation: 4919/5000, Time/gen: 673 ms, Est. time remaining: 00h:00m:54s:513ms Fibress - Max: 2.2081 Mean: 0.1180, Complexity - Max: 70 Mean: 61.08 Champ: 61 Strategy:		08:20:13.155	-11	SpeciesMeanChamp0	130.0000	
Generation: 4929/5000, Time/gen: 637 ms, Est. time remaining: 00h:00m:45s:227ms Fitness - Max: 2.4500 Mean: 0.0290, Complexity - Max: 58 Mean: 56.24 Champ: 54 Strategy		08:20:19.534		SpeciesMeanChamp1	124.0000	
Generation: 4939/5000, Time/gen: 618 ms, Est. time remaining: 00h:00m: 37s:698ms Fitness - Max: 2.4339 Mean: 0.1098, Complexity - Max: 55 Mean: 53.44 Champ: 54 Strategy		08:20:25.717	•	SpeciesMeanChamp1	129.6881	
		ņ		SpeciesMeanChamp2	129.6881	
					126.7500	
ration: 128/5000, Time/gen: 580 ms, Est. time remaining: 00h:47m:05s:760ms Fitness - Max: 6.1410 Mean: 1.0057, Complexi	ty - Max: 136	Mean: 127.99	- 11 -	SpeciesMeanChamp5	128.0000	
p: 129 Strategy: Complexifying, Specie size - Max: 141 Min: 1, Generations since last improvement: 119	-			SpeciesMeanChamp6	138.0000	
				SpeciesMeanChamp7	124.0000	
			- II -	SpeciesMeanChamp8	124.0000	
etails 🖗 Call Stack				SpeciesMeanChamp9	124.0000	
Message(s) () 08:22:17.701 Line: 515 Modified				1	Receive Messages	_



Rew Co	onfiguration.config - ReflectInsight	Configuration Editor 😁 🗕 🗖 🗙
File Help	Settings	
 Settings Auto Save Files AutoSave Listeners New Listener Certificates Routers MessagePatterns Listener Groups LogManager Instances New LogManager Instance Extensions Exception Publishers New Exception Publisher Filters New Filter 	Insight Settings] Configuration File Base Settings Config Change Enabled Debug Message Process Enabled State Exception Event Tracker Global Category Propagate Exception Enabled Request Object Request Life Span Sender Name Config Change Enabled If "True", any configuration changes duri configuration file is only read once upon Default is "True" if not defined.	true false all 20 ReflectInsight true 10
Functionalities		
Status: Modified		

Chapter 3: Creating a Base Microservice and Interface

Add New Project						?	×
▶ Recent	Sort by	Default		Search (Ctrl+	⊦E)		ρ-
▲ Installed	N	Blank App (Universal Windows)	Visual C#	Type: Visu			
 Visual C# Get Started 	, C#	WPF App (.NET Framework)	Visual C#	A project f (.dll)	or creating a C# c	lass libra	ry
Windows Universal Windows Desktop	C#	Windows Forms App (.NET Framework)	Visual C#				
Web .NET Core	ر ې،	Console App (.NET Core)	Visual C#				
.NET Standard Cloud	GB	Console App (.NET Framework)	Visual C#				
Extensibility Orleans		Class Library (.NET Standard)	Visual C#				
Test WCF		Class Library (.NET Framework)	Visual C#				
Workflow ▷ Azure Data Lake	\$	ASP.NET Core Web Application	Visual C#				
 Azure Stream Analytics Other Languages 		ASP.NET Web Application (.NET Framework)	Visual C#				
▶ NVIDIA		Shared Project	Visual C#				
▷ Online		Class Library (Legacy Portable)	Visual C#				
Not finding what you are looking for? Open Visual Studio Installer	- G 	Class Library (Universal Windows)	Visual C#				
Name: Base MicroService		Windows Runtime Component (Universal Windows)	Visual C#	v			
		cuments\Visual Studio 2017\Projects\Base MicroService	•	Browse			
					ОК	Canc	el

Graphic Bundle

Brow	se Installed Updates		NuGe	et Package N	lanager: MicroServiceManager
Cach	eManager x 👻 🗋 Include prerelease				Package source: nuget.org -
MC	CacheManager.Core by MichaConrad, 353K downloads CacheManager is an open source caching abstraction layer for .NET written in C#. It supports various	v1.1.2		(condenses)()	eManager.SystemRuntimeCach
MC	cache providers and implements many advanced features. The Core library contains all base interface CacheManager.SystemRuntimeCaching by MichaConrad, 201K downloads CacheManager extension package which adds System.Runtime.Caching.MemoryCache as an option for a local in-memory cache layer. CacheManager is an open source caching abstraction layer for .NET w	v1.1.2	1	Version: Late:	st stable 1.1.2 • Install
MC	CacheManager.StackExchange.Redis by MichaConrad, 159K downloads CacheManager extension package which addd, upport for Redis as a distributed cache layer. CacheManager is an open source caching abstraction layer for .NET written in C#. It supports various	v1.1.2		System.Runtime	extension package which adds e.Caching.MemoryCache as an option for a
MC	CacheManager.Microsoft.Extensions.Configuration by MichaConrad, 40K downloads CacheManager extension package to use Microsoft.Extensions.Configuration to configure the CacheManager instance. CacheManager is an open source caching abstraction layer for .NET written i	v1.1.2		source caching	ry cache layer. CacheManager is an open abstraction layer for .NET written in C#. It is cache providers and implements many ires.
MC	CacheManager.Serialization.Json by MichaConrad, 91.4K downloads	v1.1.2		Version: Author(s):	1.1.2 MichaConrad
	CacheManager extension package providing JSON serialization for distributed caches. CacheManager is an open source caching abstraction layer for .NET written in C#. It supports various cache providers		-	License:	https://github.com/MichaCo/ CacheManager/blob/master/LICENSE

