**# Title:**

RAS2 add ADDRESS\_TRANSLATION service.

**# Status:**

Draft

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ACPI Specification Version 6.5

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# # Summary of the change

This ECR adds the ADDRESS\_TRANSLATION feature to the RAS2 table Memory RAS Features.

# # Benefits of the change

The ADDRESS\_TRANSLATION service enables OSPM to obtain:

* A logical address from a physical address. The logical address is required, for instance, for error injection when the error is injected on a system component with a local view of memory.
* A physical address from a logical address. The physical address is required, for instance, for injecting an error using EINJv2 targeting specific location on the memory device.

The physical address from logical address translation is like existing LA2PA\_TRANSLATION service. Using the ADDRESS\_TRANSLATION service instead allows software to have a consistent interface with the same parameters in both directions. The vendor specific information also allows the OSPM or platform to share more information related to a memory device for which the address is being requested.

# **# Impact of the change**

The ECR does not impact current implementations.

# # Detailed description of the change [normative updates]

Delta from ACPI 6.5

* Changes in **yellow**
* Insertions in **green**
* Removals in **~~red~~**
* References that need fixup in blue

**The following table identifies the supported Memory RAS features.**

*Table 5.86****Platform RAS Feature Bitmap for Memory RAS***

|  |  |  |  |
| --- | --- | --- | --- |
| **Bit** | **RAS Feature** | **Feature Name** | **Description** |
| 0 | Hardware-based memory scrub feature | PATROL\_SCRUB | Indicates that the platform supports hardware-based memory scrubbing. OSPM must set this bit in the Set RAS Capabilities field to request memory scrubbing service. |
| 1 | Logical to Physical Address translation feature | LA2PA\_TRANSLATION | Indicates that the platform supports logical address to physical address translation service. OSPM must set this bit in the Set RAS Capabilities field to request address translation for a logical address. |
| 2 | Address translation feature | ADDRESS\_TRANSLATION | Indicates that the platform supports address translation service. OSPM must set this bit in the Set RAS Capabilities field to request an address translation. |
| 3~~2~~-127 | *Reserved* |  | *Reserved for future use* |

**…**

##### 5.2.21.2.3. Address Translation Service

The platform can use this feature to provide support for translation of physical addresses to logical addresses and vice versa.

The translation to logical addresses is required when the OSPM intends to inject an error on a component using the local view of memory of that component. The translation of logical address to physical address is required when OSPM only has the capability to inject an error using physical address but wants to target specific locations on a memory component.

*Table 5.89****Parameter Block Structure for ADDRESS\_TRANSLATION***

|  |  |  |  |
| --- | --- | --- | --- |
| **Field** | **Byte Length** | **Byte Offset** | **Description** |
| Type  (FIXED OUTPUT) | 2 | 0 | 0x0002 – Address translation service  This field is set by Platform. RO for OSPM / Software. |
| Version  (FIXED OUTPUT) | 2 | 2 | Byte 0 - Minor Version  Byte 1 - Major Version  For this format of the parameter block, this field should be set to 0x0100.  This field is set by Platform. RO for OSPM / Software. |
| Length  (FIXED OUTPUT) | 2 | 4 | Length, in bytes of the entire parameter block structure.  This field is set by Platform. RO for OSPM / Software. This must be set to the maximum possible output of this parameter block. |
| Address Translation Command (INPUT) | 2 | 6 | 0x01 - GET\_PA2LA\_TRANSLATION  0x02 – GET\_LA2PA\_TRANSLATION  All other values are reserved. |
| Physical Address (INPUT/OUTPUT) | 8 | 8 | When OSPM uses the GET\_PA2LA\_TRANSLATION command it specifies the system physical address in this field for which it wants the local logical address, SMBIOS info or vendor specific info.  When OSPM uses the GET\_LA2PA\_TRANSLATION command the platform provides the system physical address in this field. |
| Sub-instance Identifier (INPUT/OUTPUT) | 8 | 24 | If there are multiple constituent components that fall within the proximity domain, this field can be used to point to the specific component to which the LA applies. |
| Logical Address (INPUT/OUTPUT) | 8 | 32 | The platform returns the local logical address of target end-point associated with the input physical address in this field in response to GET\_PA2LA\_TRANSLATION command.  OSPM specifies the local logical address for which it requires the physical address when using the GET\_LA2PA\_TRANSLATION command. |
| Status (OUTPUT) | 4 | 36 | The platform returns this value in response to ADDRESS\_TRANSLATION:  0x0000\_0000: Indicates that the translation succeeded.  0x0000\_0001: Indicates that the translation failed, the Logical Address (in response to GET\_PA2LA\_TRANSLATION command) or Physical Address (in response to GET\_LA2PA\_TRANSLATION command) returned by the platform may not be valid.  0x1000\_0000: Indicates that the translation command (GET\_LA2PA\_TRANSLATION or GET\_PA2LA\_TRANSLATION) is not supported by the platform.  Other values are reserved for future use by this specification. |
| SMBIOS Locality Info  (INPUT/OUTPUT) | 2 | 40 | The platform returns the SMBIOS handle of the device associated with this physical address when using the GET\_PA2LA\_TRANSLATION command.  OSPM writes the SMBIOS handle of the device associated with the logical address when using the GET\_LA2PA\_TRANSLATION command.  If the value is 0xFFFF, platform and software shall assume there is no SMBIOS locality information available. |
| Vendor Specific Info Length  (OUTPUT) | 2 | 42 | This provides the byte length N of the Vendor Specific Info region.  NOTE: The Vendor Specific Info Length cannot exceed (Length – 42).  If there is no Vendor Specific Info, must by zero.  NOTE: The Vendor Specific Info Length could be different between different translation requests. |
| Vendor Specific Info  (OUTPUT) | N | 32 | This field provides optional supplemental translation information to further break down locality to sub-components. |