

**Deprecation of BGP AS\_SET, AS\_CONFED\_SET.  
draft-wkumari-deprecate-as-sets-01**

**Abstract**

This document deprecates the use of the AS\_SET and AS\_CONFED\_SET types of the AS\_PATH in BGPv4. This is done to simplify the design and implementation of the BGP protocol and to make the semantics of the originator of a route more clear.

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## 1. Introduction

The AS\_SET path segment type of the AS\_PATH attribute ([\[RFC4271\]](#), [Section 4.3](#)) is created by a router that is performing route aggregation and contains an unordered set of ASs that the update has traversed. The AS\_CONFED\_SET path segment type ([\[RFC5065\]](#)) of the AS\_PATH attribute is created by a router that is performing route aggregation and contains an unordered set of Member AS Numbers in the local confederation that the update has traversed (AS\_CONFED\_SETs are very similar to AS\_SETs, but are used within a confederation).

By performing aggregation, a router is, in essence, combining multiple routes into a new route. This type of aggregation blurs the semantics of what it means to originate a route. These can cause operational issues that include reachability problems and traffic engineering issues.

From analysis of past Internet routing data it is apparent that aggregation that involves AS\_SETs is very seldom used in practice on the public network and, when it is, often contains reserved AS numbers ([\[RFC1930\]](#)) and / or only a single AS in the AS\_SET. The reductions in table size provided by the aggregation is outweighed by additional complexity in the BGP protocol and confusion regarding what exactly is meant by originating a route.

## **2. Requirements notation**

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [[RFC2119](#)].

### **3. Terminology**

Deprecate: To mark (a component of a software standard) as obsolete to warn against its use in the future so that it may be phased out.

#### **4. Deployment and modification of behavior**

It is expected that initially AS\_SETs / AS\_CONFED\_SETs will be deprecated by the few operators that are currently generating them, and operator policy changed to filter them. Operators should take note that new technologies (such as those that make use of the RPKI) MAY not support routes with AS\_SETs / AS\_CONFED\_SETs in them, and MAY treat as infeasible routes containing them.

## **5. IANA Considerations**

This document contains no IANA considerations.

## 6. Security Considerations

By removing support for the AS\_SET path segment type of the AS\_PATH attribute future BGP implementations can be simplified.. This will also simplify the design and implementation of the RPKI and systems that will rely on it. By removing corner cases we remove complexity and code that is not exercised very often, which decreases the attack surface.



## 7. Acknowledgements

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Apologies to those who I may have missed, it was not intentional.

## 8. Normative References

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