Chapter 4: Designing a Memory Management Microservice

Add New Project					?	×
▷ Recent	Sort by	Default		Search (Ctrl+E)		ρ.
▲ Installed		Blank App (Universal Windows)	Visual C#	Type: Visual C]#	
 Visual C# Get Started 		WPF App (.NET Framework)	Visual C#	A project for c application	reating a command-	line
Windows Universal Windows Desktop	C#	Windows Forms App (.NET Framework)	Visual C#			
Web .NET Core	5:	Console App (.NET Core)	Visual C#			
.NET Standard Cloud	C *	Console App (.NET Framework)	Visual C#			
Extensibility Orleans		Class Library (.NET Standard)	Visual C#			
Test WCF	, - € ;; 4:3} =	Class Library (.NET Framework)	Visual C#			
Workflow ▷ Azure Data Lake	\$	ASP.NET Core Web Application	Visual C#			
 Azure Stream Analytics Other Languages 		ASP.NET Web Application (.NET Framework)	Visual C#			
 NVIDIA 		Shared Project	Visual C#			
▷ Online	n ≈s : ~3=	Class Library (Legacy Portable)	Visual C#			
Not finding what you are lookin		Class Library (Universal Windows)	Visual C#			
Open Visual Studio Installe	er 🕂 🕅	Windows Runtime Component (Universal Windows)	Visual C#	r		
Name: Memory M	licroService					
Location: C:\Users\m	nattc\OneDrive\Do	uments\Visual Studio 2017\Projects\Base MicroService	•	Browse		
Framework: .NET Fram	nework 4.7.1 🔹					
					OK Ca	ncel

RabbitMQ Proper	ties (Local (Computer)			\times
General Log On	Recovery	Dependencies			
Log on as:					
● Local System a		with desktop			
⊖ This account:				Browse	
Password:					
Confirm passv	vord:				
		ОК	Cancel	Apply	r

App Readiness Properties (Local Computer)							
General Log On	Recovery	Dependenci	es				
Select the compu actions.	ter's respons	e if this servio	e fails. <u>Help me se</u>	et up recovery			
First failure:		Restart the	Service	~			
Second failure:		Restart the	Service	v			
Subsequent failur	res:	Restart the	Service	×			
Reset fail count a	fter:	0	days				
Restart service af	ter:	1	minutes				
□ Enable actions	for stops with	n errors.	Restart Compute	er Options			
Run program							
Program:							
			E	Browse			
Command line	parameters:						
☐ Append fail count to end of command line (/fail=%1%)							
		OK	Cancel	Apply			

-

Graphic	Bundle
---------	--------

MemoryMicroservice	-	\times
Service Started.		\sim
MemoryMicroService Started.		
Heartbeat		
Heartbeat Heartbeat		
Heartbeat		
Heartbeat		
Reclaiming Memory		
*** Memory ***		
Memory before GC: 1.52 MB		
Memory after GC: 832 KB		
App memory being used: 21.1 MB		
Generation 0 Collection Count: 1		
Generation 1 Collection Count: 1		
Heartbeat		
		~

Exchanges							
Pagination							
Page 1 • of 1 - Filter:							
Name	Туре	Features	Message rate in	Message rate out	+/-		
(AMQP default)	direct	D					
Deployments	fanout	D	0.00/s	0.00/s			
EvolvedAI	fanout	D					
amq.direct	direct	D					
amq.fanout	fanout	D					
amq.headers	headers	D					
amq.match	headers	D					
amq.rabbitmq.trace	topic	DI					
amq.topic	topic	D					

Excha	nge: EvolvedAI
Message rate	es last minute ?
Currently id	2 million and a million and
Details	
Туре	fanout
Features	durable: true
Policy	
▼ Binding	JS
	This exchange
	Ų
То	Routing key Arguments
Memory	Unbind

Excha	nge: EvolvedAI
	es last minute ?
0.3/s 0.2/s 0.2/s 0.1/s 0.1/s 0.0/s 07:43:30	Publish (In) 0.00/s Publish (Out) 0.00/s 07:43:40 07:43:50 07:44:00 07:44:20
Details	
Type Features Policy	fanout durable: true
* Binding	IS
	This exchange
To Memory	Routing key Arguments Unbind

Overview	Messages			Message rates				
Name	Features	State	Ready	Unacked	Total	incoming	deliver / get	ack
Deployments	D	idle	5	0	5	0.00/s		
HealthMonitor	D	idle	0	0	0			
JobScheduler	D	idle	0	0	0			
Memory	D	idle	0	0	0			

Exchange: EvolvedAI	
Message rates last minute ?	
0.3/s 0.2/s 0.2/s Publish (In)	0.00/s
0.1/s 0.1/s 0.0/s 0.0/s 0.7:43:30 07:43:50 07:44:00 07:44:10 07:44:20 Publish (Out)	0.00/s
Details	
Type fanout	
Features durable: true	
Policy	
▼ Bindings	
This exchange	
· ·	
To Routing key Arguments Memory Image: Comparison of the second s	

Queue Memor	у							
Queued messages last minu	ute ?							
4.0	6	Read	y = 3					
2.0	-	Unacke	d 🔳 0					
1.0 0.0 07:45:40 07:45:50 07	7:46:00 07:46:10 07	g6:20 07:46:30 Tota	al 🔳 3					
Message rates last minute	?							
0.3/s 0.2/s 0.2/s 0.1/s 0.1/s 0.1/s 0.7/45:30 07:45:40 07:45:	50 07:46:00 07:46:10	Publis	h = 0	.00/s				
Details	30 0710100 0710110	07.140.60						
Features	durable: true	State	≡ idle					
Policy		Consumers	0					
Operator policy		Consumer utilisation ?	0%					
Effective policy definition			Total	Ready	Unacked	In memory	Persistent	Transient, Paged Out
		Messages ?	3	3	0	3	0	0
		Message body bytes ?	1.3kB	1.3kB	0B	1.3kB	OB	OB

MemoryMicroservice eartbeat eartbeat	RabbitMQ. 3.7.4 Erlang 20.3	
eartbeat eartbeat	Overview Connections Channels Exc	hanges Queues Admin
eartbeat eartbeat		
eartbeat b	Queue Memory	These can be
eartbeat eartbeat	▼ Overview	Changed
artbeat		changed
claiming Memory " Memory ***	Queued messages last minute ?	
Memory before GC: 1.67 MB	4.0	Ready 3
Memory after GC: 1.44 MB App memory being used: 37.6 MB	2.0	Unacked 0
Generation 0 Collection Count: 4 Generation 1 Collection Count: 4	1.0	Uniced 0
Time Spent in GC: 00%	0.0 07:46:20 07:46:30 07:46:40 07:46:40 07:47:10 07:47:1	Total 3
Memory ***		
artbeat artbeat	Message rates last minute ?	
artbeat		
artbeat artbeat	1.0/s	Publish 0.00/s
artbeat		
artbeat artbeat		
artbeat	0.0/s 07:46:20 07:46:30 07:46:40 07:46:50 07:47:00 0	7:47:10
artbeat		

