IRM Exhaustion Planning

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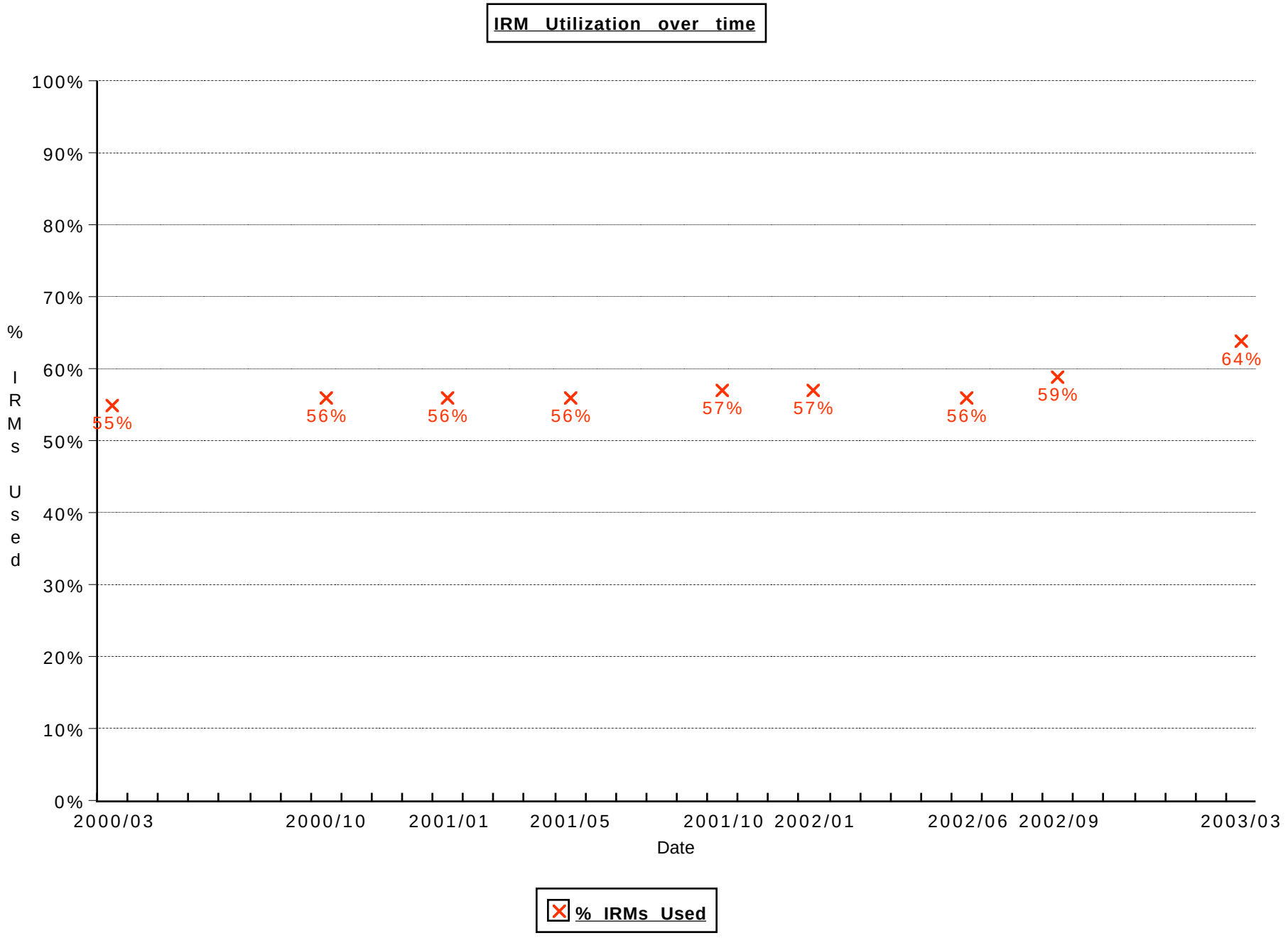
Summary

Current IRM Status



Explanation of Trends

For several years there was little growth in IRM utilization. IRMs were being assigned, but only slightly more than the rate with which they were being reclaimed.

This trend changed in 2002, with a steeper climb in utilization. Growth has been about 11% annually.

