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Editor  
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**BGP Graceful Restart - Implementation Survey**  
**[draft-ietf-idr-bgp-gr-survey-01.txt](#)**

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Abstract

This document provides a survey of BGP-4 Graceful Restart implementations.

**1. Survey Summary**

This document provides a survey of BGP-4 Graceful Restart [\[1\]](#) implementations. After a brief summary, each response is listed. The editor makes no claim as to the accuracy of the information provided.

The following organizations reported having implementations of Graceful Restart: Cisco Systems, IP Infusion, Juniper Networks, Laurel Networks, Redback Networks, Riverstone Networks and Tenor Networks. Andrew Partan responded regarding independent interoperability testing.

Respondents reported having tested interoperability between the following:

	Cisco	Juniper	Laurel	Redback	Riverstone
Cisco	-	X	X	X	X
Juniper	X	-	X	X	X

In addition to responses from implementors, Andrew Partan <asp@partan.com> reports that he has tested interoperation between Cisco, Juniper and Redback.

## 2. Survey Forms

### 2.1. Cisco Systems, Inc.

Person filling out this form: Ruchi Kapoor <ruchi@cisco.com>

Does your Graceful Restart implementation do the following as defined in [draft-ietf-idr-restart-05.txt](#)?

Send the End-of-RIB marker upon completion of initial routing update according to [section 4](#)?

Yes.

Exchange the Graceful Restart capability according to [section 5](#)?

Yes.

Restart BGP sessions normally (i.e., a full restart not a Graceful Restart) when terminated with a NOTIFICATION message according to [section 6](#)?

Yes.

Function as a Restarting Speaker according to [section 6.1](#)?

Yes.

Function as a Receiving Speaker according to [section 6.2](#)?

Yes.

List other implementations that you have tested for Graceful Restart interoperability.

JunOS.

## **2.2. IP Infusion, Inc.**

Person filling out this form: Kunihiro Ishiguro  
<kunihiro@ipinfusion.com>, Wei Cao <wei@ipinfusion.com>

Does your Graceful Restart implementation do the following as defined in [draft-ietf-idr-restart-05.txt](#)?

Send the End-of-RIB marker upon completion of initial routing update according to [section 4](#)?

Yes.

Exchange the Graceful Restart capability according to [section 5](#)?

Yes, except the "only be a receiver" case.

Restart BGP sessions normally (i.e., a full restart not a Graceful Restart) when terminated with a NOTIFICATION message according to [section 6](#)?

Yes.

Function as a Restarting Speaker according to [section 6.1](#)?

Yes. And we support both planned and unplanned restart.

Function as a Receiving Speaker according to [section 6.2](#)?

Yes.

List other implementations that you have tested for Graceful Restart interoperability.

None.

## **2.3. Juniper Networks**

Person filling out this form: Chaitanya Kodeboyina  
<ck@juniper.net>

Does your Graceful Restart implementation do the following as defined in [draft-ietf-idr-restart-05.txt](#)?

Graceful restart functionality is not on by default and one has to configure 'graceful-restart' for BGP and other protocols to implement this functionality. So all answers below are conditional on this knob being configured. (There is one knob for all protocols.)

Send the End-of-RIB marker upon completion of initial routing update according to [section 4](#)?

Yes.

Exchange the Graceful Restart capability according to [section 5](#)?

Yes.

Restart BGP sessions normally (i.e., a full restart not a Graceful Restart) when terminated with a NOTIFICATION message according to [section 6](#)?

Yes.

Function as a Restarting Speaker according to [section 6.1](#)?

Yes, except that we don't have a capability today (needs a knob at most) to restrict graceful-restart to planned restarts only. But this is an internal matter which has no bearing on interop and I don't see why this paragraph should be part of the draft:

If one wants to apply graceful restart only when the restart is planned (as opposed to both planned and unplanned restart), then one way to accomplish this would be to set the Forwarding State bit to 1 after a planned restart, and to 0 in all other cases. Other approaches to accomplish this are outside the scope of this document.

Function as a Receiving Speaker according to [section 6.2](#)?

Yes.

List other implementations that you have tested for Graceful Restart interoperability.