Chapter 5: Designing a Deployment Monitor Microservice

Deployment Start Message					ployment Stop Message		
Application Acceptance tests		ts		ost eploy test	st ploy tests		
		A	uto Auto				
dd New Project						? ×	
Recent		Sort by:	Default		Search (Ctrl+E)	P	
Installed		N°i	Blank App (Universal Windows)	Visual C#	Type: Visual C#		
Visual C# Get Started			WPF App (.NET Framework)	Visual C#	A project for creating a command- application	nand-line	
Windows Univers Windows Deskto		C	Windows Forms App (.NET Framework)	Visual C#			
Web .NET Core		5.	Console App (.NET Core)	Visual C#			
.NET Standard Cloud		<u>C</u> :\	Console App (.NET Framework)	Visual C#			
Extensibility Orleans		- € 	Class Library (.NET Standard)	Visual C#			
Test WCF			Class Library (.NET Framework)	Visual C#	1		
Workflow Azure Data Lake		\$	ASP.NET Core Web Application	Visual C#			
Azure Data Lake Azure Stream Analytics Other Languages NVIDIA			ASP.NET Web Application (.NET Framework)	Visual C#			
		C#	Shared Project	Visual C#			
Online			Class Library (Legacy Portable)	Visual C#			
Not finding what you a	are looking for?		Class Library (Universal Windows)	Visual C#			
Open Visual Studi	io Installer		Windows Runtime Component (Universal Windows)	Visual C#	-		
ame: D	eploymentMonitor	MicroSen	rice				
ocation: C	:\Users\mattc\OneD	rive\Doc	uments\Visual Studio 2017\Projects\Base MicroService	• •	Browse		
ramework:	NET Framework 4.7.1	- T					



Chapter 6: Designing a Scheduling Microservice

Add New Project					?	×
▶ Recent	Sort by: Default	▼		Search (Ctrl+E)		ρ.
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.NET Standard Cloud	Console App (.N	ET Framework)	Visual C#			
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Test WCF	Class Library (.NE	T Framework)	Visual C#			
Workflow ▷ Azure Data Lake	ASP.NET Core We	eb Application	Visual C#			
 Azure Stream Analytics Other Languages 	ASP.NET Web Ap	plication (.NET Framework)	Visual C#			
 NVIDIA 	Shared Project		Visual C#			
▷ Online	Class Library (Leg	gacy Portable)	Visual C#			
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Name: SchedulingMicroSe	ce					
Location: C:\Users\mattc\One	C:\Users\mattc\OneDrive\Documents\Visual Studio 2017\Projects\Base MicroService			Browse		
Framework: .NET Framework 4.7	•					
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	-	•	💽 Quar	tz	
Quartz by Marko Lahma Quartz Scheduling Framework for .NET	◆ v3.0.0v3.0.5		nstalled: 3.0.	0	Unins
P RabbitMQ.Client by RabbitMQ.Client The RabbitMQ.NET client is the official client library for C# (and, implicitly, other .NET languages)	O v5.0.1		Version: Late	est stable 3.0.5 🔹	Upd
ReflectSoftware.Insight by ReflectSoftware Inc. ReflectInsight - The Next Generation in Application Logging.	O v5.7.1.1	-	Options Description		
Serilog by Serilog Contributors Simple .NET logging with fully-structured events	• v2.6.0 v2.7.1	•	Version:	ing Framework for .NET 3.0.5	
	• v2.1.1		Author(s): License:	Marko Lahma http://www.apache.or LICENSE-2.0	g/licenses/
Serilog.Enrichers.Environment by Serilog Contributors Enrich Serilog log events with properties from System.Environment.			Date publishee Proiect URL:	d: Sunday, May 27, 2018 https://www.quartz-sc	
Serilog.Enrichers.Thread by Serilog Contributors Enrich Serilog events with properties from the current thread.	O v3.0.0		Report Abuse:		j/packages/
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<> Code	() Issues 52	្រា Pull requests 6 III Projects 0 🔟 Insights
Releases	Tags	
	Latest release ♥ v3.0.5 ◆ 887c86c	Quartz.NET 3.0.5
		Duartz.NET-3.0.5.zip
		Source code (zip)
		Source code (tar.gz)

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	ConvNetSharp-master	all R
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z.NET-3.0.5.zip >		
Name	Туре	Compressed size
📕 bin	File folder	r
📕 database	File folder	r
📕 src	File folder	r
🔊 build.cmd	Windows (Command Script
build.fsx	FSX File	
🔊 build.sh	Shell Scrip	pt
changelog.md	MD File	1
license.txt	Text Docur	ument
@ quartz.net.snk	Strong Na	ame Key File
Quartz.sln	Visual Stud	idio Solution
README.md	MD File	

C:\Tools\Quartz.NET-3.0.5\bin\Release\Quartz.Server\net452>quartz.server.exe install Configuration Result: [Success] Name QuartzServer [Success] Description Quartz Job Scheduling Server [Success] ServiceName QuartzServer Topshelf v4.0.0.0, .NET Framework v4.0.30319.42000 Running a transacted installation. Beginning the Install phase of the installation. Installing Quartz Server service Installing service QuartzServer Service QuartzServer has been successfully installed. The Install phase completed successfully, and the Commit phase is beginning. The Commit phase completed successfully. The transacted install has completed. C:\Tools\Quartz.NET-3.0.5\bin\Release\Quartz.Server\net452>_	Administrator: Command Prompt –	×
Installing Quartz Server service Installing service QuartzServer Service QuartzServer has been successfully installed. The Install phase completed successfully, and the Commit phase is beginning. The Commit phase completed successfully. The transacted install has completed.	nfiguration Result: uccess] Name QuartzServer uccess] DisplayName Quartz Server uccess] Description Quartz Job Scheduling Server uccess] ServiceName QuartzServer pshelf v4.0.0.0, .NET Framework v4.0.30319.42000	
The transacted install has completed.	stalling Quartz Server service stalling service QuartzServer rvice QuartzServer has been successfully installed.	
	e Commit phase completed successfully.	
C:\Tools\Quartz.NET-3.0.5\bin\Release\Quartz.Server\net452>_	e transacted install has completed.	
	\Tools\Quartz.NET-3.0.5\bin\Release\Quartz.Server\net452>_	