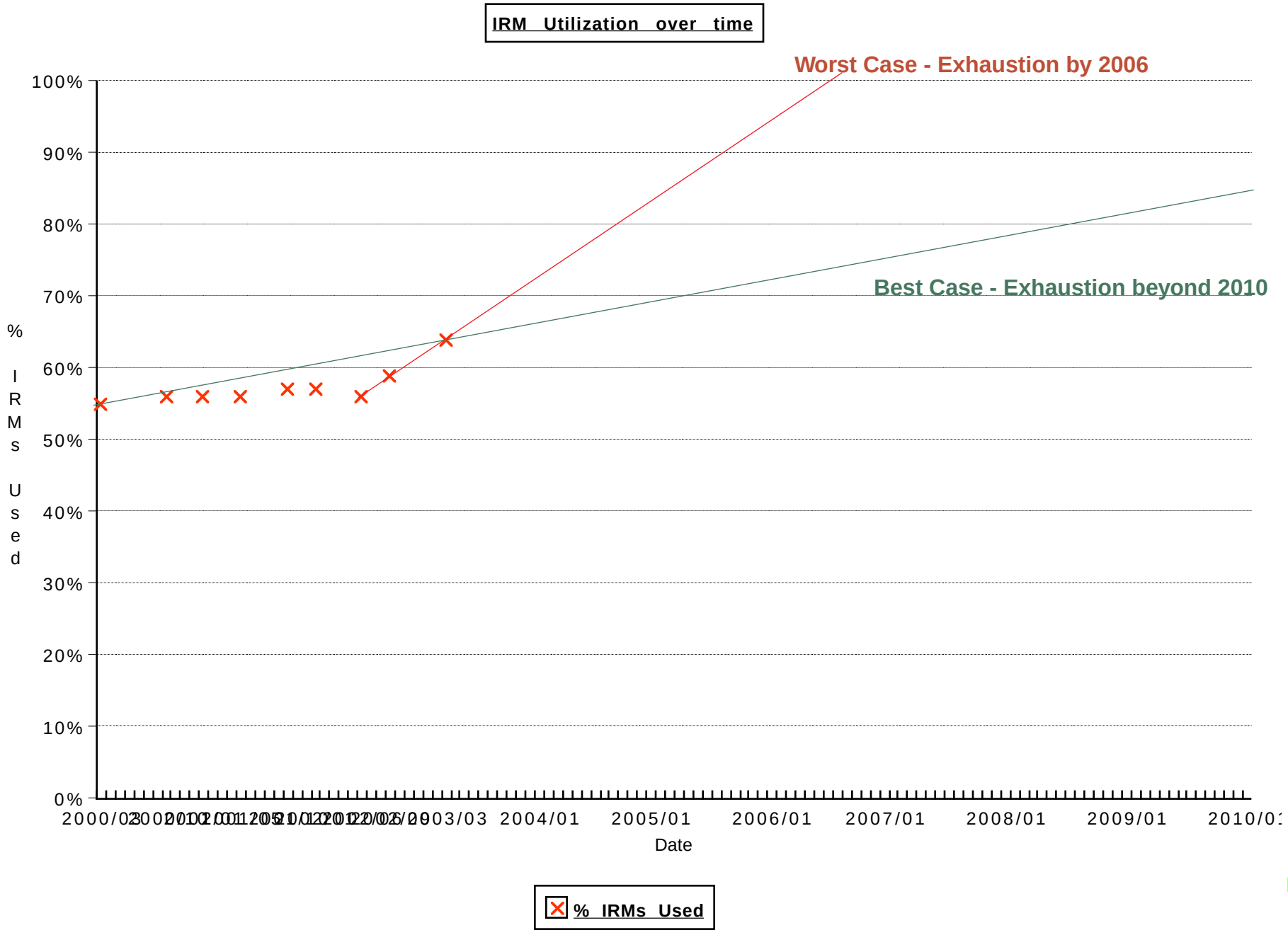
Based on this, exhaustion of the IRM resource can be expected in just over 3 years.

The most optimistic estimate is to base the growth on a comparison with March, 2000 (55%). Growth has been 3% annually since then, which would give the resource more than 11 years until exhaustion.

The truth is probably somewhere between these figures.

This may be mitigated by the removal of AMPS and TDMA systems from service. But this may be more than compensated by the unexpected growth of CDMA2000 systems, and the conversion of systems to IRM to allow international roaming.

Growth Projections



Mitigation

There may be ways to mitigate the problem, by slowing the growth of IRM codes:

- **IRM code block sharing, where IRMs are based on MDNs and local authorities require sharing of MDNs with blocks of one million or less.**
- **Upgrading of call detail recording/billing to separate the MIN and MDN. This allows the MIN to be separated from the MDN, and will allow 100% of IRM blocks to be utilized.**

Expansion

It is possible that the IRM resource could be expanded. This would require working with the US MBI administrator that controls all MIN codes that are not IRM codes. Some possibilities:

- **Use of NXX-0/1XX-XXXX number blocks. This would increase the MIN space by about 80%.**
- **Use of IRMs based on number blocks that cannot be assigned to US telephones, such as toll-free (800, 888 etc.), service codes (911, 611) etc. This usage would not conflict as these numbers would never be dialed.**
- **Negotiating with the MBI administrator to release blocks of numbers that are valid MDNs.**

The biggest risk factor is that the MBI administrator is not fully up to speed. This should not affect the first two options, but close coordination will be required.

IRM Alternatives

The only reasonable alternative to the IRM is IMSI. This will almost totally eliminate any risks of resource exhaustion. Problems with this solution include:

- **International roaming requires that all roaming partners support IMSI in their base stations and MSC (although not necessarily for their own customers). This would require coordination via an organization like the CDG.**
- **Compatiblity with GSM apparently still requires the use of 2 digit MNCs, which significantly reduces the number of codes available. This is largely a problem in the United States which has thousands of licensed service areas.**
- **Compatiblity with GSM requires compatibility with E.214. This is a problem in countries whose E.164 country codes do not match their E.212 MCCs (i.e. the North American Numbering Plan Area). Within an area that shares an E.164 country code, all MNCs must be unique (even if in different MCCs).**

A concerted effort of the wireless industry could finally bring IMSI to reality.

IFAST Actions

- **Develop a liaison with the US MBI administrator, and negotiate for expansion of the IRM resource. This could buy some time.**
- **Work with CDG to promote the migration of CDMA systems to IMSI, with a global industry-agreed cutover date. For safety, the date of January 1, 2006 is recommended.**
- **Solicit input from IFAST members to identify the impact of various solutions, and perhaps identify some further temporary or permanent solutions.**

Summary

- **The IRM resource will likely be exhausted in 3-11 years. IFAST should plan for 3-5 years.**
- **Mitigation is unlikely to have a significant effect, as it is time consuming, and not always applicable.**
- **Expansion of the resource is possible, but will require close coordination with the US MBI administrator. Obtaining permission from US carriers for this may be very time consuming.**
- **The IMSI is the best solution. If an agreement could be put in place by carriers to support IMSI by a certain date (e.g. January, 2006), a smooth transition might be possible.**
- **Once IMSI is relatively universal, the IRM could be gradually phased out.**