None.

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#### **2.4. Laurel Networks, Inc.**

Person filling out this form: Ardas Cilingiroglu  
<ardas@laurelnetworks.com>

Does your Graceful Restart implementation do the following as defined in [draft-ietf-idr-restart-05.txt](#)?

Send the End-of-RIB marker upon completion of initial routing update according to [section 4](#)?

Yes. End-of-RIB is generated upon completion of the initial update messages if graceful-restart is configured, even when it's a normal bgp (re)start.

Exchange the Graceful Restart capability according to [section 5](#)?

Yes.

Restart BGP sessions normally (i.e., a full restart not a Graceful Restart) when terminated with a NOTIFICATION message according to [section 6](#)?

Yes.

Function as a Restarting Speaker according to [section 6.1](#)?

Yes. We support both planned and unplanned restarts. Also, implemented a configurable upper bound to defer route selection.

Function as a Receiving Speaker according to [section 6.2](#)?

Yes. Implemented a configurable upper bound to retain stale Rib-In routes.

List other implementations that you have tested for Graceful Restart interoperability.

Cisco and Juniper.

### **2.5. Redback Networks, Inc.**

Person filling out this form: Jenny Yuan <jenny@redback.com>

Does your Graceful Restart implementation do the following as defined in [draft-ietf-idr-restart-05.txt](#)?

Send the End-of-RIB marker upon completion of initial routing update according to [section 4](#)?

Yes.

Exchange the Graceful Restart capability according to [section 5](#)?

Yes.

Restart BGP sessions normally (i.e., a full restart not a Graceful Restart) when terminated with a NOTIFICATION message according to [section 6](#)?

Yes.

Function as a Restarting Speaker according to [section 6.1](#)?

Yes.

Function as a Receiving Speaker according to [section 6.2](#)?

Yes.

List other implementations that you have tested for Graceful Restart interoperability.

Cisco.

### **2.6. Riverstone Networks**

Person filling out this form: Greg Hankins  
<ghankins@riverstonenet.com>

Does your Graceful Restart implementation do the following as defined in [draft-ietf-idr-restart-05.txt](#)?

Send the End-of-RIB marker upon completion of initial routing update according to [section 4](#)?

Yes.

Exchange the Graceful Restart capability according to [section 5](#)?

Yes.

Restart BGP sessions normally (i.e., a full restart not a Graceful Restart) when terminated with a NOTIFICATION message according to [section 6](#)?

Yes.

Function as a Restarting Speaker according to [section 6.1](#)?

Yes.

Function as a Receiving Speaker according to [section 6.2](#)?

Yes.

List other implementations that you have tested for Graceful Restart interoperability.

Cisco, Juniper.

Other information:

I defined a 'Resync-Time' to cover the following:

a) Restarter

This timer is started after establishment, and sets an upper limit on time the restarter will wait for EOR markers before sending routes.

b) Helper

This timer is started at the same point, and is the upper limit on the time taken by the restarter to refresh the 'stale' routes.



## **2.7. Tenor Networks**

Person filling out this form: Jim Tsillas  
<jtsillas@tenornetworks.com>

Does your Graceful Restart implementation do the following as defined in [draft-ietf-idr-restart-05.txt](#)?

Send the End-of-RIB marker upon completion of initial routing update according to [section 4](#)?

Yes

Exchange the Graceful Restart capability according to [section 5](#)?

Yes

Restart BGP sessions normally (i.e., a full restart not a Graceful Restart) when terminated with a NOTIFICATION message according to [section 6](#)?

Yes

Function as a Restarting Speaker according to [section 6.1](#)?

Yes

Function as a Receiving Speaker according to [section 6.2](#)?

Yes

List other implementations that you have tested for Graceful Restart interoperability.

(None given.)

### **3. References**

- [1] Sangli, S., Y. Rekhter, R. Fernando, J. Scudder and E. Chen, "Graceful Restart Mechanism for BGP," Work in Progress ([draft-ietf-idr-restart-08.txt](#)), September 2003.

### **4. Security Considerations**

This document does not address any security issues.

### **5. IANA Considerations**

No parameters are defined in this document.

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