	Q 🛃 🛛 📷 🕨 🖬 🗤						
Services (Local)	Services (Local)						
	Quartz Server	Name	Description	Status	Startup Type	Log On As	
	Start the service Description: Quartz Job Scheduling Server	Performance Counter DLL H Performance Logs & Alerts Phone Service Plug and Play PNRP Machine Name Public PostgreSQL Scheduling Age postgreSQL-Scheduling Age power Power Print Spooler Printer Extensions and Notifi	Enables remote users and 64-bit – Performance Logs and Alerts Coll Manages the telephony state on – Enables a computer to recognize – This service publishes a machine – Enforces group policy for remova Provides relational database stor Manages power policy and powe This service spools print jobs and This service opens custom printer	Running Running Running Running Running	Manual Manual (Trigg Manual (Trigg Manual (Trigg Automatic Automatic Automatic Automatic Automatic Manual	Local Service Local Service Local Service Local Service Local System Apostgres Network Se Local System Local System Local System	Ľ
		PrintWorkflow_6b0a6 Problem Reports and Soluti ProductAgentService Program Compatibility Assis Quality Windows Audio Vid Quartz Server Quarts Vid	Print Workflow This service provides support for _ Bitdefender Product Agent Servic This service provides support for _ Quality Windows Audio Video Ex Quartz Job Scheduling Server	Running Running	Manual Manual Automatic Manual Automatic	Local System Local System Local System Local System Local Service Local System	
		Carl RabbitMQ Carl Radio Management Service Carl Realtek Audio Service Realtek Insight Router Service ReflectInsight Router Service	Multi-protocol open source mess Radio Management and Airplane For cooperation with Realtek aud ReflectInsight Router Service. Use Creates a connection to a remote	Running Running Running	Automatic Manual Automatic Automatic Manual	Local System Local Service Local System Local System Local System	

Quartz Server Proj	perties (Local Computer)	×				
General Log On	Recovery Dependencies					
Service name:	QuartzServer					
Display name:	Quartz Server					
Description:	Quartz Job Scheduling Server					
Path to executabl	e:					
"C:\Program Files	(x86)\Quartz.Net\Quartz.Server.exe" -displayname "Quar					
Startup type:	Automatic					
Help me configure service startup options.						
Service status:	Stopped					
Start	Stop Pause Resume					
You can specify the start parameters that apply when you start the service from bare						

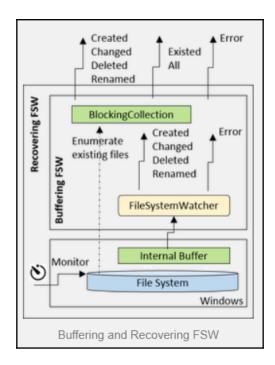


Chapter 7: Designing an Email Microservice

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▲ Installed	5	Blank App (Universal Windows)	Visual C#	Type: Visual C#	
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Windows Desktop		Windows Forms App (.NET Framework)	Visual C#		
Web .NET Core	<u>5``</u>	Console App (.NET Core)	Visual C#		
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Extensibility Orleans	€. •13=	Class Library (.NET Standard)	Visual C#		
Test WCF	 ~_3_=	Class Library (.NET Framework)	Visual C#		
Workflow ▶ Azure Data Lake	\$	ASP.NET Core Web Application	Visual C#		
 Azure Stream Analytics Other Languages 	⊕_	ASP.NET Web Application (.NET Framework)	Visual C#		
 NVIDIA 		Shared Project	Visual C#		
▷ Online		Class Library (Legacy Portable)	Visual C#		
Not finding what you are looking for	or?	Class Library (Universal Windows)	Visual C#		
Open Visual Studio Installer	RC#	Windows Runtime Component (Universal Windows)	Visual C#	*	
Name: EmailMicroSe	vice				
Location: C:\Users\matte	\OneDrive\Do	cuments\Visual Studio 2017\Projects\Base MicroService	•	Browse	
Framework: .NET Framework	ork 4.7.1 🔹				
				ОК С	ancel

Chapter 8: Designing a File Monitoring Microservice

-				
Created:	New	Microsoft	Excel	
Changed:	New	Microsoft		Worksheet.xlsx
Changed:	New	Microsoft	Excel	Worksheet.xlsx
Created:	~еw	Microsoft	Excel	Worksheet.tmp
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Renamed:	New	Microsoft	Excel	Worksheet.xlsx
Deleted:	New	Microsoft	Excel	Worksheet.xlsx~RF4 <mark>36f7c2.TMP</mark>
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Renamed:		t.xlsx		
Deleted:		3C637.tmp		
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```
48:56,387| Start: Will auto-detect unavailability of watched directory.

    Windows timeout accessing network shares: ~110 sec on start.

                    ~45 sec while watching.
48:56,408| _monitorTimer_Elapsed: Watching:\\gogo\test\in
? Processing... |Press <Enter> to contine.
48:56,476| _monitorTimer_Elapsed: Directory \\gogo\test\in accessibility is OK.
48:56,480| ProcessFile: 04.05.2015 09:48:56 -Polled- \\gogo\test\in\Test-1.xml
49:06,223| ProcessFile: 04.05.2015 09:49:06 -Created- \\gogo\test\in\Test-2.xml
49:46,501| _fileWatcher_Error: The specified network name is no longer available
49:46,503| _fileWatcher_Error: Will try to recover automatically!
49:51,506| _monitorTimer_Elapsed: Watching:\\gogo\test\in
51:00,036| _monitorTimer_Elapsed: => Directory \\gogo\test\in Is Not accessible.
- Will try to recover automatically in 00:00:05!
51:05,038| _monitorTimer_Elapsed: Watching:\\gogo\test\in
51:05,052| _monitorTimer_Elapsed: ...retrying
51:10,055| _monitorTimer_Elapsed: Watching:\\gogo\test\in
51:10,078| _monitorTimer_Elapsed: ...retrying
51:15,080| _monitorTimer_Elapsed: Watching:\\gogo\test\in
51:15,094| _monitorTimer_Elapsed: ...retrying
51:20,096| _monitorTimer_Elapsed: Watching:\\gogo\test\in
51:20,109| _monitorTimer_Elapsed: ...retrying
51:25,110| _monitorTimer_Elapsed: Watching:\\gogo\test\in
51:25,123| _monitorTimer_Elapsed: ...retrying
51:30,125| _monitorTimer_Elapsed: Watching:\\gogo\test\in
51:30,178| _monitorTimer_Elapsed: Directory \\gogo\test\in accessibility is OK.
51:30,183| ProcessFile: 04.05.2015 09:51:30 -Polled- \\gogo\test\in\Test-3.xml
51:30,183| _monitorTimer_Elapsed: <= Watcher recovered
51:37,231| ProcessFile: 04.05.2015 09:51:37 -Created- \\gogo\test\in\Test-4.xml
51:42,672| _Lambda$__22-0: Obeying cancel request
Stopping..
? Stopped. |Press <Enter> to contine.
```

RecoveringFileSystemWatcher working and auto recovering

Add New Project				? ×
▶ Recent	Sort by	/: Default 🔹 🏢 📘		Search (Ctrl+E)
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 Visual C# Get Started Windows Universal 		WPF App (.NET Framework)	Visual C#	A project for creating a command-line application
Windows Desktop		Windows Forms App (.NET Framework)	Visual C#	
 Web Office/SharePoint 	<u>5°</u>	Console App (.NET Core)	Visual C#	
.NET Core .NET Standard	E/	Console App (.NET Framework)	Visual C#	
Cloud Extensibility		Class Library (.NET Standard)	Visual C#	
Orleans Test		Class Library (.NET Framework)	Visual C#	
WCF Workflow	A	ASP.NET Core Web Application	Visual C#	
 Azure Data Lake Azure Stream Analytics 		ASP.NET Web Application (.NET Framework)	Visual C#	
 Other Languages NVIDIA 	C#	Shared Project	Visual C#	
 Online 		Class Library (Legacy Portable)	Visual C#	
Not finding what you are looking	for?	Class Library (Universal Windows)	Visual C#	
Open Visual Studio Installer	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Windows Runtime Component (Universal Windows)	Visual C#	*
Name: AdvancedFi	eMonitoringMic	ro		
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Framework: .NET Frame	vork 4.7.1 🔹			
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Web .NET Core		5 °`	Console App (.NET Core)	Visual C#					
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Extensibility Orleans			Class Library (.NET Standard)	Visual C#	l				
Test WCF		- 4 43}	Class Library (.NET Framework)	Visual C#					
Workflow ▷ Azure Data Lake		#	ASP.NET Core Web Application	Visual C#					
 Azure Stream Ana Other Languages 	lytics		ASP.NET Web Application (.NET Framework)	Visual C#					
NVIDIA		C#	Shared Project	Visual C#					
▷ Online			Class Library (Legacy Portable)	Visual C#					
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Name:	FileSystemMonitorN	licroServio	e						
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Framework:	.NET Framework 4.7	.1 🔹							
						[ОК	Cano	
							ÖK	cunc	
• Tonsholf	FileSystemWatch	ar bu TTC	oft. 3.09K downloads v1.0.0.20		0	Topshelf.Fi	leSystem	Watch	er
Topshelf.FileSystemWatcher by TTSoft, 3.09K downloads v1.0.0.20 Topshelf.FileSystemWatcher wraps the .NET FileSystemWatcher class behind a									
configurato	r, to make it possible t	o easily li	sten for FileSystem change events whithin	Ve	ersion	: Latest stable	1.0.0.20 -	Insta	all
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谢	Options	
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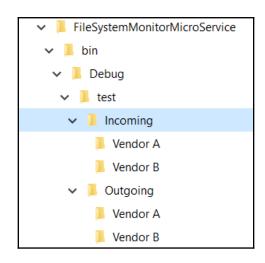
 Description

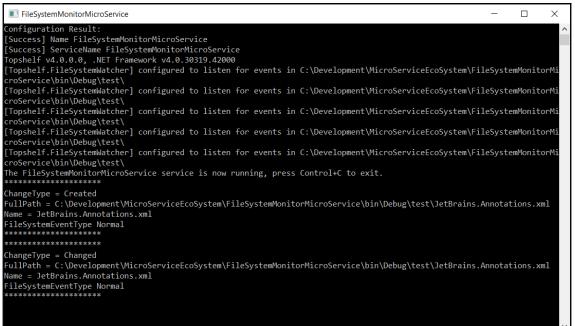
 Topshelf.FileSystemWatcher wraps the .NET

 FileSystemWatcher class behind a configurator, to make it possible to easily listen for FileSystem change events whithin your Topshelf Service.

 Version:
 1.0.0.20

 Author(s):
 TTSoft



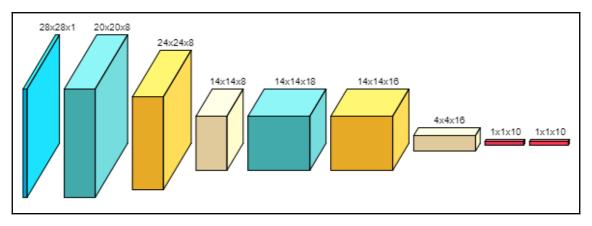


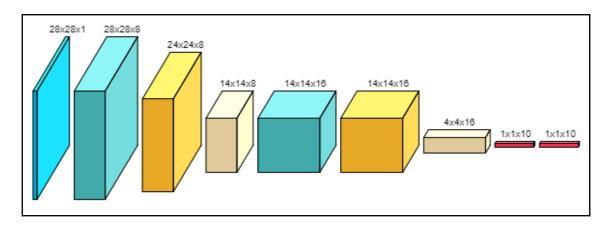
MicroServiceManager	_	\times
Memory Used: 52.0 MB		^
*** Memory at ***Saturday, June 2, 2018 8:34:26 AM		
Memory before GC: 5.38 MB		
CPU Used: 24.0450344085693		
Memory after GC: 2.42 MB		
App memory being used: 52.0 MB		
Generation 0 Collection Count: 7		
Generation 1 Collection Count: 5		
Message: OK		
Time Spent in GC: 00.01%		
*** Memory ***		
Received Memory Update Message		
Heartbeat		
Received Health Status Message		
Service: Microservice Manager_EVOLVEDAI		
Status: 1		
Microservice Manager_EVOLVEDAI Reclaiming Memory		
Memory Used: 51.9 MB		
*** Memory at ***Saturday, June 2, 2018 8:35:26 AM		
Memory before GC: 3.35 MB		
CPU Used: 7.50879335403442		
Memory after GC: 2.43 MB		
App memory being used: 51.9 MB		
Generation 0 Collection Count: 9		
Generation 1 Collection Count: 7		
Message: OK		
Time Spent in GC: 03.52%		
*** Memory ***		
Received Memory Update Message		
		\sim

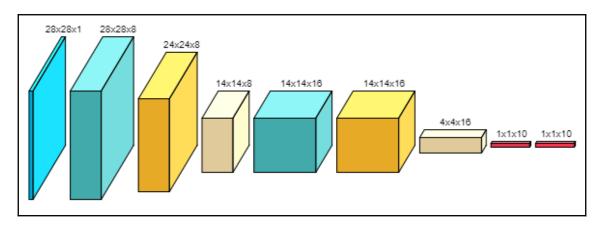
Chapter 9: Creating a Machine Learning Microservice

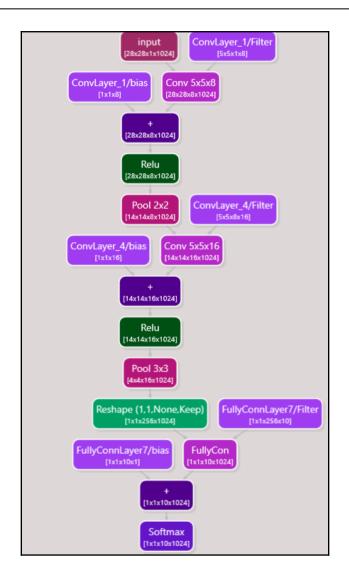
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Windows Universal Windows Desktop ▷ Web	Windows Forms App (.NET Framework)	Visual C#	
.NET Core	Console App (.NET Core)	Visual C#	
.NET Standard Cloud	Console App (.NET Framework)	Visual C#	
Extensibility Orleans	Class Library (.NET Standard)	Visual C#	
Test WCF	Class Library (.NET Framework)	Visual C#	
Workflow ▷ Azure Data Lake	ASP.NET Core Web Application	Visual C#	
 Azure Stream Analytics Other Languages 	ASP.NET Web Application (.NET Framework)	Visual C#	
NVIDIA	Shared Project	Visual C#	
▷ Online	Class Library (Legacy Portable)	Visual C#	
Not finding what you are looking for?	Class Library (Universal Windows)	Visual C#	
Open Visual Studio Installer	Windows Runtime Component (Universal Wi	ndows) Visual C#	
Name: MachineLearningMi	Service		
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Framework: .NET Framework 4.7	•		
			OK Cancel

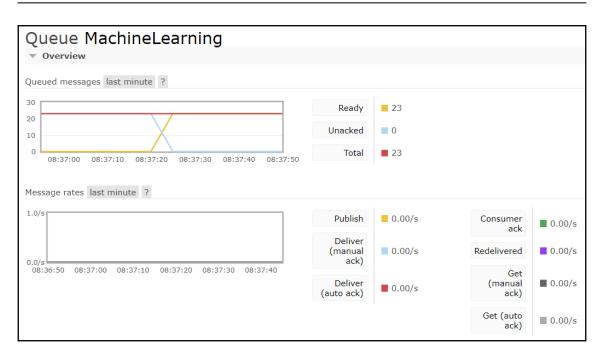
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rganize 👻 New fold	er		∎== ∎== ▼	
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3D Objects	📙 obj	5/17/2018 1:58 PM	File folder	
	Properties	5/17/2018 1:58 PM	File folder	
E Desktop	ConvNetSharp.Core.dll	5/17/2018 11:19 A	Application extens	46
Documents	ConvNetSharp.Volume.dll	5/17/2018 11:19 A	Application extens	46
, Downloads				
b Music				
E Pictures				
Videos				
💺 Windows (C:)				
🥪 Local Disk (E:)				
×	<			
File nar	me: "ConvNetSharp.Volume.dll" "ConvNet	Sharp.Core.dll"	Component Files (*.dl	l;*.tlb;*.olt 🚿











Chapter 10: Creating a Quantitative Financial Microservice

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 Installed 	*	Blank App (Universal Windows)	Visual C#	Type: Visual C#
▲ Visual C#			visual C#	A project for creating a command-line
Get Started		WPF App (.NET Framework)	Visual C#	application
Windows Universal Windows Desktop	C	Windows Forms App (.NET Framework)	Visual C#	
▶ Web	5:1	Console App (.NET Core)	Visual C#	
.NET Core .NET Standard	-	Console App (.NET Core)	Visual C#	
Cloud	<u>C</u> #	Console App (.NET Framework)	Visual C#	
Extensibility	 	Class Library (.NET Standard)	Visual C#	
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WCF		Class Library (.NET Framework)	Visual C#	
Workflow ▷ Azure Data Lake	\$	ASP.NET Core Web Application	Visual C#	
 Azure Data Lake Azure Stream Analytics 		ASP.NET Web Application (.NET Framework)	Visual C#	
 Other Languages NVIDIA 		Shared Project	Visual C#	
▷ Online		Class Library (Legacy Portable)	Visual C#	
Not finding what you are looking for?		Class Library (Universal Windows)	Visual C#	
Open Visual Studio Installer	, FS≇	Windows Runtime Component (Universal Windows)	Visual C#	*
Name: QuantMicroService				
Location: C:\Development\Mi		EcoSystem	•	Browse
Framework: .NET Framework 4.7	.1 •			
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Select the files to reference				×
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Organize 👻 New folder			1 1 1	
🛆 OneDrive	Name	Date modified	Туре	Size
, San This PC	📕 bin	5/18/2018 2:22 PM	File folder	
~	📙 obj	5/18/2018 2:22 PM	File folder	
3D Objects	Properties	5/18/2018 2:22 PM	File folder	
📙 Desktop	🔄 QLNet.dll	5/18/2018 8:50 AM	Application extens	6,371 KB
🔮 Documents				
📜 Downloads				
🐌 Music				
E Pictures				
Videos				
🐛 Windows (C:)				
🥪 Local Disk (E:)				
× <				>
File name	: QLNet.dll	~	Component Files (*.dl	l;*.tlb;*.olt ∨
			Add	Cancel

QuantFinanceMicroService	_	\times
issue: 5/22/2020 12:00:00 AM maturity: 5/22/2040 12:00:00 AM coupon: 0.08 frequency: 1		^
yield: 0.05 continuous price: 135.412004023351 yield': 0.05 price': 135.412004023351		
yield recalculation failed:: issue: 5/22/2020 12:00:00 AM maturity: 5/22/2040 12:00:00 AM coupon: 0.08 frequency: 1		
yield: 0.06 continuous price: 120.517567649524 yield: 0.0600000381469727 price': 120.517515175551		
yield recalculation failed:: issue: 5/22/2020 12:00:00 AM maturity: 5/22/2040 12:00:00 AM coupon: 0.08 frequency: 1		
yield: 0.07 continuous price: 107.775023706766 yield': 0.0699999622344971 price': 107.775068219188		~

Chapter 11: Trello Microservice – Board Status Updating

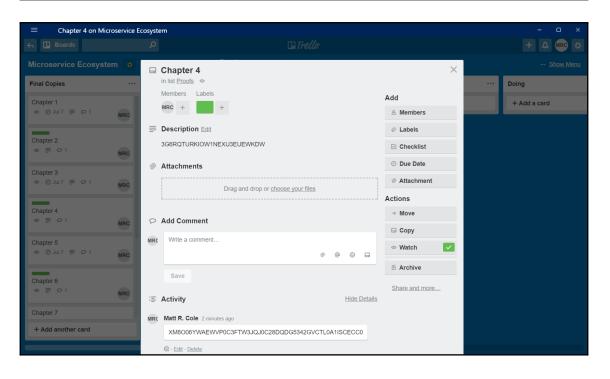
Add New Project			? ×
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▲ Installed	Blank App (Universal Windows)	Visual C#	Type: Visual C#
 Visual C# Get Started 	Ce	Visual C#	A project for creating a command-line application
Windows Universal Windows Desktop	Windows Forms App (.NET Framework)	Visual C#	
Web .NET Core	Console App (.NET Core)	Visual C#	
.NET Standard Cloud	Console App (.NET Framework)	Visual C#	
Extensibility Orleans	Class Library (.NET Standard)	Visual C#	
Test WCF	Class Library (.NET Framework)	Visual C#	
Workflow ▷ Azure Data Lake	ASP.NET Core Web Application	Visual C#	
 Azure Stream Analytics Other Languages 	ASP.NET Web Application (.NET Framework)	Visual C#	
▶ NVIDIA	Shared Project	Visual C#	
▷ Online	Class Library (Legacy Portable)	Visual C#	
Not finding what you are looking for?	TU	Visual C#	
Open Visual Studio Installer	Windows Runtime Component (Universal Windows)	Visual C#	
Name: TrelloMicroService			
	icroServiceEcoSystem	•	Browse
Framework: .NET Framework 4	7.1 🔹		
			OK Cancel

Brows	e Installed Updates 🧕	Nu	Get Package Ma	nager: TrelloMicroSer
trello	× 🗸 🖒 🗌 Include prerelease		Package	source: nuget.org -
2	Manatee.Trello.WebApi by gregsdennis, 9.03K downloads	• v2.0.3	Trellon	let
-0	Package Description		Version: Latest	stable 0.6.2 Install
0	TrelloNet by Oskar Dillén, 21.3K downloads A .NET client library for Trello.	v0.6.2	• Options	
	TrelloNet.Temp.Fork by Oskar Dillén, 2.48K downloads	v0.6.2	Description	
	A .NET client library for Trello.		A .NET client libra	ary for Trello.
			Version:	0.6.2
0	TrelloNet.Edge by Oskar Dillén, 1.93K downloads	v0.7.2.1	Author(s):	Oskar Dillén
	A .NET client library for Trello. Includes features not yet in the main respository.		License:	http://www.apache.org/licenses, LICENSE-2.0.html
	MyTrelloNet by tkykm, 959 downloads	v1.0.8	Date published:	Thursday, May 1, 2014 (5/1/2014
	rebuild TrelloNet		Project URL:	https://github.com/dillenmeiste Trello.NET
	dcm.trellolib by David Conde Marin, 163 downloads	v1.0.1	Report Abuse:	https://www.nuget.org/package TrelloNet/0.6.2/ReportAbuse



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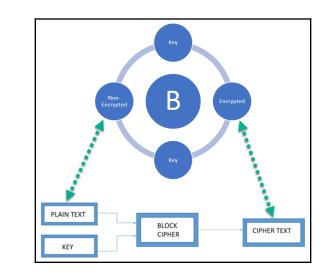
Chapter 12: Microservice Manager – The Nexus

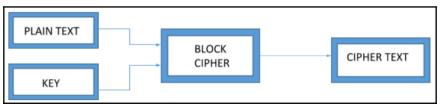
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Cach	eManager × 🚽 😋 🗌 Include prerelease	Package source: nuget.org					
MC	CacheManager.Core by MichaConrad, 353K downloads CacheManager is an open source caching abstraction layer for .NET written in C#. It supports various	v1.1.2	•	MC Cach	eManager.System	RuntimeCacł	
	cache providers and implements many advanced features. The Core library contains all base interface			Version: Lates	t stable 1.1.2 •	Install	
MC	CacheManager.SystemRuntimeCaching by MichaConrad, 201K downloads CacheManager extension package which adds System.Runtime.Caching.MemoryCache as an option for a local in-memory cache layer. CacheManager is an open source caching abstraction layer for .NET w	v1.1.2		• Options			
MC	CacheManager.StackExchange.Redis by MichaConrad, 159K downloads CacheManager extension package which adds[wpport for Redis as a distributed cache layer. CacheManager is an open source caching abstraction layer for .NET written in C#. It supports various	v1.1.2		System.Runtime	extension package which as c.Caching.MemoryCache as	an option for a	
MC	CacheManager.Microsoft.Extensions.Configuration by MichaConrad, 40K downloads CacheManager extension package to use Microsoft.Extensions.Configuration to configure the CacheManager instance. CacheManager is an open source caching abstraction layer for .NET written i	v1.1.2		local in-memory cache layer. CacheManager is an ope source caching abstraction layer for .NET written in C# supports various cache providers and implements man advanced features.			
MC	CacheManager.Serialization.Json by MichaConrad, 91.4K downloads	v1.1.2		Version:	1.1.2		
Conference of	CacheManager extension package providing JSON serialization for distributed caches. CacheManager is an open source caching abstraction layer for .NET written in C#. It supports various cache providers		-	Author(s): License:	MichaConrad https://github.com/Micha CacheManager/blob/ma		

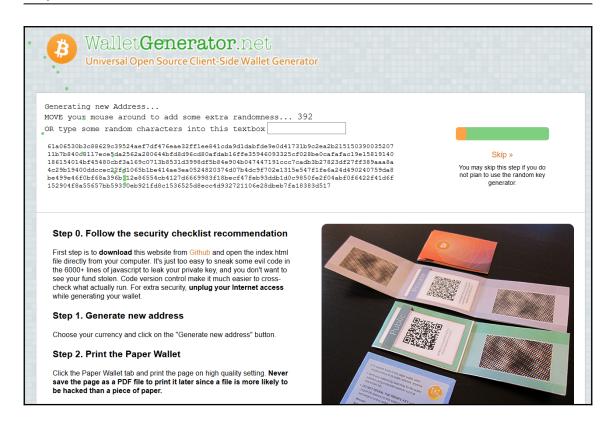
P	RabbitMQ.Client by RabbitMQ.Client	• v5.0.1	Topshelf.Leader			
. 0	The RabbitMQ .NET client is the official client library for C# (and, implicitly, other .NET languages)		Installed: 1.1.1		Uninstall	
RI⊕	ReflectSoftware.Insight by ReflectSoftware Inc. ReflectInsight - The Next Generation in Application Logging.	O v5.7.1.1	Version: 1.1.1	•	Update	
	Topshelf by Chris Patterson, Dru Sellers, Travis Smith, Brian Wilson, Mogens Heller Grabe Topshelf Service Library	O v4.0.4	• Options Description			
6	Topshelf.Autofac by Alexandr Nikitin Topshelf.Autofac provides extensions to construct your service class from your Autofac IoC container.	O v3.1.1	Extension method Topshelf. Version: Author(s):	ds to add leader election s 1.1.1 Steven Ward	tartup control to	
° C 0	Topshelf.Leader by Steven Ward Extension methods to add leader election startup control to Topshelf.	● v1.1.1	License:	https://raw.githubusercontent.com/ stevewgh/Topshelf.Leader/master/ LICENSE		
			Date published:	Friday, February 16, 2018	(2/16/2018)	
			Project URL:	https://github.com/stevev Topshelf.Leader	vgh/	

Chapter 13: Creating a Blockchain Bitcoin Microservice

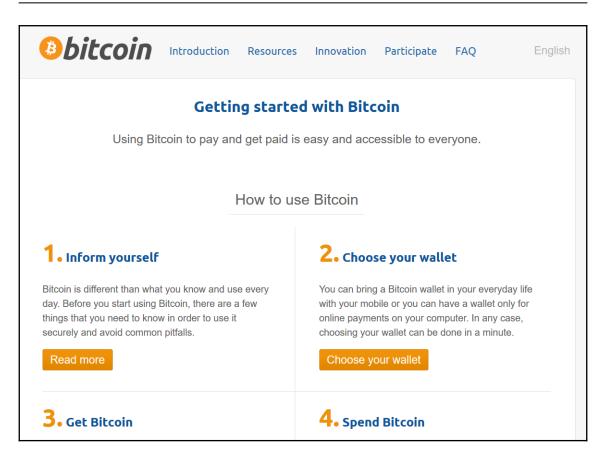




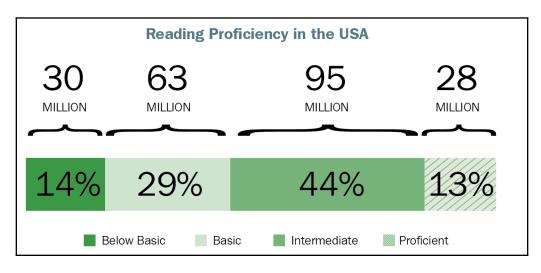
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The C# Bitcoin Library		Date published: Sunday, May 20, 2018 (5/20/2018) Project URL: https://github.com/MetacoSA/NBitcoin
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Client library for QBitNinja server		Installed: 1.0.3.47 Uninstall
QBitNinja.Server by QBitNinja, 4.27K downloads Server library for QBitNinja	v1.0.3.45	Version: Latest stable 1.0.3.47 Update Update
		• Options
		Description Client library for QBitNinja server
		Version: 1.0.3.47
		Author(s): QBitNinja.Client
		License: https://raw.githubusercontent.com/ MetacoSA/QBitNinja/master/ QBitNinja.Client/LICENSE
		Date published: Tuesday, April 24, 2018 (4/24/2018)
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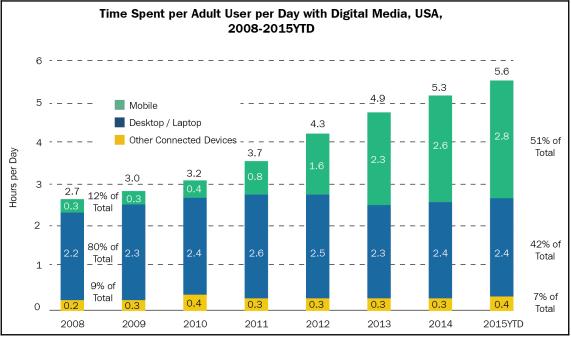






Chapter 14: Adding Speech and Search to Your Microservice





[71]

Share	of /	Averag	;e Tin	ne S	pent	per	Day	with	Major	
Media		US Ad	ults,	2014	1-201	9				

% of total						
	2014	2015	2016	2017	2018	2019
Digital	42.9%	45.3%	47.2%	48.9%	50.4%	51.6%
—Mobile (nonvoice)	21.6%	23.9%	25.7%	27.3%	28.6%	29.6%
Audio	5.8%	6.6%	7.1%	7.3%	7.5%	7.6%
—Social networks	3.2%	3.9%	4.8%	5.6%	6.0%	6.4%
Video*	3.0%	3.6%	4.2%	4.6%	5.0%	5.3%
Other	9.5%	9.7%	9.7%	9.8%	10.1%	10.3%
-Desktop/laptop**	18.6%	18.2%	17.4%	17.0%	16.8%	16.7%
Audio	0.9%	0.9%	0.9%	0.8%	0.8%	0.7%
Video*	3.3%	3.4%	3.4%	3.4%	3.3%	3.3%
Social networks	1.9%	1.7%	1.5%	1.5%	1.4%	1.4%
Other	12.6%	12.2%	11.7%	11.4%	11.3%	11.3%
-Other connected devices	2.7%	3.2%	4.0%	4.6%	5.0%	5.3%
TV***	36.6%	35.1%	34.1%	33.0%	32.0%	31.2%
Radio***	12.4%	12.3%	12.0%	11.9%	11.8%	11.7%
Print***	4.4%	4.0%	3.5%	3.3%	3.1%	3.0%
-Newspapers	2.6%	2.3%	2.0%	1.8%	1.7%	1.6%
-Magazines	1.9%	1.7%	1.5%	1.5%	1.4%	1.3%
Other***	3.6%	3.4%	3.1%	2.9%	2.7%	2.6%

Note: ages 18+; time spent with each medium includes all time spent with that medium, regardless of multitasking; for example, 1 hour of multitasking on desktop/laptop while watching TV is counted as 1 hour for TV and 1 hour for desktop/laptop; numbers may not add up to 100% due to rounding; *excludes time spent with video via social networks; **includes all internet activities on desktop and laptop computers; ***excludes digital Source: eMarketer, Sep 2017

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		Console App (.NET Framework)	Visual C#	
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<pre>bool ProcessWikipediaSearchMessage(WikipediaSearchMessage msg) { (string text, int maxResults, int resultsToRead, Language language):void</pre>							
<pre>SearchWikipedia(msg.searchTerm, msg.maxReturns, msg.maxReturns, LanguageEnglish);</pre>							
return true;	🛃 English	Language					
<pre>} tool ProcessWikipediaSearchMessage(WikipediaSearchMessage)</pre>	📑 Abkhazian	Language					
	📑 Acehnese	Language					
	📑 Afrikaans	Language					
	📑 Akan	Language					
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